

Investigators' names are frequently given in the text, but references are limited to "suggestions for further reading" and occasional references in the legends.

V. EISEN

MICROBIAL TRANSFORMATION

Microbial Transformation of Steroids and Alkaloids

By Hiroshi Iizuka and Atsushi Naito. Pp. xi+294. (University of Tokyo Press: Tokyo; University Park Press: State College, Pennsylvania, 1967.) \$16.50.

REVIEWING this book is like reviewing a telephone directory because the only text in the whole book is that contained in the preface.

The book describes the microbial transformation of steroids and alkaloids using structural formulae. Each transformation is supplemented with a reference to the original work and quite frequently also contains reference to the appropriate literature where maximum yield for a particular transformation has been obtained.

Structures are attractively drawn and beautifully laid out. As far as I could check, most of the references and the structural representations were correct. A person who is not an expert in the field but who can appreciate organic structures can bring himself up to date on the subject in a single sitting. The book covers material published up to 1966 and within the framework of its conception contains no serious omissions.

This is a reference book meant primarily for research workers and no doubt would find space in most institutional libraries.

M. АКЯТАР

ANTIBODY METHODS

Methods in Immunology and Immunochemistry

Vol. 1: Preparation of Antigens and Antibodies. Edited by Curtis A. Williams and Merrill W. Chase. Pp. xxi+479. (Academic Press: New York and London, 1967.) 205s. 4d.

THIS volume contains a wealth of practical detail on methods of producing antisera in many different species. It is just the right book to which to refer your colleagues who are requesting "a little help with the practical aspects" of antibody production. Here can be found all the small details of antigen purification and preparation, of animal handling and antiserum processing which have for so long been passed by word of mouth and practical demonstration from one laboratory to another. This volume transforms the black magic of immunology into a scientific technology, based still on many empirical procedures which have proved their worth over the years but showing some rational system in its application.

This is essentially a book of laboratory procedures, similar to another series of "Methods" which is so familiar and invaluable to enzymologists and biochemists. This is the first volume of the series and, although leaving many topics including antibody assay to later volumes, it contains all one would hope to find on techniques of antibody production and related procedures. Nearly sixty contributors who are world renowned for their achievements in immunology have given full accounts of the methods used in their own laboratories.

The first chapter, which occupies almost half the text, describes methods for preparing, purifying and characterizing a wide range of different antigens. Proteins, bacterial antigens, blood-group substances, viruses, conjugated and synthetic antigens are all treated in turn. Understandably the techniques of protein purification and characterization have not been described in detail but are reserved for the second volume. The practical techniques, however, for the production of such specialized

antigens as conjugated and synthetic antigens and some of bacterial origin are given in full detail. The second chapter concerns the production of antiserum and provides instructions for preparation of immunogens, immunization procedures, collection and handling of serum and the manipulation of many types of animal. The purification of specific antibody to different types of antigen and the separation of different immunoglobulin classes from antisera are described in the third chapter. A short fourth chapter gives details of radioisotope and ferritin labelling of antigens and antibodies, but refers readers to the fourth volume for description of fluorescent labelling. The final chapter describes methods used in studies of the structure of immunoglobulins. The more highly specialized nature of this topic makes it appear somewhat out of place in a volume of such general application, but the immense progress which has resulted from such studies perhaps justifies its inclusion for the benefit of the specialist worker or the interested general reader.

This volume can be strongly recommended to all who experiment with immunology in any shape or form. One hopes that the third volume which will deal with that other essential part of immunology, the assay of antibody activity, will be of equal standard. J. E. FOTHERGILL

ANIMAL VIRUSES

Introduction to Animal Virology

By A. P. Waterson. Second edition. Pp. x+176. (Cambridge University Press: London, 1968.) 35s.; \$5.50.

THE declared aim of this book is to provide newcomers to animal virology, or those working in neighbouring fields, with a short and readable account of the main facts about viruses infecting man and other vertebrates. To attain this goal the subject matter has been subdivided into eight sections, seven of which achieve the author's stated aim and should provide a useful introduction for newcomers trained or training in biology or medicine.

The first chapter deals rapidly with the historical development of the study of viruses which led to the emergence of the discipline of virology. An excellent and concise chapter discussing the nature of the virion with short sections on the purification, examination, characterization and classification of viruses is then followed by chapters dealing with quantitative methods and haem-agglutination. The discussion then shifts to the infected cell and brief consideration of the growth cycles of the major groups of animal viruses. The chapter on viruses and tumours which follows is adequate, though it could be clearer. For example, the comparisons made between lysogenic phages and polyoma virus are not happy: many non-inducible phages are known; some phages do have an effect on the bacterial cell (conversion); and the cryptic mutants of λ do not show resistance to super-infection. Only a very small minority of virologists subscribe to the view, favoured in the same chapter on page 105, that the RNA of Rous sarcoma virus is transcribed to DNA and that this then is duplicated at cell division. As this unsubstantiated scheme runs contrary to the (so far) universally found direction of information flow (DNA \rightarrow RNA \rightarrow PROTEIN), it is scarcely likely to prove of help to beginners. The chapter on the genetics of animal viruses commences with a table on page 113 which classifies heterozygosis as non-heritable variation, though this is later contradicted by the text on page 120. There are further mistaken or misleading statements (for example, mutant frequency is confused with mutation rate) until on page 123 near the end there is a sentence with begins "As guanine and cytosine pair with thymine and adenine . . .!"

The last chapter deals admirably with the topic "Viruses and Disease".

There are also some careless mistakes: for example, on