

The various species and organs of *Cycas* are worked through systematically, uses, diseases and so on are included and there is a certain amount about related plants, but the bulk is on *Cycas* itself.

It is based, of course, largely on other men's work, and the compilation looks balanced and fair: if something has been missed among the two hundred and fifty references I do not know it. Many of the figures are new, and the authors freshen their account with a good number of their own observations, but it is not to be expected that there should be surprising discoveries.

The price is remarkably low; but it is a pity the pages were not larger and the paper more attractive, for both the subject and the work were worthy of it.

T. M. HARRIS

Advances in Applied Microbiology

Vol. 4. Edited by Wayne W. Umbreit. Pp. x + 251. (New York and London: Academic Press, Inc., 1962.) 80s.

THE fourth volume of this series contains one long and comprehensive review by C. C. Morris on the maintenance and loss in tissue culture of specific cell characteristics, a fairly lengthy article on induced mutagenesis in the selection of micro-organisms by S. I. Alikhanian, who discusses the use of mutagenic agents in the selection of antibiotic-producing organisms, and four shorter articles. The most stimulating of these is an interesting account of present-day developments in work on the submerged growth of plant cells by L. G. Nickell. Some recent advances in techniques of continuous fermentation (first reviewed in Volume 1 of the series) are briefly discussed by T. Holme. The remaining two articles are less satisfactory: H. H. Hall's annotations on applied microbiology in animal nutrition are too brief and uncritical to be useful, and F. J. Babel's discussion of bacterial viruses in the dairy industry is a rather rambling account of the problems caused by bacteriophage in cheese-making.

The essay-type of review, commendably being aimed at by the editors of this series, is only successful when the essayist has, and is able to express, his own views on his subject rather than reflect the views of others. The indications from this volume are that such authors are difficult to find; but found they must be if the series is to survive in its present form. This volume cannot be considered as good a value for money as its predecessors, and it is unfortunate that the price per page has increased at the same time as the worth of many of the pages has decreased.

J. W. G. PORTER

Wilson's Disease

Some Current Concepts. Edited by John M. Walshe and Professor John N. Cumings. Pp. x+292. (Oxford: Blackwell Scientific Publications, 1961.) 47s 6d. net.

THIS is a distinguished example of the new form of scientific literature—the edited proceedings of a symposium by distinguished workers. It is not a text-book and will not satisfy the clinician looking for detailed guidance on treatment of Wilson's disease (hepatolenticular degeneration) but gives a valuable opportunity to the isolated worker to gain insight into the working hypotheses of the leaders in the field, often at the stage of the inspired guess which may not reach definitive publication for years.

Wilson's disease results from damage to the liver, cerebral grey matter, and kidney by abnormal accumulation of copper. The copper binding capacity of the tissue proteins is shown to be normal and the excess is attributed to lack of a plasma copper-protein, caeruloplasmin. There is evidence that, like haemoglobin, the latter is heterogeneous and it may be that hepatic synthesis of only one fraction or type fails to mature in the absence of a specific gene and that this causes failure of the regulation of copper metabolism. Cases are quoted with normal

caeruloplasmin-levels and conversely a low plasma-level is compatible with apparently normal health.

The physiological role of caeruloplasmin remains unknown. Some of the contributors suggest that it regulates the activity of adrenaline, serotonin and other tryptophan metabolites though its activity is apparently of a low order. Some clinical features such as aminoaciduria and skeletal abnormalities are unexplained. Nevertheless, enough is now known about the chemistry of this rare disease to make it possible for the geneticist to detect heterozygotes and for the clinician to treat the copper poisoning which is the proximate cause of symptoms. Penicillamine has proved the most valuable drug and indeed its effect so far exceeds the other sequestering agents as to suggest to one of the editors that its action may have another explanation.

The book is well edited and produced. It is highly recommended to neurologists and biochemists interested in copper metabolism but will also interest biologists in other fields.

J. K. SLATER

Biochemical Preparations

Vol. 9. Editor-in-Chief: M. J. Coon. Pp. ix + 149. (New York and London: John Wiley and Sons, Inc., 1962.) 53s.

VOLUME 9 of *Biochemical Preparations* continues the very high standard set by the previous volumes of this series. Under the excellent editor-in-chiefship of M. J. Coon a number of experts have written articles on about 30 widely different topics, each of which describes how to prepare a particular product. Every contribution gives a formula of the substance under discussion where this is possible and then continues with a statement of the principle of the method of preparation utilized. The starting materials are listed and information is given on where unusual ones can be obtained. Very full details of the preparative procedure are clearly expounded and the properties and degree of purity of the product are discussed. Other methods of preparation are mentioned where possible and compared with the chosen method.

Each of these articles has been checked before publication by another authority, independent of the author of the article. These painstaking editorial precautions are rewarded in extremely accurate and highly detailed accounts of methods of preparing substances of importance for biochemists and others. This series is an invaluable aid for the research laboratory.

A. KORNER

River Pollution

2: Causes and Effects. By Dr. Louis Klein. With chapters by Dr. J. R. Erichsen and H. A. Hawkes, and a section by A. L. Downing. Pp. xiv + 456. (London: Butterworth and Co. (Publishers), Ltd., 1962.) 75s.

THE fact that this volume aggregates nearly twice as many pages as those contained in the corresponding chapters of the author's original book, *Aspects of River Pollution*, is some indication of the developments which have taken place in this subject during the past five years. In summarizing the vast amount of literature covering these developments, as well as earlier work, Dr. Klein has succeeded remarkably well in presenting the main conclusions in a readable form. Wisely, he has sought the aid of specialists in compiling chapters dealing with fish, biological aspects, and biochemical and physico-chemical aspects of pollution. This last subject is brought up to date in a concise review of investigations into factors affecting the solution of oxygen in water.

The non-biologist, working in the field of pollution prevention, often has difficulty in understanding clearly the results of biological examinations of streams because of the complications which exist in expressing biotic data in a simple form, but the section of this book dealing with biological aspects of pollution should help to clarify many of the difficulties which arise.