

a medium of exchange for goods, and as a coinage. The function of gold as a monetary standard has continued up to the present time, and it has become the yardstick by which national currencies are measured.

The monetary uses of gold, and their influence on human behaviour (for example, as a brief glance at almost any television Western will show), have tended to obscure the applications of the metal in other fields. Broadly speaking, these applications stem from the ability of gold to resist many corroding environments, and from the ease with which it may be worked. Such properties lead directly to its use in electrical contacts, electron tubes, conductors, resistors, and thermocouples, where great precision and reliability are vital. A large part of the world production of gold, in fact, now goes into non-monetary uses. Dr. E. M. Wise, the editor of *Gold*, has studied and worked on the properties of the metal for many years, and he and his contributors have set out here to collect together for the attention of engineers, chemists, metallurgists, physicists, dentists, and those in the medical profession, the properties and applications which are of relevant interest.

The book contains twenty-eight chapters and includes descriptions of the sources of gold, the extraction, mechanical, physical, chemical, and metallurgical behaviour, the applications in electrical engineering, dentistry, jewellery and medicine, and special uses such as an additional element to glass, in the form of very thin films, and as a solder. Methods of chemical analysis, an important subject in view of the necessity of keeping account of the metal, are also included. The book is provided with ample lists of references, and I am not aware of such a comprehensive treatment in any other volume. It is expensive, but as it is a reference work rather than a book for the general reader this is probably not a disadvantage. It will certainly find its way to the library shelves of all organizations dealing with the metal, since it is useful to remember:

"Foul cankering rust the hidden treasure frets,
But gold that's put to use more gold begets".

J. A. CATTERALL

THE BIOCHEMIST'S 'VADE-MECUM'

Methods in Enzymology

Vol. 6. Edited by Sidney P. Colowick and Nathan O. Kaplan. Pp. xxiii+1054. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1963.) 200s.

THIS volume completes the supplement to the original treatise "Methods in Enzymology" (*Nature*, **177**, 810 (1956); **178**, 509 (1956) and **181**, 1431 (1958)) and, like the earlier volumes, has been edited by S. P. Colowick and N. O. Kaplan. The editors have brought together an impressive list of 147 authors who have between them contributed 127 articles. These contributions are grouped together under three major headings; the first two deal with the preparation and assay of enzymes and substrates, and the third with special techniques used in enzymology. The enzymes included in this volume are those concerned with nucleic acid, phosphate, coenzyme and vitamin metabolism and the respiratory enzymes. Other enzymes have been dealt with in the previous volume. The preparation and assay of substrates were not included in the first volume of the supplement and so there is complete coverage of the recent progress in this field. The final section is entitled "Special Techniques" and, besides descriptions of more general methods of protein analysis, includes articles on the esoteric techniques involved in neutron-activation chromatography of phosphorus compounds and in the application of nuclear magnetic resonance and electron spin resonance to enzymology.

With such a large number of authors contributing to this volume there is some variation in the style and standard of the individual articles, although in general

the latter is high. There is usually an introductory paragraph to each contribution describing the enzyme or substrate and giving the principles involved in the assay. The experimental procedures are given in detail with adequate reference to the original literature so that, if problems arise in following methods given in the book, the individual worker can readily turn to the original paper. The grouping of methods under the general titles 'enzymes' and 'substrates', although in general it is satisfactory, does lead to minor inconveniences. For example, polynucleotide phosphorylase, RNA polymerase and cell-free protein synthesis directed by messenger RNA, all occur in the first 25 pages, yet we have to turn to page 713 for the synthesis of synthetic polyribonucleotides. Similarly, the isolation of DNA is on page 726, the enzymatic preparation of polydeoxyribonucleotides on page 718 and the DNA polymerase on page 34.

Throughout this volume the editors have allowed the use of trivial names for the enzymes, and it is unfortunate that, two years after the publication of the report of the Commission on Enzymes, a book of this importance can be written in which the systematic names and numerical code numbers for the enzymes are not used. Apart from this criticism this volume maintains the standard set by the editors in the previous volumes and together with them provides an excellent laboratory manual for all biochemists who require detailed working instructions for the preparation and assay of enzymes. D. KERRIDGE

A SURVEY OF MANAGEMENT ATTITUDES

Thrusters and Sleepers

A Study of Attitudes in Industrial Management. (A PEP Report.) Pp. 295. (London: Political and Economic Planning; and George Allen and Unwin, Ltd., 1965.) 35s.

WHILE much is said and written about the influence of management on productivity, little systematic investigation has been carried out to determine how far managers in fact achieve a high and sustained growth rate for their firms. There should be general approval, therefore, for this report of a survey carried out by P.E.P. into management attitudes and practices and their effects on a company's prosperity. Firms selected for study included those whose management attitudes and practices were likely to be conducive to growth and these were compared with firms whose managers were thought not to possess such attitudes.

The choice of firms was decisive. Expert opinion was consulted about those firms which were expected to be prospering in ten years time and, in contrast, the survey included firms of similar size and operating conditions but whose prospects appeared to be unpromising. Altogether, eight firms were visited in each of six varying types of industry which included old and new, science-based and non-science-based, contracting and expanding, capital and consumer goods, craft and mass production industries, localized and non-localized industries and American-influenced and wholly British companies. The industries finally selected were wool textiles, machine tools, ship building, electronics, domestic appliances and earth-moving equipment. Each company was visited for two days, executives were interviewed, much published material about the companies was read, and accounts were analysed.

The research teams investigated a number of factors which are in some way associated with improved productivity. Among them are the systematic development of junior and middle managers and the introduction of modern management techniques. The latter includes mechanization, work study, operational research and accounting techniques like budgetary and cost control. Frequently these are introduced into companies by management consultants and, consequently, the use made