

EXAMINING FIBRES

Thermoanalysis of Fiber and Fiber-Forming Polymers
 Edited by Robert F. Schwenker, jun. (American Chemical Society Symposium held at Atlantic City, N.J., September 17, 1965. Applied Polymer Symposia, No. 2.) Pp. vii + 175. (New York and London: Interscience Publishers, a Division of John Wiley and Sons, 1966.) 55s.

ALTHOUGH thermoanalytical methods have been in existence for a very long time they have only been "discovered" by polymer scientists during the past decade, mainly as a result of the availability of easy to use commercial instruments for differential thermal analysis and thermogravimetry. This impetus has now resulted in the development of new techniques of thermal analysis and in particular the vast extension of our knowledge and interpretation of the thermal properties of polymers. This subject was the theme of a conference sponsored by the American Chemical Society at Atlantic City, New Jersey, in September 1965, and the papers are now reprinted in full. This volume is in the same format as the *Journal of Applied Polymer Science*, of which it is part, and as such will already have been received by subscribers to that journal. These papers, however, are worth bringing to the notice of other research workers in unrelated fields because of the elegance and degree of refinement of experimental methods and technique which are reported. Several new techniques of thermal analysis are described, among which are those of thermoparticulate analysis based on the detection of condensation nuclei evolved from polymeric materials undergoing thermal decomposition and torsional braid analysis. This is a useful method of measuring the ability of polymeric materials to store or dissipate mechanical energy on deformation. This technique is described and is shown to be sufficiently versatile to be used also as a measure of rates of cross-linking reactions.

The papers are complete and fascinating in themselves, but the volume lacks some general introductory chapter, without which much of the casual reader's interest is diverted; it also lacks any report of discussions which must have taken place at the conference and which most would consider to be as important as the actual papers.

E. F. T. WHITE

CROSSROADS FOR METALLURGY

Silver

Economics, Metallurgy, and Use. Edited by Allison Butts with the collaboration of Charles D. Cox. Pp. x + 488. (London, Princeton, N.J., and Toronto: D. Van Nostrand Company, Inc., 1967.) 108s.

THIS book, sponsored by Messrs Handy and Harman to commemorate their one hundred year association with the manufacture and use of this precious metal, serves to emphasize the ancient origins of metallurgy. Silver was one of the first metals to be used by man; its fine lustre and its workability led to its use for ornamental and domestic purposes. It soon became of economic value as a basis of finance, a service it rendered until displaced by gold in the eighteenth century. The early production of silver was by a chemical process; later processes used a combination of chemistry and engineering. Silver finds many modern applications: as a contact material because of its high electrical conductivity; as a material for use in electrical storage batteries where high energy/unit weight and space are required; in nuclear reactors, where silver-cadmium alloys are used as neutron absorbers; and in photo-sensitive materials. In these latter applications the influence of physical science has been predominant.

The history of silver reflects the changing nature of metallurgy which has passed from a technical craft to a science under the influence first of chemistry and latterly of physics. Metallurgists are no longer concerned solely with the extraction of metals from their ores and their subsequent fabrication, but treat metals as one of a class of modern technological materials in which the macroscopic properties are related to the crystal structure. The application of the knowledge gained by developments in solid state physics, crystallography and thermodynamics has led to a fuller understanding not only of the properties of metallic materials but also of ceramics, polymers, plastics and composite materials.

The need for a unified approach in the teaching of the basic science of these materials has led to the evolution of the subject of materials science, which aims to supply engineers, physicists and chemists with a knowledge of crystal structure and its relation to the physical properties of the technological materials they are called on to use. It would seem that materials science is to succeed metallurgy as a study in many universities and colleges. This unification in a number of diverse studies will be no bad thing from both the economic and teaching points of view, provided we do not lose sight of such important studies as, for example, process metallurgy. As this volume shows, much economic value depends on the winning of metal from natural ores and its fabrication. If materials science helps us to use poorer ores, to fabricate better and find new applications, it will be a worthy successor.

Professor Allison Butts and Mr C. D. Cox, who edited this volume, are to be complimented on producing a book which is interesting reading for anyone involved with metals from a scientific or technical point of view. It will also interest those concerned with any of the industrial, economic or artistic aspects of silver.

W. J. KITCHINGMAN

ORGANOMETALLIC PREPARATIONS

Organometallic Compounds

Methods of Synthesis, Physical Constants and Chemical Reactions. By Michael Dub. Vol. 2: Compounds of Germanium, Tin and Lead, including Biological Activity and Commercial Application, covering the Literature from 1937 to 1964. Second edition, edited by Richard W. Weiss. Pp. xx + 697. (Berlin and New York: Springer-Verlag, 1967.) 98 D.M.; \$24.50.

THIS edition is devoted to organo-derivatives of germanium, tin and lead. Research workers in these fields are well aware of the difficulties and labour of extracting information from the literature and for them this book, like its predecessor, will be a tremendous asset. It covers, comprehensively and accurately, references to all publications in the field between 1937 and 1964, but it is not in any sense a critical or comparative work.

The presentation is by division into headings such as symmetrical, tetra-organo-tin compounds and organo-tin hydrides. General preparative methods are then listed, followed by specific examples and their physical and chemical properties. This is followed by a tabulation of all compounds of a given class, together with some data on each and literature references. In using this compilation careful examination of the table of contents is essential, and some care is needed in searching the tables, for they are not systematically arranged in order of increasing carbon content. It is pleasing to see the abbreviations Me, Et, Pr, Ph used throughout.

The print and general layout are excellent, and this edition is much improved by a hard binding.

F. GLOCKLING