

Viscosity and Its Measurement

By A. Dimsdale and F. Moore. (The Institute of Physics and the Physical Society Monographs for Students.) Pp. v+67. (London: Chapman and Hall, Ltd.; New York: Reinhold Publishing Corporation, 1962. Published on behalf of the Institute of Physics and the Physical Society.) 7s. 6d. net.

VISCOSITY and its Measurement is a welcome addition to the series of *Monographs for Students*, published for the Institute of Physics and the Physical Society. At its price it must be one of the cheapest of text-books for undergraduate students. 'Properties of matter' is generally regarded nowadays by both students and teachers as somewhat outmoded and the subject of viscosity as possibly of main interest only to chemists and engineers. It is, therefore, necessary to remind physicists that these topics are the basis of the modern growing interest in the science of materials and in particular flow phenomena. It is true that solids and gases receive little treatment in the monograph, but within the space provided and in regard to the authors' experience it is perhaps natural that the concentration should be on liquids and plastic materials. The synopsis mentions that the authors' main interest is in clay and ceramic materials, but, disregarding modesty, Would it not have given the monograph more authority if the respective positions of the authors as deputy director of research and senior scientific officer of the British Ceramic Research Association had been included on the title page?

The contents of the monograph follow a simple and straightforward pattern. In the brief introductory chapter, viscosity and its various forms and the different families of materials in relation to their viscous behaviour are defined, and in the successive chapters the capillary, rotational and falling-body types of viscometer are individually treated. Though the fundamental theory is given, the emphasis is on recent forms, modifications and applications to non-Newtonian and thixotropic materials. The references largely cover the years between 1930 and 1959, though the early work of Poiseuille, Reynolds, Couette, Ostwald, Bingham and others is, of course, discussed. The standard text-book *Monograph of Viscometry*, by G. Barr, will be of help to those who wish to pursue the subject further, but for a more extensive experimental treatment with a detailed bibliography I would refer the reader to the chapter "Measurement and Control of Viscosity and Related Flow Properties", by R. McKennal, in *The Instrument Manual* (United Trade Press, Ltd., 1960). S. WEINTROUB

Tabellen zur angewandten Physik

Band 1: Elektronenphysik, Uebermikroskopie, Ionenphysik. By M. von Ardenne. (Berlin: VEB Deutscher Verlag der Wissenschaften, 1962.) Pp. xxiv+758. n.p.

THIS volume is the first part of a new edition of the monumental work published in 1956 by the same author, under the title *Tabellen der Elektronenphysik, Ionenphysik und Uebermikroskopie*. The original edition was in two volumes of 1,368 pages in all. Owing to the rapid growth of the subject since then, the new work will be in three volumes, the first of which has much the same title and covers much the same ground as the first volume of the first edition. The major additions concern the new uses of electron beams as a tool for welding, boring and micro-writing, developments in mass spectrographs, lasers and ultrasonics. The MKSA system has now been adopted throughout.

This is a most valuable compilation for everyone working in electron and ion physics, a field which the author treats in the broadest possible sense. The literature seems to have been exhaustively searched, so far as I was able to test it. One wonders how Prof. von Ardenne is able to organize a team of adequate expertise

on such a scale. It can be surmised, from internal evidence, that it is mainly provided by the staff of his research institute in Dresden. He is again to be congratulated on performing an invaluable service to this branch of science. The volume is beautifully printed and bound; there are many line diagrams, graphs and micrographs, and copious references. He mentions that Volume 2 will deal with *Physik und Technik des Vakuums* and *Plasmaphysik*, and Volume 3 with medical electronics and nuclear physics. V. E. COSSLETT

Organic Chemistry

Vol. 1: The Fundamental Principles. By I. L. Finar. Fourth edition. Pp. xv+853. (London: Longmans, Green and Co., Ltd., 1963.) 50s.

WITH the appearance of the fourth edition of Dr. Finar's book, an already comprehensive text has been brought further up-to-date. Several topics have been expanded, and some new topics have been introduced.

The revised text, which includes literature references up to 1961, provides a more modern account of topics such as aromaticity and quasi-aromatic compounds, bridged carbonium ions and 1,2-shifts, the mechanism and stereochemistry of the Diels-Alder reaction, large ring compounds and conformational effects. The chapter on stereochemistry has also been revised, and is now up to date, with Newman projection formulae and an account of the *R* and *S* notation. Very properly, most of the modernization has occurred in the field of reaction mechanisms, and on this topic the author is commendably frank. Although every reaction is given a mechanistic treatment, glibness is studiously avoided. Phrases such as "the mechanism is believed to be" or "the mechanism is uncertain" occur very frequently, and alternative "explanations" are often quoted.

At the end of each chapter the author furnishes a selection of examination questions and a list of references for further study. The eight-page appendix provides a guide to the chemical literature and to nomenclature, followed by some very useful advice on how to conduct a literature search.

This is an excellent text-book, well written and clearly illustrated. G. L. BUCHANAN

The Tectonics of the Canadian Shield

Edited by John S. Stevenson. (The Royal Society of Canada Special Publications, No. 4.) Pp. x+180. (Toronto: University of Toronto Press; London: Oxford University Press, 1962.) 52s. net.

IN its Special Publications series, the Royal Society of Canada has in recent years sponsored symposium volumes on *The Grenville Problem*, *The Proterozoic in Canada*, and *Soils in Canada*. This fourth contribution (the third to deal with Precambrian rocks) is a collection of 14 miscellaneous papers, ranging from accounts of the forthcoming tectonic map of the Canadian Shield and of its metallogenetic implications to a discussion of new orogenic theories. By combining structural trends with potassium-argon age determinations, the broad tectonic pattern of the Shield has been delimited and three orogenies have been established—Grenville at 950 m.y., Hudsonian at 1,700 m.y., and Kenoran at 2,500 m.y. (all ± 150 m.y.). Among the most outstanding contributions are those on the structure of the Grenville rocks of Ontario and of Quebec, and on the Phanerozoic events which have deformed the Precambrian formations. With the rapid increase in geochronological studies, knowledge of the Shield is growing steadily and the volume furnishes a useful stock-taking of present-day ideas. It would have been much improved, however, by the incorporation of an overall review correlating the disconnected papers which it presents. C. F. DAVIDSON