

## Book Review

*Works intended for notice in this column should be sent direct to the Book-Review Editor (M. M. Woolfson, Physics Department, University of York, Heslington, York YO1 5DD, England). As far as practicable books will be reviewed in a country different from that of publication.*

**The mechanical properties of matter.** By M. T. SPRACKLING. Pp. 144. London: English University Press, 1972. Price £1.30.

This text is one of a series which, according to the editor's foreword, aims to bridge the gap between school and University or College by supplying concise and up to date presentation of important topics. From the author's preface, this particular book surveys the mechanical properties of matter at first year university level both in terms of large scale concepts and the behaviour of basic particles.

Taken as a whole the book is clearly and concisely written, is at a suitable level for first-year students, and provides a sound introduction to the understanding of the mechanical properties of materials. It therefore meets most of the aims of the author and editor.

However an up-to-date presentation of this subject ought to contain more than a passing reference to polymers which are amongst the most familiar materials in a student's daily experience. It is possible to present basic ideas of polymer structure and to contrast the mechanisms of rubber and crystal elasticity at sixth form – first year level. Had this been done the value of the book would have been greatly enhanced both by extending the understanding of materials and by illuminating the concept of entropy which the student ought to be developing at this stage.

Most of the book is at a suitable level for the intended reader, but there are two parts likely to cause him considerable difficulty. The first concerns the visualisation of crystal defects which is difficult, and although this book is clearer than most, a first-year student is unlikely to have sufficient familiarity with lattices and crystallographic notation to follow the section. The second concerns the discussion of shear. This is not taken to the point of recognising shear as a change in the shape of a body without change in its size, and yet from subsequent references the reader is expected to be familiar with this concept, which is unreasonable.

Apart from these points, which the teacher can easily rectify, the book can

be recommended to the beginning undergraduate who should benefit greatly by reading it.

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## Books Received

*The following books have been received by the Editor. Brief and generally uncritical notices are given of works of marginal crystallographic interest; occasionally a book of fundamental interest is included under this heading because of difficulty in finding a suitable reviewer without great delay.*

**Protective coatings on metals. Vol. 1.** Edited by G. V. SAMSONOV. Pp. xi + 227. New York: Plenum Press, 1972. Price \$32.50.

This book is a translation of an original Russian text published for the Institute of Materials Science of the Academy of Sciences of the Ukrainian SSR by Naukova Dumka in Kiev in 1971.

There are 52 articles by various authors published under nine main headings: General and theoretical problems of diffusion impregnation and coating formation; Boriding; Carburizing; Nitriding; Aluminizing; Siliconizing and Titanizing; Chromizing; Multicomponent diffusion coatings; Properties of protective coatings.

**Solid-state physics literature guide, Vol. 3, Group IV, V, 8 VI transition metals and compounds.** By T. F. CONNOLLY. Pp. xviii + 197. New York: Plenum Press, 1972. Price \$17.00.

A comprehensive bibliography of groups IV, V and VI transition metals and their compounds, this volume emphasizes materials preparation, ultrapurification, crystal growth, characterization, and basic physical properties. The work, which also includes groups VII and VIII elements in the section on chalcogenides, is prefaced by critical introductions to special sections of the bibliography *Transition metal oxides* by T. B. REED (Lincoln Laboratories, Massachusetts Institute of Technology) and *Preparation of single elements* by O. N. CARLSON (Ames Laboratory, University of Iowa).

**Landolt-Börnstein. Numerical data and functional relationships in science and technology. Group III. Vol. 8. Crystal and solid-state physics. VII. Epitaxy data of inorganic crystals.** By M. GEBHARDT and A. NEUHAUS. Pp. 186. Berlin, Heidelberg, New York: Springer-Verlag, 1972. Price (cloth) DM 118, U.S. \$37.50.

This volume contains the epitaxy data of inorganic and organic crystals as an extension of the volumes of crystal-structure data. The planes, directions and periods and the misfits of orientation are compiled for about 3700 epitaxial systems.

An alphabetical list of the formulae of all substances included, an index of names of the organic compounds and an index of mineral names are to be found at the end of the volume.

The literature is considered from 1936 to 1970.

**Handbook of electronic materials. Vol. 7. III-V. Ternary semiconducting compounds – Data tables.** By M. NEUBERGER. Pp. 55. New York: Plenum Press, 1972. Price \$14.50.

**An essay about the origine & virtues of gems.** By ROBERT BOYLE. (Contributions to the History of Geology, Vol. 7, edited by GEORGE W. WHITE.) Pp. xxvii + 184. New York: Hafner, 1972. Price £6.75.

Robert Boyle's essay on *The Origin and Virtues of Gems* was published in 1672. At the time the essay was written gems were reputed to have 'virtues' i.e. properties both of medical and magical origin. An introduction by Arthur F. Hagner adds much to the value of this book as does a glossary of seventeenth century mineralogical terminology.

**Geology of soils.** By CHARLES B. HUNT. Pp. ix + 344, Figs. 166, Tables 22. San Francisco: Freeman, 1972. Price £5.

Contents by chapters: (1) Perspective; (2) Geologic time; (3) Weathering and erosion; (4) Landforms; (5) Climate on and in the ground; (6) Flora and fauna; (7) Surface deposits; (8) Modern soils; (9) Ancient soils and superimposed profiles; (10) Physical properties of the ground; (11) Mineralogy and geochemistry; (12) Ground fertility and erosion; (13) Some engineering aspects of ground conditions.