

should prove of enormous value as collateral reading for standard courses in quantum mechanics. Its status in elementary physics instruction is however open to question.

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A frequent contributor of book reviews, R. Bruce Lindsay is Hazard Professor of Physics at Brown University.

At low temperatures

ELECTRICAL RESISTANCE OF METALS.
By George Terence Meaden. 218 pp.
Plenum Press, New York, 1965. \$11.50

by L. I. van Torne

The author states that this book was written to fulfill the needs of scientists and engineers who require a full and current presentation of the experimental facts together with a relatively concise account of the modern theory of the electrical resistance of metals and alloys. The author has achieved his goal, and students as well as scientists and engineers who need data or who measure electrical transport properties of metals should find this a valuable book.

In chapter 1 the author discusses the importance and utility of information concerning the electrical resistivity of metallic and semimetallic elements in the cryogenic temperature range. Chapter 2 is a comprehensive tabulation of electrical resistivity behavior of metallic elements at cryogenic temperatures. Chapter 3 gives a very brief outline of the theory of electrical resistivity in metals. A discussion of the Gruneisen-Bloch equation with regard to its limitations and utility for comparing resistivity data from different elements is given in chapter 4. Some remarks about the influence of alloying, plastic deformation, irradiation, high pressures, magnetic fields and specimen geometry on electrical resistivity are given in chapters 5 and 6. A review of electrical-resistivity measuring techniques at ambient temperatures and below and methods of achieving and controlling cryogenic temperatures are given in chapters 7 and 8. Rather complete author and subject indexes—often given in a cursory manner in books of this kind—allow the reader a

rapid means of finding a specific reference or item of interest.

In summary, this book contains a wealth of experimental data on electrical resistivity of metals at low temperatures and presents several methods of obtaining such data. However, in the author's words, "no pretense is made that any part of the theory is exhaustively covered."

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The reviewer does electron microscopy and diffraction work in crystalline materials at the Martin Company, Orlando, Florida.

Fibrous and filamentary materials

CERAMIC AND GRAPHITE FIBERS AND WHISKERS: A SURVEY OF THE TECHNOLOGY. By L. R. McCreight, H. W. Rauch, W. H. Sutton. 395 pp. Academic Press, New York, 1965. \$10.00

by R. P. I. Adler

Taken as a bibliography and a current survey of the state-of-the-art of whisker and fiber technology this book can serve as a practical starting point for materials scientists wishing to enter this field. The most valuable portions of the volume are a cross-indexed selection of 550 references, over 200 patents, and 58 organizations concerned with the theoretical and practical aspects of fibrous materials. The topics that are covered are: The Potential Strength of Materials (chapter 2); Applications of Fibers (chapter 3); Factors Affecting Fiber Strength (chapter 4); Reports on Organizations Conducting Fibrous Materials Studies (chapter 5); Evaluation and Discussion (Chapter 6); Conclusions and Recommendations (chapter 7); Patents on Ceramic and Graphite Fibers (chapter 8); Bibliography (chapter 9).

The first technical chapter presents a very brief comparison between the actual and theoretical strengths of selected filamentary materials. The obvious parameters of temperature and elastic moduli that influence the theoretical strength are pointed out while some relatively low strengths are attributed to fabrication and testing conditions. This is followed by

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review of the application of fibers for reinforcing, insulation, fillers, and as fabrics, tapes, and paper; a very general approach is used but some specific examples are given.

The next chapter on factors affecting strength is perhaps the most disappointing in organization and emphasis. The pertinent factors are discussed in terms of the specific types of materials (i.e. glass, ceramic, and graphite) but within each section the intrinsic, fabrication, and environmental effects are liberally mixed compounding an already complex situation. For this chapter there is a relatively heavy emphasis on glass and fused-silica fibers which was not expected from the book title. As a parting thought the chapter closes with an incomplete section on testing and evaluation.

Sandwiched between the three most relevant chapters on organizations interested in fibrous materials, the patent abstracts, and the bibliography are two short chapters. These concern: (1) Evaluation and Discussion and (2) Conclusions and Recommendations. They contain all too general and obvious statements (e.g. Recommendation 1: "That the interested reader continue to seek the latest informa-

tion in the patent and technical literature.") that could just as well have been included as summary statements at the end of previous chapters or left out altogether.

Other annoying elements present are obvious editorial mistakes such as misprinted symbols, typographical (spelling and numerical) errors, improperly labelled figures and tables (e.g. Tables I, XX, XXI and XXII list the units of stress and the elastic modulus as $10^{-3} \times \text{psi}$ and $10^{-6} \times \text{psi}$ respectively). These might be tolerated in reports, but definitely should not appear in book form.

In summary this book can serve some useful purpose currently since the organization reports, patent abstracts, summary tables, and cross-referenced subject and author indices will provide a useful source of information. It appears however that most of the other chapters (except chapter 3) were used as dressing and filler material containing brief generalizations that are the domain of review articles and reports already in print.

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He left his imprint

HOMAGE TO GALILEO. Conf. proc. (Rochester, Oct. 1964). Morton F. Kaplon, ed. 139 pp. MIT Press, Cambridge, Mass., 1965. \$6.00

by *L. Marton*

There were many celebrations in 1964, commemorating the 400th anniversary of Galileo's birth. Some appeared in print, like the one reviewed here, others not. Many opinions were voiced about Galileo's achievements, some of them contradictory. Galileo remains a controversial figure, which is by no means a derogatory remark. In fact, I believe that the controversies add to his stature and that we learn to appreciate more the versatility of his genius.

The present slim volume contains six contributions preceded by an introduction by Morton F. Kaplon. The

contributors are Giorgio de Santillana (professor of history and philosophy of science, MIT); Gilberto Bernardini (director, Scuola Normale of Pisa); Norwood Russell Hanson (professor of philosophy, Yale); Edward W. Strong (professor of philosophy, Berkeley); Philip H. Abelson (editor of *Science* and director, Geophysical Laboratory, Carnegie Institution of Washington); and Erich Kahler (formerly professor, Institute for Advanced Study, Princeton). The general tendencies in all papers are to extoll the achievements of Galileo, perhaps even beyond what may be called an objective presentation. This remark needs some clarification, which I would like to illustrate using a few examples.

Most people interested in Galileo are familiar with de Santillana's book

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