Book Reviews

The Proteins. Chemistry, biological activity, and methods. vol. II, pt. B. Hans Neurath and Kenneth Bailey, Eds. Academic Press, New York, 1954. ix + 634 pp. Illus. + plates. $16.50.

Volume IIB of *The Proteins* concludes a treatise already indispensable to the protein chemist. It contains six chapters by seven American and British contributors including both editors. Whereas volume I covered general reactions and properties, and IIA specific group proteins, IIB is more concerned with molecular biology and biosynthesis. Plasma, muscle, and fibrous proteins are considered, with emphasis on structure and function. Amid heated controversy, great progress has resulted from recent study of muscle biochemistry, protein biosynthesis, and the polypeptide configurations of structural proteins. It is fortunate that such experienced investigators were chosen to evaluate the current status of these problems.

The book begins with a chapter on "interstitial" proteins by W. L. Hughes that is admittedly developed around the author's own interests. Despite the failure to include some significant new work, the article is a fine source of information on purified plasma proteins. W. C. Boyd follows with a thorough, coherent description of the proteins of immune reactions that is notable for its impartiality. Although research on antibody formation is omitted, the subject is later summarized by H. Tarver. J. C. Kendrew reviews fibrous proteins in an article replete with fine photographs and remarkable for lucid analysis of the theoretical structures proposed for keratins.

In an excellent introduction to a confused field, Bailey critically, yet objectively, discusses muscle proteins from a historical viewpoint and with emphasis on structure and function. N. M. Green and Neurath review proteolytic enzymes —particularly their action on proteins and the effects of inhibitors. The perceptive analysis of enzyme kinetics and of zymogen transformations is noteworthy. Tarver concludes the volume with a detailed but well-balanced interpretation of studies on peptide and protein synthesis and protein turnover.

Most authors cite many late references, and there is an excellent subject and author index for volumes IIA and IIB. In a treatise destined to become the standard reference work on proteins, this volume is outstanding for topical interest, homogeneity and balance in treatment, authoritative interpretation, and good style.

FRANK W. PUTNAM
Department of Biochemistry and
Argonne Cancer Research Hospital, University of Chicago

Strength and Resistance of Metals. John M. Lessells. Wiley, New York; Chapman & Hall, London, 1954. xiv + 450 pp. Illus. $10.

This book is intended, primarily, to provide the advanced undergraduate and graduate student of machine design with information on the behavior of metals under stress. It is apparent that the choice of subject matter and the method of presentation have been dictated by the considerable practical engineering experience of the author, since the emphasis is on the factors that are most frequently encountered as the cause of service failure of machine elements and structural members. Although occasional reference is made to elements of physical metallurgy, the interpretation of mechanical behavior of metals is presented largely from the viewpoint of classical mechanics or applied elasticity. Most of the discussion centers on the behavior of steel, but reference is also made to light metals, heat-resisting alloys, and so forth, when the behavior of these metals differs greatly from that of steel.

Topics considered include the tension test and the mechanism of overstrain, in the first two chapters. Considerable attention is given to details of test equipment and to definitions of terms of engineering importance, such as elastic limit and proportional limit. Hysteresis effects and residual stresses are briefly reviewed in their relation to overstrain. In the first two chapters and throughout the book, great care is taken to point out the factors that are likely to be of importance to the design engineer.

The behavior of metals at elevated temperatures is discussed briefly in Chapter 3. Methods for utilizing, in design, the results of short-time tensile, stress rupture, and creep tests are also reviewed.

Chapter 4, on the subject of hardness testing, includes a discussion of the Meyer hardness analysis as well as a description of the more conventional techniques.

The subject of resistance to impact loading is considered in Chapter 5, and some discussion of the low temperature embrittlement effect is given from the viewpoint of its importance in engineering design.

Failure of metals by fatigue is presented in considerable detail in Chapters 6–8. The influence of such factors as temperature, size, surface condition, residual stress, and numerous other variables on fatigue strength is covered, and many examples taken from actual service failures are included.

Chapters 9 and 10 are devoted to the subjects of strain hysteresis and mechanical wear, respectively. The more important theories of strength, working stresses, and choice of safety factors are presented in the final chapter. Tables of the properties of metals and alloys in common use are included.

Throughout the text are many illustrative problems; additional problems dealing with the subject matter of each chapter are at the end of the book.

Those who are interested primarily in the reasons *why* particular metals behave as they do are unlikely to be satisfied with the treatment given. The practicing engineer and designer should find this a valuable reference. The author is to be commended for gathering into a single volume detailed information on a number of topics of great practical importance, which formerly was dispersed throughout the technical literature.

G. M. SINCLAIR
Department of Theoretical and Applied Mechanics, College of Engineering, University of Illinois

Isotope Geology. Kalervo Rankama. McGraw-Hill, New York; Pergamon Press, London, 1955. xvi + 535 pp. Illus. $12.

Kalervo Rankama has coined the name "Isotope Geology" to express his ideas on the bearing of the nuclides on geology and their possible application to problems of geology. The book is divided into two parts: part I, "Physics and chemistry of nuclides," using some 148 pages, and part II, "Natural science of nuclides," with 277 pages. A bibliography uses 44 pages, with a name index of 7 pages. The subject index is very complete and uses 46