Book Reviews

Currents in Biochemical Research 1956. David E. Green, Ed. Interscience, New York, 1956. 697 pp. Illus. $10.

The first volume of CBR was published 10 years ago, and this collection of 27 essays follows in the pattern set by that volume. The object of the book, according to the editor, is "to communicate to non-specialists an over-all impression of the present status of the significant problems in each field, to point up the broad strategy of current research, and . . . to speculate on the likely paths of future research." The authors "have been asked to write as simply and as lucidly as the requirements of scholarship tend to permit." Certainly, most of these objectives have been realized in many of the papers in the current collection.

By far the largest number of papers are concerned with various aspects of the chemistry and biochemistry of enzymes. Racker writes on enzymes as reagents, Mahler on enzyme complexes, Greenberg on multiple enzyme systems, and Chance on electron transfer and enzyme substrate compounds. The kinetics of enzyme reactions are discussed by Alberty, and Theorell is concerned with the relations between prosthetic groups, coenzymes, and enzymes. The role of nucleotides and coenzymes in enzymic processes is considered by Huennekens, while George discusses the nature of the reactions involving hemo proteins.

A second group of essays may be considered as primarily concerned with problems in intermediary metabolism. Cori discusses the integration of our information concerning enzymic activities with specific details of cellular organization, with particular reference to certain aspects of carbohydrate metabolism. Lipmann contributes a short paper on the basic biochemical aspects of the biological problems of "duplication, reproduction, and individualization" brought together under the term *patternization*. Steroid biosynthesis is discussed by Bloch, and the recent information in regard to the biosynthesis of the porphyrin molecule by Shemin. Leloir writes on the interconversion of sugars in various living systems.

Three papers are concerned primarily with microbiological subjects: that of Barker on bacterial fermentation, that of Snell on the role that the study of bacterial nutrition has played in our understanding of the nutritional requirements of higher animals, and an extended paper of Spiegelman and Campbell on the formation of induced enzymes in microorganisms. Current ideas concerning protein structure are discussed by Low and Edsall, while the specific problem of the structure of insulin is reported on by Sanger.

In addition to these, Morales and Botts present a theory for the primary events in muscular activity, and Nachmansohn and Wilson discuss recent work in the biochemistry of nervous activity. A new concept for the role of the ribonucleic acids is the subject of the essay by Cohn, and there are papers on photosynthesis by Bassham and Calvin and on viral growth by Hershey. Last, but not of least importance, are a number of papers concerned with the biochemical aspects of human disease, notably, a discussion of certain anomalies in carbohydrate metabolism by Stetten, of the hormones by Pincus, of the nature and function of blood by Surgenor, and the outline of an integrated concept of carcinogenesis by Rusch.

All of these papers have been prepared by experts in their various fields, although in some instances numerous details and turbid rhetoric make difficult going for the nonspecialist. However, most of the articles are stimulating as well as informative, and the book should have value, especially in affording the orientation toward a given field that is engendered by experienced guidance.

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Handbuch der Physik. vol. XIV, *Low Temperature Physics*, 1. S. Flugge, Ed. Springer, Berlin, 1956. 349 pp. Illus.

Volume XIV of the new *Handbuch der Physik* is the first of two volumes dealing with low-temperature physics. It comprises two articles on liquefiers and associated topics, together with one each on electrical conductivity, thermal conductivity, and specific heats.

The first chapter, "The production of low temperatures down to hydrogen temperatures" by J. G. Daunt, is an impressively exhaustive summary of the principal cryogenic devices that have been developed, with much detail on design and performance. The theory of liquefiers, regenerators, and heat exchangers is outlined with the maximum thoroughness permissible under the necessary limitations of space. It is, incidentally, the longest chapter, with more than 100 pages and 101 figures. Each section is fully supplemented by references to the original articles, some of which are quite obscure and indicative of the great effort that has been put into achieving a thorough coverage of the subject. A minor criticism can be leveled at the numerous printing errors. In addition, the author obviously has divided loyalties in the matter of Anglo-American spelling, a problem that arouses my deepest sympathy.

Complementary to the first, the second chapter, by S. C. Collins, deals with "Helium liquefiers and carriers." The author discusses in turn the principles of refrigeration, heat exchangers, representative liquefiers, and transfer and storage vessels. The section on liquefiers suffers from overcondensation in the closing stages and tends to degenerate thereupon into a brief recitation of performance figures for the better-known liquefiers throughout the world. Viewed as a whole, however, the article is a valuable contribution to the volume and is amply provided with diagrams and references.

The subject of "Electrical conductivity of metals and alloys at low temperatures" is expertly dealt with by D. K. C. MacDonald. The style is refreshingly lucid and articulate, and indeed the author permits himself to become positively lighthearted on occasion. The opening section proceeds from the early history to a quick survey of theoretical developments and a discussion of the effects of impurities, lattice defects, and so on. The second part is concerned with experimental methods and techniques, especially recent developments for greater precision of measurement. The galvanometer amplifier, in the development of which the author has played an active part, is described at considerable length; other topics are measurements with bridges and potentiometers; the superconducting galvanometer, modulator, and reversing switch; and the preparation of specimens. Finally, the author returns to a discussion of the adequacy (or otherwise) of theory in the light of experimental data, concentrating on the monovalent metals, which are his principal personal interest, and ranging over the Bloch-Gruneisen formula, electron screening effects, magneto-resistance, size effects, low-temperature resistance minima and thermoelectricity, and the