

NEW BOOKS

Cambridge Readings in the Literature of Science, being extracts from the writings of men of science to illustrate the development of scientific thought. Arranged by WILLIAM CECIL DAMPIER WHETHAM and his daughter, MARGARET DAMPIER WHETHAM. The University Press, Cambridge, England, 1924. x + 275 pp., 8 halftones and many figures. 14 × 20 cm. Price 7 shillings 6 pence, net.

Quoting from the title page and the preface of this attractive volume, we have here a book of "extracts from the writings of men of science to illustrate the development of scientific thought," the collection having been planned to tell a connected story, thus giving us an anthology of science.

There are three divisions or major chapters: (1) the structure of the universe—cosmogony; (2) the nature of matter—atomic theories; (3) the development of life—evolution. Under each division are chained together selections from the great masters of thought, the links, where needed, being supplied by the editors in the shape of a page, or at times a paragraph, introductory to a new author, explanatory of his position in the advancing struggle of science—a word concerning his era, his life or achievements—so that, as we advance through the first section—cosmogony—we find ourselves led almost imperceptibly from the "inspired poetry of the Book of Genesis" through the astronomy of Aristotle, Aristarchus and Archimedes, Copernicus and Galileo, to the mathematical principles of Newton and Laplace; then to the establishment of, not laws only, but composition and structure, as established by Foucault, Stokes, Bunsen and Kirchhof; and finally to the relativity theory of Einstein, Minkowski, Eddington, establishing the effect of gravity on light and the unity of all natural laws in four-dimensional space.

The success of such a book will depend primarily upon the wisdom of the editors in their choice of material. No doubt, critics will be found to wonder why certain epoch-making works have been excluded from this quite wonderful anthology. It did indeed seem to the reviewer that the leap in Section II (Atomic Theories) from Lucretius to Lavoisier, with only Paracelsus as a stepping stone, served only to emphasize unfortunately the roughness of the road between.

But not every thing may be included and the editors have established here quite notably their ability as builders of the literary bridge, upon which in no minor way does the success of an anthology depend. With choice phraseology, they have led us, their pupils, along the advancing path, as it increases in difficulties, always avoiding that common pedagogical error so well named *per saltum*. Thus we read anent Lucretius:

"The philosophic and speculative mind of the Greeks did not lead to experimental science but . . . we find first (?) Arabians and then Europeans . . . engaged in . . . alchemy." "Man's desire for wealth and power was set on an ardent hunt for the means of making gold and silver." "The writings (of Paracelsus) illustrate the characteristic confused

treatment of scientific problems before. . . definite and limited problems, suited to experimental study, came to be formulated."

Here then the reader proceeds rapidly, yet without conscious strain, from the simple thought of the ancient philosopher on to the atomic theory, molecular relations, the periodic system, ionic dissociation, cathode rays, atomic numbers and atomic structure.

In the third section (Evolution) the task is much easier, as here the steps have been historically more simple. The story is told of the advance from Linnaeus and Lamarck to Lyell, Wohler and Pasteur, on the experimental side, to the theories of Malthus, Darwin and Mendel, the chromosome theory of Morgan, and finally this section, and the book, ends with Bergson's doubts, as expressed in his "Creative Evolution."

The volume is a small octavo of about 275 pages. It may be read in an evening, or may be kept by one's side for reference and profit and occasional study. It is a book which it is a pleasure to read. It is a pleasure also to congratulate the editors on the success of their labors.

ARTHUR JOHN HOPKINS

Gmelin's Handbuch der anorganischen Chemie. (*Handbook of Inorganic Chemistry.*) Eighth edition. Deutschen Chemischen Gesellschaft, Sigismundstr. 3, Berlin W 10, Germany, 1924. xxii + 329 pp. 14 figs. 25.5 × 17.5 cm. Price, 21 M.

This is the first volume to appear of the new (eighth) edition of Gmelin's Handbook, now being published under the auspices of the German Chemical Society. The completed work is to occupy some twenty volumes, of about 500 pages each, and will be issued at the rate of about two volumes per year. It is to be a wholly rearranged and rewritten version of the seventh edition, and aims to be a substantially complete collection of all the facts of inorganic chemistry published up to the time of the appearance of each volume. The older and now obsolete material is to be critically examined, and the physicochemical and technological aspects are to be particularly emphasized.

The chemical elements have been listed in a special order for the purposes of this handbook. In this list, the rare gases and the metalloids come first, followed by the light and finally the heavy metals. The elements themselves are discussed in accordance with their order in this list. Under each element, general topics such as history, occurrence, properties, etc., are first discussed, after which the binary compounds of the element with all the elements above it in the list are discussed in their order. The same order is also followed in the ternary and higher compounds.

In the present volume dealing with zinc, the aims of the publishers seem to have been achieved. It represents a striking advance over the older edition. The physicochemical data are given much more exhaustive treatment and, more important still, the whole material has been presented

from this illuminating and clarifying point of view. It is evident, also, that a genuine attempt has been made to cover the American as well as the German technological literature of this element. Judging by this first volume, the new edition of "Gmelin" is to be even more indispensable than the old, and the German Chemical Society deserves our thanks and congratulations for carrying out so well such a laborious and difficult undertaking.

ARTHUR B. LAMB

Chemiker-Kalendar. (*The Chemist's Calendar.*) Edited by Professor Dr. WALTHER ROTH, Techn. Hochschule, Braunschweig. Julius Springer, Linkstr. 23-24, Berlin W 9, 1925. Vol. I. xiv + 636 pp. Vol. II. x + 666 pp. Illustrated. 15.5 × 9.5 cm. Price 12 M.

The 1925 edition of this useful ready-reference book contains several interesting additions to its familiar contents. The chapter on the "Structure of Matter," by Grimm, has been completed by a second instalment entitled Chemical Compounds, in which the most recent advances in this field are presented. The illustrations in this chapter showing the orbits of the electrons in the Bohr models are particularly fine. There are also new chapters on the "Testing of Chemical Reagents," by Geilmann, on "Photochemistry," by Kellermann, and on "Colorimetry and Absorption Spectrum Analysis," by Scheibe.

It is unfortunate that the Editors of this handbook do not appreciate the inconvenience which the lack of an alphabetical index entails. It can never compete successfully with other less complete reference books which do not suffer from this handicap. To the American reader, also, the lengthy, theoretical articles appear out of place and the hundred pages or more devoted to memoranda and a calendar seem a waste of space.

ARTHUR B. LAMB

Chemie der Zelle und Gewebe. *Zeitschrift für die Probleme der Gärung, Atmung und Vitaminforschung.* (*Chemistry of the Cell and Tissues. A Journal Devoted to the Problems of Fermentation, Respiration and Vitamin Research.*) HUGO HAEHN, Editor. Band XII, Heft 1. Gebrüder Borntraeger, Leipzig, 1924. 99 pp. 4 figs. 25.5 × 18.5 cm. Price 6 M.

This new Journal is a continuation or outgrowth of the *Zeitschrift für technische Biologie*, which in turn was the successor to the *Zeitschrift für Gärungsphysiologie, usw.* It is edited by Hugo Haehn with the collaboration of a number of notable biochemists.

There is an intimate correlation between fermentation and respiration not only among the lower organisms but also among the higher forms of life, where in addition to breathing there is the anaerobic decomposition of the energy-supplying material taken in. The last ten years have witnessed a great expansion in our knowledge of these related fields, and the

Editors express the hope that they may promote a still further rapid advance by this new delimitation of the scope of this periodical.

ARTHUR B. LAMB

Food Products. By HENRY C. SHERMAN, Ph.D., Sc.D., Professor of Food Chemistry, Columbia University. Second edition, revised and enlarged. The Macmillan Company, New York, 1924. xii + 687 pp. 44 figs. 19.5 × 13 cm. Price \$3.00.

This useful book in its second edition has been enlarged by 93 pages. The most conspicuous change is the economic slant that much of the material has been given. Thus, there is a new final chapter on "Food Budgets and Food Economics." A further indication of the same change in treatment is found in the conversion of the chapter on "Food Legislation" of the first edition into a chapter on "The Food Industry and its Control" in the new edition, without sacrificing any of its value as an exposition of the present status of food legislation. Similarly, the place of meat in the diet is discussed not merely from the hygienic, but also from the budgetary, point of view. Enlargement of the bibliographies and the inclusion of considerable new material, bringing the subject matter up to date, are responsible in the main, together with the economic discussion, for the increase in size. Thus, there is extended consideration of vitamins, together with an appendix tabulating the relative vitamin content of a large variety of foods. Dietary considerations, as for example the role of iodine in the diet, have been thoroughly brought up to date, and many new food analyses, as for example the sea-food analyses of Clark and Almy, have been incorporated. Hence the usefulness of the book in its new form has been increased very materially. The only serious omission seems to be the lack of adequate consideration of the common forms of spoilage of food and every-day means for their recognition. For example, "swells" of canned goods are mentioned only in connection with commercial canning of peas, without any description by which the uninitiated could recognize this condition.

CARL L. ALSBERG