

argument, especially that of the significance among mammals of the large intestine.\*

But on the whole the work bears the stamp of a production of an erudite scientist and a deep thinker.

ALEŠ HRDLICKA.

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*Die Chemie der Zuckerarten.* Von Professor Dr. EDMUND O. VON LIPPMANN, Director der Zuckerraffinerie Halle zu Halle a. S. Dritte völlig umgearbeitete Auflage. 1904. Braunschweig, Friedr. Vieweg und Sohn. Gr: Svo. Pp. xl + 2003. In two volumes. Price, M. 30; bound, M. 34.

This work, the third edition of the prize essay 'Die Zuckerarten und ihre Derivate,' which first appeared in 1878, embodies the sum total of our present-day knowledge of the sugars.

So great has been the progress made and the wealth of material accumulated in this field of research within the past decade that the contents of this work fill fully two thousand pages; for the sake of convenience the publication is issued in two volumes.

The first of these volumes contains the introductory remarks, a copious table of contents and a full discussion of the monosaccharides. The second treats of the di-, tri- and tetrasaccharides, the constitution, configuration and synthesis of the sugars, the relations between the optical, caloric and other physical constants, the origin of the sugars in plants, and of the physiological importance of the sugars. In addition to this there are the addenda, bringing the discussion of the subject matters up to the close of February, 1904; an author's and a subject index—the latter alone covering about fifty pages.

When one recalls the various domains of knowledge with which the chemistry of sugar is necessarily in touch and contact, for instance general, organic, analytic, physical, physiological, medical, pathological chemistry,

\* Metchnikoff considers that, in the active mammalian life, 'the need to stop in order to empty the intestines would be a serious disadvantage' and implies that this factor may have had influence in the evolution of the organ.

the chemistry of foods, of fermentation, bacteriology, agricultural chemistry, physics, etc., a faint conception may be formed of the gigantic task which confronted the author in his endeavor to deal adequately with his subject.

Of course, certain limits had to be set, the lines of demarcation had to be drawn somewhere, and of this no one could have been more clearly conscious than the author. With a modesty as charming as it is rare, he states in his preface: 'Completeness could not be attained in any direction,' and yet this work is the most thorough of all works ever published on the chemistry of the sugars.

The fundamental idea governing its whole scope and plan is the giving of a detailed description of the various kinds of sugars and their more immediate derivatives, while less closely allied bodies receive attention only to an extent necessary to define and establish their characteristics.

Instead of entering into a detailed account of the well-nigh innumerable methods of analysis and technology, the author has sought to give their essence and spirit, to sketch in clear outlines their underlying principles. Data relating to the construction and manipulation of polariscopes, to the specific gravity of sugar solutions, etc., data which can readily be found in manuals and text-books, have been omitted.

Scheibler's naming of the sugars has been retained, the author deeming the time not yet come for the adoption of Emil Fischer's rational system of nomenclature. A noteworthy feature of the book is the manner in which the table of contents and the index complement each other, the former referring to the general topics, while the index lists the individual chemical terms and expressions.

Space, of course, forbids here entering upon a detailed review of these volumes; all that may be done is to sum up in a few words the impression left by a careful, critical examination of their pages. The style in which the book is written is attractive—concise, clear, forceful. There is no question but that von Lippmann in his 'Chemie der Zuckerarten' has given to chemical science a monograph

which in thoroughness, lucidity, in masterly treatment throughout, is rivaled by but few, excelled by none. F. G. WIECHMANN.

#### SCIENTIFIC JOURNALS AND ARTICLES.

THE *Botanical Gazette* for June contains the following articles: Dr. Roland Thaxter publishes a further contribution on the Myxobacteriaceæ, especially in reference to the work of Migula, Zukal, Miss A. L. Smith and Zederbauer; also establishing eight new species. John Donnell Smith contributes his twenty-sixth fascicle of 'Undescribed Plants from Guatemala and Other Central American States,' describing twelve new species. Thomas H. Kearney asks the question, 'Are Plants of Sea Beaches and Dunes True Halophytes?' reaching the conclusion that these are not generally halophytic. Alice Eastwood publishes fourteen new species of western Polemoniaceæ. George J. Peirce, in 'Notes on the Monterey Pine,' shows that the difference in the quantities of water and solutes drawn up through the xylem into galled and normal leaves furnishes the reason for the differences in the amount of conducting tissue as shown by the annual rings. In other words, amputated seedlings and branches bearing galled leaves develop bundles which vary from the normal according to the degree of injury which the leaves have undergone. This is confirmation of Jost's conclusion that leaves and vascular bundles are closely correlated in their development. Amon B. Plowman publishes the 'Celloidin Method for Hard Tissues' as developed and perfected by Professor E. C. Jeffrey. M. A. Chrysler publishes 'Anatomical Notes on Certain Strand Plants,' being the results of a comparative study of the leaf anatomy of certain plants in the vicinity of Woods Hole and near Lake Michigan. Charles E. Allen makes a preliminary announcement of his conclusions in reference to chromosome reduction in *Lilium canadense*, being quite different in some points from those previously maintained.

THE June issue of the *Bulletin of the Michigan Ornithological Club* contains the follow-

ing articles: 'Some Notes on the Life History of the American Redstart,' by J. Claire Wood, with a full-page cut of the species by Louis Agassiz Fuertes. Bradshaw H. Swales concludes his 'List of the Land Birds of Southeastern Michigan.' A. H. Griffith contributes 'Birds in Decoration,' which is illustrated by specimens of Japanese art from the Detroit Museum of Art. P. A. Taverner writes on the 'Tagging of Birds' as a means of solving some of the vexing problems of migration. Walter B. Barrows describes the ornithological and oological collections of the Michigan Agricultural College, which is supplemented by a half-tone of the interior. Alexander W. Blain, Jr. notes the capture of 'Three Rare Michigan Birds.' There are other notes of value and the usual reviews. With this issue Professor Barrows becomes one of the editorial staff.

#### SOCIETIES AND ACADEMIES.

##### THE RESEARCH CLUB OF THE UNIVERSITY OF MICHIGAN.

At the meeting of the club held April 27 Dr. Novy presented the results obtained in collaboration with Mr. McNeal on the cultivation of the organisms causing trypanosomatic diseases. These investigators have been able to cultivate three of these protozoa. The organism *Trypanosoma lewisi* has now been under cultivation for two years. *T. Brucei*, the cause of nagana or the tsetse-fly disease of South Africa, has been under cultivation since last August. The culture medium sent from Manila, after inoculation with the trypanosome from a cow suffering with surra, on arrival in Ann Arbor, showed an excellent culture of this organism which had developed en route. This organism was kept alive for sixty-five days, but all efforts to secure infection in animals or to obtain subcultures failed.

A comparison of the trypanosome from the Philippine surra with that from the Island of Mauritius seems to indicate that the two are entirely distinct.

The cultural characteristics of the Philippine trypanosome are such as to distinguish