CELLULOSE CHEMISTRY FOR THE STUDENT

An Introduction to the Chemistry of Cellulose

By J. T. Marsh and Dr. F. C. Wood. Third edition revised. Pp. xii+523+23 plates. (London: Chapman and Hall, Ltd., 1945.) 32*s*. net.

THIS work was first published only in 1938, but it is now well established as an authoritative introduction to one of the most complex branches of chemical study. One of the main reasons for its success is, no doubt, the skilful way in which a balance is preserved between the extremes of theory and practice. The nature of cellulose chemistry is such that to achieve this is particularly difficult. Thus, on one side is the substance cellulose itself, with its complex chemical structure still not certain despite a large volume of physical and chemical research. On the other are everyday commodities, such as paper and textiles, which consist principally of cellulose, although the role of this substance in determining their properties is still far from being fully understood. The new-comer to the subject may well be excused a measure of bewilderment when he attempts to correlate these two extremes, but this book will go far towards eliminating it.

The preface to this new edition mentions the strengthening of those portions of the book which refer to the "non-textile aspects of the subject", thereby removing the only real criticism which the present writer felt justified in raising in his review of the last edition. In particular, fuller reference is now made to paper manufacture, brief descriptions of the usual commercial methods of pulping wood being included. Beating is also dealt with briefly (although the subject, as such, does not occur in the index). However, readers whose interests are connected with paper technology may justifiably have expected a fuller treatment of this subject than is possible in the three and a half pages allotted to it, especially in view of the importance of recent work as a guide to the physical structure of cellulose. Holocellulose, now known to be a very important constituent of chemical pulps so far as their behaviour on beating is concerned, is mentioned only as a three-line definition. However, it would be unfair to stress these points too strongly, as the authors have obviously gone to some pains to widen the background of the book, and in other respects they have succeeded in doing so.

The scope of the book follows along much the same lines as those of the previous editions. Part 1 deals with the occurrence in Nature and general physical properties of cellulose. Part 2 discusses its chemical constitution and molecular weight and structure, with special reference to the works of Staudinger and of Mark and Meyer, and to the chain molecule hypothesis. Cellulose dispersed in various reagents is the subject of Part 3; and modified celluloses (especially those produced by treatment with acid or with oxidizing agents) are dealt with in Part 4. Part 5 comprises nearly two hundred pages and deals at length with derivatives of cellulose. Many of these are of considerable commercial importance (for example, as a basis of rayon and high explosives manufacture); others play an important part in studies of the chemical structure and molecular weight of cellulose.

The book ends with density tables, good subject and author indexes, and a list of patent specifications with page references to the text. There is no bibliography, but sources of information, whether books or scientific journals, are mentioned as occasion arises. This is probably the best plan in a book intended as a guide to younger chemists.

The general standard of production of the book is high, and the illustrations are well reproduced. Some additions to the latter (depicting the structures of trees) occur in the new edition. A useful feature is the tables summarizing the effects on the chemical reactions and physical properties of cellulose of 'activation' (swelling) and of degradation. The book may again be recommended to all chemists interested in those branches of industry which are concerned with cellulose.

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THE HUXLEY PAPERS

The Huxley Papers

A Descriptive Catalogue of the Correspondence, Manuscripts and Miscellaneous Papers of the Rt. Hon. Thomas Henry Huxley, preserved in the Imperial College of Science and Technology, London. By Warren R. Dawson. Pp. xii+201. (London: Macmillan and Co., Ltd., 1946.) 25*s*. net.

THE general and scientific correspondence of T. H. Huxley cannot fail to be of interest to a wide circle of students. His correspondents included not only men of science, but also those eminent in almost every field of learning. In 1937, through the Friends of the National Libraries, his correspondence and miscellaneous papers were acquired by the Imperial College of Science and Technology, and afterwards a few additions have been made by private donors. Mr. Dawson was entrusted with arranging, classifying and cataloguing this large mass of documents, comprising some 4,500 letters to and from about 850 correspondents, and the results are presented in the present volume.

The greater part (174 pages) is devoted to scientific and general correspondence. The letters are arranged alphabetically under the name of the correspondent, with the letters of each writer in chronological order. Each entry comprises, so far as possible, the town of origin, date, and a brief summary of the contents of the latter, with figures indicating the volume number and folio of the Huxley papers. Family letters are listed in a separate section, and then follow lists of miscellaneous papers dealing with almost every subject in which Huxley was interested, including notes and materials for many of his lectures and papers. These support Chalmers Mitchell's observation, contained in an appreciation of Huxley written soon after his death, that "His literary style, his brilliant rhetoric and acute disputation came to him slowly; they were the outcome of laborious effort and continual practice."

The papers throw light on the many activities in which Huxley took part, and will be invaluable to biographers and all students of the intellectual development of the nineteenth century. The catalogue is beautifully printed on paper of a quality that has become all too rare in recent years. One or two slight errors in the scientific names are possibly the result of Huxley's very illegible handwriting, and do not detract from the general high standard of this useful work.

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