

great thoughts and great actions. All are lit by the reflections of the infinite."

The translators are to be congratulated. Their task was by no means easy, but they have accomplished it in an eminently successful manner.

S. P. B.

### History of Organic Chemistry.

*Geschichte der organischen Chemie.* Von Carl Graebe. Erster Band. Pp. x+406. (Berlin: Julius Springer, 1920.) England, 84 m.; Germany, 28 m.

THE history of a science has often been compared to the erection stone by stone of some great edifice; but it appears to the writer that the metaphor is ill chosen inasmuch as the complete building is already planned when the foundation is laid. A closer analogy is that of a jig-saw puzzle in which the separate, irregular bits are slowly fitted into their several places whilst the ultimate result remains hidden until the whole is complete.

This is certainly true of organic chemistry, and although the general plan seems to be taking shape in a marvellous fashion, who would declare the puzzle to be near completion or attempt to forecast its final development? Looking now at the ordered arrangement of its several parts it is difficult for some of us to realise the difficulties of the early investigators, who had to make a selection from an ever-increasing mass of disconnected observations and laboriously to piece them together. It is perhaps one of the remarkable facts in the history of organic chemistry that from the publication in 1832 of the classical research of Liebig and Wöhler on "the radical of benzoic acid," which Berzelius greeted as proclaiming the dawn of a new day, few revolutionary changes in fundamental principles have occurred to retard the steady growth of the science. Even the electrochemical theory, which engaged Berzelius and his opponents of the French and German laboratories in a somewhat embittered controversy, only served to stimulate research and add new facts to the science.

It is interesting to trace the many new theories which owe their inception to the study of organic chemistry. The theory of valency was developed by Frankland in studying the organo-metallic compounds; that of catalysis was formulated by Berzelius in explanation of the ether process. Isomerism was conceived by Faraday in examining the compressed hydrocarbon gases of the Portable Gas Co. The relation of vapour density to molecular weight elucidated by Gerhardt and Cannizzaro, the theory of atomic linking advanced by Kekulé and Couper; of stereoisomerism by Pasteur,

van't Hoff and Le Bel, and in recent years of dynamic isomerism, enzyme action, steric hindrance and many other phenomena, which have helped to throw new light on molecular mechanics and structure, all originated with this branch of the science.

In the volume before us, which is printed in clear type, Prof. Graebe describes in considerable detail and in simple and attractive language the history of organic chemistry from 1770 to the 'eighties of last century, and tells us that arrangements have already been completed with Dr. Hoesch to carry the story forward in a second volume. In the arrangement the author has recorded the results not only of experimental and theoretical investigations but has attempted to show by quotations from the original sources the manner in which the new ideas were given to the world, while numerous, brief biographies of chemists are introduced as their names happen to occur.

The volume has evidently been prepared with parental thought and care which the author expresses by the word *Vorliebe*, a feeling which can well be understood in one who, during a long and active career, has himself played no insignificant part in the story he relates. We can cordially recommend the book to all chemists who are interested in the history of their science.

J. B. C.

### Early British Botanists.

*Early British Botanists and Their Gardens, based on Unpublished Writings of Goodyer, Tradescant, and Others.* By R. T. Gunther. Pp. viii+417. (Oxford: Printed by the University Press, 1922.) n.p.

JOHN GOODYER, until recently known only as the contributor of rare plants to Dr. Thomas Johnson, the editor of the second edition of Gerard's "Herball" in 1633, and further commemorated by Robert Brown's orchid genus *Goodyera*, is the central personality in this absorbing volume.

About twelve years ago Canon Vaughan, rector of Droxford, a Hampshire village famous as the retreat of Izaak Walton when he retired from London, printed an article embodying fresh information, which was followed later by a longer notice by Dr. G. C. Druce in the Report of the Botanical Exchange Club for 1916, pp. 523-550, drawn up from papers in the library of Magdalen College, Oxford. Now, thanks to the assiduity of the author of the volume under notice, he, as librarian, has had the scattered notes arranged and bound, and from them has presented a picture of the man, which is a revelation. He is shown