

Not merely does it bring together and arrange an astonishing mass of data—for which alone workers in the subject will continue for many years to be deeply indebted to Prof. Gäumann—but also it is abundantly interwoven with original interpretations (always to be expected from this author) and unusual points of view. These also, as the editor points out, will prove “a mine of argument and controversy, and a source of endless discussion and questioning—which is what a book of this kind should be”.

Of the translation, little need be said other than that it is very good indeed. The original drafts were made by a group of assistants, and the whole was afterwards revised and ‘homogenized’ by Prof. (and Mrs.) Brierley. This they have done so well that there is no evidence of its mosaic nature, and the text is singularly free of those rawnesses which tend to crop up in translated versions. There are occasional misprints, of which the outstanding one is “*sensu stricta*” (headings of all odd-numbered pages from p. 281 to p. 351).

Apart from a short account of disease control (which is almost in the nature of a postscript) the subject-matter is arranged in five long chapters, dealing with the mechanism of infection; transmission of disease, epidemiology, “disease proneness” of the host, physiological and morphological effects of disease, etc. The arrangement is logical, but it does, in fact, lead to a certain amount of repetition. Each topic is split up, again and again, so that the table of contents comes to wear rather a formidable aspect, and there are still further subdivisions in the text. One feels that the book is over-sectionalized—that distinctions are drawn which are not based on evidence of substance and that there are compartments which as yet are devoid of *bona fide* occupants.

This leads to the controversial points which Prof. Brierley mentions. They are here in abundance; in looking through the text, I have noted more than a hundred such places—places where I would query either the value of some data or the conclusion drawn, or the use of a word, or suchlike. The language is often teleological; but we are told in the preface that it is not to be so considered. One rather wonders then how it is to be considered. It is obviously impossible to set out these criticisms here, but they will occur to any student who reads carefully.

On the matter of terminology, with which this book is heavily loaded, there will no doubt be differences of opinion. Prof. Gäumann borrows freely from human medicine, and this is in conformity with his marked tendency to bring animal and plant pathology into the same pattern, in some cases rather incongruously. Other words are his own invention. Many of these, one feels, are superfluous, and their effect is often merely to lengthen the argument and nothing more. Prof. Gäumann’s acute mind revels in fine distinctions, and he adopts or coins the appropriate words. It is almost with pleasure, therefore, that one finds that even he occasionally nods. Thus, in the first sentence of the book, the word “infection” is applied to the first of the five phases or stages of an infectious disease; on p. 36 it has come to cover the first two stages, and in the title of the book it is clearly intended to cover all five.

There remains the question of what kind of student will read his Gäumann with profit. The title-page speaks of it as a text-book for agriculturists, foresters (and others). I have no wish to disparage these people when I say that they would make little headway with it or get much of the specific information

which would help them in their type of problem. The book is essentially for the plant pathological specialist, and for the more academically minded one at that. It has its uneven patches, and parts of it could be pruned away with advantage. Nevertheless, in its general scope and execution, it is a brilliant piece of work, and one which will undoubtedly stimulate and guide the plant pathological research of the future.

W. BROWN

FUNDAMENTALS OF ADVANCED ORGANIC CHEMISTRY

Advanced Organic Chemistry

By Prof. G. W. Wheland. Second edition. Pp. xi+799. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1949.) 64s. net.

AT the outset of his postgraduate training in organic chemistry, many a serious student must feel a desire to retrace a portion of his previous path as an undergraduate in order to make a more determined effort to apprehend the underlying principles of the science which, owing to the congested curriculum of degree courses, he has necessarily considered mainly from the descriptive point of view. He would find the requirements of this undertaking provided in a most interesting and comprehensive manner by Prof. G. W. Wheland’s thought-provoking book which now appears in its second edition. Rather than being an elaboration of facts, this volume attempts to place the simpler chemistry already learnt on a sound theoretical basis. The treatment is non-mathematical and “the primary guiding and unifying principle . . . is the structural theory in its broadest sense”.

The first half of the book is devoted to a clear and critical review of the structural theory. The first chapters describe the forces binding atoms into molecules, the loose forces between molecules and the forces binding molecules into addition compounds, for example, the hydrogen bond. The spatial disposition of atoms in organic molecules is then discussed at length in five interesting chapters to form what must be one of the best summaries of stereochemistry in the English language. Discussions of steric strain and steric hindrance brought about by the interaction of atoms, and of the modification of ‘classical’ structures of molecules by resonance, form the subjects of the next two chapters. Excellent sections on molecular rearrangements (130 pages) and tautomerism (65 pages) then follow, and the book closes with a chapter on free radicals.

Throughout, the text is liberally supported with references to the original literature, including the most recent publications. In places, the emphasis on structural considerations has resulted in other physical evidence being overlooked. For example, in the account of the Walden inversion only one paragraph is devoted to a discussion of the mechanism of the phenomenon, the kinetic evidence for this being largely lost sight of. This, however, is but a minor criticism of an excellent book which can be unreservedly recommended to chemists for developing their critical outlook and increasing their real understanding of a fascinating branch of natural knowledge.