Book Reviews

Which Approach?

Organic Chemistry Today. F. W. Gibbs. Penguin Books, Baltimore, Md., 1961. x + 294 pp. Illus. Paper, $1.45.

Elementary Organic Chemistry. Ernest Campaigne. Prentice-Hall, Englewood Cliffs, N.J., 1962. viii + 312 pp. Illus. $10.

The book by F. W. Gibbs, honorary lecturer in the history of technology at University College, London, is designed as a popularization of organic chemistry for the general reader with little or no scientific background, as well as for senior pupils in school or specialists in other fields of science. The text by Ernest Campaigne, professor of organic chemistry at Indiana University, is a traditional "abbreviated course" textbook for the nonchemistry major, which attempts to provide in one semester a reasonably rigorous survey of organic chemistry. The purpose of undertaking a simultaneous review of these two books is to attain some comparison of the adequacy with which a specialist and an informed nonspecialist might approach the subject of organic chemistry for approximately similar audiences.

Both books commence with the customary introductory material that has to do with the nature of organic chemistry, chemical bond types, functional groups, isomerism, and other fundamental concepts. At this point the books diverge radically, and it is legitimate to inquire into the effectiveness of the two approaches. Gibbs's technique, with a very inadequate minimum of introductory groundwork and without any systematic development of nomenclature, is to consider immediately a number of broad and important general topics of organic chemistry: petroleum products, petrochemicals, resins and polymers, coal and coal-tar products, classes of organic compounds containing halogen, sulfur, silicon, and nitrogen, detergents, carbohydrates, proteins, foodstuffs, vitamins, drugs, and dyestuffs. The main emphasis is industrial and practical, and a number of current as well as historically pertinent industrial processes are discussed in considerable detail, making occasionally for quite interesting reading. Numerous equations endeavor to illustrate the topics under consideration, as do also a number of rather inadequately described flow and block diagrams of industrial procedures. The author's lack of systematic organization, failure to develop adequate nomenclature, and headlong approach to the subject, however, tend to negate his effective writing style and lead to a completely helter-skelter account of organic chemistry, filled (to the reader with no background) with confusing trivial names, undefined terms, and disconnected facts. At best in its historical material and at worst in its description of scientific subtleties, *Organic Chemistry Today* provides an awesome and bewildering glimpse into the Big, Wide, Wonderful World of Organic Chemistry, a glimpse which may prove more dazzling than instructive to the reader.

In contrast, Campaigne's brief text is outstanding in its careful organization and concise approach. The contents of the text follow, in abridged form, the traditional approach: saturated, unsaturated and aromatic hydrocarbons, petroleum and rubber, halogen compounds, oxygenated derivatives of the common types, nitrogen and sulfur containing compounds, optical isomerism, carbohydrates and large molecules, both synthetic and natural. Sufficient systematic nomenclature for reasonable understanding of the text is introduced immediately, and numerous general equations clearly illustrate each topic under consideration. The author lists a series of "new terms and concepts" at the beginning of each chapter, a technique of somewhat questionable value since the terms and concepts are quite meaningless until the chapter material has been digested. Study questions at the end of each chapter, however, constitute a useful technique for forcing a review and operational understanding of the chapter contents. The text has several general shortcomings that crop up occasionally. Introductory aspects of reaction mechanisms are handled too briefly to be particularly useful, a number of terms and symbols are used without adequate definition, and some topics are treated in such an abbreviated form that they might better have remained unmentioned. All in all, however, *Elementary Organic Chemistry* is understandably written and logically organized; it offers the beginning student and the serious general reader an opportunity actually to learn a bit of organic chemistry, rather than an opportunity merely to read about it.

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Retrospective Evaluation

The Orientation of Animals. Kineses, taxes, and compass reactions. D. L. Gunn and G. F. Fraenkel. Dover, New York, 1961. x + 376 pp. Illus. $2.

This monograph was first published in 1940 by Oxford University Press. The main body of the Dover edition is a photocopy of the original text. To this the authors have added a brief preface, 16 pages of notes based on studies of orientation published between 1940 and 1960, and a bibliography of 113 entries covering these years. The main text provides a careful analysis and classification of the animal reactions that used to be termed "tropisms." It is, then, concerned with animal behavior in the tradition that derives from Loeb, Jennings, and Mast. In a retrospective evaluation of their work, the authors state: "it seems to have tidied up the basic concepts to such an extent that almost every subsequent contribution in the narrow field that it deals with, namely the mechanisms of simpler orientation reactions, has been discussed in the words and spirit of the definitions and terms that we selected. . . ." This evaluation is entirely just. The analysis of orientation mechanisms continues to command interest. Fraenkel and Gunn can be justly proud of their key influence in stimulating and