Mechanisms of Reactions at Carbon–Carbon Double Bonds

By Prof. Charles C. Price. (Polytechnic Institute of Brooklyn: Lectures on Progress in Chemistry.) Pp. viii+120. (New York and London: Interscience Publishers, Inc., 1946.) 15*s*.

THIS is the first of a proposed series of books by visiting lecturers to the Brooklyn Polytechnic Institute, who are reviewing progress in chemical topics. The treatment is not comprehensive, but stimulates interest by an able summary of many recent trends in olefinic chemistry. About half the book deals with the electronic theory of double-bond reactivity in ionic and free-radical processes; in the remainder these themes are developed with special reference to polymerization. Prof. Price writes from the point of view of an organic chemist; but is quick to perceive relevant physical evidence, and makes a number of interesting suggestions on problems of mechanism.

Particular prominence is given to electrostatic field effects of substituents, especially on π-electrons. Quantitative treatment is carried out by resolving electric dipole moments into bond moments and into separate charges. Rather a wide choice of sizes and arrangements of charges would appear possible, so that while the magnitudes of the effects are fittingly emphasized, the numerical results may well only be accepted with reserve. Descriptions would have been easier if there had been a greater readiness to admit into the vocabulary the term 'resonance', while the distinction drawn in places between this term and mesomerism will mean nothing to many chemists, to whom the words are synonymous.

The chapters on copolymerization and emulsion polymerization are especially interesting, and opportunely emphasize the fact, regretted by academic chemists, that publication of knowledge of these phenomena, though increasing, is still the exception rather than the rule. The apparently established use of the term 'condensation polymerization' for polycondensation is unfortunate.

More description might be given, in the text, of some of the reactions formulated; but the book is pleasantly printed. J. SHERIDAN

The Microscope

Its Theory and Applications. By J. H. Wredden. Pp. xxiv+296. (London: J. and A. Churchill, Ltd., 1947.) 21*s*.

The Intelligent Use of the Microscope

By C. W. Olliver. Pp. viii+182. (London: Chapman and Hall, Ltd., 1947.) 12*s*. 6*d*. net.

BOTH these books give a detailed account of the use and the optical theory of the microscope. It is unfortunate that so little training in the proper use of the instrument is given in biological courses, and the student often arrives at the research stage with little or no knowledge of its finer use, particularly in regard to lighting, screens, sub-stage focusing and the aperture of the objective. These books may then be welcomed as directing attention to the many optical problems affecting the critical use of the microscope. Both are well provided with illustrations, and particular attention is paid to the sub-stage optical equipment and the careful selection of a light source.

Chapters on photomicrography, light filters, and the polarizing microscope are given, and Mr. Wredden, who writes from the point of view of one who uses the microscope in the study of industrial and electrical problems, includes a chapter on micrometry. This book also contains tables of refractive indices of various substances, an index of visibility and a number of useful constants. The chapter on the preparation of specimens, although containing a number of useful hints to the beginner, is not very applicable to biological technique.

While Mr. Olliver goes into rather less detail, his book would be of great value to everyone engaged in microscopic work. At the same time, it may be observed that these instructions are of little use unless improvement is made in the condition of microscopes used by students in some biological departments, for many of these date from the early days of the century and are long past useful service.

Petrographic Micro-technique

A Practical Handbook for the Preparation of Thin Sections of Rocks for use with the Petrological Microscope. By A. V. Weatherhead. Pp. x+102. (London: Arthur Barron, Ltd., 1947.) 12*s*. 6*d*. net.

THE author of this little book has performed a notable feat, namely, to arrive within a reasonable distance of making a manual process comprehensible by means of the printed word. Nothing will compensate for lack of practice (and patience) in making thin petrographic sections, but much fruitless labour will be avoided by following in Mr. Weatherhead's steps. Perhaps the most interesting points are his experience with 'Norbide' (B_4C), as an abrasive of extreme hardness, and his use of complementary colours in controlling thickness in the course of preparation of specimens. To have achieved vertical and horizontal sections of eggshell is remarkable. If a blemish may be mentioned it is the use of the phrase "doubly polarized light". Maybe this is scarcely wrong, but it is not traditional, and is apt to mislead. "Between crossed nicols" (even if in these days we use calcite substitutes) seems preferable as a description. But this is a trifle: as a guide to micro-technique, this monograph is a first-class effort.

F. I. G. RAWLINS

Algebra

By Dr. A. Page. Pp. vii+346. (London: University of London Press, Ltd., 1947.) 18*s*. net.

THIS book is designed to meet the requirements of students preparing for examinations of the higher school certificate, intermediate and final general degrees, as well as university scholarships. It is a thoroughly sound course enhanced by many practical applications of algebra to physics, chemistry, engineering, economics and medical science. There is also, among the thirteen chapters, a valuable one on statistics. The difficulties of the subject are skilfully surmounted in an interesting way, and the book is well provided with exercises both on the text of the several chapters, and miscellaneous in the form of revision papers, to all of which answers are supplied. Only one small point calls for comment: the chapter on determinants—the last in the book—seems to come a little too late in the course. Further, it appears to contain no applications to the solution of equations, which is rather a pity, in view of the practical importance of this aspect of the subject. Nevertheless, the book may be confidently recommended as a very useful text-book for students generally, as well as for those studying for the specified examinations.