micrograph of Plate III. These lectures are a model of how to tackle one difficult task of a lecturer to final-year students, although no doubt such students made up only a very small proportion of his American audience.

This task was to re-assess the findings of ten years ago in the light of those made in the past two. For example, Dr. Gale shows that although many experiments concerned with amino-acid incorporation into disrupted *Staphylococci* contributed to our present knowledge of protein biosynthesis, some of the results were bewildering. Now, they may be interpreted readily since knowledge of the chemical nature of the cell wall has advanced and it is realized that certain amino-acids may be incorporated into substances other than true protein. The lecture reported in Chapter 1 deals with the structure of the bacterial cell, with an account of the cell wall and membrane, and Chapter 2 deals with amino-acid incorporation. Chapter 3, on nucleic acid and protein synthesis, is stimulating but the data are already in need of a second reappraisal. Since the lecture was delivered, the ribosomes in which bacteria are so rich and which excited so much interest a few years ago seem no longer to hold their central place in metabolism as templates for protein synthesis. "Ribosomes are non-specialized structures which synthesize, at a given time, the protein dictated by the message they happen to contain"[3]. As a consequence of the discovery of this type of RNA called 'messenger', Dr. Gale's convenient nomenclature of rna and RNA, according to the size of the molecule, will need revision. It is certain that present discoveries will lead to a tremendous spate of new publications, some of which will no doubt appear to be contradictory, and it is to be hoped that Dr. Gale will be persuaded to survey the field of protein biosynthesis again in about a year's time if only to lighten the burden of the harassed lecturer and his critical, if not angry, young audience.

The book contains few errors. A glucosyl residue in Fig. 2 lacks a hydroxymethyl group; while the apt quotation from Sir Thomas Browne omits whales from the list of prodigious pieces of Nature given in the first authentic edition of *Religio Medici* (1643) and states that the civility of the little citizens more nearly ('more neatly' is correct) "sets forth the wisdome of their Maker".

S. Dagley

[1] Wilde, O. O'F., *Lady Windermer's Fan*. Act 1 (1892).
[2] Wilde, O. O'F., *The Importance of Being Earnest*, Act 1 (1895).
[3] Brenner, S., Jacob, F., and Meselson, M., *Nature*, **190**, 576 (1961).

POLYMER CHEMISTRY

Preparative Methods of Polymer Chemistry

By Wayne R. Sorenson and Tod W. Campbell. Pp. viii + 337. (New York: Interscience Publishers, Inc.; London: Interscience Publishers, Ltd., 1961.) 79*s*.

THE polymer chemist in search of a good method for the laboratory preparation of a particular polymer has in the past been obliged in many cases to carry out a tedious and time-consuming search through *Chemical Abstracts*, all too often with the frustrating result that the desired information is contained in an inaccessible journal. The appearance of a laboratory handbook which collects details of the great majority of polymer-forming reactions and preparative data for a very wide range of polymers will therefore be noted with interest and probably also relief by workers in all branches of this subject.

This cannot have been an easy book to write. The field to be covered is very extensive indeed, it is expanding rapidly, and its sub-division into types of polymer or reaction is not always straightforward. Experimental methods in the literature range from the most meticulous high-vacuum techniques with highly purified materials down to the crudest 'cooking together' in air of commercial-purity reagents, so that the authors must have devoted a lot of thought to selecting the most suitable standards of procedure to adopt in a book of this type. There exists also the difficult problem of the reliability of various published preparations—How is this to be judged? It is therefore greatly to the authors' credit that satisfactory solutions to all these problems have been found.

After a short introductory chapter, some fifty pages are devoted to experimental techniques for the preparation, fabrication and characterization of polymers. The remainder of the book consists of detailed methods of preparation, divided into chapters headed "Polycondensation and Hydrogen Transfer Reactions", "Addition Polymers from Unsaturated Monomers", "Ring Opening Polymerization", "Non-classical Routes to Polymers", and "Synthetic Resins". Each sub-section, containing a number of representative preparations, is preceded by a brief theoretical introduction outlining the principles and mechanisms involved, and giving numerous references to sources of more detailed theoretical treatment. The experimental procedures, although mainly directed to polymer preparation, include quite a few well-chosen examples of reactions on polymers.

The book has many features which deserve favourable comment. The importance of purity of materials is stressed in Chapter 2 and again on numerous occasions throughout the book. The potential danger in many polymerizations is emphasized repeatedly, and where any particular preparation involves special hazard from the type of reaction or the poisonous nature of the materials, this is clearly stated in bold type. The book is very comprehensive, but on those occasions where topics are considered outside its scope, references to other sources of information are given. The lists of references at the ends of the chapters are most extensive, totalling more than five hundred. The methods included are of a high enough standard (with few exceptions) to satisfy everyone but the most demanding research worker, who can easily modify the procedures to suit himself. The details given in the preparations are not the over-abridged accounts which appear in some of our more space-conscious journals, but include numerous helpful comments. The information is thoroughly up to date; few of the latest types of polymer-forming reaction are omitted, except (understandably) in the field of inorganic polymers. In addition to a very good general index, there are indexes by initiator system, reaction system and functional groups. I was impressed also by the clear type, attractive layout and good binding. There are very few misprints.

This is a book which most polymer chemists would find useful. It would also be helpful in connexion with undergraduate courses on practical methods of polymer chemistry. It is an important addition to polymer literature which I recommend highly.

I. C. McNeill