The volume as a whole is a useful account of the current state of knowledge on the rheology of polymer systems.

C. E. H. BAWN

POLYMER REVIEW

Macromolecular Reviews

Vol. 2. Edited by A. Peterlin, M. Goodman, S. Okamura, B. H. Zimm and H. F. Mark. Pp. vii + 295. (New York and London: Interscience Publishers, a Division of John Wiley and Sons, 1967.) 126*s*.

THE second volume of *Macromolecular Reviews* contains four contributions—each written by an authority in his subject- of major interest to the general polymer scientist. The first paper is an excellent review of the technique of neutron scattering and its application to the study of low-frequency molecular motions in polymers. The application of this relatively new spectroscopic technique to polymers is already proving of value in determining the characteristic skeletal and intermolecular frequencies in solid polymers and in providing information about the effects of temperature, crystallinity, branching and cross-linking on intra and intermolecular vibrations. This article describes in a very readable manner the necessary theoretical background, the type of information obtained, and the analysis of the results for a number of polymers.

Since the announcement in 1955 by Professor Karl Ziegler of a new catalyst for the low temperature and low pressure polymerization of ethylene and the development of this catalyst by Professor G. Natta and his school at Milan for the synthesis of stereoregular polymers of α-olefins the effort in many academic and industrial laboratories to elucidate the mechanism by which this catalyst works has been immense. The review by Dr J. Boor (151 pages) which examines the important features of the Ziegler catalyst, particularly in regard to the nature of the active site and the ability of the catalyst to polymerize structurally different monomers, is one of the most thorough, informative and important the reviewer has read. Among the stereoregular polymers studied so far, isotactic polypropylene, because of its technological utility, has received much attention. In the past few years syndiotactic polypropylene has been synthesized and characterized. A second paper by Dr Boor in collaboration with Dr E. A. Youngman summarizes the present state of knowledge of the synthesis and properties of syndiotactic polypropylene and the special role of these studies in the understanding of Ziegler-type catalysts and the behaviour of tactic polymers.

The other contribution to this volume on homogeneous anionic polymerization of unsaturated monomers by M. Morton and L. J. Fettes is a further progress report on the mechanism of anionic polymerization with reference to three special features of these systems, namely, (*a*) monodispersity of molecular weight distribution, (*b*) block polymerization and (*c*) synthesis of reactive end group polymers. This article also includes a list of all unsaturated monomers that reportedly have been polymerized by a carbanionic mechanism.

C. E. H. BAWN

HETEROCYCLIC CHEMISTRY

1,2-Cycloaddition Reactions

The Formation of Three- and Four-Membered Heterocycles. By Linda Lee Muller and Jan Hamer. (Interscience Monographs on Chemistry.) Pp. x + 362. (New York and London: Interscience Publishers, a Division of John Wiley and Sons, 1967.) 140*s*.

THE material of this book is arranged in two main chapters, with a brief introduction. The first, of 106 pages, covers the synthesis of heterocyclic three-membered ring systems, and the second, of 227 pages, deals with the four-membered rings. There is also an author index and a brief subject index of four pages.

This book is evidently intended to be a companion volume to *1,4-Cycloaddition Reactions*, edited by Hamer (although in this case published by Academic Press). Both limit their coverage to cycloadditions leading to heterocyclic ring systems, which is made clear in the subtitle. The selection of material for the present volume is open to criticism. Epoxides are not discussed, because of adequate treatment elsewhere, but other three-membered heterocyclic systems are dealt with in fair detail. Many of the three-membered ring-forming reactions, however, cannot properly be described as cycloadditions, for they involve elimination of some part of a reactant as an essential step in the cyclization (in the diaziridine and oxaziridine syntheses). It is difficult to see why nearly two pages are devoted to the preparation and reactions of the "germirenes" before the incorrectness of these structures is revealed, unless it is a result of the historical approach mentioned in the preface. On page 243, it is pointed out that the 3,4-dimethyl-1,2-diazete structure for the biacetyl-hydrazine reaction product (which is not the only representative of its type to be found in the literature) was discredited as long ago as 1936. Neither of these topics deserves more than a very brief mention; the latter, perhaps, is best forgotten altogether. Much space is wasted on tabulations of rather trivial nuclear magnetic resonance data, while isocyanate dimers are dismissed (page 252) in half a sentence.

In spite of these shortcomings, the book serves a useful purpose, it is quite readable, and not outrageously expensive. If it reaches a second impression it is to be hoped that the rather large number of printing errors will be corrected (I found seventy-three, mostly in the formulae, including eight on page 319).

A. J. BOULTON

HISTORIC GEOLOGY

Selected Works

Granites and Migmatites. By J. J. Sederholm. Pp. 608. (Edinburgh and London: Oliver and Boyd, Ltd., 1967.) 315*s*.

UNDOUBTEDLY, the value of this volume is to make readily available seven of the classic papers of the prophet of the transformationalist school of granite genesis and the doyen of Fennoscandian geologists, J. J. Sederholm. All the works presented were first published more than thirty years ago but one has not appeared before in English and the others are difficult to obtain being either out of print, or only available in the largest libraries.

Although the emphasis and subject matter vary, the seven papers are primarily concerned with the occurrence, mutual relationship and origin of the granites, gneisses and migmatites of the Precambrian formations of Finland, particularly those in the south-western part of that country. The value of the papers is two-fold: first, they are an accurate account of the petrographic, chemical and, particularly, field evidence that enabled the author to unravel the complex Precambrian history of Finland, and second, they record Sederholm's own interpretation of these data. On the first count, the accuracy of his observations is probably most graphically witnessed by the fact that they have been used by others in discounting Sederholm's own interpretations. The interpretative sections are, in most cases, a conversational discourse written in the first person and, although highly informative, tend to be too pleonastic for modern tastes.

Three of the papers, occupying almost two thirds of the volume, describe in detail the Precambrian geology of three "test" areas and form parts 1, 2 and 3 of a series on migmatites and Precambrian rocks of south-western