Journal of Organometallic Chemistry
Elsevier Sequoia S.A., Lausanne
Printed in The Netherlands

BOOK REVIEW

The Stereochemistry of Macromolecules, Vols. 1 and 2; edited by A. D. KETLEY. Marcel Dekker, New York, 1967; Vol. 1, xii+412 pages, $19.50; Vol. 2, xiii+383 pages, $18.75.

Time is indeed ripe for a comprehensive survey of the advances of the last fourteen years or so in the chemistry of polymerization processes which result in stereoregular products. Dr. A. D. Ketley has undertaken to achieve this objective in a work of three volumes of which the first two are now available.

Much of the impetus behind the burgeoning of organometallic research, industrially and academically, stems from the catalytic activity of organometallics in polymerization and other reactions which are characterized by control of stereochemistry, and the contributors to the present two volumes have been well chosen, from the spectrum of fields of interest available, to present critical reviews of a subject in which mechanism is still a matter for much speculation and discussion, and where a clarification of the state of the art is vital to progress in understanding.

To organometallic chemists, the most interesting features will presumably be the nature of the reaction between the catalyst and the first monomer molecule and the role played by the organometallic centre in directing the orientation of subsequent olefin molecules in the insertion process. The potential that polymerization techniques offer for the elucidation of the mechanism of reactions involving small molecules is often overlooked, and one particularly useful quality of the present volumes is that they may well suggest new ways in which the bonding in organometallic compounds may be investigated by employing the polymerization reaction, not for its own intrinsic interest, but as a magnifying glass with which to view the reaction site.

The first volume is concerned with Ziegler–Natta catalysts with reference to procedures, mechanism, copolymerization and commercial production. Volume 2 deals with other stereoregulating systems, with monomers other than olefins, with radical reactions and with biological systems. For organometallic chemists the focus of interest will reside in the chapters on alkali-metal-based catalysts and on the polymerization of carbonyl compounds and epoxides.

The trilogy is to be completed by a volume concerned with the determination of steric structure and the interaction between structure and properties.

The series as a whole is most welcome; the advances made in the last decade and a half are admirably reviewed and the unison of so many aspects of stereoregulation of polymers in one collective work will provide an invaluable basis for further progress.

A. D. JENKINS