

hydrogen peroxide leads to alcohols, oxidation with chromic acid produces ketones, treatment with carboxylic acids yields the saturated compounds, while treatment with silver nitrate and sodium hydroxide gives rise to coupled products. Each of these reactions usually proceeds in high yield and with stereochemical specificity. The further discovery that organoboranes are smoothly isomerized by heat to the isomers bearing the boron atom at the least hindered position of the carbon chain has added considerably to the scope of the above-mentioned types of reactions.

Hydroboration is by now recognized as a vital synthetic tool for the organic chemist, despite the fact that boron hydride chemistry for many years has had the reputation of being a specialized field, requiring complex equipment and involving considerable experimental difficulties. So far, most of the extensive work on hydroboration which has been published is spread through the literature in papers and preliminary communications in various journals. It is therefore very opportune that Professor Brown, to whose school most of the pioneering work in this field is due, has in this book for the first time brought together all the various aspects of hydroboration chemistry.

The scope of the book can be judged from the titles of the chapters: 1. Introduction and Survey; 2. Early History; 3. Chemistry of Organoboranes; 4. Borohydride Chemistry; 5. Hydroboration Procedures; 6. Scope; 7. Directive Effects; 8. Stereochemistry; 9. Isomerization; 10. Displacement Reactions; 11. Hydroboration of Hindered Olefins; 12. Alkylboranes; 13. Selective Hydroboration with Disiamylborane; 14. Asymmetric Hydroboration with Disopinocampheylborane; 15. Hydroboration of Dienes; 16. Hydroboration of Acetylenes; 17. Diborane as a Reducing Agent; 18. Disiamylborane as a Reducing Agent; 19. Hydroboration of Functional Derivatives; 20. Epilog.

The book, which deals with the theoretical as well as the experimental aspects of hydroboration, is an excellent one, without qualifications. Although it is inevitable that the plan of the book (involving first a general survey before describing various particular aspects) leads to some repetition, the writing is lucid and the book is interesting throughout. Professor Brown has very successfully conveyed his enthusiasm for the subject to the reader. In addition to describing the hydroboration literature fully and logically, a number of unpublished results from the author's laboratory are included. The book can be thoroughly recommended to all individuals, students as well as practicing chemists, who wish to become further acquainted with an important new field in organic chemistry.

The book is well-printed, and the contents are set out attractively, including the illustrations demonstrating that "tall oaks from little acorns grow." The liberal use of chemical equations and formulas is welcome, and contributes to the clarity of the presentation. Finally, the publishers and printers are to be congratulated on the fact, mentioned at the beginning of the book, that "the manuscript was received on October 1, 1961, and was published on March 30, 1962." The effect of this prompt publication has been

the production of a book which is up-to-date, despite the fact that the field is a rapidly expanding one.

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Methoden der Organischen Chemie (Houben-Weyl).
Vierte, Völlig Neu Gestaltete Auflage. Band XIV.
Makromolekulare Stoffe. Teil 1. Edited by EUGEN
MULLER, Tübingen. With O. BAYER, Leverkusen. H.
MEERWEIN, Marburg, and K. ZIEGLER, Mülheim. Georg
Thieme Verlag, Herdweg 63, Stuttgart, Germany, 1961.
lxiv + 1360 pp. 18.5 × 26 cm. Price, DM. 287.--;
subskriptionspreis, DM. 258.30.

The Fourth Edition of what is known to most chemists as "Houben-Weyl" is expected to run to sixteen volumes which will appear not necessarily in numerical order. It is most fortunate for workers in the synthetic polymer field that Part I of Volume XIV of this series has arrived early on the scene. One finds the same thorough and expert coverage that is to be expected from "Houben-Weyl."

The approach has been not to attempt to include all of the existing literature of polymer chemistry but rather to cover a good many topics in depth. The result has been a work which will be of enormous benefit to the research man in carrying out the practical aspects of synthetic polymer chemistry. In achieving this success the authors have avoided an excess of technology in order to make this a useful laboratory text. Final polymer processing data, for example, are not included.

Part I of Volume XIV is concerned with the preparation of vinyl and divinyl polymers and is to be followed in Part II by a treatise on condensation and ring opening polymerizations. After a brief introductory chapter on definitions, stereochemistry and nomenclature of polymers, Part I is divided into three principal chapters: 1. Bulk and solution polymerization; 2. Emulsion and suspension polymerization; 3. Polymerization processes for important monomers. Radical, ionic and coordination polymerization techniques are discussed extensively in each of these sections. Literature coverage, including patents, is complete through 1959 and in part to 1961. A particular benefit to be found here is that many of the detailed experimental procedures have been taken from patents and are now readily accessible in easily repeated detail.

Not only will everyone now engaged in polymer research benefit from this edition, but one can anticipate increased research work in this area especially in academic laboratories. A final blessing which may occur is that the availability of such a splendid literature source should encourage the overdue writing of a new comprehensive textbook of synthetic and mechanistic aspects of polymer chemistry.

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