

## BOOK REVIEW

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*The Organic Compounds of Mercury*; by L. G. MAKAROVA AND A. N. NESMEYANOV, North Holland Publishing Company, Amsterdam, 1967, xii + 532 pages, D.Fl. 108.—Series: *Methods of Elemento-Organic Chemistry*, Volume 4; edited by A. N. NESMEYANOV AND K. A. KOCHESHKOV.

This volume, the fourth in a series edited by A. N. Nesmeyanov and K. A. Kocheshkov, is a translation of a work published in the U.S.S.R. in 1965. It is based on a 1945 monograph entitled *Synthetic Methods in the Field of Organometallic Compounds of Mercury* by the same authors, which is generally expanded and brought up to date by inclusion of work published up to 1964. As in previous volumes of the series, the emphasis is heavily on synthetic methods, but these cover the wide range of synthetic applications of organomercurials as well as ways of preparing these mercurials. In keeping with the earlier volumes, detailed experimental instructions for carrying out specific reactions are interspersed with the running text.

The work has the main defect of the earlier volumes of the series in that it is almost entirely non-critical. An outstanding example of this is the uncritical description of the use of the hydrogen chloride cleavage of unsymmetrical diorganomercury compounds to define an order of electronegativity of organic groups, the so-called "Kharasch electronegativity series", an approach which leads to conclusions which are in clear contradiction to the simplest principles of substituent effects in organic chemistry as established over 30 years ago; for example, it places the *p*-MeOC<sub>6</sub>H<sub>4</sub> and *p*-MeC<sub>6</sub>H<sub>4</sub> groups as *more* and *m*-ClC<sub>6</sub>H<sub>4</sub> and *m*-CF<sub>3</sub>C<sub>6</sub>H<sub>4</sub> groups *less* electronegative than phenyl groups. For discussion of this series, the authors refer the reader to papers published between 1934 and 1938. It is true that two pages later the slight concession is made that "Dessy believes that the splitting of RHgR' by hydrochloric acid is a measure of the availability of electrons at the attacked carbon atom and not of the electronegativity of the group which is split off", but even this is nullified by the next sentence, "However, there is some uncertainty about the possibility of a transfer of electric effects via a mercury atom". No reference is made to the criticism of the Kharasch series advanced by Eaborn in 1961, or much earlier, by Gilman, in 1953.

Again in common with the earlier volumes, the coverage of work published during the past ten years seems to be less complete than is desirable (although this is less serious for organomercury compounds than, say, for the organoboron and organoaluminium compounds described in Vol. 1). For example, although there is a section of the book devoted to "substitution of mercury for heavy metals and some metalloids", there is no mention of the reaction of this class which is best understood, *viz.* aromatic mercuridesilylation, several studies of which have been published from 1958 onwards.

The translation seems adequate, and the meaning is nowhere obscured, but there are some incorrect choices of words; for example, "a whole series of papers has been published laying down the *formations* of this method", and "Di-*p*-anisylmercury

reacts with Hg in benzene *already* in the cold" (where *even* is presumably intended).

The Subject Index is large but unhelpful. Thus a reader wishing to find out how halogens react with organomercurials will find no entry under "halogens", but he will, if he persists, find an appropriate sub-heading under the general item "organomercury compounds, reactions of with ...". He will find no entry referring to reactions of alcohols, although these are described in the text. There is a very informative Table of Contents at the beginning of the book, but even so the reader will probably be surprised to find that reactions of halides such as  $\text{CoCl}_2$  and  $\text{FeCl}_3$  with organomercurials are described under the heading "Photochemical reactions of Organomercury Compounds", apparently because "the reaction of halides of metals that do not form stable organometallic compounds is similar to that of ultraviolet".

The Author Index is completely misleading, and many chemists who have contributed to the field under review would form a most unfavourable impression of the book if they employed the common method of judging the quality of a book by the adequacy of the references to their own work. There are only about 200 entries in the Author Index, but a sample count suggests that less than 20% of the names cited at ends of chapters appear in this index. For example, among chemists in the United States who have contributed to the understanding of organic mercuriation or demercuriation reactions, the name of R. E. Dessy appears in the index (though by no means all the mentions of his work in the text are listed), but those of Herbert C. Brown, F. R. Jensen, and M. M. Kreevoy do not, although there are many references to their papers in the appropriate chapters.

Nevertheless, in spite of its defects, the book contains a huge amount of factual material, on the whole very conveniently classified and clearly presented, and all workers in the field of organic derivatives of non-transition metals will want to have it readily available, if only because organomercurials are formed from, or are convertible into, a wide range of derivatives of other metals. Such workers can hardly fail, moreover, to get ideas for further research, and this alone would justify the publication of the book.

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