

BOOK REVIEWS

Silylation of Organic Compounds; by A. E. PIERCE, Pierce Chemical Company, Rockford, Illinois, 1968, xii + 487 pages, \$18.50.

The greatest impact of organosilicon chemistry on organic chemistry has been in the replacement of active hydrogen in organic compounds by the trimethylsilyl group (defined, for the purposes of this book, as "silylation"), and the use of the silylated derivatives in gas-chromatographic and mass-spectrometric analysis. This approach has made possible the detection and determination of compounds not sufficiently stable or volatile to be examined directly by these analytical techniques, and, in particular, has rendered the techniques applicable on the microgram and sub-microgram scale to many kinds of large molecules of natural origin. It has been applied to a wide range of hydroxy and amino compounds, most intensively to steroids and carbohydrates. Dr. Pierce presents in this book an admirable compilation of information on this subject.

The book is intended primarily for organic chemists interested in using silylation in analysis, and they will find it invaluable as a laboratory manual and a reference work. Applications to alcohols, phenols, carboxylic acids, amines, hydroxyamines, amino acids and their derivatives, amides and ureas, carbohydrates, and steroids are considered in all the essential detail, and applications to peroxides, epoxides, enols, thiols, oximes, pyridines, pyrimidines and inorganic acids are briefly described. Use of silylated derivatives in thin layer chromatography is also covered. Dimethylsilylation is briefly discussed, as is the recent application, by Thomas and Walton and their collaborators, of halomethyldimethylsilyl derivatives in conjunction with electron-capture detectors, which extends gas-chromatographic analysis of steroids to the sub-nanogram range. The literature is reviewed up to July 1968, and almost 900 references are given.

Organosilicon chemists also will wish to have this book available, because of the considerable body of well-classified information it presents on some important reactions of halogeno- and amino-trimethylsilanes. They will find the chapter on theoretical aspects of silylation the least satisfactory, but its defects do not detract from the rest of the book. (It is unfortunate, however, that organic chemists will see a set of dissociation energies for $\text{Me}_3\text{Si-X}$ bonds which are almost certainly very much too high, since this will create a false impression in the minds of non-specialists which may take years to eradicate.)

This book, which will be warmly welcomed, is available direct from the Pierce Chemical Company, P.O. Box 117, Rockford, Illinois, 61105, U.S.A. There can be little doubt that its appearance will give a great boost to the use of silylation.

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