deals mainly with the chemistry and metabolism of glycerides, and appears under the authorship of William Lennarz (bacterial lipids), Edward Hill and William Lands (phospholipid metabolism), and G. Hübscher (glyceride metabolism). Again the division of labor is somewhat arbitrary. The organization might have been more successful had the chapters on bacterial lipids and phospholipid metabolism been combined.

A third group of chapters, on the biosynthesis and metabolism of prostaglandins (Bengt Samuelsson), steroids (P. Holloway), aromatic substances (John Corcoran and F. Darby), and polyisoprenoid quinones (Ronald Bentley), rounds out the book and makes it much more comprehensive than most books on lipids. Thus, the general impression is of a substantial effort to present in a relatively brief form a considerable amount of the latest information on lipid metabolism.

Although the separate ways in which the material has been treated by the various authors may lead to some inconvenience in the use of this book for teaching purposes, there is no question that it has permitted each author to deal in a personal way with his subject and to inject new insights that might otherwise have been lost. The literature appears to have been covered up to and including part of 1969. Because of this and because of the sophisticated level of discussion, I would expect this book to be highly useful to the research specialist and the graduate student in biochemistry or molecular biology.

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Chemical Deduction

Problems in Organic Reaction Mechanisms. HERMANN HÖVER. Wiley-Interscience, New York, 1970. x, 470 pp., illus. $24.95.

Most organic chemistry texts at both the elementary and the advanced level have aimed at a logical and compact exposition of a vast and burgeoning body of knowledge. The result has all too often been a bloodless and dull classified directory, categorizing facts and advertising theories—fine for the stranger in town, but of little use to the student who aims to stay and find the action by learning how theories are formulated and tested. How then are chemists trained? They are trained in the classroom by talking about problems, solving them on paper by deciding what experimental measurements have bearing on what theoretical and practical questions. Students are launched at the blackboard and in the laboratory with small, well-defined problems whose goals are clear and which invite certain modes of attack, and by a combination of intellectual and manual effort they are gradually advanced toward more subtle and difficult problems. Learning chemistry is therefore more the Socratic dialogue as embodied in the give-and-take of seminars than the mere transmission of information, to which conventional texts and most lecture courses seem devoted.

Here in Hermann Höver's *Problems in Organic Reaction Mechanisms* we are given within the covers of a book the elements of a seminar. In the first section of just 52 pages are brief descriptions, consisting of information about starting materials, reaction conditions, and reaction products, of some 200 reactions. The reader is invited to deduce from this information the mechanisms by which these reactions take place. Then follow 400 pages explaining how reaction mechanisms can be deduced which account for the observed data given in the problems, mechanisms which are in accord with, and exemplify, general principles of chemical reactivity.

The deduction of the detailed pathways by which chemical transformations take place is less a matter of discovering "truth" than of constructing a heuristic framework which correlates chemical structure with chemical reactivity. It is important to all organic chemists, as an end in itself to those who are theoretically inclined, and to those who are more practical as a means for extending analogies from the known to the unknown.

To use this book is to undergo a true bootstrap operation. By thinking about the information given with a view to fitting it into a consistent picture, the student learns how deductions are made and what minimum information is necessary to make and substantiate a particular kind of conclusion. This is the heart of chemistry as it is practiced.

Höver asks a great deal of his readers, but their effort will be richly rewarded. Höver's discussions of specific problems exemplify much of current mechanistic thought and, more important, give a student a feeling of how these ideas develop—how fact and imagination interact. The selected literature references and the index are also admirable. Best of all, the book provides a new approach for reducing to paper our teaching of what goes, somewhat pretentiously, under the name of "theory" in organic chemistry.

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Biometeorology

Biometeorological Methods. R. E. MUNN. Academic Press, New York, 1971. xiv, 336 pp., illus. Cloth, $12.50; paper, $6.95. Environmental Sciences series.

The methodology of biometeorological research cuts across many disciplinary lines, as does biometeorology itself. Researchers must concern themselves with the whole range of meteorological measurements and analysis, but must also be knowledgeable about relevant aspects of biological research. Too rarely have researchers been experts in both fields. If primarily biologists, they have tended to accept meteorological data uncritically and used naive methods of data analysis and interpretation. Meteorologists approaching biological problems have often made similar errors in the interpretation of biological data.

This volume by Munn should go a long way toward correcting these inadequacies. It is a useful synthesis of methods from a very broad range of disciplines, showing how many diverse methods can be used to solve biometeorological problems.

A considerable portion of the book deals with problems of sampling the atmosphere in time and space, and it includes a useful discussion of instrument response and time constants. Statistical methods are considered somewhat cursorily, but in enough detail to indicate the range of applications. Methods of dimensional analysis and physical modeling of biological phenomena receive brief treatment, along with useful illustrative examples. Applications of synoptic climatology to such diverse problems as forest fire weather forecasting and the large-scale dispersal of insects and birds il-