The reader entering a library composed of micro-cards in filing cases would not have to wait, as at present, until the numerous charging and transporting steps, from call slip to final delivery, are completed. He would go directly to the filing cases in which the micro-cards are arranged in accordance with the most highly perfected cataloguing system, and when he has found the title he desires, the micro-card "book" would be withdrawn and a call slip inserted in its place. A duplicate call slip would be left with the attendant and the reader would go to read his "book" to any one of the numerous micro-card reading machines which "will be sprinkled freely, not only all over the library, but everywhere else around the university."

The question of copyright infringement is not considered a serious hindrance, since there are such vast ranges of material which were never under copyright at all and others on which copyright has long since expired. In the case of all others, satisfactory arrangements with authors and publishers would have to be made. These might possibly be on the basis of some guarantee that libraries will continue to purchase the originals in the usual number or provide a system of honoraria to recompense the holder of the copyright.

The author points out that it is the far less used source material of science which is in greatest need of being transferred to micro-cards. It is this, however, of which the original cost of publication is on the most precarious basis. Practically all scientific periodicals require the aid of subsidies of one kind or another. Any additional expenditure for their dissemination to the relatively few who use them can hardly be justified on the basis of solving the problem of library growth. Micro-cards are not substitutes for original publications, but supplements to them which are produced only at a cost which augments the total cost of publishing this class of literature. Just how great this may prove to be can not be estimated at present, but it is conceivable that it may well approach that required for providing the additional library buildings and paying the costs of caring for the innumerable books produced on an ever expanding scale. The net gain may, therefore, be very much less than the micro-card plan may at first appear to offer.

One other thought which the author's plan arouses is the tendency of librarians to regard their principal duty as that of improving the service they render to readers in the library. This is based on the assumption that the library itself is the place for scholars and scientists to go to do their best work. As a matter of fact, however, the conditions there are usually not as conducive to concentration, study and reflection as the privacy of one's own surroundings.

The purpose behind the micro-card plan is to improve library service. By means of these micro-cards, there will be set up the most perfect and convenient catalogues of research literature ever made. This of course is fine for those who can come to the library, but what about the far greater number who can not or who prefer to work in their homes or laboratories? For these, their index and catalogue requirements are at present served fairly well by printed, widely circulating publications, and their principal need is to obtain from the library with the least possible effort the source publications which they desire to study at their convenience. The plan of microfilm copying referred to at the beginning of this review is designed for this purpose and will permit librarians to render far greater service to far larger numbers of workers than is possible in any other manner.

The author mentions that "Collecting and holding, however important, are merely static functions of libraries: publishing and dissemination are dynamic functions." If the publishing is confined to single microfilm copies in numbers sufficient to meet the needs of individual workers, a far more efficient and economically justifiable dissemination of the source literature will be accomplished than by any plan of micro-card republication.

ATHERTON SEIDELL

ORGANIC CHEMISTRY

Organic Chemistry Simplified. By RUDOLPH MACY. $6\frac{1}{4} \times 9\frac{1}{4}$ in. viii + 431 pages. Bound in red cloth. Brooklyn: Chemical Publishing Company, Inc., 1943. $3.75.

THE author, in his preface, states that this book was written to provide a simpler and more gradual introduction to the subject of organic chemistry, for the benefit of first-year students, or those who, like doctors, dentists and others, require only a general elementary knowledge of this branch of chemistry. And it is his hope that it will prove useful for home study, particularly by those who wish to familiarize themselves with the more recent concepts of valence, the octet and duet in chemistry, north poles and south poles, dipole moments, resonance, dielectric constants, hydrogen bonding, parachors, Raman spectra, etc.

The first part of the book, therefore, is devoted to a general elementary study of atomic structure, interpreted in the light of modern up-to-date physical chemistry. The rest of the text deals with molecular structures and the organic chemist as the architect thereof. The various reactions encountered in studying the chemistry of these carbon compounds are explained largely by the application of the physical-chemical theories discussed in the antecedent pages.

In its unorthodox composition, the classification of compounds, sequence of topics, simplicity and origi-

nality of approach, it is quite the antithesis of the scissors-made text-book, and is both interesting and refreshing. Ingenious examples and similes are numerous. The "official" nomenclature for many classes of organic compounds is clearly explained. And yet the author throughout spells ole*fins* as ole*fines,* although in modern organic nomenclature the termination -ine is generally reserved for true bases.

The extent to which physical chemistry is used in the text, in addition to the 56 pages devoted to it in Part I as introductory, and the 20 pages on "From Partial Valence to Resonance" in Part II, will make its use for home study rather difficult reading for those who have not had at least an elementary course in that branch of chemistry. In other words, the book is essentially a primer of organic chemistry from the modern physical chemical standpoint. As such, it is cordially recommended, for it is clearly written and effectively presented. The net result, however, of so much physical chemistry, of rather frequent repetitions and of unnecessarily expanded structural formulas, has been to curtail seriously the amount of space available for the purely descriptive side of the subject, and that is just the side which is easiest and most attractive reading to the beginner.

The author's interest in etymology is indicated by the number of chemical words whose derivation and translation he gives. It is regrettable that so few of the great organic chemists of the past are mentioned by name in association with those parts of the science to which they have been the chief contributors. There are no references to the literature or lists of books suggested for collateral reading. In view of the author's position as senior chemist at the Edgewood Arsenal of the Chemical Warfare Service, U.S.A., it is somewhat surprising that the only war gas mentioned is "mustard gas." Phosgene, the chief killing gas of World War I, and still an important intermediate in several branches of chemical industry, does not appear at all. In the chapter on drugs, a number of the compounds mentioned bear only their German instead of their American names.

The arrangement of the subject-matter can be seen from the following table of contents: Part I. The Unique Position of the Carbon Atom in Chemistry, and a review of the modern theories concerning atoms, molecules, valence, etc. Part II—The Architecture of Carbon Compounds—discusses structural theories, chains and rings, double and triple bonds, stereochemistry and isomerism, from partial valence to resonance, paraffins, olefins, acetylenes and benzene hydrocarbons. Part III—The Classification of Carbon Compounds—presents the customary methods of classification, alkyl and aryl radicals, halogen compounds, primary, secondary and tertiary compounds, oxygen compounds (alcohols, phenols, ethers, aldehydes and ketones, acids and mixed types); nitrogen compounds; and compounds containing sulfur, phosphorus or other elements. Part IV—Special Topics in Organic Chemistry—is devoted to the structures of complex compounds, heterocycles and condensed cycles, the role of isoprene in nature, proteins, carbohydrates, dyes, drugs, hormones and vitamins, isotopic chemistry and giant molecules. A general index completes the book.

Paper, type and printing are exceptionally good. The proofreading is quite remarkable in its accuracy, not more than two or three slips having been found in the entire book. Illustrations, cuts, formulas, tabulations, etc., are admirable.

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SPECIAL ARTICLES

THE METABOLISM OF THE KIDNEY[1]

WITH a view to gaining an insight into the metabolism of the kidney in experimental renal hypertension a comparative study has been made of the concentration and activities of various enzyme systems in the kidney of normal and hypertensive dogs.

Experimental renal hypertension was produced in dogs by the clamping procedure of Goldblatt,[2] or by the Cellophane or silk perinephritis method of Page.[3] The tissue respiration was measured by the manometric method of Warburg.[4] The experiments were carried out with tissue slices, homogenized suspensions and tissue extracts at 37.5° C and at a pH of 7.4.

Histological examination of the portions of the kidney adjacent to the parts used in these experiments showed no necrosis.

I have studied the enzymatic activity of kidney slices and of homogenized tissue suspensions from the experimental and the opposite control kidneys of dogs with hypertension due to unilateral operations, from both kidneys of bilaterally operated hypertensive dogs and from the normal kidneys of non-hypertensive dogs. Preparations from the experimental kidneys of both types of hypertensive dogs, in comparison

[1] A detailed report of this work will appear in the *Journal of Experimental Medicine.*

[2] H. Goldblatt, J. Lynch, R. F. Hanzal and W. W. Summerville, *Jour. Exp. Med.,* 59: 347, 1934.

[3] I. H. Page, SCIENCE, 89: 273, 1939; *Jour. Am. Med. Asn.,* 113: 2046, 1939.

[4] O. Warburg, "The Metabolism of Tumours." New York: Richard R. Smith, Inc. 1931.