SYNTRON COMPANY announces a 12-page bulletin on electric vibrators. Ask for bulletin No. 81461. 295 Lexington Ave., Homer City, Pa.

FOSTER D. SNELL, INC., 29 West 15th Street, New York 11, N.Y., offer a Common Chemical Market directory of the chemical companies of the European Common Market and the European Free Trade Association. Its 243 pages lists alphabetically 6,000 European chemical companies, by countries. Price $18.00 per copy.

GAS-CHROM. A list of references to papers on gas chromatography of steroids and related substances in included in the September issue of the GAS-CHROM Newsletter. This compilation includes work published up until June 1961 and may be obtained from Applied Science Laboratories, Inc., State College, Pa.

FRITZSCHE BROTHERS, INC., 76 Ninth Avenue, New York 11, N.Y., manufacturer of aromatic chemicals, demonstrated the Fritzsche Codex of Structural Formulas at the Chicago A.C.S. meeting in September.

The key feature of the Fritzsche Codex is that it locates organic compounds, either commercially available or in a developmental stage, by their chemical structures rather than by often ambiguous nomenclatures. The Codex now furnishes such information, in a matter of minutes, on some 20,000 organic compounds grouped in eighteen functional categories, and their combinations. More are being added daily. Fritzsche Brothers will offer the Codex service on either subscription or specific-inquiry basis.

THE OPTICAL SOCIETY OF AMERICA, 1155 Sixteenth Street, N.W., Washington 6, D.C. again announces that the journal OiS is available to members of the A.O.C.S. at $11.00 per year. This journal, translated from Russian, gives more space to spectroscopy than to optics. The OSA hopes to prove that a translation journal can be supported by subscriptions.

DAMPFDRUCKTABELLEN NICHTASSOZIIERENDER STOFFE (Vapour Pressure Tables of non-associating Substances) edited by E. Oehley, Frankfurt (Main)-Hoechst, has just been published as a new addition to the Dechema-Erfahrungsaustausch series. The booklet consists of 42 pages, size DIN A 4 (210 x 297 mm.), and can be obtained only from the DECHEMA Deutsche Gesellschaft für chemisches Apparatewesen E. V., Frankfurt (Main) 7, Postfach 7746. The price to Dechema members is DM 13.40 and to nonmembers DM 16.80, plus postage.

The booklet provides the possibility of obtaining approximate, but in most cases adequate information in the simplest way on the boiling temperature under a wide range of pressures, provided that the readily obtainable "boiling point," i.e. the boiling temperature at 760 torr, is known. The tables will therefore save users time-consuming searches or measurements.

• *New Books*

HETEROCYCLIC SYSTEMS WITH BRIDGEHEAD NITROGEN ATOMS, PART I AND PART II, by William L. Mosby (Interscience Publishers, Inc., New York, 1961; 1467 pp., $48.00, Subs. $43.00). This is the fifteenth volume in a series of monographs edited by Arnold Weissberger on the Chemistry of Heterocyclic Compounds. Although it is meant to be a comprehensive review of bridgehead nitrogen systems, this volume is really somewhat different from the other monographs on heterocyclic chemistry edited by Weissberger. The author attempts to survey all the bridgehead nitrogen systems reported through 1958, listing some 3500 references. Both fused and bridged ring systems have been surveyed; consequently the monograph has been divided under two subtitles: A. Fused Ring Systems and B. Bridged Ring Systems. Because of the difficulty in organizing subject material dealing with compounds which fall into several categories, Mosby chose to list structures according to the principles of the Ring Index and Chemical Abstracts and

not according to compound classes. In contrast to Elderfield's Heterocyclic Compounds, the classical treatise in the field of heterocyclic chemistry, this book is not meant to be a text but should be considered as an excellent reference to the chemistry of an unusual body of materials which might otherwise be very difficult to locate in the primary literature.

With some exceptions only convalent nitrogen rings have been included in the text; consequently systems in which the bridgehead nitrogen is necessarily quaternary, as in certain spiranes and betaines, have generally been omitted.

The volume is divided into two books for convenience only and not according to subject matter. Thus, Part I (Book I) covers fused 3/3 ring systems to fused 5/6 ring systems. Part II (Book 2) covers the subject matter of fused 5/6 ring systems to fused 6/7 and larger systems and bridged ring systems. A table of contents appears at the beginning of both books. However, in view of the complexity of the nuclei covered, when seeking particular ring systems it is almost a necessity to refer to the "Index of Ring Systems" which appears only in Book 2. Also listed in Book 2 is a subject index which can be used for locating specific compounds.

Although the book by necessity is organized in a somewhat disjointed fashion, the subject matter is presented in a critical manner and is not a mere compilation of data. Particularly pleasing is the fact that the author speculates freely upon the structure of controversial products in order to "encourage discussion and work in areas requiring elucidation." Thus the structure 2-oxa-1-azabicyclo [1.1.0] butane (I) was proposed by Kolbe for one of the products isolated from the reaction of 1-bromo-phenylacetone and alcoholic ammonia. The structure I is listed by Mosby as the simplest fused 3-membered bridged nitrogen compound but with the qualification that the compound isolated by Kolbe is probably really 2, 5-diphenyl-3, 6-dihydroxy-3, 6-dimethyl pyrazine. The arguments for the corrected structures are not always presented, however. Most of the corrections are based on differences in modern and previously held concepts of organic structure and mechanisms although many changes are based on both published and unpublished experimental data. Often several alternate structures are proposed by Mosby where he feels evidence given in the primary literature is insufficient to eliminate the new possibilities.

Numerous tables have been used to summarize the data on individual compounds. The properties of the compounds and of several derivatives have been listed. The author describes the reactions by which the compounds are obtained and delves briefly into the chemistry of the parent compound.

The pharmaceutical chemist may be disappointed to discover that the area of natural products is only scantily covered due to its extensive nature. Thus, only general reference is given to the areas of penicillin, gliotoxin and alkaloid chemistry. However, references to reviews which cover these subjects more completely are listed. Unfortunately the book was published too late to include the numerous bridged nitrogen compounds isolated by Huisgen, by LeBel, and by Delpierie and Lanchen from the 1,3-dipolar addition of cyclic nitrones and related compounds to olefins.

Considering the cost ($48.00), the volume is recommended for people working in the field of heterocyclic nitrogen compounds or for the library reference shelf and not for the average organic chemist. The monograph would be of greatest value to natural products and dye chemists.

In conclusion several features of this book deserve acclaim. It serves as an excellent reference to a series of compounds which would be difficult to locate otherwise. Mosby's critical presentation of data stimulates the reader considerably, particularly with respect to structure elucidation. The literary style of the book is excellent. The principal criticism of the book is that general chemistry of particular compound classes had to be eliminated since the book could not be organized according to compound class. Finally, it would have been better if the alkaloids had been eliminated altogether from this volume and included in a separate book where they could have been given the detail they justly deserved.

WILLIAM F. ERMAN, Procter & Gamble Company, Cincinnati 1, Ohio

TOXICOLOGY—MECHANISM AND ANALYTICAL METHODS, Vol. I, Edited by C. P. Stewart and A. Stolman (Academic Press, New York, 774 pp., 1960, $22.00) The text is a general reference for both the student and worker engaged in the isolation and identification of toxicants and toxicant metabolites in biological materials. The contributors are well versed in their respective analytical specialties and each reviews succinctly both the theoretical basis and practical application of their analytical specialties to the isolation and quantitative determination of poisons. The introductory chapter defines the function of the analytical toxicologist emphasizing report writing and the role as expert witness in legal proceedings. The book has been organized into two sections.

Part I deals briefly with the absorption, distribution, and excretion of the more common drugs and some industrial and agricultural poisons, omitting unfortunately reference to a number of household and industrial items of toxic potential. Part II provides an excellent treatise on systematic isolation and separation of toxicants from biological material and methods used in their identification. These include chromatographic techniques, ion exchange, paper electrophoresis, countercurrent distribution, emission and absorption spectrum analyses, polarography, microdiffusion, optical crystallography, and dye techniques.

The book provides an excellent reference to the analytical toxicologist and would form a welcome addition to his library.

B. R. ZEITLIN, General Foods Corporation, Tarrytown, N. Y.

FATTY ACIDS: THEIR CHEMISTRY, PROPERTIES, PRODUCTION, AND USES, Part 2, Second Edition, edited by Klare S. Markley (Interscience Publishers, Inc., New York, 770 pp., 715-1485, 1961, $27.50. The second edition of this work comprises four volumes of which Part 1 and Part 2 have been published. The expansion in size over the first edition published in 1947 arises from marked advances that occurred in this field during the fourteen year period, and from a more comprehensive treatment of the lower members of the fatty acid series, the hydroxy-, keto-, branched-chain, and polycarboxylic acids, and their derivatives. Industrial production and utilization of fatty acids, treated superficially in the first edition, are stressed.

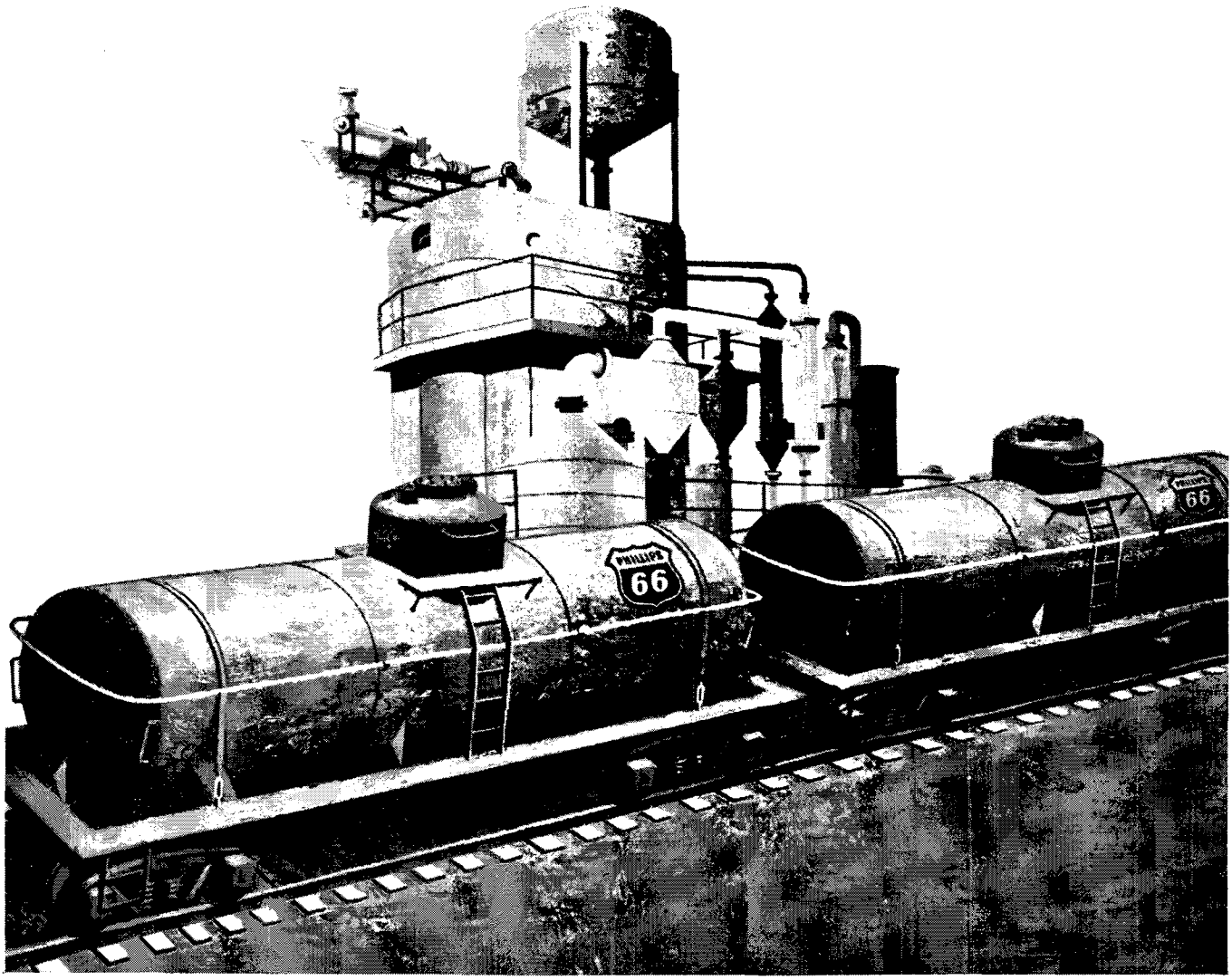
Part 2 contains seven chapters. VIII, Salts of Fatty Acids; IX, Esters and Esterification; and XII, Hydrogenation, are by Klare S. Markley. X, Dehydration, Pyrolysis, and Polymerization; XI, Halogenation, Dehalogenation, and Dehydrogenation are by Norman O. V. Sonntag. XIII, Chemical Oxidation; and XIV, Oxidation by Atmospheric Oxidation (Autoxidation) are by Daniel Swern. A subject index is included.

As indicated in the initial paragraph, the second edition of FATTY ACIDS is a rewritten and augmented revision of the first edition. It is sufficiently different in subject matter and scope of coverage from other major works in this area, namely, Holman, Lundberg, and Malkin's "Progress in the Chemistry of Fats and Other Lipids," Bailey's "Industrial Oil and Fat Products," Hilditch's "The Chemical Constitution of Natural Fats," and Devel's "Lipids," to be of distinct and unique value in this general field.

Generally speaking FATTY ACIDS is well written, well illustrated, and relatively free of errors. However, it is unfortunate that the chapters of Part 2 are incorrectly numbered on the Contents page. Typographical errors noted on p. 1336 and 1382 do not materially detract from the high quality of this book.

This volume is highly recommended to everyone having an academic, industrial, or managerial interest in fatty acids and derived or related materials.

F. L. JACKSON, The Procter & Gamble Company, Cincinnati, O.



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SOVIET RESEARCH IN CATALYSIS IN ENGLISH TRANSLATION, 1957-1958, (Consultants Bureau, New York, 1961; Part I, Theoretical and Sundry Associated Effects, 464 pp., $50; Part II, General, 760 pp., $80; Part III, Reduction, Oxidation, Fischer-Tropsch, 86 pp., $10; Part IV, Hydrogenation, Cracking, 115 pp., $12.50; Part V, Isomerization, Alkylation 160 pp. $17.50; Part VI, Polymerization, Friedel-Crafts, Ziegler, 190 pp., $12; complete collection $170). The 362 papers which appear here were taken from the publisher's translations of five journals. The titles of the translations are: Bulletin of the Academy of Sciences, USSR Division of Chemical Sciences; Colloid Journal; Proceedings of the Academy of Sciences, USSR; Journal of Applied Chemistry; and Journal of General Chemistry. The format and binding is the same as in the publisher's translations of these journals. The collection probably contains well over half of the material published on catalysis in the Soviet Union during 1957-1958, but some journals are not represented, for example, The Russian Journal of Physical Chemistry and the Russian Chemical Reviews (Uspeckhi Khimii) which are translated by The Chemical Society (London).

In judging a collection such as this, one needs to take note of several substantial differences between catalytic research in the U. S. and that in the U.S.S.R. Heterogeneous catalysis represents one of the most prominent areas of chemical research in Soviet academic laboratories. The Soviet Academy of Sciences, which is smaller than ours and represents a wider area of learning, has a substantial number of members from the domain of heterogeneous catalysis. The total volume of academic research is very small in the U. S. and, correspondingly, only one member of our Academy of Sciences has a background of research in this area. The Soviet emphasis upon catalysis is probably less the result of some basic policy decision than a historical development flowing from the influence of Ipatieff and particularly Zelinskii.

Although many universities in the U.S.S.R. are active in catalytic research most of the academic research in this area is performed in research institutes for which we have no equivalent. A very substantial fraction of the papers in this collection originated in two Moscow institutes of the Academy of Sciences, the Zelinskii Institute of Organic Chemistry (largely an institute of heterogeneous catalysis), and the Institute of Physical Chemistry. In future editions the new institute of catalysis in Novo Sibirsk will begin to figure prominently. Much of the work in these institutes is academic in nature; students work in them for advanced degrees and the directors of institute laboratories often have joint university appointments. For example, Academician Balandin is the director of two laboratories at the Zelinskii Institute and also is director of the Laboratory of Organic Catalysis at the Lomonosov State University, Moscow. Academician Kazanskii is Director of the Zelinskii Institute; director of one of its laboratories; and director of the Laboratory of Petroleum Chemistry at the university. Most of the papers from these institutes represent academic research, but many represent work which would be done in an industrial laboratory in the United States.

Many papers derive from non-academy institutes such as the Karpov Institute, institutes for petroleum, synthetic rubber, etc. These are more apt to represent developmental research although some papers from these laboratories represent basic studies. Since the non-academy institutes serve industries rather than companies, there is less reason to keep developmental and exploratory research proprietary. If the U.S.S.R. exceeds us greatly in the volume of academic work in catalysis, the sum of our industrial research probably distinctly exceeds theirs.

One must note a different attitude towards the nature of scientific publication. As they stand, only a small minority of the papers in this collection would have any chance of being accepted by a U. S. journal. To us the papers look more like bimonthly progress reports. Had they been published in our journals, the numerous papers of Shuikin, for example, would have been combined into a few more systematic papers. But these are matters of judgment. It should be added, however, that many of the papers published in the periodic volumes of "Problemi Kinetiki i Kataliza" (not covered in this collection) are of a more systematic nature.

The papers chosen for the collection represent basic and applied work in conventional heterogeneous catalysis and catalysis by strong acids. There are also papers dealing with chemisorption, and about 20 papers in Part I deal with physical adsorption. The latter are mostly from the laboratory of Kiselev and that of Academician Dubinin and, although their relation to catalysis is a bit remote, it is useful to have so many of the important papers of Kiselev in one location. Then, in Parts I and II, there are about 20 papers dealing with noncatalytic kinetics, high polymers, and other assorted topics whose connection to catalysis is so remote that this reviewer cannot see that even 'Sundry Associated Effects' justifies their inclusion.

The assignment of papers into Part I, II, III, and IV is capricious. Thus, one of the 'Reductions' in Part III is a straightforward hydrogenation, and the other four are hydrogenolysis. However, many of the 'Hydrogenations' in Part IV are also hydrogenolysis. Dehydrogenation reactions appear mainly in Part II but Part II also contains hydrogenations, for example, "Influence of Used Catalyst on Acidity Increase of Hydrogenated Fat" by Goledeev *et al.*

Most of the applied papers are aimed at petroleum refining, high polymers, petrochemicals, silico-organic compounds, and the ammonia synthesis. Only two relate to fats and oils.

Inevitably, in a collection such as this, the various papers run the entire gamut of quality. However no one interested in catalysis can afford to ignore Soviet work in this area ('Soviet', not 'Russian' since a number of these papers originate in such non-Russian places as Alma-Ata, Baku, and the Central Asiatic University, Tashkent). For those lacking access to translations of the journals cited at the beginning, the collection provides an excellent overview of U.S.S.R. research in catalysis.

ROBERT L. BURWELL, JR., Northwestern University, Evanston, Ill.

WATER TREATMENT FOR INDUSTRIAL AND OTHER USES, by Eskel Nordell (Reinhold Publishing Corporation, New York, 598 pp., second edition, 1961, $12.00). The format is clear, with the numerous tables and figures easily found by reference to chapter number. Every page shows its chapter number. The table of contents include such items as water supplies; dissolved minerals and gases; turbidity, sediment, color, organic matter, tastes, odors and microorganisms; conditioning for industrial, institutional, municipal, boiler feed, and cooling purposes; description of equipment for aeration, deaeration, chemical feeding, sedimentation, coagulation, settling and filtration; removal of iron and manganese; and water softening process such as iron-exchange and demineralization, and cold and hot lime-soda methods.

This second edition is an expansion of the original book and includes advances made in methods of water treatment, equipment, and applications. This is an authoritative book that is suitable for use as a textbook in a water treatment course. It is also good for reference purposes by engineers and technical people who have to do with the design, installation, operation, and maintenance of water treatment plants.

There are parts that appear to be overly simplified and also there are duplications. However the latter might be an advantage to those who use the book as a reference work on a specific subject. In addition to the index there are many cross references in the body of the book. Numerous up to date references are given at the end of each chapter. There are many tables of statistics with discussions of them. Popular misconceptions about water and water treatment are brought out. Examples of specific installations with faults and problems are given along with figures on capacities and dollar costs.

J. D. LINDSAY, Texas A&M College, College Station, Texas

FLOW OF FLUIDS THROUGH POROUS MATERIALS, by R. E. Collins (Reinhold Publishing Corporation, New York, 270 pp., 1961, $12.50). The previous literature either deals with special aspects of this subject or serves as reference for research workers. This volume presents the first unified treatment of all types of flow through porous media. It is designed as an expository textbook, but is directed primarily to petroleum engineers and to those in research who want a refresher on general theory. It also should be of interest to chemical engineers, civil engineers and soil scientists.

The intent of the book has been to offer a concise guide, leading from the basic physical characteristics of porous materials and the interactions of their contained fluids, to an understanding of some of the more complex problems of fluid flow through porous media. Specifically, the book deals with:

1. Structure and Properties of Porous Materials.
2. Statics of Fluids in Porous Media.
3. Physical and Mathematical Theory of Flow.
4. Steady and Laminar, Transient Flow of Homogeneous Fluids.
5. Simultaneous Flow of Miscible and Immiscible Fluids.
6. Theory of Models.
7. Flow with Change of Phase.

New and previously unpublished results are included on porosity and permeability distributions in sedimentary rocks, and on the calculation of water flood sweep patterns. Recent advances in the field are well covered. Each chapter is followed by references to aid in further study or research.

R. L. CAMPBELL, JR., Anderson, Clayton & Company, Sherman, Texas