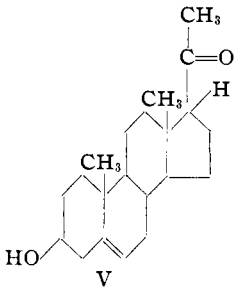
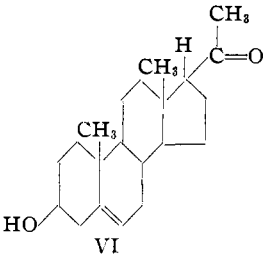



V




VI

droxide yields two products: (a) an acid which forms an insoluble sodium salt, and presumably has the formula IV; and (b) a mixture of ketones formed by a rearrangement process having properties of $\Delta^5$-pregnenolone, V, and $\Delta^5$-*iso*-pregnenolone, VI, previously prepared from stigmasterol and pregnanediol by Fernholz [*Ber.*, **67,** 1855, 2027 (1934)] and by Butenandt and his co-workers [*Ber.*, **67,** 1611, 1901 (1934); **70,** 96 (1937)]. The exact proportions of the two ketones in the mixture are now being investigated, and experimental studies on the rearrangement of the acid, IV, into the corresponding ketones are in progress. The details of our experimental results will be published in a forthcoming paper. We hope that this announcement may serve as a reservation of this research project.

FRICK CHEMICAL LABORATORY WILLIS A. YARNALL
PRINCETON, NEW JERSEY EVERETT S. WALLIS

RECEIVED APRIL 1, 1937

# NEW BOOKS

**Alchemy and Other Chemical Achievements of the Ancient Orient.** The Civilization of Japan and China in Early Times as Seen from the Chemical Point of View. By Dr. MASUMI CHIKASHIGE, Emeritus Professor of Kyoto Imperial University. Rokakuho Uchida, Tokyo, Japan, 1936. 102 pp. 17 plates. 12.7 × 18.8 cm. Price, 1.50 Yen.

This is an English translation of a book which appeared in the Japanese language in 1929 under a title which may properly be translated "Metallurgic Arts in the Orient." The Japanese version contained a discussion of European alchemy which is omitted from the present translation. The work is divided into three parts which deal, respectively, with Chinese alchemy, with Chinese bronze and with Japanese steel swords.

The author considers that many alchemical books can be enumerated, but that "in the final analysis, only two works, *Pao-p'u-tzu* (written by *Ko Hung*, fourth century A.D.) and *Pên Ts'ao Ching*" (a treatise on materia medica published toward the end of the *Han* dynasty) "remain as the authentic sources of information on the earlier Chinese alchemy." Biographical accounts of *Ko Hung* and *T'ao Hung-ching* are given, and many interesting quotations from the second (*Lun Hsien*, "Essay on the Immortals"), the fourth (*Chin Tan*, "Gold Medicine"), the eleventh (*Hsien Yao*, "Medicines of the Immortals") and the sixteenth (*Huang Pao*, "The Yellow and the White") of the Inner Chapters of "*Pao-p'u-tzŭ*." Chikashige discusses the identity of some of the materials which *Ko Hung* used, and concludes that some of the processes may actually have yielded real gold because of the gold which existed in small amounts in the reagents.

The discussion of ancient Chinese bronzes centers around the "Six Recipes of *Chin*" which are set down in the *Chou Li K'ao Kung Chi* (Artificers' Record, the sixth part of the *Chou* ritual) which was published during the *Chou* dynasty in the tenth century B.C. The author concludes that these recipes, except the last one, are reasonable. He discusses the properties of the several kinds of bronze which correspond to them, and finally reports chemical analyses of ancient bronzes in which the proportions of copper to tin agree with those laid down in certain of the recipes. He has wisely made his analyses upon the uncleaned bronze objects, determining the total amount of each metal present in the combined mass of metal and oxidized material.

"As to the method of forging swords in extreme antiquity, no history nor tradition has been handed down; but some of the straight swords excavated by archeologists were once submitted to investigation from which it may be concluded with some justice that they belong to the class of forged swords. For they showed some signs of having been forged by 'folding,' or even by 'combining' different sorts of iron. The art of forging made great progress when in the days of the Prince Regent *Shōtoku* (573–621) it was taught by some naturalized smiths at Oshinumi and later when Emperor *Gotoba* (1180–1239) gave directions to the noted smiths of the various provinces and made them forge at the court. All this concerns the method of forging the so-called *kotō* (old swords) but this method was lost during the age of civil wars toward the end of the *Ashikaga* Period. *Shintō* (new swords) made their first appearance toward the beginning of the *Tokugawa* Period and during the *Anei* (1772–1780) era or thereabouts *shinshintō* (new new swords) began to be turned out. A sword-smith, named *Suishinshi* is said to have been the originator of the *shinshintō* school. He was a diligent investigator of the oldest school of sword forging, and thus the once obscured method became clear again; but it did not live long as such, for *Suishinshi* improved it further and gave birth to a new school. The doctrine of the school of *shinshintō* still survives among the sword-smiths of the last days of the *Tokugawa* Period."

Chikashige describes the methods of the *shinshintō* school, having procured his information from the notes of two who were instructed by master sword-smiths. The descriptions are clearly illustrated by diagrams, and the effect of the process upon the structure of the metal is made evident by micrographs of cross sections. Micrographs of cross sections of ancient Japanese swords and of inferior swords from Java and Formosa show plainly the manner in which they were forged.

TENNEY L. DAVIS

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**Boden und Pflanze. (Soil and Plant).** By Sir E. JOHN RUSSELL. Second edition. Translated from the 6th English edition by Dr. K. W. MÜLLER, Zurich. Foreword by Prof. Dr. GEORG WIEGNER. Verlag von Theodor Steinkopff, Residenzstrasse 32, Dresden-Blasewitz, Germany, 1936. xiii + 446 pp. 60 figs. 16 × 24 cm. Price, RM. 30; bound, RM. 32.

The contributions of Sir John Russell rank high in international soil science and this German translation of the sixth edition of his Soil Conditions and Plant Growth is especially interesting at this time. The first German edition appeared in 1914 and was by Hans Brehm. This second edition is by K. W. Müller of Zurich, and the late Prof. G. Wiegner has supplied the book with an appreciative preface. This new German edition meets all expectations and has in contrast with the first many changes to show, the contents having risen from 243 to 446 pages, and also the arrangement of the material has been considerably altered. The translation is well handled with a fine appreciation of technical accuracy. The following chapter headings give a good idea of the scope of the book: historical introduction; the influence of the soil on the growth of plants; the composition of the soil; the soil in nature; the changes in its mineral composition; the changes in organic matter; the micro flora of the soil and its relation to plant growth; the biological relationships in the soil; soil and plant; method of evaluating soil; methods of soil analysis. The author has handled the material in a different manner from that customary in most soil books. The soil itself and its relation to the plant receives the most detailed and thorough consideration. Even the first edition of the book received much praise in Germany and this second edition is considered as a most welcome corollary to German textbooks on Soil Science, as the name of its distinguished author is a guarantee of its value to soil science internationally everywhere.

OSWALD SCHREINER

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**Essential Principles of Organic Chemistry.** By CHARLES S. GIBSON, O.B.E., M.A., Sc.D., F.R.S., Professor of Chemistry in the University of London, at Guy's Hospital Medical School. Cambridge University Press; The Macmillan Company, 60 Fifth Avenue, New York, N. Y., 1936. viii + 548 pp. 14.5 × 22.5 cm. Price, $5.00.

This text is designed for use in teaching organic chemistry to students who expect to specialize in the subject, and others for whom a thorough understanding of the principles of the science is essential. An examination of the contents leaves no doubt that the book is well suited to the group for which it is intended.

The first two pages form a very attractive introduction involving the presentation of the "carbon skeletons" of many compounds; ethyl ether, isoquinoline, diphenylmercury and trimethylamine are some of the examples. Then follows a description of analytical methods. While this latter material provides the logical and classical approach to the subject, it will seem to some a trifle old-fashioned compared with the introductory subject matter of the better American texts.

The first chapter deals with the aliphatic hydrocarbons, and the second with aromatic hydrocarbons. From this point, aliphatic and aromatic compounds are treated together. The result is very satisfactory. The presentation is excellent throughout.

The only serious adverse criticism of the book would be that many of the recent important developments are ignored. Synthetic plastics, polymerization, the synthesis of alcohols from olefins, ethylene glycol and its derivatives, the formation of phenol and aniline directly from chlorobenzene, dyes and terpenes are topics which are treated very briefly or omitted entirely.

The sections devoted to carbohydrates, purines, the Beckmann rearrangement and crystal structure are particularly satisfactory.

The book is well printed, is plentifully supplied with clear, attractive formulas and has very few typographical errors. It is to be highly recommended to teachers, with the reservation that the material needs to be supplemented with reference to certain of the newer developments.

REYNOLD C. FUSON

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**Die chromatographische Adsorptionsmethode, Grundlagen, Methodik, Anwendung. (The Chromatographic Adsorption Method: Principles, Procedures and Applications.)** By Dr. L. ZECHMEISTER, Professor, and Dr. L. v. CHOLNOKY, Lecturer, at the Chemical Institute of the University of Pécs (Ungarn). Verlag von Julius Springer, Schottengasse 4, Wien I, Austria, 1937. xi + 231 pp. 45 figs. 14 × 21 cm. Price, RM. 14.40.

This carefully printed publication is an excellent compendium of the improvements and applications of the Tswett chromatographic adsorption method. The various uses of this columnar adsorption method for the detection, separation, isolation, purification and identification of chemical compounds are discussed. Consideration is given to the relation between the chemical structure and the adsorbability of organic compounds. Descriptions of the adsorbents and of the solvents required for the adsorption and elution of the compounds are included. The preparation of the adsorption columns is described, and methods for following the separation of colorless substances upon the columns are illustrated. The greater part of the volume (pp. 76–191) is devoted to the description of the separation of specific substances which are classified according to groups: (a) natural pigments, such as chlorophylls and derivatives, bile pigments, carotenoids and derivatives, naphthoquinone and anthraquinone pigments, flavines, pterine, anthrocyanins and other pigments; (b) synthetic

dyes; (c) colorless substances, such as aliphatic and aromatic hydrocarbons and derivatives, polycyclic compounds, sterols, alkaloids, enzymes, vitamins, hormones, tannins and drugs. Photographs illustrating the separation of pigments by adsorption upon columns are reproduced. A comprehensive bibliography (all titles in German) and author and subject indexes are appended.

Everyone who is concerned with the isolation and identification of chemical compounds should find many helpful suggestions in this publication. Experience has shown, however, that the adsorptive properties of different preparations of the same adsorbent may vary more than is indicated; hence, familiarity with the properties of the adsorbents becomes an important factor in the application of the chromatographic adsorption technique.

HAROLD H. STRAIN

## BOOKS RECEIVED

March 15, 1937–April 15, 1937

JEROME ALEXANDER. "Colloid Chemistry. Principles and Applications." Fourth edition. D. Van Nostrand Co., Inc., 250 Fourth Ave., New York, N. Y. 505 pp. $4.50.

J. F. BARKLEY. "Questions and Answers on Boiler Feed Water Conditioning." U. S. Bureau of Mines. Superintendent of Documents, Government Printing Office, Washington, D. C. 121 pp. $0.20.

J. DUCLAUX. "Diffusion. VI. Dans les Liquides. VII. Dans les Gels et les Solides." Hermann et Cie., Éditeurs, 6 Rue de la Sorbonne, Paris, France. 90 + 50 pp. 20 + 12 fr.

L. EBERLEIN. "Die neueren Milchindustrien." Verlag von Theodor Steinkopff, Residenzstrasse 32, Dresden-Blasewitz, Germany. 135 pp. RM. 5.50; bound, RM. 6.50.

RENÉ FABRE. "Toxiques Minéraux. IV. Phosphore, Acides et Alcalis. March Générale de l'Expertise." Hermann et Cie., Éditeurs, 6 Rue de la Sorbonne, Paris, France. 106 pp. 12 fr.

L. F. FIESER. "The Chemistry of the Natural Products Related to Phenanthrene." Second edition, with appendix. Reinhold Publishing Corporation, 330 West 42d St., New York, N. Y. 456 pp. $7.00.

LESLIE J. HARRIS. "Vitamins in Theory and Practice." Second edition. The Macmillan Company, 60 Fifth Ave., New York, N. Y. 242 pp. $3.00.

G. S. HARTLEY. "Aqueous Solutions of Paraffin-Chain Salts. A Study in Micelle Formation." Hermann et Cie., Éditeurs, 6 Rue de la Sorbonne, Paris, France. 69 pp. 15 fr.

ERICH HEYMANN. "The Sol-Gel Transformation." Hermann et Cie., Éditeurs, 6 Rue de la Sorbonne, Paris, France. 68 pp. 15 fr.

DOUGLAS G. HILL, JOHN H. SAYLOR, WARREN C. VOSBURGH and ROBERT N. WILSON. "Elementary Chemistry." Henry Holt and Co., 257 Fourth Ave., New York, N. Y. 473 pp. $2.80.

ERIC HOLMES. "The Metabolism of Living Tissues." The Macmillan Company, 60 Fifth Ave., New York, N. Y. 235 pp. $2.25.

GLENN L. JENKINS and ANDREW G. DUMEZ. "Quantitative Pharmaceutical Chemistry, Containing Theory and Practice of Quantitative Analysis Applied to Pharmacy." McGraw-Hill Book Co., Inc., 330 West 42d St., New York, N. Y. 466 pp. $3.50.

ALCIDE JOUNIAUX. "Volumétrie. I. Alcalimétrie. II. Acidimétrie. III. Argentométrie. IV. Manganométrie et Chromométrie. V. Iodométrie et Arsenométrie." Hermann et Cie., Éditeurs, 6 Rue de la Sorbonne, Paris, France. 60 + 30 + 26 + 44 + 50 pp. 12 + 8 + 8 + 10 + 12 fr.

ROBERT KREMANN and MAX PESTEMER. "Zusammenhänge zwischen Eigenschaften und chemischen Konstitution." Verlag von Theodor Steinkopff, Residenzstrasse 32, Dresden-Blasewitz, Germany. 225 pp. RM. 16; bound, RM. 18.

FRITZ LÖWE. "Atlas der Analysen-linien der wichtigsten Elemente." Verlag von Theodor Steinkopff, Residenzstrasse 32, Dresden-Blasewitz, Germany. 37 pp. RM. 10.

L. PIATTI. "Nachweis und Bestimmung von Lösungsmitteldämpfen." Verlag von Theodor Steinkopff, Residenzstrasse 32, Dresden-Blasewitz, Germany. 87 pp. RM. 6.50; bound, RM. 7.50.

N. V. SIDGWICK. "The Organic Chemistry of Nitrogen." Revised and rewritten by T. W. J. Taylor and Wilson Baker. Oxford University Press, 114 Fifth Ave., New York, N. Y. 590 pp. $8.50.

A. F. H. WARD. "Applied Chemistry for Engineers." Longmans, Green and Co., 114 Fifth Ave., New York, N. Y. 127 pp. $1.75.

FRANK C. WHITMORE. "Organic Chemistry." D. Van Nostrand Co., Inc., 250 Fourth Ave., New York, N. Y. 1080 pp. $7.50.

"Zur Entwicklung der Chemie der Hochpolymeren Kunststoffe, Kautschuk, Anstrichmittel, Cellulosederivate." Verlag Chemie, G. m. b. H., Corneliusstrasse 3, Berlin W 35, Germany. 214 pp. RM. 2.10.

"Structure and Molecular Forces in Pure Liquids and Solutions. A General Discussion." Published for the Faraday Society by Gurney and Jackson, 33 Paternoster Row, London, England. 282 pp. 13s./2d.