

Methyl 3,12-diketo- Δ^4 -*etio*-cholenate melts at 235–237°; $[\alpha]_{5461}^{25} + 242 \pm 2^\circ$. (Calcd. for $C_{21}H_{28}O_4$: C, 73.23; H, 8.19. Found: C, 73.25; H, 8.36.) The methyl ester of acid 1 melts at 178–179°; $[\alpha]_{5461}^{25} + 289 \pm 7^\circ$.

DEPARTMENT OF BIOCHEMISTRY
THE MAYO FOUNDATION
ROCHESTER, MINNESOTA

H. L. MASON
W. M. HOEHN

RECEIVED SEPTEMBER 16, 1938

NEW BOOKS

An Introduction to Microchemical Methods for Senior Students of Chemistry. By CECIL L. WILSON, M.Sc., Ph.D., Senior Assistant in Chemistry, The Queen's University of Belfast. Chemical Publishing Company of New York, Inc., 148 Lafayette Street, New York, N. Y., 1938. 196 pp. 93 figs. 12.5 × 19 cm. Price, \$3.00.

The book is written for the use of senior students in introductory courses on microchemistry. The author will acquaint the students "with the large field covered by microchemistry," but he has no intention of making the students capable "of undertaking advanced work utilizing microchemical methods." The scope of the proposed course is wide as may be derived from the following list of chapters: the compound microscope and its use (35 pp.), crystallization (6 pp.), observation of transition points and Liesegang rings (7 pp.), the polarizing microscope (16 pp.), classification of crystals (9 pp.), crystal tests (6 pp.), spot tests (8 pp.), inorganic qualitative analysis (29 pp.), inorganic gravimetric analysis (16 pp.), inorganic volumetric analysis (4 pp.), the tintometer (3 pp.), the colorimeter (6 pp.), the nephelometer (3 pp.), organic operations (12 pp.), residue- and Kjeldahl determinations (3 pp.), photomicrography (6 pp.), and the spectrograph (10 pp.). It is obvious that the number of suggested experiments must be small in every chapter.

The reviewer is of the opinion that the book would have gained in value if various rather unimportant discussions had been suppressed in favor of a more detailed description of the procedures. Nearly the whole page 169 is devoted to a discussion of the reasons for not including the more important determinations of quantitative organic elementary analysis, but a list of apparatus is missing, and the concentrations of the inorganic solutions listed in the appendix are not indicated.

The introduction contains the statement "...this was the acknowledged motive which first led Pregl to develop his invaluable work on organic microanalysis. Almost at the same time Emich was laying similar foundations in the inorganic branch, his work being at least in part inspired by the spectacular success attained by Pregl."

It may be permitted to recall the facts that Emich started his microchemical investigations before 1900, that Pregl did not enter the field before 1909 and acknowledged in his book that Emich had laid the groundwork, and finally that Pregl's "spectacular success"—obviously the Nobel Prize awarded in 1923—came far too late to have

any influence on Emich's numerous contributions to the development of microchemistry.

A. A. BENEDETTI-PICHLER

Katalyse und Determinismus. Ein Beitrag zur Philosophie der Chemie. (Catalysis and Determinism. A Treatise on the Philosophy of Chemistry.) By ALWIN MITTASCH. Verlag von Julius Springer, Linkstrasse 22–24, Berlin W 9, Germany, 1938. ix + 203 pp. 10 figs. 14.5 × 22 cm. Price, RM. 9.60.

This work consists of a discussion of general philosophical problems, especially those in the philosophy of science, *e. g.*, causality, determinism, organicism and teleology. The author takes account particularly of the bearing of what is now known about catalysis as a basis for his considerations. His standpoint is that of a physical chemist who has read widely and carefully in the literature of philosophy and who probably attaches more importance to philosophical speculation than do most chemists.

L. J. HENDERSON

Die Theorie der Komplexität und der Allotropie. (The Theory of Complexity and Allotropy.) By Dr. A. SMITS, Professor and Director of the Laboratory of General and Inorganic Chemistry of the University of Amsterdam. Verlag Chemie, G. m. b. H., Corneliusstrasse 3, Berlin W 35, Germany, 1938. xii + 372 pp. 153 figs. 15.5 × 22 cm. Price, RM. 19.50.

The author states that he has set himself the task of setting forth the new material which has accumulated in the sixteen years since the appearance of his book on "The Theory of Allotropy," and of discussing it from the standpoint of the theory of complexity of phases. He has wished to include some of the topics treated in the earlier book, but for reasons of space has omitted some of the chapters, more particularly that chapter dealing in detail with the systems phosphorus and cyanogen.

The early chapters of the book set forth clearly the author's theory of phase complexity and his concept of pseudocomponents, with plentiful diagrams showing the relationship of the unary system at equilibrium to the pseudobinary or pseudoternary systems obtainable when the approach to internal equilibrium can be inhibited. Here, as also in later chapters, it is shown that recent theoretical work has postulated an increasing number of finer

differences in atomic or molecular structure which are in accord with the author's theory of a very general occurrence of complexity within a single phase.

The sixth chapter discusses two of the conditions which favor the detection of phase complexity, intensive drying and low temperatures. The discussion of intensive drying omits the consideration of Baker's well-known experiments, which were treated *in extenso* in the earlier book, but gives the author's results on the heat of condensation of benzene vapor, which are in accord with Baker's in showing that intensive drying gives definite evidence that benzene is complex. The separation of ortho and para hydrogen at low temperatures is viewed as a notable example of complexity in a substance as supposedly simple as hydrogen gas.

The later chapters contain discussions, many of them in extended form, of the occurrence of complexity in the cases of acetaldehyde, the ammonium halides, sulfur trioxide, etc. The use of the Raman effect in the study of the various modifications of sulfur trioxide is given in detail.

It hardly needs to be said that Smits' latest book contains a fuller exposition of the data and theory of phase complexity than exists elsewhere, since the theory and much of the data are Smits' own contribution to chemical science. Those who have given little thought to the subject will be surprised at the frequency with which complexity in a phase has been shown to exist, and may well bear the facts in mind when baffling and supposedly inexplicable experimental results turn up. Those who are more familiar with the subject will profit by reading Smits' book, though they may find it occasionally somewhat repetitious. The printing and diagrams are good; page references occasionally are wrong. The "gesenkter Auslandspreis" is RM. 19.50.

ARTHUR E. HILL

BOOKS RECEIVED

August 15, 1938–September 15, 1938

- J. G. CROWTHER. "About Petroleum." Oxford University Press, 114 Fifth Ave., New York, N. Y. 181 pp. \$2.25.
- F. W. GODDARD AND E. J. F. JAMES. "The Elements of Physical Chemistry." Longmans, Green and Co., 114 Fifth Ave., New York, N. Y. 251 pp. \$1.80.
- J. B. S. HALDANE. "The Chemistry of the Individual. Being the 38th Robert Boyle Lecture." Oxford University Press, 114 Fifth Ave., New York, N. Y. 17 pp. \$0.40.
- ARTHUR E. HAAS AND IRA M. FREEMAN. "Elementary Survey of Physics." E. P. Dutton and Co., 286–302 Fourth Ave., New York, N. Y. 203 pp. \$1.90.
- BENJAMIN HARROW. "Biochemistry for Medical, Dental and College Students." W. B. Saunders Company, West Washington Square, Philadelphia, Pa. 383 pp. \$3.75.
- FELIX HAUROWITZ. "Fortschritte der Biochemie. III Teil (1931–1938)." Verlag von Theodor Steinkopff, Residenzstrasse 32, Dresden-Blasewitz, Germany. 167 pp. RM. 9; bound, RM. 9.75.
- DOROTHY JORDAN LLOYD AND AGNES SHORE. "Chemistry of the Proteins." P. Blakiston's Son and Co., 1012 Walnut St., Philadelphia, Pa. 532 pp. \$5.50.
- A. MATAGRIN. "Manuel du Savonnier." Gauthier-Villars, Éditeur, 55 Quai des Grands-Augustins, Paris 6^e, France. 268 pp. Fr. 30.
- GILBERT T. MORGAN AND DAVID DOIG PRATT. "British Chemical Industry. Its Rise and Development." Longmans, Green and Co., 114 Fifth Ave., New York, N. Y. 387 pp. \$6.25.
- ALFRED O'RAHILLY. "Electromagnetics. A Discussion of Fundamentals." Longmans, Green and Co., 114 Fifth Ave., New York, N. Y. 884 pp. \$12.50.
- JULIUS SCHÜLEIN. "Die Bierhefe als Heil-, Nähr- und Futtermittel." Second edition. Verlag von Theodor Steinkopff, Residenzstrasse 32, Dresden-Blasewitz, Germany. 262 pp. RM. 11; bound, RM. 12.
- BYRON A. SOULE. "Library Guide for the Chemist." McGraw-Hill Book Co., Inc., 330 West 42d St., New York, N. Y. 302 pp. \$2.75.
- CECIL L. WILSON. "An Introduction to Microchemical Methods." Chemical Publishing Company of New York, Inc., 148 Lafayette St., New York, N. Y. 196 pp. \$3.00.
- "Copper Mining in North America." Bulletin 405, Bureau of Mines, U. S. Department of the Interior. Superintendent of Documents, Government Printing Office, Washington, D. C. 300 pp. \$0.40.
- "Minerals Yearbook, 1938." Bureau of Mines, U. S. Department of the Interior. Superintendent of Documents, Government Printing Office, Washington, D. C. 1339 pp. \$2.00.