

(2) A volumetric method which is of particular value in determining the quantity of auramines present in dye mixtures may be based upon their hydrolysis.

(3) Auramine G is appreciably more resistant to hydrolysis than is auramine.

WASHINGTON, D. C.

NEW BOOKS

Felix Cornu. (A memorial volume consisting of a biography, letters of appreciation, etc., from various chemists and geologists of Germany and Austria.) Theodor Steinkopff, Dresden and Leipzig, 1923. 148 pp. Illustrated. 23 × 16 cm. Price, unbound, 4 shillings.

Felix Cornu published about 57 papers on minerals, mineral chemistry, colloids, geology and geochemistry previous to his untimely death in 1909 at the age of 27. His contemporaries considered him a genial, brilliant, many-sided investigator. His energy for study developed early and burned like a meteor, ending abruptly. A brief biographical sketch by Becke appeared in *Min. pet. Mitt.*, 1909, V Heft. These letters and the charming biography by his mother give more of personal interest and throw light on the influences of environment and heredity that affected Cornu. Felix was the son of a professor in the University of Prague. His uncle of the same name was a chemist and President of the *Société Vaudoise des Sciences Naturelles*, also a linguist and traveler, having twice visited the Cornu relatives in America. Cornu's death was a tragedy because much further was expected of him. His best known work is probably that on colloidal minerals and the colloidal matter in soils.

ROGER C. WELLS

Organic Chemistry for Advanced Students. By JULIUS B. COHEN, Ph.D., Professor of Organic Chemistry in the University of Leeds. Fourth edition. Longmans, Green and Company, New York; Edward Arnold and Company, London, 1923. Part I. Reactions. viii + 423 pp. 6 figs. Part II. Structure. vii + 461 pp. 68 figs. Part III. Synthesis. vii + 412 pp. 22.5 × 14 cm. Price, each part, \$6.00.

The author has taken advantage of the new edition to incorporate a considerable amount of material which has appeared or become important since the text was revised for the second edition. Among the new subjects which are regarded as sufficiently important for special mention in the preface are the theories of Lewis and Langmuir and Sir J. J. Thomson on the structure of the atom, and their application to organic reactions; the work of Devine, Haworth and Hudson on the constitution of the carbohydrates; the developments of Baeyer's strain theory by Thorpe and Ingold; the photochemical studies of Baly and Heilbron; the bio-

chemical work of Neuberg; the recent experiments of Senter and Drew on the Walden inversion, of McKenzie and Wren on racemization, and of Kenner and Mills on the resolution of new forms of asymmetric molecules.

Recent synthetic work also has received due attention, the third volume containing an account of the synthetic researches of Ruzicka on the terpenes and allied substances, of Fischer and Freudenberg on the tannins, of Willstätter, Hess and W. H. Perkin on the alkaloids, of T. B. Johnson and his collaborators on the pyrimidine bases, of Biltz on the xanthine bases, of Pyman on the glyoxaline group and of Levene and Jones on the nucleic acids.

Besides these major additions, there are many minor revisions throughout the text. The author has made a laudable and, on the whole, a successful effort to keep his work up to date without greatly changing its character or unduly increasing its length.

E. P. KOHLER

Smith's College Chemistry. Revised and rewritten by JAMES KENDALL, Professor of Chemistry, Columbia University. The Century Company, New York and London, 1923. xiii + 747 pp. 147 figs. 20.5 × 13.5 cm. Price \$3.50.

"In preparing this edition for the press, practically the entire book has been rewritten, but at the same time every effort has been made to leave the volume a characteristic Smith text. In the early chapters, particular attention has been paid to a re-statement of the fundamental conceptions of molecular and atomic weights." In fact the book is so much like the original that special comment is hardly necessary. The discussion of the fundamental conceptions is not much of an improvement and it seems rather strange that one who has the courage to present the fundamental theories almost before the presentation of any of the facts should hesitate to give symbols, formulas and equations until Chapter 9. The inclusion of sodium hydroxide in the hydrochloric acid chapter is a decided improvement. Chapters 36, 37, 38, 39 are a valuable addition and should be included in every course in General Chemistry.

To one who believes in a large amount of theory for beginners the original College Chemistry has not been spoiled but to one who holds the opposite view the book has not been improved. It still requires real teachers for its successful presentation.

JOHN B. ZINN

A Laboratory Outline of Smith's Intermediate Chemistry. By JAMES KENDALL, Professor of Chemistry, Columbia University. The Century Company, New York, 1923. iii + 127 pp. 21 figs. 19.5 × 13 cm. Price \$1.25.

This book is of the conventional type and has nothing unusual in its treatment of the subject. It is so well correlated with the text that it

leaves very little to the imagination of the student. Laboratory experiments should be arranged more in the nature of little research—if I may use a much abused term—problems in which the answer is not obvious to the experimenter. This manual has not been written from that point of view and therefore will be a disappointment to some teachers.

JOHN B. ZINN

College Chemistry Companion, for Use in Conjunction with the Revised Editions of Smith's College Chemistry and a Laboratory Outline of College Chemistry. By JAMES KENDALL, Professor of Chemistry, Columbia University. The Century Company, New York and London, 1924. xiii + 230 pp. Illustrated. 20.5 × 13.5 cm. Price \$1.50.

The author claims that "the average undergraduate student 'taking' chemistry will not take it very far unless his regular lecture and laboratory periods are supplemented in several ways. The most necessary addition, recognized by practically every teacher, is a thorough training in chemical calculations. Only through continued practice in solving numerical exercises can a beginner appreciate fully the significance of the various topics discussed in his textbooks. A series of carefully selected problems will demonstrate to him, as nothing else can, the concrete applications of abstract chemical theory to industry and to everyday life." The author does this very well by picking his problems with reference to the subject matter of the text. He further states that "the book is designed first and foremost, for the student's own use. The instructor in the lecture room and the assistant in the laboratory may strive all they will, but in the end it is up to him to work out his own salvation. In his pilgrim's progress towards the paradise of chemical knowledge, let the novice consider this volume not as an addition to the pack that he has to carry, but as a stimulating and congenial companion. In order to justify its claim to this title, the book sometimes speaks to the student in language rather less formal than might be regarded as permissible in a more pretentious text. The human touch is almost indispensable in undergraduate chemistry, and the teacher who scorns to stoop cannot complain if he fails to conquer." I like the last sentence and every teacher would do well to take the expression to heart. The book is something different and its informality is what is going to give it prestige with the students. The Seances used to explain the Kinetic Molecular Hypothesis as well as Physical and Chemical Equilibrium will appeal to the student and help him in mastering what is otherwise a very difficult subject. It is apparently designed to make the Smith combination more teachable where one is obliged to rely on somewhat immature teachers for most of the instruction, and I believe it will be successful. It is a real addition to the Smith texts.

JOHN B. ZINN

Laboratory Directions in Inorganic Chemistry. By ALEXANDER SILVERMAN, Head of the Department of Chemistry, University of Pittsburgh. Second edition, revised. D. Van Nostrand Company, 8 Warren Street, New York, 1923. v + 54 pp. 31 figs. 26.5 × 20.5 cm. Price, unbound, \$1.25 net.

This loose leaf laboratory book consists of 252 paragraphs or groups of experimental directions arranged in 54 topical divisions, one sheet for each division.

The author states in the foreword, "It has been our policy to select the simplest forms of apparatus and impress the student with the variety of purposes for which the apparatus may be employed." In pursuance of this policy the methods and apparatus suggested for several experiments on familiar topics are unique, but no appreciably greater amount of time than is usually required would seem to be demanded by the operations described. Professor Silverman's attempt to simplify laboratory apparatus and lessen its cost will undoubtedly meet with the approval of many teachers.

Several experiments not commonly included in an elementary laboratory course are given. These are drawn from quantitative analyses and lecture demonstrations. These experiments seem likely to be successful in the hands of individual students.

The book is designed to be used with the author's "Study Questions and Problems in Inorganic Chemistry." This would seem to the reviewer to be essential to the successful use of the "Laboratory Directions," for they should be accompanied by some outline or handbook which emphasizes the object of the various experiments, the conclusions to be drawn and the connection of the laboratory work to textbook or lecture material.

C. R. HOOVER

Study and Quiz Outline, Arranged Primarily to Accompany McPherson and Henderson's "A Course in General Chemistry." By WILLIAM LLOYD EVANS, Professor of Chemistry, Ohio State University. Ginn and Company, Boston, New York, Chicago, Atlanta, Dallas, Columbus, San Francisco; London; 1924. vi + 163 pp. 21.5 × 14.5 cm. Price \$1.00.

Study outlines are given for eleven chapters and lists of questions, usually more than twenty, on each of the forty-three chapters of "A Course in General Chemistry." In chapters where no study outline is given the author states, "it is called for as an exercise or its preparation is left to the discretion of the teacher."

The author has apparently been successful in presenting a clear and accurate study outline of parts of a popular college textbook. The exercises are varied in nature and comprehensive in scope. Very few mistakes of any kind are to be observed. The author states that all stoichiometrical problems have been checked by the use of logarithms. A student who masters the outlines and is able to answer all questions presented should

have a satisfactory knowledge of the text which the outlines are designed to cover. The book should be of considerable assistance to teachers using "A Course in General Chemistry."

C. R. HOOVER

Charts of the Chemical Reactions of the Common Elements. By JOHN A. TIMM, Ph.D., Instructor in Chemistry, Yale University. John Wiley and Sons, Inc., New York; Chapman and Hall, Limited, London; 1924. ix + 80 pp. 24.5×18.5 cm. Price \$2.00 net.

In the preface the author states, "The value of periodic review is appreciated by every teacher. The difficulty which arises, whenever such a review is undertaken, is that of assigning portions of the text for the students to study. Such assignments are of necessity too long and result in inadequate preparation.

"These charts have been designed to meet this difficulty. When it is desired to review the chemistry of certain elements, their charts and equations should be assigned for study."

Charts and equations for common reactions of thirty-one elements are given. The charts show formulas for the common compounds of a given element connected by horizontal and vertical lines with arrows, indicating chemical changes and relationships. Numbers on each line refer to equations on an opposite or adjoining page.

There is little doubt that many students beginning the study of chemistry in our colleges need the assistance of every pedagogical device that the teacher can employ. Any novel method of presenting the necessary and fundamental relationships of elements and compounds may serve to fix the wandering attention of the reluctant student. Dr. Timm's charts, in the hands of a teacher familiar with their use, should serve this useful purpose. The reviewer is inclined to feel, however, that the equations which constitute part of Dr. Timm's book, together with plain statements in words of the fundamental facts, might be more easily mastered by the serious student than the combination of charts and equations which may be necessary for his less interested brother. It seems unfortunate to the reviewer that all oxidations involving oxygen compounds are represented by consecutive reactions showing atomic oxygen as the oxidizing agent.

C. R. HOOVER