

wooden stave silos, the racemic lactic acid produced showed a daily increase.

4. Alcohol was formed in small amounts in each silo.
5. Carbon dioxide developed very rapidly after filling the silo.
6. Free oxygen disappeared entirely after the second or third day.
7. The maximum temperature observed in any of the three silos was 91° Fahrenheit.
8. Within the limits of this investigation, no differences were noted which might be attributed to differences in the material of which the silos were constructed.

AMES, IOWA.

NEW BOOKS.

General Chemistry: Part I, *Principles and Applications*, pp. vi + 410; Part II, *Experiments*, pp. xiv + 174. By LYMAN C. NEWELL. Boston: D. C. Heath & Co. 1914. Price, \$1.20 (separately, Part I, \$1.00; Part II, 60 cents.)

"This book has been written to meet the demand for a simple and practical treatment of the principles and applications of chemistry. * * * * * Not only must the student be taught the principles of chemistry, and their applications in daily life, but he must be taught in such a way that, should occasion arise, he can use chemistry to earn a living" (Preface).

Part I contains the usual elementary matter. Many applications, like the pulmotor, ammonia refrigerator, and acetylene blowpipe, receive attention. A large number of chemical industries are discussed. Organic compounds and food and nutrition occupy thirty pages. The amount of information included in some chapters is very considerable. Thus seven classes of proteins are discussed and, aside from the acids related to fat, no less than seven organic acids are described. The periodic system receives due attention. Modern views, such as those connected with ionization, are used, and the results of recent investigations, such as those on radioactivity, are included.

A book for beginners should be written so that every sentence is unambiguous and its meaning obvious. The author does not always succeed in reaching this ideal. For example: "The sulfur wells * * * are very powerful, a single well often pumping 500 tons daily." "The number which expresses the combining power of an atom of an element is called the valence of the element." Capacity would convey the idea better than "power." "The gas (ammonia) is very volatile, and is usually collected by upward displacement." Is any connection between the two parts of this sentence intended, and what does "volatile" mean, here?

The order of topics chosen seems to result in frequent mention of subjects not yet discussed. Nitric acid, with its numerous reduction prod-

ucts, would be easier to master if it followed, instead of preceding carbonic acid and sulfuric acid.

The laboratory directions are unusually full, occupying, as they do, 238 experiments and 166 pages.

ALEXANDER SMITH.

Metallographie. Ein ausführliches Lehr- und Handbuch der Konstitution und der physikalischen, chemischen, und technischen Eigenschaften der Metalle und metallischen Legierungen VON DR. W. GUERTLER. Zweiter Teil: Die binären Legierungen mit Kohlenstoff, Silizium, Titan, Bor, Aluminium, Erdmetallen, Erdalkalimetallen, Alkalimetallen und Gasen. Heft I: Die Konstitution des Systems Eisen-Kohlenstoff sowie der sonstigen binären Kohlenstofflegierungen. Berlin: Verlag von Gebrüder Borntraeger. 1913. Pp. xl + 648. Price 32 Marks.

The remarkable growth of metallography and especially in its application to iron and steel is well shown in this volume in which 630 of the 648 pages are devoted to the explanation and critical discussion of the phenomena involved in the equilibria of the single binary system, that of iron and carbon. It is even more striking when one considers that nothing is said of the physical and mechanical properties of iron and steel. The relationships between physical properties and the equilibrium diagram are to be discussed in a later volume and it is sincerely hoped that the author may be spared to complete his task. Dr. Guertler is eminently well fitted to do this work as it needs much impartial and critical discussion. In this volume he has examined all of the experimental data with a thoroughness which is astonishing. Controversial material is handled very justly and fully and the data analyzed in such a way as to at least allow one to have a temporary opinion. In view of the large number of experimental papers which are appearing, the opinion can be only a provisional one, and in fact the whole subject is being so carefully scrutinized in many laboratories that the time seems scarcely ripe for more than a statement of fact.

The book is well illustrated with many photomicrographs and diagrams, and is exceedingly well printed.

The few pages not devoted to a discussion of the various phases of the iron-carbon diagram are devoted to the carbides of other elements.

HENRY FAY.

Introduction to Organic Chemistry. By JOHN TAPPAN STODDARD, Professor of Chemistry in Smith College. Philadelphia: P. Blakiston's Son & Company, pp. viii + 419. Price, \$1.50.

The scope of this text as stated by the author in the preface is as follows: "The book is intended to be used in connection with lectures, recitations and laboratory work in the first course of organic chemistry in college. The author has endeavored to present the subject simply, directly and connectedly, so that the student may gain a clear idea of the principles of organic chemistry and its relations to general chemistry.

* * * * * Emphasis is laid on general reactions and characteristics, rather than on special facts relating to particular compounds. * *

* * * * * Many applications of organic chemistry to practical life are given. * * * * * The book is considerably smaller than many of the texts on the subject, but it is believed that it is none the less complete in all the essential matter which is properly presented in a first course."

In the opinion of the reviewer the author has been fairly successful in his efforts. The size and scope of the book reminds one of Remsen's "Organic Chemistry," although the method of presentation is somewhat different.

It has seemed to the reviewer that the text, in common with a number of texts in organic chemistry, is unnecessarily cold and uninviting for a first course. The great number of acts to be presented and the desire to keep the text within ordinary limits naturally lead to the omission of much interesting information. Perhaps it is the intention of the author that such information should be supplied by the teacher—but unfortunately this expectation is not always realized. The author of the text before us uses no illustrations or figures of any kind, unless indeed one considers structural formula as falling under this head. Of course illustrations and pictures are not necessary in such books—neither are they in our homes for that matter; but if properly selected they may in either case have an educational value.

The author makes the statement that formaldehyde is used as a food preservative and gives the well-known method for detecting its presence in milk. The reviewer doubts if this compound is any longer used for this purpose. He also doubts if 95% alcohol can be made for 20 cents a gallon.

On the whole, the book contains the fundamental principles of organic chemistry presented in a fairly attractive way and may be recommended to teachers in search of such a text.

WM. MCPHERSON.

Elementary Household Chemistry: An introductory text-book for students of Home Economics. By JOHN FERGUSON SNELL, Professor of Chemistry, MacDonald College, McGill University. New York: The MacMillan Company. 1914. pp. 307. Price, \$1.25.

The task which the author has set for himself in these pages is, in the nature of the case, a difficult and, as it seems to the writer of this review, an undesirable one. The title page says it is an introductory text-book for students of home economics. The field of home economics covers many subjects and is fairly well outlined for study under the divisions of food, clothing and shelter. Even in the present undeveloped stage of the subject, there is abundant material for an elementary book upon any one of these divisions. Moreover, it is to be hoped that the student

of elementary home economics is not taking beginning chemistry, dietetics and dyeing, even in the same year. If, as the preface states, "The text has been written with the needs in mind of students the majority of whom have had no previous instruction in chemistry," the writer doubts if this is a good way to teach either chemistry or home economics. Further, if, as the preface states later, the author had also in mind "the needs of students who had had training in general chemistry," then it seems such students ought to be able to use a less elementary book, to be ready to do more intensive work in both chemistry and some one phase of home economics. In other words, in the present stage of development of home economics, even elementary work in it requires elementary knowledge of four rather than one science.

While the reviewer has little sympathy with this method of teaching either elementary chemistry or home economics, she does find much excellent material in the book. The subject matter is put in an interesting and clear way. Much ingenuity has been shown in selecting the experiments, in the elimination of irrelevant matter, and in the presentation of the essentials.

The following suggestions are offered concerning the experiments. If one wished to prepare carbon dioxide (p. 5), it would seem that it could be done more easily and more simply, and when grape sugar and yeast are used, it would be better to take a liter flask and a cake of yeast, and then test for other products as well as carbon dioxide; again, strenuous objection is made to testing temperature by the hand (p. 7); chemistry applied to the household ought to teach accuracy by the use of scales and the thermometer and neither of these instruments are suggested in this text; the statements (p. 181) concerning jelly-making do not agree with the results of Miss Goldthwaite's investigations; it seems desirable if one teaches any classification of proteins (p. 184) to use the one agreed upon by scientists; the amount of flour used in making the gluten test (p. 190) is far too small for satisfactory results, and it is most desirable to obtain the gluten from the flour of both soft and hard wheats in order to enable the student to learn that fundamental distinction in flours.

The appendix contains much useful material well arranged. A good bibliography would add to the value of the text. The book will be helpful to the student of elementary chemistry and may provide suggestions and illustrations for teachers of home economics in secondary schools.

ISABEL BEVIER.