

isolation of these compounds there is necessarily much loss of material and these figures are therefore given as minimal values.

WASHINGTON, D. C.

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### CORRECTIONS.

Page 1421, line 21, read 28.39 instead of 28.29.

Page 1422, line 7, read 12.69 instead of 12.09.

Page 1423, line 3, read 3.81 instead of 3.51.

Page 1424, line 3, read 42.26 instead of 42.46.

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### NEW BOOKS.

**The Life of Robert Hare.** By EDGAR FAHS SMITH. J. B. Lippincott & Co.

This is an important contribution to the history of American Science. In the absorption in present-day problems and achievements we are apt to underestimate and ignore the pioneers who laid the foundation for our building. It is a tardy recognition, but due these men, that we take account of their work.

Robert Hare belongs to the group of men which includes Franklin, Bache, Silliman, Joseph Henry and, later, Wolcott Gibbs. He was born in 1781 and died in 1858 and throughout his long life devoted his untiring energy and great ability to the development of the two kindred sciences of physics and chemistry. As Dr. Smith observes, he would in these days have been classed as a physical chemist.

At twenty years of age he was made a member of the Chemical Society of Pennsylvania, the first chemical society in the world, and presented a paper on his new invention, the oxy-hydrogen blowpipe, showing by means of it the fusion of platinum. This proved the beginning of the platinum industry and the introduction of this valuable instrument into the industries in general.

His early years were spent at work in his father's brewery and through his mechanical ingenuity many improvements were introduced into the business. In 1818 he served for a few months as professor of natural philosophy and chemistry at the College of William and Mary and the same year was made professor of chemistry in the medical department of the University of Pennsylvania, holding this position until his retirement after twenty-nine years of service.

His eagerness for research was most noteworthy in an age when teachers were generally content to limit their activities to lecture work, and when the providing of apparatus, commonly self-made, formed a heavy burden both in cost and labor. His own expression was that he "longed to return again to rove unshackled in the path of experiment."

It is impracticable in a brief review to mention all of his inventions and

achievements. His calorimotor served later as a model for Planté in the construction of his secondary battery. His galvanic dephlagrator, as Silliman said, surpassed any other form of galvanic instrument and Faraday called it the most perfect form of the apparatus known at that time. He was the first to use platinized asbestos for contact work in his synthesis of ammonia from nitric oxide and hydrogen and also the mercury cathode in analytical and industrial operations. He recommended the use of the electric current for firing explosives in mines and under water and in an electric furnace converted charcoal into graphite and prepared electrically calcium carbide, phosphorus and calcium. A long list could be made of his contributions to all branches of chemistry. In his lecture and analytical work he introduced a large and varied number of forms of apparatus, especially developing eudiometry and gas analysis.

His historian gives a delightful personally conducted tour through Hare's lecture room and laboratory, describing the many forms of apparatus, ingenious contrivances and preparations of new substances. At the close of Hare's career the Smithsonian Institution asked for this apparatus to be placed in its keeping and exhibited as part of the history of science in this country but unfortunately lost it later by fire.

His ability and profound interest in the nature of energy and the constitution of matter are shown in his controversies with such masters as Berzelius, Faraday and Liebig, and also his close friend, Silliman, and this timely book gives a helpful insight into the way in which our present views were clarified and grew out of the misconceptions of the past. It is well for one to realize the difficulties that had to be overcome.

The gratitude of American chemists is due Dr. Smith for the fidelity and ability with which his task has been performed. It is evident that it has been a labor of love. In illustrations, typography, paper and binding the book is a credit to the publishers and will form an ornament and welcome addition to any library.

FRANCIS P. VENABLE.

**A Course in Food Analysis.** By ANDREW L. WINTON, PH.D. First Edition. New York: John Wiley and Sons, Inc. Price, \$1.50 net.

The purpose of this book, as the author states, is not only to start the chemical student on the right road to the use of more extensive works in food chemistry, but to meet the needs of the general student who takes a course in food analysis for the purpose of mental and manual discipline. Instead of a full semester of qualitative analysis and another in quantitative analysis, which is usually recommended before the student takes up food analysis, this book contemplates, without so much training, the taking up of a course of forty carefully selected experiments for the purpose of obtaining analytical skill and at the same time a knowledge of the composition of food products.

The author states that the study of food analysis is particularly valuable because the widest variety of methods is employed, including not only precipitation and titration, as in ordinary quantitative analysis, but also extraction, polarization, colorimetric, centrifugal and distillation processes. The materials studied are very wisely arranged in such a way that different subjects can be taken up successively by different groups of students in the class, and thus the more expensive apparatus need not be duplicated.

The typical analyses of various foods, and the analytical methods employed, have been carefully selected from the works of well-known chemists, and care has been taken to give due credit to the authors. It will be noticed that explicit directions for handling the classes in laboratory instruction are given, and this is carefully thought out by one who is thoroughly familiar with the best laboratory practice. In each case the most suitable material to be used for student laboratory examinations has been selected, and even the amount necessary for groups of six is stated. Where it seemed best in order to make the descriptions plain, illustrations are used, and the descriptions of apparatus are clear and concise. For those who see no objection to the elimination of some of the preliminary training of the food chemist, this is a very practical book for teaching the chemistry of foods. It does not follow too closely existing food laws and food standards, which change from time to time, but is based on the best practice of the laboratories of the country.

E. H. S. BAILEY.