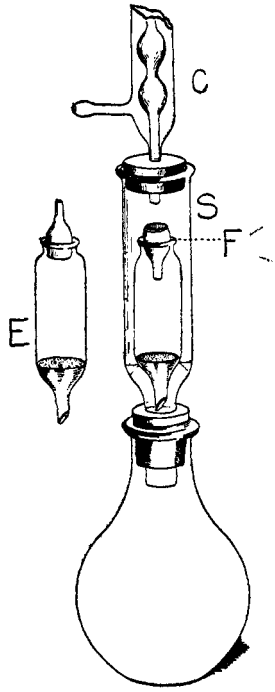
and effectively dried to constant weight in a current of dry hydrogen or other inactive gas for the estimation of the moisture, and at the same time preparing the sample for extraction. Rubber caps are placed over the two ends of the tube during the cooling and weighing. For the extraction of the sample, the tube *E* is placed in a Stutzer tube *S* as shown in the figure, which is connected as usual with an ether flask below, and by means of either a cork or mercury joint with a short bulb condenser above. The funnel stopper, placed as shown, directs the returning drops of the liquid upon the center of the sample, and especially it prevents the loss of the sample by spattering. This is a source of objection to all forms of open extractors. Owing to the very small percentage of fats or ether extracts in most food stuffs a small loss of the sample from this cause makes a very large analytical error in the work, whether estimated from loss of the sample or gain in weight of the ether flask. During two years use in this laboratory we have obtained with the apparatus very concordant results between duplicate analyses, and would commend it for the use of students especially. By means of a seven mm. glass tube, six tubes and samples are dried in a current of hydrogen at a time in a water-oven. The whole apparatus may be had of Max Kaehler and Martini, Berlin.



NEW BOOKS.

CHEMISTRY FOR ENGINEERS AND MANUFACTURERS. By BERTRAM BLOUNT AND A. G. BLOXAM. In two volumes. VOLUME I, CHEMISTRY OF ENGINEERING, BUILDING AND METALLURGY. 8vo. 244 pp. London: Charles Griffin & Co., Ltd. Philadelphia: J. B. Lippincott Co.

This work is a compilation of material intended to cover the chief branches of chemical industry. The first volume deals in

the first part with the chemistry of building materials, fuel, steam making and lubrication. The second part is entirely devoted to metallurgy.

The scope of the work necessitates condensation, yet the reader will be impressed at times with the meagerness of description, especially as the treatment of other subjects seems disproportionately extended. An appearance of unevenness in treatment is thus given, which might have been avoided.

Books of this class are more difficult to write as the limits of technical science are widened and there is room for much judgment in holding a proper balance between the necessities of the reader and the restricted space of a hand book or text book. While this book will be very serviceable to the large class of engineers and manufacturers for whom it is especially written, and even to the student of industrial chemistry, it can hardly be of much interest to " the expert in any one of the branches touched upon" (*vide* preface). The touch is entirely too light as a rule for those who seek extended information. The entire absence of references, also, deprives the work of much of the usefulness it might have had for professional readers in subjects not strictly their own.

The illustrations are good as far as they go, but are much less freely supplied than the nature of the book requires.

The subjects of gaseous fuel and water for steam making are well and clearly treated. Of boiler compositions the authors justly say that " none should be used without a knowledge both of its composition and of that of the water to be treated," and that, " all are sold at prices bearing but a remote relation to their intrinsic values." As to the preservation of iron by paint, the statement that red lead paint is the best will hardly meet unqualified assent.

The treatment of the metallurgy of iron is very full, and contains a good though brief discussion of the influence of foreign elements on the quality of iron. The statement that "the chief gold-producing countries are Australia, America (California), and Russia" is more compact than edifying. Electrometallurgical processes are given in treating of many of the metals. The commercial production of aluminum is described

briefly but no allusion is made to the part which the United States have played in the development of this industry, nor do the names of Cowles or Hall appear in the text.

The second volume will treat of the chief chemical industries other than those referred to.

A. A. BRENEMAN.

LABORATORY EXPERIMENTS IN GENERAL CHEMISTRY. By CHARLES R. SANGER, A.M., PH.D. Paper. St. Louis. Published by the Author. 1896.

EXPERIMENTS IN GENERAL CHEMISTRY AND QUALITATIVE ANALYSIS. By CHARLES R. SANGER, A.M., PH.D. Paper. St. Louis. Published by the Author. 1896.

These two little books by Professor Sanger contain well selected collections of experiments for beginners in chemistry. The first collection was prepared for students in a general college course, while the second collection appears to have been arranged for students beginning a medical course. In the first collection for college students there is evidence that the author had in mind the needs of those who spend but part of a year in the laboratory. What the student is told to do is clearly indicated and his attention is directed at every step to the important points in the reactions considered. The experimental course offered to medical students is not as extended as the present writer would like to see, but is as full as this class of students is supposed to need, and has, besides, the advantage of systematic arrangement.

J. H. LONG.

BOOKS RECEIVED.

Eighth Annual Report of the Kentucky Agricultural Experiment Station of the State College of Kentucky, for the year 1895. Lexington, Ky. lxvi, 150 pp.

North Carolina Weather during the Year 1895. North Carolina Agricultural Experiment Station, Raleigh, N. C. lii, 264 pp.

Bulletin No. 122. Cost of Nitrogen, Phosphoric Acid and Potash. Proper Use of Tables of Analysis of Fertilizers. Connecticut Agricultural Experiment Station, New Haven, Conn. 16 pp.

Reduction of Nitrates by Bacteria and Consequent Loss of Nitrogen. By Ellen H. Richards and George William Rolfe. 20 pp. Reprinted from the *Technology Quarterly*, Vol. IX, No. 1, March, 1896.

Nitro-Explosives. A Practical Treatise. By P. Gerald Sanford, F. I. C.,