

of gases produced by bacteria, new methods for determining carbon monoxide, determination of the heating power of gases, of sulphur in organic substances, the gas lantern, analysis of the gases evolved in the electrolysis of chlorides and in the manufacture of bleaching-powder.

In its new form this work will undoubtedly come to be regarded as the standard text-book and reference book on gas analysis and will be found indispensable in all chemical laboratories.

EDWARD H. KEISER.

**SEWAGE WORKS ANALYSES.** BY GILBERT J. FOWLER, M.Sc. (Vict.) F.I.C. Superintendent and Chemist, Manchester Corporation Sewage Works. New York: John Wiley and Sons. London: P. S. King & Son. 1902. Price, \$2.00.

With the development of bacterial processes for the treatment of sewage, has arisen the necessity for constant and careful control of the working of the bacterial filters, and this can only be done by chemical analysis of the effluent. In order to keep a sewage plant in good working condition the effluent from each bed must be constantly examined, and the amount of sewage to be applied to the bed determined by the results thus obtained. The methods that are used for this purpose by Mr. Fowler, manager and chemist of the Manchester Sewage Works, and by Mr. Scudder, of the Mersey and Irwell Commission, are now published for the first time, and the book, "Sewage Works Analyses," is an important addition to the literature of the subject. The methods for determining free, albuminoid, and organic ammonia, nitrogen as nitrites and nitrates, solids in suspension and solution, absorbed oxygen, dissolved oxygen, chlorine, iron compounds, acidity and alkalimetry, are so fully and carefully described, that it would be possible for one who has had very little training in chemistry, not only to understand the methods, but to perform successfully the various determinations. It may, however, be well to call to the attention of those not familiar with sewage analysis, that the English method of determining the oxygen consumed, with potassium permanganate and potassium iodide, is not usually used in this country, but in its place, a modification of Kubel's method, heating a known quantity of the sewage for five minutes with a solution of potassium permanganate, and determining the amount of potassium permanganate used by titrating with oxalic acid;

that of the three methods given for the determination of dissolved oxygen, the indigo method, in the opinion of the writer, though more complicated, gives the best results, and that the colorimetric methods for the determination of ferrous and ferric salts, can only be considered as approximate methods.

Beside the various determinations that have been mentioned the author devotes a chapter of the book to the subject of Chemical Control of Sewage Purification Works, in which he also describes methods for gauging sewage flow, methods of sampling sewage, measuring of sewage sludge, and of determining the degree of purity necessary in an effluent, and in this connection it is to be said that the incubator test, devised by Mr. Scudder and given in detail by Mr. Fowler, is one upon which great importance is now laid, in determining whether or not a sufficient purification of the sewage has been accomplished. The concluding chapter of the book is devoted to the collection and analysis of the gases given off from septic tanks and contact beds, and it is to be regretted that no mention is made of Hempel's methods of gas analysis, which are now so commonly used. Taking the book as a whole, very much can be said in its favor and very little in the way of criticism.

LEONARD P. KINNICUTT.

CONGRÈS INTERNATIONAL D'ÉLECTRICITÉ, PARIS, 1900; par M. E. HOSPITALIER. Paris: Gauthier-Villars. 1901.

This large 8mo. of nearly 500 pages contains the reports and proceedings of the congress. The third section of the congress was devoted to electrochemistry, but the communications on this subject occupy but 22 pages. They include a discussion of the electrochemical nomenclature proposed by Dr. Le Blanc, in which the proposition was generally rejected; a notice of papers by Hollard on the principles of electrolytic analysis and analysis of commercial copper; a short communication of Zenger on the use of sea-salt mother-liquor in a battery cell; a very fragmentary paper by Bouillet on electrochemical deposits; and a paper of 15 pages by Keller on electric furnaces. The above comprises all in the book which touches chemistry, excepting possibly a careful report by G. Claude (23 pp.) on the mechanism of electrolysis by street-railway return-currents. The volume would be out of place in a chemical library, but contains matter of value to the professional electrician.

J. W. RICHARDS.