

the advantage of the differential notation. A bright boy sees at once that algebra is an improvement over arithmetic, but he does not see the advantages of the calculus at the time when he is studying the subject. It seems as though the teacher of physics might with profit, present his subject so that the student would feel the need of more advanced mathematics. This, however, is a debatable question, and the author has the argument of experience on his side. His book is certainly a good one.

WILDER D. BANCROFT.

L'EAU DANS L'INDUSTRIE. PAR H. DE LA COUX. Paris. V^e Ch. Dunod, Editeur. 49 Quai des Grands-Augustins. 1900. Price, 15 francs.

As the name "water in the industry" (or industrial arts) indicates, this work by M. De la Coux, a chemical engineer and professor of industrial chemistry for the Polytechnic Association in Paris, takes up the several questions connected with the utilization of water, natural and acquired impurities, and the means for removing the same, and lastly the methods of testing and analysis. The scheme of treatment is reasonably comprehensive, and in some portions is very adequately and fully developed, and in others, not so completely as in other works already available.

The distinctive characters and differences of composition of the various classes of natural waters are first stated, and the solubility of certain salts in water considered from the industrial point of view; as for example, the effects on the boiling of water.

The next section on the use of water in boilers and for the raising of steam, the difficulties from the development of incrustation and so-called "boiler-scale," the remedies and means of removal of incrustations, both mechanical and chemical, is very full and satisfactory in its treatment. Not only are the several chemical salts which have proved of value as scale-removing materials discussed separately, but the calculations given by which (the extent of the impurity in the water being known) the amount of correction needed may be ascertained. The means of purifying mine waters and salt water to make them available for boiler purposes is also very thoroughly covered.

The employment of water in special industries is then noted and the requirements and conditions of purity in each discussed. Thus, the use of water in the textile and tinctorial industries, in

tanning, in the preparation of tanning and dye-wood extracts, in paper-making, in sugar refining, in brewing and distilling, in ice manufacture and for alimentary preparations are all referred to, and the special requirements stated.

The question of the general purification of water by chemical treatment, by filtration and sterilization is also treated, although somewhat from the standpoint of French methods and with very little mention of the experimental work done in England and Germany.

The treatment and purification of waste waters from various industrial operations is then discussed, mention being made specially of the waste-waters from beet-sugar refineries, from dye works, and from works yielding soapy or greasy residual waters. The recovery of glycerine from the soap-maker's waste lyes is also referred to. This section is, however, not so broadly conceived or handled as is done in König's well-known work: "Die Verunreinigung der Gewässer, deren schädlichen Folgen, sowie die Reinigung von Trink and Schmutz wasser," the second edition of which appeared last year in two volumes.

The chemical analysis of water, both qualitative and quantitative, forms the subject of the last section of the work and is reasonably full, although not comparable with books like Tiemann-Gärtner, and special American works on this branch.

The book, however, in the compass of 496 pages, covers a wide range of topics and on the whole, quite satisfactorily.

SAMUEL P. SADTLER.

BOOKS RECEIVED.

The Protection of Shade Trees in Towns and Cities. Bulletin No. 131, Connecticut Agricultural Experiment Station, New Haven, Conn. November, 1900. 30 pp., with numerous plates.

Report of the Connecticut Agricultural Experiment Station, for the Year ending October 31, 1900. Part I.—Fertilizers. New Haven, Conn. 112 pp.

Grundzüge der Siderologie. Von Hanns Freiherr v. Jüptner. Erster Teil: Die Konstitution der Eisenlegierungen und Schlacken. Leipzig: Verlag von Arthur Felix. 1900. viii + 316 pp. Price, M. 13.

The Periodical Cicada or Seventeen-year Locust in West Virginia. By A. D. Hopkins, Ph.D. September, 1900, Bulletin 68. 72 pp. Report on Examination of Wheat Stubble from Different Sections of the State. The Joint Worm in Wheat. By A. D. Hopkins, Ph.D. October, 1900. Bulletin 69,