

useful. I advise every chemist, metallurgist, and assayer to procure the book.

JOSEPH W. RICHARDS.

ANNUAIRE DE L'OBSERVATOIRE MUNICIPAL DE PARIS, DIT OBSERVATOIRE DE MONTSOURIS, POUR L'ANNÉE 1900. Librairie Gauthier-Villars, Paris. 18mo. 563 pp. Price, 2 francs.

The principal work of this observatory is not star-gazing, but a supervision of the hygiene of the city, as a short perusal of this somewhat belated, but yet valuable, yearly report shows. Founded in 1870, its work is now along the following lines: I. Physical and meteorological, including, besides the usual records, a study of atmospheric electricity, of smoke, of the air of the sewers, etc. II. Chemical, comprising the composition of the air in different parts of the city, in schools, public buildings, sewers; the examination of the water supply, of the Seine water, of the sewer water, and of the subterranean waters in and around Paris; of the rain, snow and fog; also sanitary questions submitted by the municipality, as the efficiency of disinfectants, etc. III. The micrographic service makes bacteriological examinations of the air, water, food, drains, sewage, Seine water, soil, and has a special service for contagious diseases.

The thousands of analyses, conveniently tabulated, will be of great interest and value to all concerned in the sanitation of cities or towns. For example, the carbonic acid in the air at Montsouris, taken every day for fifteen years, averaged 30 liters per 100 cubic meters. It is greater in winter than summer; also greater at night than in daytime at Montsouris, but *vice versa* in Paris.

Altogether, the book is well worth its price, especially to the sanitary chemist.

JOSEPH W. RICHARDS.

EXPERIMENTAL PHYSICS. BY EUGENE LOMMEL. Translated by G. W. MYERS from the third German edition. Philadelphia: J. B. Lippincott Co. 1900. xxii + 664 pp.

Eighty-two pages are devoted to motion, 23 to solids, 31 to liquids, 35 to gases, 81 to heat, 17 to magnetism, 56 to electricity, 114 to electrical currents, 47 to waves and sound, 157 to light. This is one of the best text-books on physics that has ever been written, and we have here a very creditable English translation. No book and no translator can hope to avoid all slips and the definition of electromotive force as a quantity of work (p. 334) is

an unfortunate way of putting things, while the spelling of du Bois-Reymond's name on p. 360 and elsewhere must be charged against the translator. Apart from a few similar minor points, the book is phenomenally satisfactory and to be recommended to every one.

WILDER D. BANCROFT.

EVOLUTION OF THE THERMOMETER. BY HENRY CARRINGTON BOLTON. Easton, Pa. : The Chemical Publishing Co. 1900. 98 pp. Price, \$1.00.

The period covered is the century and a half between 1592 and 1743. The author defends the view that the first thermometer was due to Galileo. This instrument was an air-thermometer with a liquid seal. The plan of measuring the expansion of a liquid in a sealed tube dates from about 1644; in 1664, we find Boyle introducing the idea of a fixed point; in 1669 we have the suggestion of two fixed points by Honoré Fabri; in 1694, Renaldini argued in favor of the freezing-point and boiling-point of water as the two fixed points. The mercury thermometer as a practical instrument is due to Fahrenheit, and for years his instruments were the best in the world. The centesimal scale was suggested by Celsius in 1742; but it will be news to many people that Celsius took the boiling-point of water as zero, and that the inverted scale, which we call by the name of Celsius, was due to Christin. The book is interesting, the illustrations are curious, and the color of the binding is atrocious.

WILDER D. BANCROFT.

THE CHEMICAL ANALYSIS OF IRON. BY ANDREW A. BLAIR. Fourth edition. Philadelphia: J. B. Lippincott Co. 1901. xi + 319 pp. Price, \$4.00.

The new edition of this standard work on iron analysis has been entirely rewritten and a number of recently improved methods have been incorporated. Among the new material are Vanier's modification of Deshay's method for the rapid determination of manganese in steel, Bamber's method for sulphur in pig-iron, the ether methods for the determination of nickel, chromium, and aluminum and, under carbon, there appear a number of new methods and modifications. The ferro-alloys of molybdenum, chromium, silicon, and titanium are given due attention in this edition. Under coal and coke analysis the methods are those reported by the Committee on Coal Analysis of the American Chemical Society.

P. W. SHIMER.