and bacteriological examination of waters, the latter being confined to methods of preparing culture liquids and counting colonies. In the opinion of the writer the retort which is recommended for the "albuminoid" ammonia process would be better replaced by a flask, or a distilling bulb with a ground glass stopper. The retort seems to have little place left in the modern laboratory.

The opinion is expressed that, while the bacteriological examination is important, its value has been greatly overrated, and the chemical examination will, in most cases, give more reliable information as to the character of a water.

The typography and general arrangement of the book are excellent, and the writer is not acquainted with any other work which contains so much that is of value on the subject.

W. A. NOYES.

HINTS ON THE TEACHING OF ELEMENTARY CHEMISTRY IN SCHOOLS AND SCIENCE CLASSES. By William A. Tilden, D.Sc., F.R.S. London: Longmans, Green & Co. 1895. 12mo. 84 pp. Ill. Price, 75 cents.

Dr. Tilden is one of the English chemists who examines many papers written by candidates in chemistry. He is well qualified, therefore, to speak to teachers of the subject, and his book is practically a series of short talks to teachers. The following extract gives a good idea of his point of view:

"In order to cultivate the powers of observation, various branches of natural science have been brought into use in schools, but none seem to present so many advantages as are offered by chemistry when rightly taught. As a science based entirely upon the results of observation and experiment, it is only by making experiment a principal feature of the system of instruction that these advantages can be secured. The observations and experiments must also, as far as possible, be the work of the pupil and not of the teacher, and therefore exercises undertaken should be in the first instance of the simplest possible character, and graduated so as to lead on to more difficult operations, which should only be undertaken after some time and after demonstration by the teacher. It is a mistake to suppose that the great theories of chemistry can be established by experiments conducted wholly by beginners, but with due preliminary

instruction the more advanced student may get a long way in this direction.''

Prof. Tilden seems to fully comprehend the necessity for simplicity in the apparatus to be used by beginners and a number of hints are given in this line worth consideration.

EDWARD HART.

BOOKS RECEIVED.

Bulletin No. 41. Experiments with Wheat and Oats. University of Illinois, Agricultural Experiment Station, Urbana, Ill. 16 pp.

Bulletin No. 42. Corn Experiments. University of Illinois, Agricultural Experiment Station, Urbana, Ill. 18 pp.

Chemistry at a Glance. A Study in Molecular Architecture. By Herbert B. Tuttle. No. 1. Oxides. 1896. 59 pp. Price, 60 cents.

A Dictionary of Chemical Solubilities. (Inorganic.) By Arthur Messinger Comey, Ph.D. London: Macmillan & Co., and New York. 1896. xx, 515 pp. Price $5.00.

Experimental-Untersuchungen über Zersetzung und Verbrennung von Kohlenwasserstoffen. By Fritz Haber. München: R. Oldenbourg. 1896. 116 pp. Price M 1.50.

Elementary Chemistry. By Paul C. Freer. Boston: Allyn & Bacon. 1895. x, 284 pp. Introductory price, $1.00.

Bulletin No. 41. Tobacco. Yellow Leaf and Cigar Varieties. Agricultural Experiment Station, Baton Rouge, La. 32 pp.

Nineteenth Annual Report of the Connecticut Agricultural Experiment Station for 1895. Part II. Fertilizer Experiments. New Haven: Connecticut Experiment Station. 157 pp.

The Liquefaction of Gases. Papers by Michael Faraday, F.R.S., with an appendix. Alembic Club Reprints, No. 12. Edinburgh: Wm. F. Clay. 79 pp. Price, two shillings.

Nineteenth Annual Report of the Connecticut Agricultural Experiment Station for 1895. Part III. Proteids of Potato; of Pea and Vetch; Conglutin and Vitellin. Recent Laws affecting the Station: Index. New Haven, Conn.: Connecticut Agricultural Experiment Station. 88 pp.