

SANITARY CHEMISTRY.

E. H. RICHARDS, REVIEWER.

Recent Work in England on the Purification of Sewage. BY LEONARD P. KINNICUTT. *J. Am. Chem. Soc.*, 20, 185-194.—The author writes from personal observation of the favorable results of experiments made in the more efficient utilization of those bacterial agencies which, in absence of air, accomplish the quick solution of a large part of the organic substances met with in ordinary town sewage.

Municipal and Other Water Supplies. *North Carolina Board of Health Sixth Biennial Rep.*, 1897, 56-96.—Analyses of twenty samples of water from various towns in North Carolina are given, with reports and correspondence in regard to bacteriological examinations. The whole statement is instructive as to the status of sanitary knowledge and control in many of the states.

The Interpretation of Sanitary Water Analysis. BY FLOYD DAVIS. *Eng. Mag.*, 1898, 68.

Engineering Chemistry of Boiler Water. BY H. HEFFEMANN. *Railway and Eng. Rev.*, 1898, 203.

The Purification of River Water Supplies. BY A. HAZEN. *Eng. Mag.*, May, 1898.

AGRICULTURAL CHEMISTRY.

W. R. WHITNEY, REVIEWER.

The Relative Sensibility of Plants to Acidity in Soils. BY WALTER MAXWELL. *J. Am. Chem. Soc.*, 20, 102-107.—Of a number of vegetables, cereals, etc., the greater part were found to be exceedingly sensitive to the presence of acid. Millet and maize were least affected by acid.

Milk Fat from Fat-free Food. BY F. H. HALL. *N. Y. Agr. Expt. Sta. Bull., Popular Edition*, 132.—An experiment is described in which materials which were practically fat-free, were fed to a cow during a period of three months. The fat which the cow produced in the milk during this time was not derived, the author believes, either from fat in the food, from stored fat of the animal's body, or from proteids in its food, nor was it formed at the expense of two or more of these. A part at least must have come from carbohydrates of the food. That fat may be formed from carbohydrates has been pretty generally recognized and was discussed in the *U. S. Expt. Sta. Rec.*, 7,

538, and 8, 179. That protein does not produce fat is also there stated as the result of Pflüger's work.

Cotton Culture. Fertilizer Formulas. BY R. J. REDDING. *Georgia Expt. Sta. Bull.*, 39, and **Experiments with Cotton.** BY J. F. DUGGAR. *Ala. Agr. Expt. Sta. Bull.*, 89 and 91.—These contain accounts of experiments with different varieties of cotton plants under the influence of different fertilizing mixtures.

Analyses of Commercial Fertilizers. *Kentucky Agr. Expt. Sta. Bull.*, 71.

The Chemical Composition of Utah Soils, Cache and Sanpete Counties. *Utah. Agr. Coll. Bull.*, 52.

Cooperative Experiments made by the Ohio Students' Union. *Ohio Agr. Expt. Sta. Bull.*, 88.

Cooperative Fertilizer Experiments with Cotton in 1897. *Ala. Agr. Expt. Sta. Bull.*, 91.

Experiments with Corn. *Ala. Agr. Expt. Sta. Bull.*, 88.

Experiments with Cotton. *Ala. Agr. Expt. Sta. Bull.*, 89.

Concentrated Feed-Staffs. *Hatch Expt. Sta. of Mass. Agr. Coll. Bull.*, 53.

Calories of Combustion in Oxygen of Cereals and Cereal Products, Calculated from Analytical Data. BY H. W. WILEY AND W. D. BIGELOW. *J. Am. Chem. Soc.*, 20, 304-316.

F. H. THORP, REVIEWER.

Corrosive Sublimate and Flour of Sulphur for Potato Scab. Experiments made in 1896. BY H. GARMAN. **The Use of Corrosive Sublimate for Potato Scab in 1897.** BY H. GARMAN. *Ky. Agr. Expt. Sta. Bull. No. 72*, Feb., 1898.—The first of the above investigations was made to determine whether the scab fungus was introduced into the soil on the seed potatoes. Before planting, the potatoes were rolled in flowers of sulphur or soaked for an hour in a solution of mercuric chloride ($4\frac{1}{2}$ ounces in 30 gallons of water). The test showed that sulphur had little effect in preventing scab but that mercuric chloride did check the disease very greatly. The second investigation was to determine the strength of the mercuric chloride solution that could be safely used in treating the seed potatoes. The results showed that treatment of the seed reduced the proportion of scabby potatoes; that the percentage of scab diminishes with the increase of the strength of the solu-

tion used ; that short soaking of the seed in strong solution was as effective as long exposure to weaker solutions ; and that very strong solutions caused some reduction in the yield, if the soaking was prolonged. Treatment for one hour with $4\frac{1}{2}$ ounces of corrosive sublimate per gallon of water was found most suitable. Stronger solutions may be used for short soaking.

ASSAYING.

H. O. HOFMAN, REVIEWER.

A Cement for the Assay Office. BY R. MARSH. *Eng. Min. J.*, 65, 37.—The author recommends for repairs of cracks in muffles from 1 to 2 parts litharge and 10 parts bone ash mixed dry and then moistened with water to the consistency of paste. This cement will stand fire, be tight, hard and strong, and will not crack.

The Assay of Copper Bullion. BY A CORRESPONDENT. *Eng. Min. J.*, 65, 223.—The method recommended is as follows: Weigh 1 assay ton into a No. 5 beaker, add 120 cc. cold water, then 100 cc. nitric acid, boil when violent action ceases until red fumes disappear, dilute to 300 cc., filter through 11 cm. paper, sprinkle $2\frac{1}{2}$ grams test-lead over it and, having gathered together the edges, press into a $2\frac{1}{2}$ inch scorifier charged with 5 grams test-lead so as to flatten out the point of the filter. Add to the hot filtrate a slight excess of brine, stir vigorously (by hand, by compressed air, or other mechanical device), when silver chloride will settle out in about 30 minutes with 20 oz. copper. Filter through a double filter, sprinkle with test-lead as before, and transfer to scorifier containing gold filter, place in front of muffle, dry paper and burn. Then place scorifier in the opening of muffle to finish incineration, cover sintered mass with 15 grams test-lead and $\frac{1}{2}$ gram borax glass and scorify. This gives a button weighing about 4 grams, which is cupelled in a small cupel and parted.

The Assaying of Gold Bullion. BY C. WHITEHEAD AND T. ULKE. *Eng. Min. J.*, 65, 189.—This paper is a short description of the method employed at the mint. This is discussed under the heads, melting and sampling, gold assay, determination of base metals, determination of silver.

The Assaying of Silver Bullion. BY C. WHITEHEAD AND T. ULKE. *Eng. Min. J.*, 65, 250-251.—This paper discusses the assay of silver bullion at the mint in the same manner as a previous one did the gold assay. It covers grading and sampling of bullion, standardizing of the sodium chloride solution, determination of the silver, influence of alloyed metals and organic matter, and accuracy and rapidity of the assay.