

ANALYTICAL CHEMISTRY.

PROXIMATE ANALYSIS.

A. G. WOODMAN, REVIEWER.

Soil Humus: Some Sources of Error in Analytical Methods.

By A. L. EMERY. *J. Am. Chem. Soc.*, 22, 285-291.—The author points out three sources of error in ordinary methods of soil analysis: (1) In washing samples free from calcium salts with dilute hydrochloric acid, some of the organic matter is liable to be dissolved. (2) When the soil is leached with caustic potash, part of the nitrogen is expelled as ammonia, the amount depending upon the nature of the soil and the time of leaching. (3) When the soil is leached with ammonia water, ammonia is taken from the solution and held in combination with the organic matter. Since nitrogen in the humus is determined by dividing the nitrogen in the potash extract, which is too low, by the humus, which is too high, the error is multiplied, and the result is almost invariably too low.

An Examination of Brown and Taylor's Official Method of Identifying Butter.

By JOHN A. HUMMEL. *J. Am. Chem. Soc.*, 22, 327-329.—The increasing production of "renovated" butter makes it important to have some ready method for its identification. In chemical properties and composition the differences between renovated and normal butter are too slight to be of use, but the difference in behavior towards polarized light is sufficient in many cases to indicate the character of the sample. This difference is shown by photomicrographs of representative preparations.

On the Relation of the Reducing Power of Normal Urine to the Amount of Certain Nitrogen Compounds Present.

By J. H. LONG. *J. Am. Chem. Soc.*, 22, 309-327.—The author has determined directly the reducing power of uric acid and creatinin in terms of cupric oxide, using a modified form of Pavy's solution. The total reducing power of the urine and also the amounts of nitrogenous substances present was likewise determined. It was found that on the average 46.6 per cent. of the total reducing power was due to sugar, corresponding to 1.514 grams per liter, or about 0.15 per cent.

On Acetic Acid as a Substitute for Ethyl Alcohol in Extracting the Active Principles of Some Official Drugs.

By EDWARD R. SQUIBB. *Am. J. Pharm.*, 72, 311-319.—In this paper, the fourth on the subject, the author gives the results obtained on buckthorn and cascara sagrada.

ULTIMATE ANALYSIS.

H. P. TALBOT, REVIEWER.

On the Determination of Carbon and Hydrogen by Combustion in Oxygen, Using Copper Oxide. BY CHARLES F. MABERY AND WILLIAM R. CLYMER. *J. Am. Chem. Soc.*, 22, 213-218.—To purify the oxygen and air used during combustions, two pieces of combustion tubing 1.75 meters long and bent at the ends are filled with broken glass moistened with concentrated sulphuric acid in one case and 40 per cent caustic potash solution in the other. These may be fastened to the wall. Sulphuric acid is found to be the best absorbent for water, and if not more than 2-3 cc. are used to collect the water, no carbon dioxide is retained under the conditions of an ordinary combustion. The gas flow may reach 1000 cc. per hour without loss. A rate of 500 cc. per minute through the potash bulbs does not cause loss of moisture, when the calcium chloride is freshly fused and finely granular. In the combustion of hydrocarbons the tube should be first filled with oxygen before volatilization commences. As high a heat as can be used without danger to the life of the combustion tube, is desirable.

Note: Test for Tin. BY ALLEN ROGERS. *J. Am. Chem. Soc.*, 22, 220.—The addition of a stannous chloride solution to one of ammonium molybdate, as usually prepared, gives a blue tint to the mixture, even in the presence of only 0.0000042 gram of stannous chloride per cubic centimeter.

The Estimation of Alumina and Ferric Oxide in Natural Phosphates. BY F. P. VEITCH. *J. Am. Chem. Soc.*, 22, 246-258.—Ammonium phosphate is added to the solution of the aluminum, then ammonia to alkaline reaction, the resulting precipitate is redissolved in hydrochloric acid, and the number of cc. required to accomplish this, after the solution has become acid, is noted. The solution is diluted to 250 cc., and for each cc. of acid added 5 cc. of a 50 per cent. ammonium thiosulphate solution is now dropped in slowly. On boiling for half an hour the aluminum is precipitated, and the precipitate is washed, dried, ignited, and weighed as $AlPO_4$. Two precipitations are necessary in the presence of large quantities of iron or lime. Magnesium, sodium, and potassium salts are without effect; silica and fluorine must be previously removed; the sulphates present must not exceed the equivalent of 1.25 grams of sulphuric acid.

The Distillation of Ammonia in the Determination of Nitrogen. BY FRANCIS GANO BENEDICT. *J. Am. Chem. Soc.*, 22, 259-263.—To hasten the complete transference of the liberated

ammonia to the receiving flask, a device is used by which the condenser water is run off after a definite time, allowing the whole delivery-pipe to be heated for a few moments by the steam. In this way the time of distillation is shortened, without danger of loss of acid from the solution in the receiving flask.

Lime and Sulphuric Acid by the Photometric Method. By J. I. D. HINDS. *J. Am. Chem. Soc.*, 2,2 269-274.—This paper is supplementary to an earlier one on the same subject (*J. Am. Chem. Soc.*, 18, 661). A table is appended to facilitate the calculation of percentages.

A Rapid Method for the Determination of Carbon in Iron or Steel by Combustion. By GEO. WM. SARGENT. *J. Am. Chem. Soc.*, 22, 277-285.—An apparatus is described in detail with which a combustion may be completed in twenty minutes. The author points out that a stream of electric sparks may replace the copper oxide, although, on account of the wear upon the terminals of the induction coil as a result of constant use, the employment of the oxide is still advised.

On the Preparation of Potassium Xanthate for Nickel Determinations. By E. D. CAMPBELL. *J. Am. Chem. Soc.*, 22, 307-308.—Commercial xanthate does not give satisfactory results when used in the author's method for the determination of nickel (*J. Am. Chem. Soc.*, 17, 125). A procedure is described for the preparation of a pure, stable salt from absolute alcohol, carbon disulphide, and potassium hydroxide.

Remarks on some Methods of Determining Carbon in Steel. By GEORGE AUCHY. *J. Am. Chem. Soc.*, 22, 334-343.—The methods commented upon are: The loss on ignition of carbon sponge; the combustion methods, wet and dry; and the color method. Suggestions are made as to possible sources of error in each procedure.

A Method for the Determination of Zinc by the Use of Standard Thiosulphate Solution. By RICHARD K. MEADE. *J. Am. Chem. Soc.*, 22, 353-356.—The procedure is analogous to that proposed by the author for the determination of magnesium (see *this Rev.*, 5, 100). The zinc is precipitated as zinc ammonium arsenate in a slightly acid solution, and the precipitate is dissolved in hydrochloric acid. Potassium iodide is added to the solution and the liberated iodine measured by means of a thiosulphate solution. Calcium and magnesium are first removed by precipitation with arsenate in an alkaline solution. Manganese must be removed as dioxide by potassium chlorate.