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ARTHUR A. NOYES, Editor.

REVIEWERS: Analytical Chemistry, H. P. Talbot and F. G. Moore; Biological Chemistry, A. G. Woodman; Carbohydrates, G. W. Rolfe; General Chemistry, A. A. Noyes; Geological and Mineralogical Chemistry, W. O. Crosby and M. L. Fuller; Inorganic Chemistry, Henry Fay; Metallurgical Chemistry and Assaying, H. O. Hofman; Organic Chemistry, J. F. Norris; Physical Chemistry, H. M. Goodwin; Sanitary Chemistry, E. H. Richards; Industrial Chemistry, A. H. Gill and F. H. Thorp.

ANALYTICAL CHEMISTRY.

ULTIMATE ANALYSIS.

H. P. TALBOT, REVIEWER.

A Process for the Determination of Carbon Dioxide in Carbonates. By R. E. DIVINE. *J. Am. Chem. Soc.*, 22, 473-476. The apparatus prescribed is of simple construction, including only two flasks with easily obtainable accessories. The air is expelled from one of the flasks by filling it with steam, and after cooling, the carbon dioxide liberated from the carbonate in the other flask, by means of sulphuric or tartaric acid, is collected in the first-named flask. Barium hydroxide solution is then introduced, and, after shaking to absorb the carbon dioxide, the excess of the hydroxide is determined.

A Method for the Rapid Gravimetric Estimation of Lime. By W. H. HESS. *J. Am. Chem. Soc.*, 22, 477-478.—The lime is precipitated as oxalate; this precipitate is ignited to destroy the filter, and the residue treated with ammonium nitrate and ammonium sulphate. Heating is continued until ammonium salts are expelled, and the lime is weighed as sulphate.

Note: The Employment of Ammonium Molybdate as a Test for Tin. By J. P. LONGSTAFF. *J. Am. Chem. Soc.*, 22, 450-451.—The author points out that he had already published a paper on this subject (*Chem. News*, 79, 282) prior to the publication of Rogers' article (*J. Am. Chem. Soc.*, 22, 220). The work of the two chemists is in substantial agreement.

Note: The Adulteration and Analysis of the Arsenical Insecticides. By J. K. HAYWOOD. *J. Am. Chem. Soc.*, 22, 568-582.

— The paper contains a résumé of the results of the analyses of the important insecticides of this class, and a description of methods of analysis which have given satisfactory results in the author's hands.

Note: Qualitative Tests for Boracic Acid. BY E. M. WADE AND M. L. WADE. *J. Am. Chem. Soc.*, 22, 618.—The substance to be tested is treated with hydrochloric acid and wood alcohol, the solution concentrated, and turmeric paper is held in the vapors. The paper, upon treatment with dilute ammonia, turns deep purple or blue.

F. J. MOORE, REVIEWER.

Estimation of Alkali Carbonates in the Presence of Bicarbonates. BY FRANK K. CAMERON. *Am. Chem. J.*, 23, 471–486.—The author finds existing methods unsatisfactory, and recommends that such solutions be titrated with a solution of acid potassium sulphate. Certain precautions are necessary in order to obtain a satisfactory end-point, owing to the instability of bicarbonates in solution. The method has the practical advantage that alkali and chlorine may be determined in the same sample.

Silicon in Ferrosilicon, II. BY FRED. W. BAUER. *Iron Age*, 65, (No. 22) 11.—The author compares six methods for the determination of silicon in ferrosilicon, and reaches the conclusion that methods involving the fusion of the sample with sodium carbonate should be abandoned, as yielding too low results.

The Assay of Antimony. BY ARTHUR CHIPPENDALE. *Eng. Min. J.*, 69, 553.—Native oxides of antimony are readily dissolved by boiling in concentrated hydrochloric acid, with the occasional addition of crystals of potassium iodide. In the solution the antimony may be determined by familiar methods.

The Electrolytic Determination of Copper. BY WILLIAM E. GRAINGER. *Eng. Min. J.*, 69, 558.—The article gives an account of the methods by which ores are prepared for analysis at the laboratory of the "Ducktown Copper and Iron Co. Limited." The arrangement of their electrolytic apparatus is also described.

Separation and Determination of Mercury as Mercurous Oxalate. BY C. A. PETERS. *Am. J. Sci.*, 149, 401–406.—The author sums up the results of his work as follows: "Mercurous nitrate may be estimated volumetrically by precipitating as oxalate and determining the excess of precipitant with permanganate. The precipitated mercurous oxalate may be estimated gravimetrically, by drying over sulphuric acid and weighing directly." Separations of mercurous salts from small quantities of

mercuric compounds may also be made, but the difficulties increase with the amount of mercuric salts present.

On the Qualitative Separation of Nickel and Cobalt by the Action of Ammonium Hydrate on the Ferricyanides. BY PHILIP E. BROWNING AND JOHN B. HARTWELL. *Am. J. Sci.*, 150, 316-317.—The method of Clarke (*Am. J. Sci.*, 48, 67) is improved by the addition of the solution of an aluminum salt.

Iodometric Estimation of Arsenic Acid. BY F. A. GOOCH AND JULIA C. MORRIS. *Am. J. Sci.*, 150, 151-157.—Soluble arsenates are treated with sulphuric acid and potassium iodide in slight excess. The bulk of the liberated iodine is expelled by boiling, and the solution finally bleached by the careful addition of sulphurous acid. After neutralization with sodium hydrate and acid carbonate, the resulting arsenite is titrated with iodine solution in the usual way. Earlier methods based upon the same reaction are critically discussed.

HENRY FAY, REVIEWER.

Note on a Qualitative Test for Tin. BY CHARLES BASKERVILLE. *J. Elisha Mitchell Sci. Soc.*, 16, 80-81.—The test involves the application of Longstaff's method, which depends upon the blue color produced when stannous chloride reacts with molybdic acid. Compare the abstract above relating to the same subject.

J. F. NORRIS, REVIEWER.

The Elementary Analysis of Organic Substances Containing Nitrogen. BY FRANCIS GANO BENEDICT. *Am. Chem. J.*, 23, 334-353.—In order to prevent the formation of oxides of nitrogen in the combustion of organic substances containing nitrogen, the compound to be analyzed is burned with a known weight of sugar or benzoic acid. After the substance has been charred in the closed tube, oxygen is admitted to oxidize the non-volatile residue and the copper that has been reduced by the volatile products of the dry distillation. The results of a large number of analyses made under these conditions prove that no oxides of nitrogen, which interfere with accurate results, are formed. The method does away with the use of a reduced copper spiral and so facilitates the analysis of nitrogenous substances. The use of sugar or benzoic acid in the analysis of compounds containing nitrogen which is not united to oxygen, is not necessary, for they can be burned without the formation of oxides of nitrogen, if they are charred, in the manner described above, before oxygen is admitted to the tube. The analysis of a compound containing a number of nitro groups can be readily effected by mixing the sub-

stance with finely powdered silica. The silica not only prevents an explosion, but also materially assists in reducing the oxides of nitrogen formed.

INORGANIC CHEMISTRY.

HENRY FAY, REVIEWER.

On the Isomorphism of Selenium and Tellurium. BY JAMES F. NORRIS AND RICHARD MOMMERS. *Am. Chem. J.*, **23**, 486-494.—The isomorphism of the double bromides of selenium and dimethylamine with the corresponding tellurium compound was studied by bringing together in succession saturated solutions of these two colored salts with the colorless double chloride of tellurium and dimethylamine. According to the method of Retgers, isomorphism exists when the color of the crystals varies gradually from one side to the other, the crystals of the pure compounds being visible on the extreme edges of the mass. If, however, the salts are not isomorphous, they do not mix, and in the center where the two solutions have been brought together, distinct crystals of each compound may be seen, owing to their difference of color. The double chloride of tellurium and dimethylamine gave mixed crystals of varying depths of color with both the selenium and the tellurium double bromide, showing the isomorphism of both bromides with the chloride, and consequently with each other. As it has been suggested that tellurium salts are isomorphous with those of the platinum group of metals, the double bromide of platinum and dimethylamine was tested in the same manner, using again the double chloride of tellurium and dimethylamine. In this case the two compounds crystallized out separately, disproving the isomorphism of the platinum compound with those of selenium and tellurium. During the investigation the following double salts of tellurium were isolated: $3\text{TeCl}_4 \cdot \text{TeOCl}_2 \cdot 4(\text{CH}_3)_2\text{NH} \cdot \text{HCl} \cdot \text{H}_2\text{O}$, $\text{TeCl}_4 \cdot \text{TeOCl}_2 \cdot 2(\text{CH}_3)_2\text{NH} \cdot \text{HCl} \cdot \text{H}_2\text{O}$, $\text{TeCl}_4 \cdot 2\text{TeOCl}_2 \cdot 3(\text{CH}_3)_2\text{NH} \cdot \text{HCl}$, $\text{TeCl}_4 \cdot 2(\text{CH}_3)_2\text{NH} \cdot \text{HCl}$, $\text{TeBr}_4 \cdot 2(\text{CH}_3)_2\text{NH} \cdot \text{HBr}$. It is thus shown that tellurium, as well as selenium, forms double salts which contain the oxychloride of the metal. The first three salts can be considered as derivatives of the salt $\text{TeCl}_4 \cdot (\text{CH}_3)_2\text{NH} \cdot \text{HCl}$, in which a part of the tellurium tetrachloride has been converted into the oxychloride by the water in the solvent. Double salts of tellurium, analogous to the double salts of selenium and the perbromide of dimethylamine $(\text{CH}_3)_2\text{NH} \cdot \text{HBr}_2$, could not be obtained.

The Occurrence of Vanadium, Chromium, and Titanium in Peats. BY CHARLES BASKERVILLE. *J. Am. Chem. Soc.*, **21**,