

The values obtained for the specific resistance vary from about 300 to 1150; the mean, about 500, is only about one-fourth of the value found by Matthieson.

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## ANALYTICAL CHEMISTRY.

### ULTIMATE ANALYSIS.

H. P. TALBOT. REVIEWER.

**The Iodometric Determination of Small Quantities of Carbon Monoxide.** By LEONARD P. KINNICUTT AND GEORGE R. SANFORD. *J. Am. Chem. Soc.*, 22, 14-18.—The carbon monoxide is passed over iodine pentoxide at a temperature of 150°, and the reduced iodine is collected in a potassium iodide solution and titrated with thiosulphate solution. Accurate determinations were made when the amount of the monoxide in the air was as small as 2.5 parts in 100,000.

**The Volumetric Determination of Magnesia.** By JAMES OTIS HANDY. *J. Am. Chem. Soc.*, 22, 31-39.—The precipitate of magnesium ammonium phosphate, thrown down under definite conditions, is collected upon a filter, washed with dilute ammonia, and the filter exposed to the air until the ammonia has volatilized, which is found to be the case when the filter has dried about one-half inch from its circumference. The precipitate and filter are then treated with standard sulphuric acid in excess, and after complete solution the excess is determined by titration with standard sodium hydroxide solution, using methyl orange as an indicator.

**Notes: The Retention of Moisture by Asbestos, and The Determination of Graphite by Loss.** By GEORGE AUCHY. *J. Am. Chem. Soc.*, 22, 46-48.

**The Determination of Sulphur in Bitumens.** By A. C. LANGMUIR. *J. Am. Chem. Soc.*, 22, 99-102.—The author comments upon the criticisms made by S. F. and H. E. Peckham (*this Rev.*, 5, 100) upon an article by E. H. Hodgson (*this Rev.*, 5, 10). He prefers the Eschka method as modified by Heath (*this Rev.*, 4, 121). While it is undoubtedly true that the sulphur in illuminating gas is often a source of considerable error in sulphur determinations, it seems to the reviewer doubtful whether the data given by von Meyer and quoted by Langmuir are of general application. It is certainly true that Boston gas, for instance, introduces much less sulphuric acid during evaporation, even under unfavorable conditions, than was found by von Meyer in his laboratory.

**The Determination of Nickel in Nickel Ores.** By A. C. LANGMUIR. *J. Am. Chem. Soc.*, 22, 102-106.—The ore is dissolved in nitric acid, this acid replaced by hydrochloric acid, the copper thrown out as sulphide, and the iron oxidized and precipitated once by ammonia. This precipitate is dissolved in hydrochloric acid, and the solution extracted with ether to separate most of the iron, the remaining iron being twice precipitated by ammonia. The ammonium chloride in the filtrate is destroyed by boiling with nitric acid, and finally the solution is evaporated with sulphuric acid, made ammoniacal, and electrolyzed. The procedure given is an adaptation of well-known methods to the special case of nickel ores.

**Substitutes for Hydrochloric Acid in Testing Carbonates.** By JOSEPH W. RICHARDS AND NORMAN S. POWELL. *J. Am. Chem. Soc.*, 22, 117-121.—With the purpose of obtaining a substitute for hydrochloric acid in the test for carbonates in field-work the authors studied the action of solutions of potassium acid sulphate, oxalic, citric, and tartaric acids upon various natural carbonates. Tartaric acid proved to be most efficient, followed by citric and oxalic acids. A table shows the effect of each reagent upon a variety of carbonates at varying temperatures.

**Report of Committee on Coal Analysis.** By WILLIAM A. NOYES, W. F. HILLEBRAND, AND C. B. DUDLEY. *J. Am. Chem. Soc.*, 21, 1116-1132.—This is a final report of the committee and describes the procedures which they consider efficient for coal analysis.

W. H. WALKER, REVIEWER.

**The Constitution of the Magnesium Ammonium Arseniate of Analysis.** By MARTHA AUSTIN. *Am. J. Sci.*, 159, 55-61.—When magnesium ammonium arseniate is formed by the addition of magnesia mixture to a solution of arsenic acid, the presence of an excess of ammonium chloride causes a replacement of some of the magnesium by ammonium, forming possibly the salt  $Mg(NH_4)_4(AsO_4)_2$ . A precipitate of the ideal constitution is thrown down, however, when an amount of the ammoniacal magnesia mixture slightly in excess of that theoretically necessary to precipitate the arsenic present is added to the faintly acid solution of arsenic acid, containing no ammonium salt, in a volume not exceeding 200 cc. This precipitate may be washed with a faintly ammoniacal wash-water and ignited to pyroarsenite without appreciable loss.

**On the Estimation of Thallium as the Acid and Neutral Sulphate.** By PHILIP E. BROWNING. *Am. J. Sci.*, 159, 137-

138.—The suggestion of previous investigators that both the acid and neutral sulphates of thallium might be used in the estimation of this element has been carried out by the author with positive results. By treating thallium chloride with sulphuric acid and heating to constant weight at  $220^{\circ}$ – $240^{\circ}$  C., the salt was found to correspond to the acid sulphate. When heated to dull redness, sulphuric acid escaped, and when constant weight was again attained, the residue had the composition of the neutral sulphate.

**Laboratory Notes.** By J. M. CAMP. *Iron Age*, 65, 17–18.—In these notes are included detailed directions for the determination of phosphorus in coal and coke, and in ores, pig-iron, and steel which contain also arsenic. A method for the estimation of alumina in slags and ores is proposed, in which the aluminum is separated and weighed as aluminum phosphate.

**Silicon in Ferrosilicon.** By F. W. BAUER. *Iron Age*, 65, 3.—The percentages of silicon in a sample of ferrosilicon as reported by eleven chemists, working independently, are given, together with an outline of the method used by each. The results vary from 14.90 per cent. to 16.68 per cent. silicon.

**A Rapid Method for Determining Lime in Blast-furnace Slags.** By TITUS ULKE. *Eng. Min. J.*, 69, 164.—The sample of slag is dissolved in very dilute nitric acid, and any barium present is precipitated by the addition of a few drops of sulphuric acid. The solution is now made almost neutral with dilute ammonia, and the calcium precipitated by the addition of ammonium oxalate. This precipitate contains no iron or aluminum, and can be washed free from ammonium oxalate, dissolved, and oxidized with standard potassium permanganate solution. The entire analysis may be completed in from 15 to 20 minutes.

## GEOLOGICAL AND MINERALOGICAL CHEMISTRY.

M. L. FULLER, REVIEWER.

**Some Analyses of Italian Volcanic Rocks, II.** By HENRY S. WASHINGTON. *Am. J. Sci.*, 159, 44–54.—1. Ciminite. From a trachytic flow at Monte Cimino, Viterbo. The mineral components of this rock as computed from the analyses are orthoclase 37.9 per cent., labradorite 26.5, diopside 16.5, olivine 17.3, and magnetite 1.8. This would place the rock between the trachytes and the andesites and basalts in the group of andesitic trachytes or trachydolrites of Rosenbusch (latite of Ransome). 2. Selagite. This is a lamprophyric latite occurring as a volcanic neck in Tertiary marls, Monte Catini, Tuscany. The analyses