

## FERROMOLYBDENUM.

Weigh 0.5 gram of the sample into a platinum crucible (100 cc. capacity) and dissolve it with 15 cc. strong nitric acid; when thoroughly dissolved add 2 cc. sulphuric acid (sp. gr. 1.58) and evaporate over a Bunsen burner until fumes are given off. Care must be exercised here that no nitric acid remains in the crucible. Add 30 grams potassium hydrogen sulphate (fused) and proceed as in the case of steel.

The following are some results obtained by the above methods. Three molybdenum steels were made in crucible fires; the molybdenum contents and analyses are as follows:

Steels. No.	Molybdenum added. Per cent.	Molybdenum found. Per cent.
1	5.00	5.040
2	8.00	8.050
3	10.00	10.014

These analyses were made in duplicate.

A ferromolybdenum was also analyzed by Messrs. Booth, Garrett, and Blair, of Philadelphia, Mr. McCreath, of Harrisburg, and myself. Mr. Whitfield, the chemist who made the analysis for Messrs. Booth, Garrett, and Blair, used the sulphide method given in Blair's "Chemical Analysis of Iron," fourth edition. What method Mr. McCreath used I do not know; I used the method described above.

Messrs. B. G. and B. Per cent.	Mr. McCreath. Per cent.	Volumetric. Per cent.
50.53	50.34	50.45

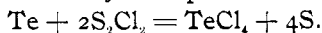
A molybdenum steel containing chromium was analyzed by Mr. McCreath and myself with results as follows: Mr. McCreath, 7.42; volumetric, 7.81. A tungsten molybdenum chrome steel was made, the amount of molybdenum added to steel being 3.6 per cent.; molybdenum found was 3.59 per cent. All of my analyses were made in duplicate.

## TELLURIUM TETRACHLORIDE.

BY VICTOR LENHER.

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WHEN an excess of sulphur monochloride is brought in contact with metallic tellurium at the ordinary temperature, the tellurium is rapidly attacked, heat is evolved, and in a few moments white needle-like crystals of tellurium tetrachloride separate. The reaction may be represented as follows:



The free sulphur indicated in the reaction dissolves in the excess of sulphur chloride, and on evaporation is shown to be present.

Tellurium tetrachloride is insoluble in sulphur chloride, and in carbon bisulphide. Inasmuch as sulphur chloride dissolves in carbon bisulphide in all proportions, when the latter solvent is brought in contact with a mixture of tellurium tetrachloride, and sulphur chloride containing sulphur in solution, it is only necessary to extract this mixture with carbon bisulphide when the pure crystals of tellurium tetrachloride are obtained. In actually carrying out this preparation, the sulphur chloride is usually decanted from the crystals which are then thoroughly washed with carbon bisulphide.

Tellurium tetrachloride prepared in this manner appears as white needle-like crystals which are almost insoluble in sulphur chloride in the cold, but dissolve readily in the hot reagent.

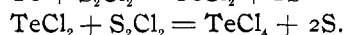
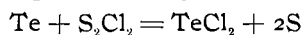
On analysis, 0.5164 gram tellurium tetrachloride gave 0.2430 gram tellurium, or 47.06 per cent. Theory requires 47.21 per cent.

0.2305 gram tellurium tetrachloride gave 0.4863 gram silver chloride, or 52.20 per cent. chlorine. Theory requires 52.79 per cent.

The chloride thus obtained is permanent in dry air, but in moist air decomposes with formation of the oxychloride. Excess of water gives tellurous acid.

When heated with metallic tellurium the black dichloride is formed.

This method of preparing tellurium tetrachloride is frequently very convenient when the pure salt is desired. The reaction of sulphur monochloride on tellurium with formation of the tetrachloride takes place as indicated, at any temperature from the ordinary to  $139^{\circ}$ , the boiling-point of sulphur chloride, when the latter is in excess. An experiment was conducted, heating metallic tellurium to a high temperature in a current of sulphur chloride. The tellurium was placed in a porcelain boat in a combustion tube. When sulphur chloride vapor comes in contact with highly heated tellurium, the black dichloride of tellurium is first formed, but quickly changes into tetrachloride.



In this experiment, beautiful long white needles of tellurium tetrachloride were deposited on the sides of the tube, beyond the

porcelain boat, even while black tellurium dichloride yet remained in the boat.

In studying the replacing action of sulphur, selenium and tellurium, Krafft and Steiner<sup>1</sup> heated 2 parts sulphur chloride with 2.2 parts of tellurium in an open combustion tube. Since they worked with a slight excess of tellurium, the dichloride was obtained, but they do not appear to have observed that with excess of sulphur chloride, the tetrachloride is obtained, the yield being practically quantitative.

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## PRELIMINARY COMMUNICATION UPON GLUCOPHOSPHORIC ACID.

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PHOSPHORIC acid is a very important constituent of all living matter. It enters in organic combination with nearly every cell constituent. As glycerophosphoric acid it enters the molecule of lecithin, which is a "primary cell constituent"; in a like manner it combines with proteid, forming the so-called "paranucleic acid." Further, in combination with purin bases it forms the most important cell constituent, known as nucleic acid.

The latter substance, however, is very complex, and its composition is not fully known. At the present stage of our knowledge on the subject it seemed of great importance to analyze the substances related to nucleic acid but of a less complex nature. For this reason I undertook the analysis of a substance first obtained by Palladin<sup>2</sup> from different seeds, and later analyzed by Schulze and Winterstein.<sup>3</sup>

Schulze and Winterstein made an elementary analysis of the substance obtained by Palladin himself, and according to them it contained :

	Per cent.
Carbon .....	9.65
Hydrogen .....	2.83
Phosphorus pentoxide.....	34.66
Ash .....	67.88

In my hands the method of Palladin did not prove very satis-

<sup>1</sup> *Ber. d. chem. Ges.*, **34**, 560.

<sup>2</sup> Palladin: *Ztschr. Biol.*, (1894), p. 199.

<sup>3</sup> Schulze and Winterstein: *Ztschr. physiol. Chem.*, **22**, 90.