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[1] 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[2] from different seeds, and later analyzed by Schulze and Winterstein.[3]

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-

[1] *Ber. d. chem. Ges.*, **34**, 560.
[2] Palladin: *Ztschr. Biol.*, (1894), p. 199.
[3] Schulze and Winterstein: *Ztschr. physiol. Chem.*, **22**, 90.

factory and by a comparatively simple method, which I shall describe later, I obtained a copper salt of an acid of the following composition :

0.1380 gram of the substance on combustion gave 0.0858 gram carbon dioxide and 0.0355 gram water ; or 16.95 per cent. carbon and 2.85 per cent. hydrogen.

0.2364 gram of the substance on combustion gave at 723.1 mm. pressure and 14.0°, 6 cc. nitrogen, or 2.41 per cent.

0.1735 gram of the substance, on fusion with sodium hydroxide and potassium nitrate, gave 0.0658 gram magnesium pyrophosphate, or 24.10 per cent. phosphorus pentoxide.

0.0950 gram of the substance gave 0.0548 gram of ash, or 57.67 per cent. The ash contained 0.0339 gram cupric oxide or 35.66 per cent.

SUMMARY.

	Per cent.
Carbon	16.95
Hydrogen	2.85
Nitrogen	2.41
Phosphorus pentoxide	24.10
Cupric oxide	35.66
Ash	57.67

A solution of the salt in nitric acid containing ammonium nitrate gave no reaction for phosphoric acid with ammonium molybdate solution, thus showing that the salt was not contaminated with inorganic phosphates. In the seed the acid is present in the form of its calcium magnesium salt. The latter salt is precipitated by alkalies and by sodium acetate ; it is soluble in dilute acids. A comparatively dilute acetic acid solution of it added to an acid solution of Witte's peptone forms a precipitate. On hydrolysis of the substance with dilute mineral acids it yielded orthophosphoric acid; no glycerol could be extracted, nor any appreciable quantity of fatty acids. Also the purin bases were not detected among the decomposition products. The free acid obtained from the copper salt did not give the slightest biuret test. However, the solution of the copper salt in hydrochloric acid heated over a flame was capable of reducing Fehling's solution.

With phenylhydrazine the products of hydrolysis formed a crystalline deposit characteristic for glucosazones. It is thus suggestive that a carbohydrate enters the molecule of this organic phosphoric acid.

A further study on the composition of the substance is in progress.