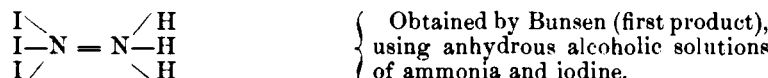
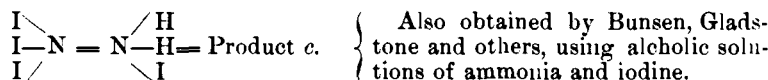
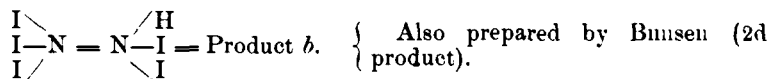
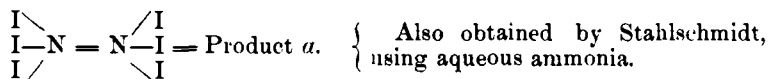


The atomic ratios approximately represented by the above results are :

- For *a* N : I = 1 : 3
 “ *b* N : I = 2 : 5
 “ *c* N : I = 1 : 2

Owing to these results and the experiments of other chemists, the author is of the opinion that the molecule of these compounds contains two parted nitrogen atoms, and considers the existence of the following substituted products established.



It appears, then, that the formation of these different products is dependent on the conditions under which the explosive compound is prepared, as well as upon its decomposition by water.

*Discussion of the Working Hypothesis that the so-called Elements are Compound Bodies,** by J. NORMAN LOCKYER, F. R. S.

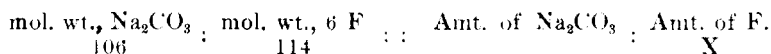
On Lockyer's "Hypothesis that the so-called Elements are Compound Bodies,"† by C. S. HASTINGS, Assistant Prof. of Physics, Johns Hopkins University.

On a New Volumetric Method of Determining Fluorine, by SAMUEL L. PENFIELD, Assistant in the Sheffield Laboratory. The reaction $3 \text{ SiF}_4 + 2 \text{ H}_2\text{O} = 2 \text{ H}_2\text{SiF}_6 + \text{ SiO}_2$ is made the basis of a volumetric determination of fluorine, the amount of hydro-fluo-silicic acid formed from a given weight of a fluoride, being estimated by a standard alkali solution.

* Abstracted from the Amer. Jour. Sci., vol. xvii. p. 93.

† A review of the preceding paper.

Owing, however, to the decomposition of the silico-fluoride on neutralizing with alkali, the direct titration of the hydrofluosilicic acid is impracticable, and the author recommends the use of a mixture of solution of potassium chloride and alcohol. In this case, a transparent precipitate of potassium silico-fluoride is formed, an equivalent amount of hydrochloric acid being liberated, which is then estimated by titration. The details of the process consist in weighing out the fluoride in a flask, together with some powdered and ignited silica (unless a silicate is under examination), adding concentrated sulphuric acid, and heating to about 150° C. The flask is provided with a doubly-perforated cork, enclosing two tubes, one for the admission of a steady current of dry air supplied from a gasometer, the other for the escape of the evolved gas, which first passes through a small U tube (artificially cooled, and serving to retain any sulphuric acid possibly carried over), then through a larger U tube, containing the mixture of potassium chloride and alcohol, and finally through a third tube, to insure complete decomposition. After the operation has continued for about two hours, the contents of the U tube are directly titrated, an additional quantity of alcohol being added, to precipitate the potassium silico-fluoride as completely as possible. In case chlorine is also present in the mineral to be tested, the first U tube is filled with pumice, impregnated with anhydrous cupric sulphate, which retains any hydrochloric acid evolved. Each equivalent of sodic carbonate used equals 1 equivalent of hydrofluosilicic acid, or 6 of fluorine, according to the proportion:



Results proving the accuracy of the method are given.

Preliminary Notice of an Investigation on Petrocene, a Product of the Destructive Distillation of Petroleum, by SAMUEL P. SADTLER and H. G. McCARTER.—In this notice, the authors direct attention to the fact, that for several months past they have been engaged in the investigation of petrocene, and claim equal right to this research with MM. Prunier and David, who, it appears, are also occupied with an examination of the same product, concerning which they have recently communicated a preliminary note to the *Comptes Rendus* (t. 87, p. 991).

Messrs. Sadtler and McCarter operate on the material described by Dr. Tweddle, in the *Franklyn Institute Journal* (vol. 72, p. 204). The method of forming double crystallizations with picric acid from