tence of salts having the ratios 24 to 1 and 18 to 1 is, however, also indicated, as, for instance, in the sodium salt: 24 $WO_3P_2O_5Na_2O$ 5 H_2O + 27 Aq. In some phospho-molybdates the ratios of MoO_3 to P_2O_5 have been found to be 20 to 1, 22 to 1 and 24 to 1, and the existence of corresponding ratios among the phospho-tungstates appears probable. In conclusion, the author notes the preparation of finely crystallized antimonio-tungstates and antimonio-molybdates of the alkalies, and the corresponding manganese salts (the latter having the formula: 6 WO_3 3 Sb_2O_5 4 MnO + 30 Aq. and 6 MoO_3 3 Sb_2O_5 4 MnO + 30 Aq.), as well as the formation of vanadio-tungstates and vanadio-molybdates of the alkalies, and regards as likely the existence of analogous salts containing SnO_2, TiO_2, ZrO_2, Nb_2O_5 and Ta_2O_5.

On Nitrogen Iodide, by J. W. MALLET.—Investigators have arrived at very different views respecting the composition of the black substance formed by the action of iodine upon ammonia, to which the formulas NI_3, NHI_2, NH_2I, NH_3NI_3 and NH_3 4 NI_3 have been assigned, a result largely due, in the author's opinion, to the fact that the substance referred to undergoes a gradual decomposition in contact with H_2O and, to a considerable extent, on drying at ordinary temperatures. For this reason, the air-dried powder often consists of a mixture of the original substance with various products of decomposition, and is therefore ill adapted to accurate analysis. The most advisable method of desiccation consists in first repeatedly and rapidly washing the product with absolute alcohol and ether (both artificially cooled), this last menstruum being subsequently removed by evaporation. The analysis of the product obtained by treating finely divided iodine with an excess of the strongest liquid ammonia (kept at 0° C.) and dried in the above manner, gave numbers corresponding to:

(*a*)	N	1	atom.
	I	2.98	atoms.

Another specimen, prepared with weaker ammonia, without precautions as to cooling, gave:

(*b*)	N	1	atom.
	I	2.47	atoms.

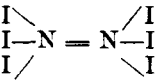
And a third product, at first merely washed with water, in which it was preserved for several days at ordinary temperatures, and finally washed with alcohol and ether, gave:

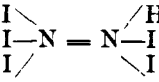
(*c*)	N	1	atom.
	I	2.08	atoms.

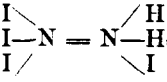
The atomic ratios approximately represented by the above results are:

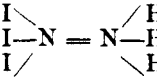
For *a*.....N : I = 1 : 3
" *b*.....N : I = 2 : 5
" *c*.....N : I = 1 : 2

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.


= Product *a*. { Also obtained by Stahlschmidt, using aqueous ammonia.


= Product *b*. { Also prepared by Bunsen (2d product).


= Product *c*. { Also obtained by Bunsen, Gladstone and others, using alcholic solutions of ammonia and iodine.


{ Obtained by Bunsen (first product), using anhydrous alcoholic solutions of ammonia and iodine.

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 $3\ SiF_4 + 2\ H_2O = 2\ H_2SiF_6 + SiO_2$ is made the basis of a volumetric determination of fluorine, the amount of hydrofluo-silicic acid formed from a given weight of a fluoride, being estimated by a standard alkali solution.

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

† A review of the preceeding paper.