[Robertson, *J. Chem. Soc.*, **107**, 902 (1915); **109**, 218 (1916); *Chem. News*, **120**, 54 (1920)].

In their method fuming sulfuric acid alone or in conjunction with chromic acid or persulfate is used as oxidizing agent, and the liberated halogen absorbed in alkaline arsenite. In the present writer's method ordinary strong sulfuric acid and potassium dichromate are employed with aqueous sodium peroxide as absorbent. The following advantages are claimed. (a) The apparatus is much simpler; it is, in fact, an apparatus for the Bunsen determination of peroxides with slightly modified Peligot tubes for absorption. (b) The use of fuming sulfuric acid, an unpleasant reagent, is avoided. (c) As air is aspirated through the apparatus the time of an estimation is shorter, being fifty to sixty minutes instead of seventy to ninety as stated by Thompson and Oakdale. (d) Sodium peroxide is a reagent which has never been found to be contaminated with halogen.

In the last fifteen years some hundreds of estimations have been carried out by the author and his research students without a single failure. The method is described in various textbooks and is in use in a number of laboratories.

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COMMUNICATIONS TO THE EDITOR

AN ATTEMPT TO DETERMINE NUCLEAR MOMENTS

Sir:

The explanation of the hyperfine structure of line spectra and the alternating intensities of band spectra involves the assumption of the existence of a proton spin in the nucleus of $^1/_2$ quantum unit. The magnetic moment associated with this spin would stand in the same ratio to the magnetic moment of the electron as e/m for the two charges. This means that the magnetic moment of a hydrogen nucleus would be 1/1840 of a Bohr magneton, which is too small an amount to detect in the ordinary Stern–Gerlach experiment.

In the case of the heavier atoms the proton spins are usually paired in the nucleus but in some cases, *e. g.*, iodine, several protons remain unpaired and a resultant proton spin of several half units results. Thus a resultant spin of 3 units is to be expected for HI and 5 units for I_2. The iodine molecule has the larger spin, but the deflection in the Stern–Gerlach experiment is inversely proportional to the absolute temperature of the beam and the beam of iodine must be formed at room temperature while the beam of hydrogen iodide may be formed at a temperature of 130–140° K. Experiments were tried with both molecules.

In order to obtain the maximum deflection, pole pieces 10 cm. long were used to produce the inhomogeneous field. The beam was formed by slits of about 0.02 mm. width and was condensed upon a surface cooled with liquid air under reduced pressure. The image was photographed *in vacuo*. The image formed was about 0.2 mm. wide and under the most favorable conditions a broadening of the image of about 0.01 mm. was to be expected when the field was on. This effect should be easily measurable. The experiments failed because of the lack of sharpness of definition of the edges of the image. This lack of sharpness is partially the result of the long path of the beam. It was not possible to obtain images whose widths could be measured with certainty to 0.01 mm. and it is not certain that any deflection has been observed.

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CATALYSIS BY SODIUM CHLORIDE OF OXIDATION OF CARBON

Sir:

The catalytic action of salt in the oxidation of carbon, long familiar to the householder as a means of freeing chimneys of soot, may readily be demonstrated in the laboratory. If a glass tube or rod is held just above a flame which surrounds a wad of asbestos impregnated with sodium chloride, the latter volatilizes and deposits on the glass. A faint veiling is all that is necessary. An alternative method of applying the salt is to wipe a solution of it over the glass and let the water evaporate. Next, the glass is covered with soot by means of a smoky flame, over both the bare glass and that portion coated with sodium chloride, and is permitted to cool to give uniform temperature in the subsequent heating. If the tube or rod so prepared is then slowly heated, as uniformly as possible, it will be noted that the deposit of soot burns off first from the section where the sodium chloride is, leaving a very sharp dividing line between the treated and untreated glass surfaces.

A similar effect is observed if an effort is made to cover with soot a hot piece of glass, a portion of which has been treated with sodium chloride. Depending on the temperature, the soot will either fail to deposit at all on the treated surface, or will burn off rapidly when the smoky flame is removed, while the untreated glass becomes and remains covered.

An effort was made to follow the reaction quantitatively, using sugar charcoal heated to a definite temperature in a current of carbon dioxide-free air, determining the rate of formation of carbon dioxide by absorption in standard barium hydroxide solution. It was found that the uncatalyzed oxidation proceeded at an appreciable rate even at a tempera-