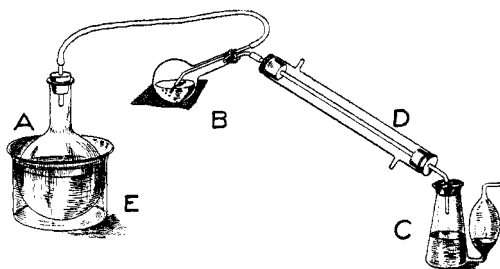


BORIC ACID DETERMINATION.¹

BY THOMAS S. GLADDING.

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FOR the determination of boric acid I find the following method gives satisfactory results :



One gram of the substance in which the boric acid is to be determined is washed into flask B (150 cc. capacity), with a little ninety-five per cent. methyl alcohol. Five cc. of sirupy eighty-five per cent. phosphoric acid are added. Flask A is filled two-thirds full of ninety-five per cent. methyl alcohol and placed in the water-bath E. Flask B is now connected with the condenser D, and flask C placed in position to receive the distillate. Heat is now applied to the water-bath E and, when the methyl alcohol is boiling, flask A is connected to the tube which passes to the bottom of flask B. A current of methyl alcohol vapor is thus continually passing through the liquid in flask B, and carries over the boric acid. Heat is applied under flask B and so regulated that the liquid remains between fifteen and twenty-five cc.

The distillation is carried on in this way for about one-half hour, the distillate finally amounting to about 100 cc. A mixture of 40 cc. glycerine and 100 cc. water is now carefully neutralized, using phenolphthalein as an indicator, and then added to the distillate, which is then titrated with standard soda. The distillation must be continued until no more acid is obtained. Usually, it is complete in thirty minutes.

¹ Read before the New York Section, February 4, 1898.

A blank should be run using all the reagents, and any acidity found must be deducted from the final results.

The following results were obtained with borax and boric acid : One gram borax gave 36.57 per cent. boric acid, the theoretical per cent. being 36.65 per cent. ; one gram boric acid gave 99.9 per cent. boric acid.

A distillation of crystallized boracic acid, without the addition of phosphoric or other acid, was found to yield all the boric acid present. A similar distillation of borax was found to yield 19.50 per cent. boric acid out of a total of 36.65 per cent. present, or slightly more than fifty per cent. of the whole amount. This behavior may be useful in some analyses.

A gentle suction, by means of aspiration bottle, upon flask C, is desirable to avoid loss by possible leakage.

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ACTION OF SULPHUR MONOCHLORIDE UPON MINERALS.

BY EDGAR F. SMITH.

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SULPHUR monochloride has frequently been applied in organic chemistry in the synthesis of various bodies, and the results obtained by the employment of this reagent have invariably had great attraction and interest for the investigator. There are, however, other directions in which the same reagent may be followed with equal interest ; *e. g.*, in the action upon the natural products furnished by the mineral world. To illustrate, mention may be made of the behavior of such substances as arsenopyrite, chalcopyrite, pyrite, and marcasite with the reagent in question. Finely divided arsenopyrite and sulphur monochloride were brought together in a glass tube. After slight agitation, action set in, accompanied by the evolution of much heat, and the almost complete decomposition of the mineral. The tube was then freed from air by the introduction of carbon dioxide. It was sealed and heated to about the boiling-point of the sulphur monochloride (139°) for a period of nine hours. On cooling, beautiful olive-green colored plates or scales separated. After their removal from the tube and separation from the adherent liquid they proved to be deliquescent and