

This method gives excellent results with water that could not be used at all with the former method on account of the yellow color invariably produced.

I can find no mention of a similar phenomenon in any literature to which I have access.

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*The Determination of Sodium Carbonate in the Presence of Sodium Fluoride.*—The ordinary volumetric method of estimating sodium carbonate by the use of standard acid and methyl orange cannot be employed in the determination of this compound in the presence of sodium fluoride.

If a trial titration were to be made of sodium carbonate in the presence of the fluoride, it is found that after the carbonate has been completely acted upon by the acid, the methyl orange indicator, instead of turning a distinct red, turns gradually into a darker shade of yellow, almost unnoticeable, and at an indefinite point, thus making this method worthless in a case of this kind.

A modification of the ordinary volumetric method which I have been using and have found to give excellent results, is outlined below.

One gram of the sample of fluoride is dissolved in about 100 cc. of water and to the solution is added 25 cc. of a 5 per cent. solution of calcium chloride, thereby precipitating calcium fluoride and also calcium carbonate, if there were any alkaline carbonate present.

The mixture is then titrated with N/10 hydrochloric acid, using methyl orange as indicator. As the number of cubic centimeters required by the calcium carbonate is equal to the amount required by the equivalent quantity of sodium carbonate, the per cent. of the latter may be obtained directly by multiplying the number of cubic centimeters of N/10 acid by 0.53.

The end reaction is very distinct and no difficulty is experienced in finding the point. It is very important that the solution of calcium chloride employed be perfectly neutral. If it should be found acid, add a few drops of methyl orange and dilute sodium hydroxide until neutral, and if found alkaline add methyl orange as before and dilute acid until neutral.

Barium chloride may be used in place of the calcium salt, but I give preference to the latter as the precipitate is not so dense and so gives a sharper titration.

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