XXXVIII.—*The Existence of Barium and Lead Nitrososulphates.*

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THE nitrososulphates of potassium, sodium, and ammonium have each been prepared by the union of nitric oxide with the sulphite in alkaline solution. But these salts have hitherto appeared to be incapable of undergoing regular double decomposition with other salts. Thus, in contact with copper sulphate they instantly change to alkali sulphate and nitrous oxide, whilst they do not react at all with copper hydroxide. With silver nitrate, their decomposition does not commence immediately, even when this reagent is in concentrated solution and the alkali nitrososulphate is in crystals, but after a short time an action begins, and then proceeds very rapidly.

It is possible, however, to effect some double decompositions of

these nitrososulphates. Baryta-water, which does not precipitate them when it is dilute, gives when concentrated an abundant white precipitate, without causing any effervescence. The precipitate is soluble in water, and, when drained from its mother-liquor on a porous tile, effervesces freely in contact with hydrochloric acid, barium sulphate being formed at the same time. The nitrososulphate with which we experimented was an aqueous solution of the pure potassium salt. The lead salt mixed with hydroxide may be obtained as a white insoluble substance by adding a solution of basic lead acetate to a solution of nitrososulphate; after precipitation, the mother-liquor no longer effervesces with acids. Treated, itself, with dilute nitric acid it momentarily dissolves, but is almost immediately replaced by lead sulphate, while effervescence occurs. We have failed to prepare the calcium salt by adding to a nitrososulphate a solution of lime in sugar-water.