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XVI.—*Note on the existence of Strontia in the Well-Waters of Bristol.*

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Our attention was first directed to this subject, in consequence of the discovery of a small quantity of sulphate of strontia in the deposit or crust which had formed in the interior of a pipe in connection with the hot baths at our Royal Infirmary. We subsequently found, that this compound was also contained in very minute proportion in the water with which this institution was supplied. Having been much occupied lately in examining the well-waters from different parts of the city and its suburbs, we have succeeded in assuring ourselves that the above is not an isolated case, and that sulphate of strontia occurs to a greater or smaller extent in the waters from most parts of the city, particularly in those from the neighbourhood of Cotham, Kingsdown and West Clifton, as well as on the opposite side of the city, at Pyle Hill. The liassic and marly strata which occur here, as is well known, contain fine beds of crystallized celestine, for which this district has been long celebrated. Hence, the presence of this mineral ingredient in the water is easily accounted for.

Those waters we have found to contain the largest proportion of strontia are obtained from Cotham, on the edge of the lias, and at its junction with the new red sandstone. In one specimen which we examined from this locality, we detected as much as three-tenths of a grain of the sulphate per gallon. The process of analysis pursued

in this inquiry was as follows:—The water having been evaporated to dryness, the residuary mass was heated with an excess of pure sulphuric acid, in order to convert the whole of the earthy and alkaline salts present into sulphates, and also to get rid of the organic matter. The excess of sulphuric acid was then expelled by a further application of heat, and the fixed residue extracted, first with boiling water, and subsequently with hot hydrochloric acid, until the whole of the matters that were soluble in those menstrua were dissolved out. That which remained consisted of a mixture of silica with sulphate of strontia. In order to separate these two substances, they were placed in a platinum capsule, and exposed to the vapours of hydrofluoric acid, by which means the silica was abstracted, and sulphate of strontia left behind in the pure state. The necessity for the first operation originated from the fact that the sulphate of strontia is somewhat soluble in chloride of sodium, and therefore upon attempting to estimate it, without taking the precaution to first convert the whole of the bases into sulphates, a loss would be sustained, in consequence of the solution of a part of the sulphate of strontia in the water.

We have also discovered extremely minute traces of sulphate of strontia or sulphate of baryta in many well-waters from other localities. At all events, the siliceous residue obtained by the above process, when fused with a mixture of starch and carbonate of soda, yielded a fused mass which, upon solution in water, and testing with the nitroprusside of potassium, produced a faint violet colouration, which could only be caused by the presence of a trace of alkaline sulphide, resulting from the decomposition of an earthy sulphate insoluble in hydrochloric acid.