Note on the use of Nitrat of Silver, for the detection of Arsenic, in reference to a paper on this subject in Vol. III. of the Society's Transactions. BY DR. MARCET.

I OFFERED to the Society three or four years ago, some remarks on this subject, which were published in the Third Volume of these Transactions. An objection to this mode of detection has since been pointed out to me by an ingenious student of Guy's Hospital; and the subject appears sufficiently important to require this early notice. The objection is this. If any alkaline phosphat be added to nitrat of silver; or if phosphoric acid be added to a solution containing silver and ammonia, a phosphat of silver falls down in the form of a yellow precipitate, closely resembling in appearance that which is formed by arsenic from the same re-agents, and having, like the latter, the property of being soluble both in nitric acid and in ammonia. Some ambiguity therefore might arise in applying the test of silver, for the purpose of detecting arsenic, if the suspected fluid happened to contain phosphoric acid, a circumstance by no means impossible. On examining the phosphat of silver, however, it will be found easily distinguishable from the arsenical salt in a variety of particulars, but more especially by its yielding neither a white smoke, nor a crystalline sublimate, when exposed to heat in a tube; and by its forming on charcoal, when urged by the blow-pipe, a greenish vitreous globule, which is, comparatively, of very difficult reduction.

The test of silver therefore, may, no doubt, with proper management, afford unquestionable indications as to

the presence or absence of arsenic; yet in cases of juridical information, the concurrence of other tests, and in particular that of sulphat of copper with potash, by which arsenic is precipitated in the form of Scheele's green pigment, is highly desirable.

But if the quantity of arsenic be not extremely minute, a proof still more satisfactory, and indeed the most perfect evidence that can be desired, will be readily obtained by heating the yellow precipitate in a tube, with a little pulverized charcoal and dry alkali, so as actually to obtain a pellicle of metallic arsenic on the inside of the tube. This *experimentum crucis* so justly recommended by chemists, supersedes, when the result is affirmative, all other chemical evidence; and it is the more easily performed by using silver for the precipitation of arsenic, as a bulky precipitate is obtained, which subsides very readily, and affords the means of bringing into a tangible form, and submitting to the process of reduction, quantities of arsenic too minute to be operated upon by any other method. It was in this way that I lately detected arsenic in the remains of a beverage by which a child had been poisoned, and I obtained in a tube, from the yellow precipitate, a distinct metallic coat, from a quantity of arsenic which could not exceed one tenth of a grain. I had also an opportunity of examining the contents of the stomach of the child, in which, however, not the least vestige of arsenic could be detected by any method, though the child's life had evidently been destroyed by that poison; so that during the few hours he had lived, after taking the fatal draught, the arsenic had been entirely expelled from his stomach.

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