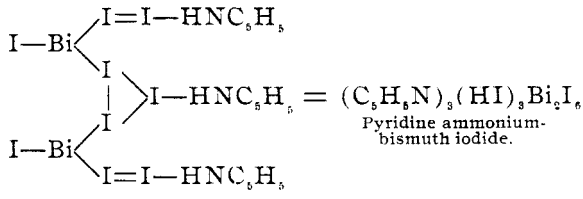

$= (C_5H_5N)_3(HI)_3Bi_2I_6$

Pyridine ammonium-bismuth iodide.

Analogous to

$(C_{17}H_{23}NO_3)_3(HI)_3Bi_2I_6$.

Atropine bismuth iodide.

The alkaloidal bismuth iodides are not quantitatively uniform enough to be entirely satisfactory for alkaloidal assay, but are more stable and uniform than the alkaloid mercuric iodides formed by Mayer's reagent. On the other hand, they are more bulky, less easy to gather in a compact mass, less manageable in filtration. On the whole, so far as found, Dragendorff's reagent gives no general advantage over that of Mayer, though I am well aware how unsatisfactory the latter has been found in the hands of analysts.

For the execution of the work upon tetramethyl ammonium bismuth iodide, I am wholly indebted to Mr. H. E. Brown; for that upon the bismuth iodides of pyridine and the alkaloids to Mr. O. C. Diehl. A further study of the reactions of the halides of bismuth upon representative organic bases is now left to Mr. Brown.

ANN ARBOR, MICH., AUGUST, 1897.

THE ACTION OF SULPHURIC ACID ON MERCURY.

BY J. R. PITMAN.

Received November 18, 1897.

THE following statement is made by Messrs. Baskerville and Miller, in a previous number of this Journal (19, 874): "A qualitative experiment showed that mercury decomposed concentrated sulphuric acid at the ordinary atmospheric temperature, about 20° C."

As a large amount of my work consists in the use of nitrometers, this statement was of considerable interest to me; however, believing their conclusions to be erroneous, the following simple tests were tried: Apparatus used, a Lunge nitrometer, with separate reading burette; the temperature at all times was

about 22° C.; the amount of mercury was from eight to ten times that of the acid (by volume).

First experiment: Thirty cc. of concentrated sulphuric acid was run into the generating bulb, and allowed to stand for forty-eight hours, being shaken at intervals; I was unable to get any gas at all under these circumstances, and there was apparently no reaction between the mercury and the sulphuric acid. Thinking that possibly the presence of air might have some effect upon the reaction, I next measured a certain quantity (about fifty cc.) of rather damp mercury; this was run into the generating bulb and thirty cc. of sulphuric acid as well; after shaking at intervals for twenty-four hours, the air was remeasured and found to have *lost* four-tenths cc.; this loss was probably due to the presence of considerable moisture in the air when first measured; as a check this same air was conducted (thoroughly dried from its contact with the sulphuric acid) from the reading burette into another generating bulb, drawing in thirty cc. of concentrated sulphuric acid, and shaking again, as before, for about twenty-four hours, with a result of a loss of less than 0.05 cc., which is an error that might occur in any test.

In order to try the effect of the preponderance of sulphuric acid, one part of mercury to seventy by volume of concentrated sulphuric acid was taken (sp. gr. 1.84), introduced into a flask, and shaken violently for some time; no mercuric sulphate was formed, nor was there appearance of any other reaction; this was at a temperature of 25.5° C. From these experiments it is apparent that there is no reaction between mercury and sulphuric acid at ordinary temperature, and if Messrs. Baskerville and Miller found a reaction as they state, it must have been by means of some different method.

ON THE DETERMINATION OF FAT AND CASEIN IN FECES.

By E. E. Smith.

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IN the November number (1897) of this Journal, Herman Poole writes, in regard to this subject, that in searching the literature he "found nothing at all which would give even a fairly