uric acid, from sulphurcus acid, and also from appreciable quantities of iron (very small traces of iron can be detected in nearly every sample), but arsenic and free chlorine are very frequently found in acids sold as pure; and as arsenic is undoubtedly a most objectionable in purity, however small its quantity may be, it should be carefully searched for, and if found, the acid containing it should be rejected as unfit for dispensing, and even more so for analytical operations, where its use might lead to very serious mistakes. Boiling a little of the acid with a piece of *pure* copper foil is a very convenient test, and is therefore generally resorted to, but it is not delicate enough for the detection of very small traces of arsenic. I have often been unable to detect it in hydrochloric acid by the copper test, when a careful examination with sulphretted hydrogen proved its presence most unmistakably.

It does not, however, suffice to add a solution of H_2 S, but the gas must be conducted through the acid until the latter is comcompletely saturated with it. After twelve hours' standing, the precipitate, which will, in any case, be formed, must be filtered, washed, dried, and fused with carbonate and nitrate of sodium; the fused mass dissolved in water, filtered, mixed with pure nitric acid in excess, boiled, and then tested with ammonia and nitrate of silver, or with sulphuretted hydrogen. It is impossible to judge of the absence of arsenic from the light color of the precipitate. By the method just described, arsenic will be found in many samples of hydrochloric acid which, if tested according to the directions of the pharmacopœia, would seem to be quite pure.

Sulphurous acid is readily detected by the pharmacopœia test, or by iodized starch, the color of which would be destroyed by the least trace of H_2SO_3 . For detecting free chlorine, solution of indigo appears to me preferable to a mixture of iodide of potassium and starch, as the formation of blue iodide of starch might be caused by perchloride of iron, which is often present in hydrochloric acid, and which might thus be mistaken for chlorine.

On the strength of numerous experiments which I have made, I can recommend the two following methods as the best for preparing perfectly pure hydrochloric acid from the crude commercial article. The first of the two methods yields an acid of low specific gravity (1.120 to 1.125), which, though very suitable for analytical purposes, does not come up to the pharmacopæia standard of strength. By the second method, which was proposed by A. Bettendorff about two years ago, and which I cannot recommend too strongly, a pure acid of 1.16 sp. gr. can be produced with very little

1st. method.—Dilute the crude acid with sufficient water to reduce the specific gravity to about 1.12; saturate it with sulphuretted hydrogen gas, allow to stand for fully twelve hours, decant