

zinc employed, aluminum and magnesium have been recommended as substitutes. The galvanic test is, as Dr. Davy states, altogether too troublesome for general use. The writer has been in the habit of using Fleitman's test for some years, but, as stated by Dr. Davy, it labours under the disadvantage of not giving off the arseniuretted hydrogen, unless with the aid of heat, and its accuracy depending on the purity of the zinc.

Dr. Davy uses sodium-amalgam, made by adding one part of metallic sodium to eight or ten parts of gently warmed mercury, (this quantity of sodium seems to be too large, say one to twenty), whereby a solid amalgam is formed. Neither of these metals are at all likely to contain arsenic, and the latter may be easily purified by nitric acid, if necessary.

The substance to be examined, whether in a liquid or even in a solid form, such as copper-arsenite, arsenate, aniline colours, arsenical sulphides, or even finely powdered arsenic itself, is introduced into a little water in a test tube and a piece of the amalgam about the size of a grain of wheat introduced. The tube is then rapidly covered with a piece of paper soaked in silver nitrate, or a crucible cover moistened with a drop of the solution, which should be made by dissolving twenty grains of silver nitrate in one ounce of water, and adding two drops of nitric acid. The solution becomes of course at once alkaline, and evolves arseniuretted hydrogen, which, acting on the silver solution, produces at once, by separation of silver, a brown mark on the paper, or a silvery stain on the porcelain. To avoid any effect by accidental spirting, Dr. Davy recommends to place the nitrated paper, or porcelain, above this.

One thousandth of a grain of arsenious acid in one cubic centimeter of water can be readily detected, and even one millionth after a short time.

Antimony, under similar circumstances, *e. i.*, in alkaline solutions, gives no such result: hence it may be better to make the liquid strongly alkaline before adding the amalgam; but if acid (tartaric) be added, then antimoniuretted hydrogen is evolved and a very similar stain produced from silver antimonide.

These stains—by arsenic or antimony—may be very easily distinguished by soaking in ammonium sulphide, filtering off the solution obtained, evaporating to dryness and observing the colour