

The same solution may be used for Group IV. if the salt does not belong to either of the first three, but it is preferable now to employ some of the original solution. It may happen that no base whatever is found, as would be the case in the examination of acids, and *vice versa*, no acid if the substance is a base. In the case of no metal being found, the base is in all probability hydrogen, which takes the place of true metals in salts, producing acids. When in the investigation for acids none have been found, the compound under examination is probably a hydrate, *i.e.* a combination of an oxide with water. Arsenic is conveniently ranked under both heads.

It is best to commence with the detection of the base, as this knowledge obviates the necessity of searching for many acids, if the substance examined has been found to be soluble in water. Thus lead in an easily soluble salt would exclude hydrochloric, hydriodic, hydrobromic, carbonic, phosphoric, sulphuric acids, &c., &c.

Barium would exclude sulphuric, carbonic, phosphoric acids, &c., &c., but not hydrochloric, hydriodic, or hydrobromic acids, &c.

A knowledge of the solubilities of salts will greatly aid the investigation.