

precipitate will be formed. The addition of ammonia dissolves the silver phosphate, but of course precipitates the original salt. The lime can be detected by adding oxalic acid and excess of sodium acetate to the acid solution. A light coloured pyroxene is often mistaken for apatite, readily distinguished by being much harder, and quite insoluble in nitric or hydrochloric acid.

HÆMATITE—Ferric oxide—is not magnetic; when in fine powder dissolves in hydrochloric acid. The addition of nitric acid to the hot solution does not change its odour. The iron can be detected by usual tests; the ore gives a brown red streak on rough porcelain.

MAGNETIC IRON ORE.—Attracted by the magnet, the hydrochloric solution turns first black on the addition of nitric acid, and then brownish yellow. Ore gives a black streak.

TITANIC IRON ORE.—Scarcely attracted by the magnet; dissolves in hydrochloric acid only when very finely pounded. The titanous acid is best detected by fusing with an excess of potassium bisulphate; dissolving in a large quantity of cold water and boiling for a long time, a white or yellow precipitate is formed.

SULPHIDES, with the exception of cinnabar (mercuric sulphide, not occurring in Canada), are acted on by nitric acid, red fumes are evolved, and the solution contains sulphuric acid. In the case of galena (lead sulphide), the sulphuric acid remains combined with the lead oxide, as insoluble lead sulphate. (See Galena.) The sulphur can generally be detected by heating a portion of the ore in a tube, open at both ends, held slanting, and testing the gas evolved by iodine starch paper. Some sulphides, such as those of zinc, antimony and bismuth, may be dissolved in hydrochloric, with evolution of hydro-sulphuric acid, and the solutions examined by the proper tests.

IRON PYRITES, or iron bisulphide, when heated strongly before the blow-pipes, loses sulphur and forms a globule of iron sulphide, which is attracted by the magnet. The powdered ore is readily dissolved by nitric acid, which is not the case with gold, for which this ore is often mistaken. Gold will dissolve in aqua regia; while so-called golden mica, often mistaken for the metal, will not.

COPPER PYRITES, when gently roasted, moistened with hydrochloric acid, and exposed to the outer flame of the blow-pipe, will impart to it a bluish green colour. The ore may be dissolved in nitric acid, the solution treated with excess of ammonia. A brown precipitate of ferric oxide will be formed, and a blue solution obtained.