

9. DETECTION OF MINUTE TRACES OF COPPER IN IRON PYRITES AND OTHER BODIES.*

Although an exceedingly small per-centage of copper may be detected in blowpipe experiments, by the reducing process, as well as by the azure-blue coloration of the flame when the test-matter is moistened with chlorhydric acid, these methods fail in certain extreme cases to give satisfactory results. It often happens that veins of Iron Pyrites lead at greater depths to Copper Pyrites. In this case, according to the experience of the writer, the Iron Pyrites will almost invariably hold minute traces of copper. Hence the desirability, on exploring expeditions, more especially, of some ready test, by which, without the necessity of employing acids or other bulky and difficultly portable reagents, these traces of copper may be detected.† The following simple method will be found to answer the purpose:—The test-substance, in powder, must first be roasted on charcoal, or, better, on a fragment of porcelain,‡ in order to drive off the sulphur. A small portion of the roasted ore is then to be fused on platinum wire with phosphor-salt; and some bisulphate of potash is to be added to the glass (without this being removed from the wire) in two or three successive portions, or until the glass becomes more or less saturated. This effected, the bead is to be shaken off the platinum loop into a small capsule, and treated with boiling water, by which either the whole or the greater part will be dissolved; and the solution is finally

* This method has not been hitherto published; but it is inserted here, as it has been shown to various persons interested in blowpipe experiments. The same remark applies to No. 11.

† In Blowpipe Practice—as far, at least, as this is possible—the operator should make it an essential aim to render himself independent of the use of mineral acids and other liquid and inconvenient reagents of a similar character. If these reagents cannot be dispensed with altogether, their use, by improved processes, may be greatly limited.

‡ In the roasting of metallic sulphides, &c., the writer has employed, for some years, small fragments of Berlin or Meissen porcelain, such as result from the breakage of crucibles and other vessels of that material. The test-substance is crushed to powder, moistened alightly, and spread over the surface of the porcelain; and when the operation is finished, the powder is easily scraped off by the point of a knife-blade or small steel-spatula. In roasting operations, rarely more than a dull red heat is required; but these porcelain fragments may be rendered white-hot, if such be necessary, without risk of fracture. *Canadian Journal*, September, 1860.