BLOWFIPE PRACTICE.

pipe, whilst others do not exhibit that reaction; some imparting a colour to the flame, others volatilizing, and so forth. Secondly, the blowpipe may be employed to ascertain the general composition of a mineral; or to prove the presence or absence, in a given body, of some particular substance, as silver, copper, lead, iron, cobalt, manganese, sulphur, arsenic, antimony, and the like. Thirdly, it may be used to determine, in certain special cases, the actual amount of a metallic or other ingredient previously ascertained to be present in the substance under examination.

In using the blowpipe, the mouth is filled with air, and this is forced gently but continuously down the tube by the compression of the muscles of the cheeks and lips, breathing being carried on simultaneously by the nostrils. By a little practice, this operation becomes exceedingly easy, especially in ordinary experiments, in which the blast is rarely required to be kept up for more than twenty or thirty seconds at a time. The beginner will find it advisable to restrict himself at first to the production of a steady continuous flame, without seeking to direct this on any object. Holding the blowpipe in his right hand (with thumb and two outside fingers below, and the index and middle finger above the tube), near the lower extremity, he should let the inner part of his arm, between the wrist and the elbow, rest against the edge of the table at which he operates. The jet or point of the blowpipe is turned to the left, and inserved either into or against the edge of the flame, according to the nature of the operation, as explained below. After a few trials, when sufficient skill to keep up a steady flame has been acquired, the point of the flame may be directed upon a small splinter of some easily fusible material, such as natrolite or lepidolite, held in a pair of forceps with platinum tips.* Some little difficulty will probably be experienced at first in keeping the test-fragment exactly at the flame's point ; but this, arising partly from irregular blowing, and partly from the beginner feeling constrained to look at the jet of the blowpipe and the object simultaneously, is easily overcome by half-an-hour's practice. A small cutting of metallic tin or copper supported on a piece of well-burnt soft-wood charcoal can be examined in a similar manner.

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Fig. 5 repre shaped mout

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[•] If forceps of this kind cannot be procured, a pair of steel forceps with fine points, such as watchmakers use, may serve as a substitute. It will be advisable to twist some silk thread or fine twine round the lower part of these, in order to protect the fingers. The points must be kept clean by a file.