

known minerals; but as many of these are rarely met with, or are comparatively of little importance, an Explanatory Note, referring only to species of ordinary occurrence, is attached to each Table. In these Notes, more especially in those which relate to the concluding Tables of the series, additional information is given respecting the crystallization, spectroscopic reactions, and other distinctive characters of leading species. The spectroscope recommended for use, in these investigations, is a simple, direct-vision pocket-spectroscope, such as can be carried very conveniently, with accompanying Bunsen-burner (the foot unscrewed), in a spare corner of the blowpipe case.

SCHOOL OF PRACTICAL SCIENCE, TORONTO:

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BRIEF SKETCH OF THE HISTORY OF THE BLOWPIPE.

The use of the Blowpipe, in the arts, dates from a very distant period—a simple form of the instrument having been long employed, in the process of soldering, by jewellers and other workers in gold and silver. This employment must naturally have suggested its use to the alchemists; and in the curious collection of woodcuts known as the *Liber mutus*, in which an alchemist, assisted by his wife, is depicted in the performance of various chemical operations, the use of the blowpipe is clearly indicated. The *Liber mutus* is of very uncertain date, but it belongs, in all probability, to the beginning of the seventeenth century. The alchemist is here employed, it is true, not in the actual examination of a substance by his blowpipe, but in the construction or sealing up of a glass vessel. Nevertheless, the use of the instrument in the conversion of calc spar into lime is pointed out by ERASMUS BARTHOLIN in his treatise on Iceland Spar, written in 1670; and in the *Ars vitraria experimentalis* of KUNCKEL, published in 1679, the blowpipe is recommended for use in the reduction, on charcoal, of metal-holding bodies, the requisite blast being produced by a pair of air-tight bags. In 1702, the celebrated alchemist JOHANN GEORG STAHL distinctly refers to the reduction of lead and antimony, by the fusion of what are now known as the oxides of these metals, on a piece of charcoal, by means of a "soldering pipe" or *tubulo cæmentorio aurifabrorum*. JOHANN ANDREAS CRAMER, in his *Elementis docimasticæ* (1739) describes the use of the instrument in the examination of small particles of metallic bodies, and suggests the use of borax (long previously employed in soldering, and also by the alchemists in crucible operations) for this purpose. He gives also a description of a mouth blowpipe provided at its lower end with a cylindrical reservoir for the retention of the moisture which condenses from the operator's breath.

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