Like the mortar and pestle that were the subject of an earlier installment of Museum Notes (1), the blowpipe was not invented by chemists but rather adapted from similar instruments used in ancient metallurgy (figure 1) and by glass blowers and jewelers (2). The form adopted by chemists, starting in the 18th century, was a slender brass tube, about 9 inches long, that was curved at one end and fitted with a fine nozzle. By blowing into the other end, a chemist or mineralogist could direct either the oxidizing or reducing regions of a luminous flame onto a small mineral sample placed in a shallow cavity cut into a charcoal block (figure 2).

Figure 1. Egyptian tomb painting illustrating the use of the blowpipe, circa 1500 BC.

Figure 3. Modern use of the blowpipe, circa 1911.

Figure 3. A chest of blowpipe reagents and a display of the variety of common laboratory blowpipes normally stored in the lower drawer. For comparison, a typical charcoal block is shown on the far left.

Figure 4. A portable Berzelius oil lamp for blowpipe analysis. The additional ring and alcohol lamp could be used to evaporate mineral water samples for analysis.
Though often heated by itself, at times the mineral sample was first mixed with various fluxes and reagents. Colored borax and phosphate glass beads and colored flame tests were also used for identification purposes (3).

Though the Oesper Collections do not own an early portable blowpipe kit for field work like those shown in the article by Burchardt (4), it does own a number of interesting items for use in teaching blowpipe analysis in a laboratory setting. These include a wooden reagent rack, with test tubes and a drawer for the storage of various types of blowpipes, charcoal blocks and other items (figure 3), a portable Berzelius oil lamp and stand (figure 4), burner adapters for use of the blowpipe in connection with a standard Bunsen burner (figure 5), and a small pocket blowpipe for crude field work (figure 6). More unusual is a set of 100 mineral samples made in Germany (figure 7) intended for use as unknowns when teaching blowpipe analysis to students.

Figure 5. Various items for blowpipe analysis, including a porcelain burner plate to hold samples, an unglazed porcelain plate for streak tests, a small magnifying glass, a jack knife, reagent bottles, sample vials, burner adapters, a charcoal block, and two varieties of blowpipe.

Figure 6. A pocket blowpipe for field work. The candle and charcoal plug fit inside the cylinder and the blowpipe, sans rubber tube and glass mouth piece, rotates to a vertical position, thus placing it out of the way for easy storage.

Figure 7. A late 19th-century German-made set of “100 Minerals for Blowpipe Experiments” used to provide students of blowpipe analysis with various samples for analysis.
References and Notes


3. Most student manuals of blowpipe analysis date from the 19th or early 20th century. For a more recent example with colored plates, see O. C. Smith, Identification and Qualitative Analysis of Minerals, Van Nostrand: New York, NY, 1940.