

## Pharmacognosy—A Shift to “Grind and Find”

Pharmacognosy was first formally taught in the United States at the Philadelphia College of Pharmacy in 1821 (Figure 1.11) and persisted as part of the curriculum of every pharmacy program in the country until 1940. By the late 1950s, most U.S. botanical pharmacognosy training had been dropped from pharmacy curricula. By this time, plants and the drugs derived from them had largely disappeared from the market, replaced by synthetic or isolated pure chemical entities. The botanical and descriptive aspects of pharmacognosy were supplanted by medicinal and pharmaceutical chemistry as drug quality assurance tools.

Continued specialization in analytical chemistry (e.g., paper chromatography) and structural elucidation—versus the broad organism-based general approach employed by pharmacognosists—was more appropriate for the development of modern drugs. The science of pharmacognosy evolved into the field of pharmaceutical biology with an

emphasis on natural products chemistry, molecular biology, biotechnology, and biological and chemical screening. In the United States, this caused many of the techniques of classical pharmacognosy, including botanical microscopy, to disappear almost completely from academia and practical use, though the quality control aspects of herbal drugs were continuously taught in Europe (e.g., Austria, Germany, and Switzerland).

Unfortunately, the loss of the tools of classical botanical pharmacognosy left a void in this important body of knowledge because physical description is the primary means by which plants are identified. Interestingly, in their *Principles of Pharmacognosy* (1887), Flückiger and Tschirch observed the beginnings of this trend in regard to the newly developed chemically characterized isolates and challenged that chemical isolation was not within the domain of pharmacognosy. They stated, “Medicinal agents of this kind are outside of the sphere of pharmacognosy.” Nevertheless, the shift to the development of medicines prepared from chemical isolates greatly influenced



**FIGURE 1.11** The founding of the Philadelphia College of Pharmacy (1821). In 1821, a professor of chemistry at Pennsylvania University, John Redman Coxe, publicly and harshly criticized the profession of pharmacy as deplorable. In response, young pharmacists banded together to form a college (association) of apothecaries directed to the quality of articles brought into the drug market. Pharmacognosy became an integral part of the pharmacy curriculum that soon followed. (From *Great Moments in Pharmacy*. 1966. Illustration by Robert Thom. Printed with permission of American Pharmacists Association Foundation. Copyright 2010, APhA Foundation.)