

Teaching the History of Pharmacy: Yesterday and Today

Robert A. Buerki

“In our utilitarian and materialistic age, too little attention is given to history,” Edward Kremers remarked parenthetically in an 1892 address before the APhA Section on Pharmaceutical Education and Legislation, “The professional student should at least have a fair knowledge of this history of his profession” (1). The first (1910) and second (1913) editions of *The Pharmaceutical Syllabus* recommended including a “Historical Account” in its required “Theory of Pharmacy” course (2). The fourth edition (1932)—the first to outline the course of instruction for the new four-year Bachelor of Science degree in Pharmacy—set out an ambitious 32-hour required course in history of pharmacy:

The study of the history of pharmacy is worth while for its own sake. It may be taught to stimulate a professional esprit de corps. It certainly is deserving of consideration as a review of the past, so that we may understand the present, and thus be enabled to plan intelligently for the future. (3)

For many, however, the rationale for including history of pharmacy in a curriculum was the sense of professionalism such a course was supposed to instill in students. In 1936, for example, C. O. Lee wrote:

We need first of all to become thoroughly professionally minded. This will be accomplished, in part at least, by becoming imbued

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with the idea that the lessons of pharmaceutical history, and its traditions, are of value. With a true historical picture of our profession at hand we should be able to go forward with intelligence, interest and enthusiasm! (4)

By 1939, Lee could report through a temporary APhA Committee to Study Courses in the History of Pharmacy that almost exactly one-half of the schools and colleges of pharmacy in the nation listed either a required or an elective course in the subject (5). That same year, however, the Syllabus suffered a crushing blow when the American Council on Pharmaceutical Education suggested that its curricular guidelines be made an obligatory part of the accreditation process (6). The tentative fifth edition of the Syllabus (1942) and its revision (1945), however, contained an outline for a required 48-hour course titled "History, Literature, and Ethics of Pharmacy" the historical portion of which was intended to "create a pleasant curiosity . . . which will lead to a life-long interest in historical material" (7). Characterizing the proposed course as "a conglomerate kept together by some fundamental, although undefined relationship," George Urdang dutifully developed a "select bibliography" for the unwieldy *mélange* just before The Pharmaceutical Syllabus collapsed under the weight of its own pretension (8).

The Pharmaceutical Survey of 1946-49 explored every facet of American pharmacy; pharmaceutical education was no exception. The Pharmaceutical Curriculum (1952), published under the auspices of the AACP Committee on Curriculum, recommended not only including historical material in orientation courses, but also outlined a required 48-hour course in the history of pharmacy:

The history of pharmacy has . . . close relationships with the history of culture, the development of science, the evolution of the healing arts, and the improving means and methods by which man has supplied his various wants. The study of this subject provides a rich background of facts and ideas for comprehending the nature and functions of pharmacy in a modern highly developed social order. (9)

At about the same time, AACP President Arthur H. Uhl, who also served as Director of the University of Wisconsin School of Pharmacy and, not incidentally, Chairman of Council of the American Institute of the History of Pharmacy, weighed in on the issue:

The History of Pharmacy is one of the assets of the profession. We have to make use of it. It is not sufficient to leave it to the individual schools whether or not to include courses in the history of pharmacy in the curriculum. These courses must be required. Only then can we be sure that every pharmacist will be the well educated pharmaceutical individual we want him to be. (10)

In 1952, George Urdang and Glenn Sonnedecker published the first comprehensive survey of the status of history of pharmacy in American pharmaceutical education. They found that 97.1 percent of American schools and colleges of pharmacy offered courses either wholly or partly devoted to the subject, concluding that “a burgeoning interest in socio-historical study of the professions, and of civilization at large, seems to be reflected in current attitudes of administrators of pharmaceutical education” (11). By the early 1960s, however, America’s schools and colleges of pharmacy were struggling to implement their new five-year curricula, and Alex Berman was more cautious:

It is possible that some day one or more schools may want to emulate Wisconsin, but at the present time there appears no basis for optimism on that score. The teaching of pharmaceutical history has probably remained unchanged in the last decade. . . .

What the future of history in pharmaceutical education will be in the extended curricula will depend on the attitude of school administrations. More than perfunctory recognition of the value of pharmaceutical history is needed to derive tangible and lasting benefits. (12)

Berman’s pessimism was soon justified. In 1963, Thaddeus S. Grosicki surveyed 48 schools and colleges of pharmacy. He found that only 77.1 percent of these institutions offered courses either wholly or partly devoted to the history of pharmacy (13). In 1976, the American Institute of the History of Pharmacy’s Committee on Teaching the History of Pharmacy sent a questionnaire to the deans of the 80 schools and colleges of pharmacy in the United States, Canada, Puerto Rico, and the Philippines. The Committee, through chair Robert A. Buerki, reported that only 48.8 percent of these institutions offered any course work that could remotely be considered as having a historical orientation (14). Buerki’s findings may have prompted the Institute’s Council to adopt a strong policy statement on teaching the history and social studies of

pharmacy later that same year. The statement declared that the Institute should:

foster curricular offerings, in each School of Pharmacy, devoted to the study of the history and social sciences of pharmacy and health care. Each subject area should be dealt with in depth, either through elective or, preferably required credits, should be supported by adequate staff and library resources, and should be recognized as a significant component of the education of a pharmacist. (15)

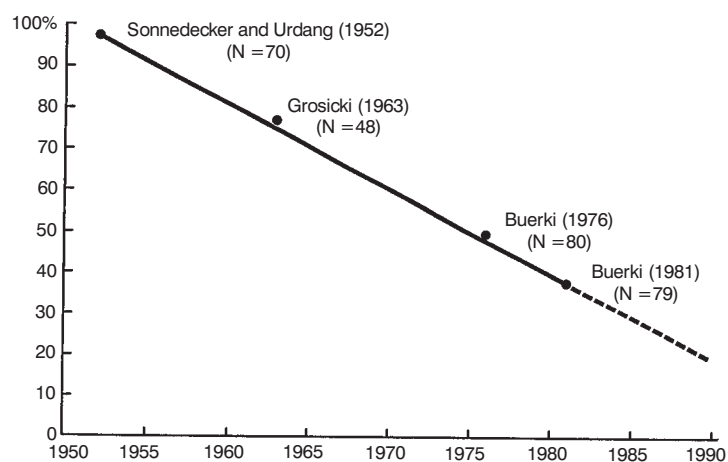
Finally, in 1981, Buerki conducted a more extensive survey of the same institutions. Of the 79 respondents, 31 institutions (or 39.2 percent) offered either required or elective course work in the history of pharmacy, 25 (or 31.7 percent) offered orientation courses that contained some historical component, and 23 (or 29.1 percent) offered no such course work (16). The data from these four surveys is presented as Figure 1.* Buerki reported that the most frequently cited reason for eliminating history of pharmacy course work was ACPE-mandated curricular changes:

Something had to give, and history of pharmacy courses were vulnerable. Required courses were accorded elective status. Elective courses which did not hold up in enrollment were not offered, and subsequently were withdrawn from the catalog, often as a matter of university policy. . . . The teaching of the history of pharmacy, like wife-beating (to paraphrase Samuel Johnson), has become an amiable weakness. (17)

Buerki concluded by calling upon AACP, the Institute, and its Committee on Teaching the History of Pharmacy to “identify and organize teachers within the discipline and assist them to assist each other in developing new, bold, and innovative teaching methods and materials,” “encourage and develop bold and innovative training programs to assure the continuity of the teaching within our discipline,” and consider “a new a bold departure from traditional concepts of history of pharmacy course organization” (18). One example of such a departure is offered as Appendix A.

*Parenthetically, a colleague in pharmaceuticals assures me that this slope reflects a zero-order kinetics model. Extrapolation of these data allows me to predict that the teaching of the history of pharmacy will expire about 7:38 p.m., Tuesday, April 11, 2000.

FIGURE 1. Decline in History of Pharmacy Offerings in AACP Schools and Colleges, 1952 to 1982.



Committee work is not a pretty thing to watch, particularly within the Institute. In March, 1992—a full decade after Buerki’s call to action—the Institute’s Committee on Teaching the History of Pharmacy, rather than promoting the development of separate, stand-alone history of pharmacy courses, decided to “pursue a variety of projects which can be incorporated into basic courses in the pharmaceutical sciences or in introduction to pharmacy courses” (19). The following year, encouraged by the language in Background Paper II of the AACP’s Commission to Implement Change in Pharmaceutical Education and buoyed by the adoption of an AACP resolution which supported “the inclusion of the educational outcomes, competencies and processes contained in Background Paper II in the revised accreditation standards of the American Council on Pharmaceutical Education, (20) the Committee recommended the “production of a new undergraduate textbook that could be used as a primary text for a recent history of pharmacy course, a supplementary text for a survey course in the history of pharmacy, or in a pharmacy orientation course to explain how American pharmacy is practiced today.” Tentatively titled *The Evolution of American Pharmacy*, the new textbook would focus on “developments in professional practice, education, public policy, and professional functions in American pharmacy during the twentieth century” (21). Unfortunately, the suggestion for implementing the project—inviting authors to present a related series of papers

at Institute symposia over a period of several years, which would then be gathered into an edited volume—proved unwieldy, despite two successful symposia on the “Evolution of American Pharmacy” presented at the 1994 and 1995 annual meetings of the Institute (22). Institute Director Gregory J. Higby has agreed to pursue the textbook as an individual project.

REFERENCES

1. Edward Kremers, “Notes on Pharmaceutical Education: The Study of *Materia Medica*,” *Proceedings of the American Pharmaceutical Association* 40 (1892), p. 316. “If philosophy makes the natural sciences interesting, history lends them a peculiar charm,” Kremers added. “Both, I dare say, are equally important to the symmetric development of a scholar.”
2. “Theory of Pharmacy,” National [Syllabus] Committee, *The Pharmaceutical Syllabus* ([Albany, New York]: New York State Board of Pharmacy, 1910), p. 108; “Theory of Pharmacy, or Pharmaceutical Technique,” National [Syllabus] Committee, *The Pharmaceutical Syllabus*, 2nd ed. (N.p.: n.p., 1913), p. 128. The “Historical Account” was mysteriously missing from the description of the “Theory of Pharmacy” course in the third edition (1922), possibly due to a typographical error. See “Theory of Pharmacy,” *Pharmaceutical Syllabus Committee, The Pharmaceutical Syllabus*, 3rd ed. (Boston: By the Committee, 1922), p. 77.
3. “History of Pharmacy,” National Pharmaceutical Syllabus Committee, *The Pharmaceutical Syllabus*, 4th ed. (Baltimore, Maryland: By the Committee, 1932), p. 76.
4. C[harles] O. Lee, “Discovering Pharmacy Through History,” *Journal of the American Pharmaceutical Association* 25:10 (October, 1936), p. 872.
5. C[harles] O. Lee, “Section on Historical Pharmacy: Report of the Committee to Study Courses in the History of Pharmacy,” *Journal of the American Pharmaceutical Association* 28:11 (November, 1939), p. 923. The Committee used college catalogs to secure its data.
6. [Henry M.] Burlage, “Summary of the Proceedings of the 1939 Meeting of the American Association of Colleges of Pharmacy: Report of the Committee on Pharmaceutical Syllabus,” *American Journal of Pharmaceutical Education* 3:4 (October, 1939), p. 490. Also see Robert G. Mrtek, “Pharmaceutical Education in These United States—An Interpretive Historical Essay of the Twentieth Century,” *American Journal of Pharmaceutical Education* 40:4 (November, 1976), pp. 351-52.
7. “History, Literature, and Ethics of Pharmacy,” National Pharmaceutical Syllabus Committee, *The Tentative Pharmaceutical Syllabus*, 5th ed., mimeographed (N.p.: By the Committee, 1942), p. 12. The material included in the course also could be incorporated in other courses or divided into two parts presented during the first and fourth year of the curriculum. Also see pp. 13-17 and “History, Literature, and Ethics of Pharmacy,” National Pharmaceutical Syllabus Committee, *The Pharmaceutical Syllabus*, tentative 5th ed., revised, mimeographed (N.p.: By the Committee, 1945), pp. 8-13.
8. George Urdang, “History, Ethics, and Literature of Pharmacy: A Select Bibliography,” *American Journal of Pharmaceutical Education* 8:4 (October, 1944),

pp. 491-503. With his characteristic thoroughness, Urdang provided history references in English, French, German, Spanish, Italian, Dutch, Swedish, Polish, and Hungarian. See pp. 492-95.

9. Lloyd E. Blauch and George L. Webster, "History of Pharmacy," *The Pharmaceutical Curriculum: A Report Created for the Committee on Curriculum*, American Association of Colleges of Pharmacy (Washington, D.C.: American Council on Education, 1952), p. 162. "Indeed, no subject so readily lends itself to developing in the pharmacist the orientation he should have as a professional person, to producing in him a sense of appreciation for, and pride in, his profession." Also see pp. 161-63 and "Orientation in Pharmacy," pp. 156-58.

10. Arthur H. Uhl, "The President's Page: Shall History of Pharmacy be a Required Subject in the Pharmaceutical Curriculum?" *American Journal of Pharmaceutical Education* 12:3 (July, 1948), p. 569.

11. Glenn Sonnedecker and George Urdang, "A Survey on the Status of History of Pharmacy in American Pharmaceutical Education," *American Journal of Pharmaceutical Education* 16:1 (January, 1952), pp. 13 and 21. A total of 36 institutions (51.4 percent) gave a course entirely devoted to the history of pharmacy, while 32 institutions (45.7 percent) devoted part of a course to the history of pharmacy.

12. Alex Berman, "Some Notes on Teaching History of Pharmacy in the Extended Curricula," *American Journal of Pharmaceutical Education* 24:3 (Summer, 1960), pp. 283-84. Berman concluded by observing that the history of pharmacy "presents a golden opportunity to bridge the gap between narrow specialization and the humanities and to give us a greater insight into some of the most pressing contemporary socio-economic problems of pharmacy."

13. T[haddeus] S. Grosicki, "History of Pharmacy in the Five-Year Program," *American Journal of Pharmaceutical Education* 27:2 (Spring, 1963), pp. 237-38. Grosicki found 22 required or elective courses in the history of pharmacy (45.8 percent) and 15 required orientation courses in which some history of pharmacy was to be incorporated (31.3 percent). Like Lee, Grosicki used college catalogs for his data.

14. Robert A. Buerki, "Teaching the History of Pharmacy—A Preliminary Assessment," *Teaching the History and Sociology of Pharmacy*, No. 1 (May, 1977), p. 1.

15. "AIHP's Policy on Teaching Historical and Social Studies," *Teaching the History and Sociology of Pharmacy*, No. 1 (May, 1977), p. 3.

16. Robert A. Buerki, "Instructional Resources in the History of Pharmacy: Results of a Survey," *American Journal of Pharmaceutical Education* 46:1 (Spring, 1982), pp. 10-11. For a complete set of materials described in the survey, see Robert A. Buerki, comp. and ed., *Survey of Instructional Resources in History of Pharmacy Undergraduate Courses* (Columbus, Ohio: The Ohio State University, 1981), x + 160 pp.

17. Buerki, "Instructional Resources in the History of Pharmacy: Results of a Survey," p. 11. Other reasons cited for eliminating history of pharmacy course work were death or retirement of faculty members teaching the course work, lack of student interest, and a lack of funds to support teaching the course work.

18. *Ibid.*, pp. 15-16.

19. George Griffenhagen, "Report of the 1992 Business Meeting: Teaching the History of Pharmacy: Robert A. Buerki, Chair," *Pharmacy in History* 34:4 (1992), p. 237.

20. Commission to Implement Change in Pharmaceutical Education, "Background Paper II: Entry Level, Curricular Outcomes, Curricular Content and Educational Process: Personal Awareness and Social Responsibility," *AACP News*, Special Report (November, 1991), pp. 17-18; and Robert A. Sandman, "Chair Report of the Bylaws

and Policy Development Committee," *American Journal of Pharmaceutical Education* 56:5 (Winter Supplement, 1992), p. 14S.

21. George Griffenhagen, "Report of the 1993 Business Meeting: Teaching the History of Pharmacy: Robert A. Buerki, Chair," *Pharmacy in History* 35:4 (1993), pp. 187, 189.

22. George Griffenhagen, "Minutes of the [1995] Annual Business Meeting: Teaching the History of Pharmacy: Robert A. Buerki, Chair," *Pharmacy in History* 37:4 (1995), p. 202. In February, 1994, Griffenhagen reported that the response was "less than encouraging." By March, he was frankly discouraged and recommended that all "editorial and publishing aspects of the 'Evolution of American Pharmacy' series would be immediately assumed by the AIHP headquarters" and that "no supplemental invitations for the presentation of papers for this series at AIHP annual meetings" would be made.

APPENDIX A

Interpreting Nineteenth-Century Pharmacy Practice: The Ohio Experience

Robert A. Buerki

Village museums offer the public a unique opportunity to step back into history and view artifacts in their natural setting rather than in the artificial setting of a glass case. More importantly, costumed docents and interpreters can demonstrate the actual use of an artifact or implement, which can be an effective educational experience for village visitors of all ages. Demonstrations at such museums generally fall into two categories: domestic arts and crafts, such as spinning, weaving, sewing, or cooking; and labor-intensive trades, such as farming, printing, and blacksmithing. Middle-class occupations such as banking, teaching, and storekeeping are less often interpreted, partly because the basic functions of these occupations have changed very little over the years and partly because such demonstrations are necessarily rather static and lack-

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ing in visual appeal. The remarkable first-person interpretations at such village museums as Indiana's Conner Prairie, where interpreters actually adopt the personae of real individuals living in the 1830s, overcome these problems to a great extent, but are often unsettling to the casual visitor.

Interpretations of the health professions are especially rare, presumably because the specialized techniques and scientific knowledge associated with health professionals is as difficult to interpret as it is to acquire. The historical interpretation of the profession of pharmacy is a case in point. The objects that pharmacists of other generations have left behind give a dimension to the history of pharmacy beyond what can be conveyed by the written word. Such artifacts are studied for what they tell about how the pharmacist worked, the development of pharmaceutical technology, and the evolution of modern drug therapy. This three-dimensional lore of the apothecary—at once nostalgic, curious, and beautiful—has a strong and intensely personal appeal for the average visitor to a museum village. Nonetheless, very few museum villages can boast of an apothecary shop, a fact that reflects the difficulties involved in providing adequate historical interpretation of such a specialized field.

One way to overcome this problem is to establish links between museums and colleges of pharmacy. If museums provide the artifacts and physical setting, pharmacy students and professors can bring their expertise to bear in building an effective interpretive program. Such cooperative programs are uncommon to say the least, although those museums located near one of the 83 colleges of pharmacy in the United States and Canada have a ready resource of professional support at their disposal. Few of these institutions have an expert on historic pharmacy practice on staff, but most would be interested in helping a museum develop a program in this field. In the absence of such resources, museums might approach a retired pharmacist in the community for assistance in presenting the history of pharmacy. In 1955, no less than thirty apothecary shop restorations were being exhibited across the United States; at present, there are more than 146 medico-pharmaceutical museums or exhibitions that are on special or semipermanent display and open to the public in the United States and Canada (1).

Only a few of these are located in museum villages in the United States (2) and Canada (3), but only a handful offer the opportunity to interact with interpreters who have extensive training in historic pharmacy practice. The Pasteur-Galt Apothecary Shop of Colonial Williamsburg, Virginia, was established in 1760 by apothecary-surgeon William Pasteur, who was joined in 1775 by physician-surgeon John Minson Galt. The pharmaceutical equipment of the shop—including rare Delft drug and leech jars, imported medicines and elixirs, and a late eighteenth-century balance—is documented as typical of the period 1760 to 1800. The shop is interpreted by costumed docents who discuss the medico-pharmaceutical practices of the colonial period. Although they get a good general education in the history of medicine of the period, these interpreters have little, if any, training in pharmaceutical manipulations (4). The meticulous resto-

ration of a pharmacy operated at Niagara-on-the-Lake since 1866 and at other locations since 1820, features the original butternut and walnut fixtures, plaster ceiling rosettes, crystal gasoliers, and many of the original drug jars brought from England as early as the 1830s. While not part of a museum village, the Niagara Apothecary is interpreted during the summers by pharmacy students who receive special training in the history of pharmacy and nineteenth-century dispensing techniques at the University of Toronto Faculty of Pharmacy (5). The recent cooperation between the Ohio Historical Society and The Ohio State University College of Pharmacy in developing a program for the restored pharmacy at Ohio Village provides an example of how more lively and informed interpretations of this and other specialized professions might be developed at historic sites.

Ohio Village is a reconstruction of a typical Ohio county seat of the 1800-1860 period. It features costumed craftsmen plying their trades with the tools and methods of their forefathers. Opened in 1974 on a ten-acre site adjacent to the Ohio Historical Center in Columbus, the open-air museum features a blacksmith, weaver, gunsmith, cabinetmaker, tinsmith, and printer. Visitors browse through the town hall, a physician's office and home, and a general store, where many of the craftsmen's products are available for sale, and then relax at the Colonel Crawford Inn, where they can enjoy authentic nineteenth-century fare.

Although a "drug store" was included in the original plans for the museum, the Ohio Village Pharmacy did not materialize until a decade later. Representatives from the Board of Trustees of the Ohio Historical Society contacted the Ohio State Pharmaceutical Association (OSPA) to seek its sponsorship for the pharmacy, following a pattern the Society had found successful in attracting sponsors for other attractions at Ohio Village. Unfortunately, although the OSPA was sympathetic to the project, it could not commit the funds required by the Society to build, furnish, and operate the pharmacy on an ongoing basis. As a result, when Ohio Village opened its gates for the first time in the fall of 1974, it did so without a pharmacy in place.

Shortly thereafter, the Society established a professional development council to assist in locating sponsors and contributors for Ohio Village. The failing health of the individual assigned to the pharmacy project made it difficult for him to make much progress, so in 1975 the Society tried a new approach. It formed a task force composed of representatives of the OSPA, the Ohio Society of Hospital Pharmacists, the Ohio State Board of Pharmacy, the colleges of pharmacy at Ohio Northern University and The Ohio State University, and the pharmaceutical industry. While representing nearly every facet of Ohio pharmacy practice, the task force also represented a wide diversity of opinion on the best method for achieving success on the project. The Historical Society preferred working with one or two major donors, whereas the task force felt that a grass-roots appeal to individual pharmacists through a "friends" group organized specifically for that purpose might achieve the same results. Later

that same year, the Historical Society established a development office to spearhead a fund-raising campaign for the pharmacy project through pharmaceutical associations, manufacturers, and private foundations. Yet despite its best efforts, the Society was able to raise only about \$1,300 during the first two years of its campaign. Finally, in 1983, in anticipation of the centenary of the Ohio State Board of Pharmacy, a new non-profit corporation was formed by past members of the Board to promote the profession of pharmacy in the State of Ohio. Happily, the first project the Ohio Society of Past Board Members chose to promote was the Ohio Village Pharmacy. Since 1983, the OSPBM has raised nearly \$72,000 for the project, including a grant from the Columbus Foundation and a major donation from Merrell-Dow Pharmaceuticals of Cincinnati (6).

The magnificent mahogany fixtures dominating the pharmacy were custom-built in 1887 for pharmacist Charles Bulfinch of Lynn, Massachusetts, a descendent of the famous American architect of the same name. The ornately carved fixtures feature a full-length mirror and stained-glass windows; undisplayed items include a grandfather clock and unique metal bas-reliefs of Asclepius, the ancient Greek god of the healing arts, and Hermes (or Mercury), the messenger of the gods who is associated with science and commerce in both the Greek and Roman traditions. The fixtures were in daily use until 1955, then stored for two decades by Massachusetts pharmacist Philip McAuliffe, who donated them to the Historical Society in 1975 at the suggestion of Dr. Glenn Sonnedecker, Director of the American Institute of the History of Pharmacy. The drug jars, patent medicines, and other antique pharmaceutical equipment reflect the resources of the Society's historical collections as well as a major collection of over 4,000 pharmaceutical antiques and artifacts assembled by Robert J. Prunchak of Buffalo, New York, and donated to the Society by Merrell-Dow Pharmaceuticals of Cincinnati (7). The pharmacy also features a raised demonstration area fitted with glass fixtures and a hidden sink. The demonstration area is used by both Society interpreters and student volunteers from The Ohio State University College of Pharmacy who discuss nineteenth-century materia medica and therapeutics with visitors to the pharmacy, and recreate in an authentic manner the dosage forms employed by early American pharmacists. This program represents a unique cooperative agreement between two state educational agencies.

Perhaps the most unusual aspect of this collaboration was the College's development of two new elective courses in the history of pharmacy. The selected upper-division pharmacy students who complete these courses have an opportunity to demonstrate nineteenth-century compounding and dispensing techniques to visitors of the Village Pharmacy on a regularly scheduled basis. Dressed in period costumes and using authentic antique pharmaceutical equipment, textbooks, drug compendia, and crude drugs of the Civil War era, the students demonstrate the preparation of products prescribed by nineteenth-century physicians and highlight the pivotal role the American pharmacist has played in maintaining public health.

Students interpreting nineteenth-century pharmacy practice at the Ohio Village Pharmacy take two formal courses in the history of pharmacy as preparation: Pharmacy 513, a three quarter-hour survey course tracing the development of the profession from antiquity to present-day practice, and Pharmacy 694.01, a two quarter-hour course which provides students with an in-depth knowledge of pharmaceutical practices of a century ago as well as an increased appreciation of their professional heritage. The course operates on three levels. Weekly lectures concentrate on medical theories, drug therapy, and pharmacy practice in mid-nineteenth-century America; outside readings trace the development of representative classes of therapeutic drugs during the period 1850 to 1920; and laboratory exercises allow students to understand the work of the pharmacist before the rise of modern pharmaceutical science and technology (8).

During their first week of class, for example, students learn in lecture of the harsh realities of life in colonial America. They hear about the drastic "heroic" therapies advocated by late eighteenth-century and early nineteenth-century physicians, which consisted of copious bleedings supplemented by violent—and sometimes fatal—purges and emetics. Lectures also cover the popular alternative treatments provided by uneducated herbalists, hydropaths, and other self-styled practitioners, who reflected the self-sufficiency and egalitarianism of the age of Jacksonian democracy. The students read of the mid-nineteenth-century pharmaceutical apprenticeship experiences of one of America's most remarkable pharmacists, John Uri Lloyd. They become acquainted with the standards of pharmaceutical practice advocated by the so-called "Father of American Pharmacy," William Procter, Jr., in the 1849 edition of his classic *Practical Pharmacy*, the first pharmacy textbook in English intended for an American audience. Reading from primary sources whenever possible allows students to pick up many of the nuances associated with mid-nineteenth-century pharmaceutical practices. During their first laboratory period, students practice writing out prescription labels using steel-nibbed pens, make up the paste used to adhere the labels to antique prescription vials, cork the vials using corks compressed in a cork press, and tie the corks to the vials using a "pharmacist's knot" (see Plate 1) (9).

During subsequent lectures, students learn about homeopathic and eclectic medical sects, the popular health reform movements from the 1830s to the 1870s, the medical contributions of the American Indian, the introduction of the germ theory of disease, and the professional development of American medicine and pharmacy, including education and licensing standards. During subsequent laboratory periods, students learn to identify drugs by their distinctive physical appearance and taste as well as by their microscopic botanical characteristics. They then prepare a wide variety of authentic nineteenth-century dosage forms, including pills and powders, infusions, tinctures, wines, spirits, extracts, syrups, distilled oils, waters, lozenges, troches, liniments, cerates, and plasters (10).

PLATE 1. Pharmacist's knot for capping a dispensing bottle. Reprinted from Francis Mohr and Theophilus Redwood, *Practical Pharmacy*, ed. William Procter (Philadelphia: Lea and Blanchard, 1849).

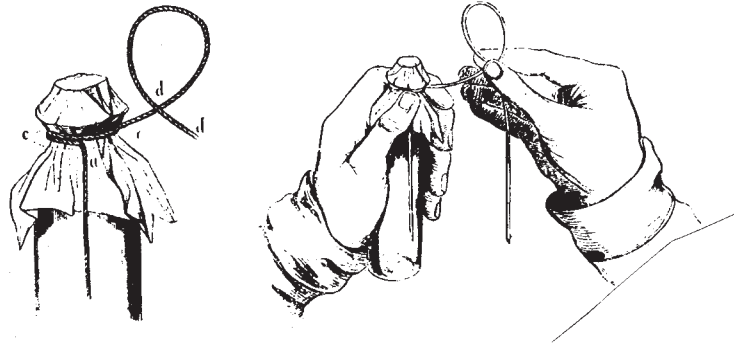


PLATE 2. The Ohio Village Pharmacy, located on the grounds of the Ohio Historical Society in Columbus, reflects the practice of pharmacy in a typical small town in Ohio during the 1870s. Note the wooden sidewalks and the mortar-and-pestle shop sign.



PLATE 3. Ohio Historical Society interpretive specialists Susan Brouillette and Michael Follin are two of over a dozen craftpersons and museum professionals who provide a lively and informative interpretation of nineteenth-century pharmacy practice at the Ohio Village Pharmacy.



PLATE 4. Robert A. Buerki (left) demonstrates a nineteenth-century dispensing technique to pharmacy student Barbara Grajzl at The Ohio State University College of Pharmacy while Professor Larry W. Robertson (right) prepares a drug plant identification exercise using a microscope.



PLATE 5. Pharmacy student Linda Wright displays the contents of her mortar to curious young visitors to the Ohio Village Pharmacy during a scheduled demonstration period.



Students put their newly acquired skills to work by concurrently registering for Pharmacy 694.01, a one quarter-hour practicum designed to provide them with the opportunity to discuss the work of the typical, small-town, nineteenth-century American pharmacist with the many visitors the Ohio Village Pharmacy attracts. Dressed in period costumes, the students spend between six and ten hours a week preparing authentic dosage forms and communicating therapeutic information of a bygone era to visitors. In addition, students are expected to prepare a one to two-page report each week on a nineteenth-century drug and its use, a nineteenth-century pharmaceutical preparation, or a topic of professional or scientific interest to American pharmacists during the period 1865-75. Figure 1 is an example of a student report on the preparation of aloec pills, a popular nineteenth-century laxative product. These reports can serve as the basis for the more informal interpretation scripts, which allow the students to demonstrate their compounding and dispensing skills, while explaining to visitors what they are doing—and why—in an organized, educational, and efficient manner. Figure 2 is an example of such an interpretation script, which stresses the pharmacist's role in combatting drug adulteration and providing some relief from the intestinal travail brought about by nineteenth-century dietary habits. Once the students feel comfortable with their interpretation, they can abandon their formal scripts and concentrate on tailoring their remarks to specific audiences, such as the groups of school children who can always be counted upon to ask unusual and challenging questions. Finally, students are

PLATE 6. Students print labels for their drug products using steel-nibbed ink pens. A mid-nineteenth-century pan balance used for weighing prescription ingredients is in the background.



encouraged to make a record of all questions asked by visitors during the course of their demonstrations and of their responses. These records serve not only as the basis for weekly recitations, but are also collected to create a resource manual for other interpreters. Students can elect to repeat the practicum up to three times, each offering being progressively more challenging, both with regard to the drug products they prepare and the professional and scientific concepts they discuss with the public. The practicum also provides students with an opportunity to practice the interpersonal communication skills they will need as licensed pharmacists in contemporary society. For this reason, in addition to experiencing and conveying some of the "feel" of practicing

FIGURE 1

STUDENT REPORT

Preparation: Pilulae Aloes (Pills of Aloe), USP V, p. 242

Formula: Socotrine Aloes 48 gr. Reduced: 24 gr. Dose: 2 gr.
 Soap 48 gr. 24 gr.
To make: 24 pills 12 pills

Active

Ingredient: Socotrine Aloes, "the inspissated juice of the leaves of Aloe Socotrina" (ibid., p. 16).

Description: Succulent plants belonging to the Lily family, indigenous to East and South Africa, with numerous, persistent fleshy leaves. "If the leaf of an Aloe be separated from the parent plant, it may be laid in the sun for several weeks without becoming entirely shrivelled; and even when considerably dried by long exposure to heat, it will, if plunged into water, become in a few hours plump and fresh" (Grieve, p. 28).

The drug consists of the liquid exuded from the leaves, evaporated to dryness. Plants must be at least two to three years old to yield the juice. The leaves are cut off close to the stem and placed in tubs and allowed to drain. The juice is concentrated by boiling to the consistency of thick honey ("inspissation"). Upon cooling, it is placed into gourds or goat skins and allowed to solidify.

Socotrine aloes are dark, reddish-brown masses almost entirely soluble in alcohol, not more than 50% soluble in water, and should not yield more than 3% of ash. Samples which are nearly black are unsuitable for pharmaceutical purposes.

Medicinal Use: One of the "safest and best warm and stimulating purgatives to persons of sedentary habits and phlegmatic constitutions" (ibid.). An ordinary small dose takes from 15 to 18 hours to exert its effect. Its action is exerted mainly on the large intestine, for which reason it is also useful as a vermifuge. Prolonged use of aloes is said to induce piles.

Preparations of aloes are rarely prescribed alone; they require the addition of carminatives to moderate the tendency to griping. "Aloes in one form or another is the commonest domestic medicine and is the basis of most proprietary . . . pills" (ibid., p. 29).

Aloes is also used as a purgative for horses; it is also used in veterinary practice as a bitter tonic in small doses and externally as a stimulant and desiccant.

Other Uses: The soft extract combined with wood ash is used by the natives of Jamaica as a substitute for soap; the leaves may be used for polishing pewter; the decayed spongy substance of the leaves may be used as tinder; the fibers may be spun into thread; the leaves may also be used to produce a violet dye which does not require a mordant to fix it.

Source: M. Grieve, A Modern Herbal (1931; rpt. New York: Dover Publications, Inc., 1971), pp. 26-29.

FIGURE 2

INTERPRETATION SCRIPT

We're making aloe pills this afternoon in the manner of the pharmacists of the 1870s. Many of you have identified this aloe vera plant, which is native to eastern Africa and Egypt. To harvest the aloe, the natives would cut off the leaves of the aloe plant, allow the juice to drain out, and boil this juice to the consistency of a thick syrup. They would then pour the juice into a gourd, goatskin, or other convenient container, and allow it to thicken and harden into the lumps we see here. Drug adulteration was a major problem for the pharmacist of the nineteenth century, and for this reason, he preferred receiving drugs in their raw or native state so that he could check them for adulteration or tampering.

The pharmacist would take his imported lumps of aloe, grind it into a powder with his mortar and pestle, and mix it with an equal quantity of grated soap, using his balance for accuracy. He would then mix the powdered aloe and soap with a very few drops of water to form a pill mass, much the consistency of putty [or chewing gum]. He would then roll the pill mass on his pill tile to form a long cylinder called a pill pipe, the length of which would be determined by the number of pills in the formula or prescription. We're making twelve pills, so the pill pipe would be rolled out to the "12" mark on the pill tile. The pharmacist would then cut the pill pipe into twelve equal segments with his spatula, roll each into a sphere [or ball], polish it with his pill finisher as I'm doing here to give it a sheen, and dispense it in a pillbox with lycopodium powder to keep the pills from sticking together. Aloe pills were an excellent laxative, and two of these pills would produce a laxative effect in about 12 to 15 hours. Folks in the nineteenth century didn't eat the balanced diets we eat today--lots of meat, but very little fruit, vegetables, or roughage. For this reason, many of them suffered from chronic constipation and found relief in aloe pills and other popular laxatives of the day.

Some pharmacists also coated their pills with gold or silver, such as the silver-coated pills you see here. This was done for two reasons: first, it produced a very elegant appearance which was admired by the public; second, and more important, the gold or silver masked the bitter flavor of many of the plant drugs of the late nineteenth century. The gold or silver passed through the body unchanged.

If a pharmacist wished to make a large quantity of pills, he would use the pill machine you see here. To use the machine, the pharmacist would make the pill pipes much as I have described, lay them in the bed of this machine, and form up to twenty-five pills at one stroke. Truly, a labor-saving device!

pharmacy in the nineteenth century, students participating in the practicum can receive up to 300 hours toward their 1,500-hour practical experience requirement for licensure with the Ohio State Board of Pharmacy.

The Ohio Village Pharmacy demonstration project is truly a cooperative venture. The Ohio Historical Society provides costumes and parking passes for the student volunteers and a modest budget to the College for the purchase of the drugs and chemicals used in both the demonstrations at the Village and instruction at the College of Pharmacy; in turn, the College provides special laboratory instruction for the Society's interpreters, compounds authentic mid-nineteenth-century pharmaceutical products, locates hard-to-find botanical drugs to display in the pharmacy's antique apothecary jars, and provides consultation in the history of pharmacy.

Since their inception in 1986, the courses have attracted over a dozen dedi-

cated pharmacy students, a respectable amount of regional publicity (11), and national recognition in the form of the coveted Certificate of Commendation conferred upon the author in 1987 by the American Institute of the History of Pharmacy (12). In continuing their unique and mutually beneficial relationship, the Ohio Historical Society and The Ohio State University College of Pharmacy have not only underscored the societal role of the pharmacist as a pivotal member of the health care team, but have also helped create a greater public appreciation for the place that the drug store has had in the life of American communities. The success of the program suggests that it could serve as a model for similar collaborative efforts between museums and institutions of higher learning to interpret the history of specialized professions for the public.

NOTES

1. See George B. Griffenhagen and Ernst W. Stieb, *Pharmacy Museums and Historical Collections in the United States and Canada* (Madison, Wis.: American Institute of the History of Pharmacy, 1988).

2. The historic parks and villages of Canada are particularly rich in pharmacy restorations. These Canadian restorations include the 1908 Livingstone Pharmacy at Heritage Park Historical Village in Calgary and the 1885-era Daly's Drug Store of Fort Edmonton Park in Edmonton, both in Alberta; the gold rush era J. P. Taylor Drug Store in Barkerville Historic Park, Finlayson's Pharmacy and Way San Yuen Wat Kee and Company (a Chinese herbalist's shop) in Burnaby Village Museum representing the period before 1925, and the 1896 Pioneer Drug Store in Fort Steele Historic Park, all in British Columbia; in Nova Scotia, a reconstruction of the 1605 Habitation at Port Royal presents drug therapy available to the first permanent settlement in North America north of Florida, while the drug store in Sherbrooke Village captures late nineteenth-century pharmacy practice; Ontario's Sainte-Marie Among the Hurons in Midland includes a hospital pharmacy as part of its recreation of a Jesuit mission of the 1640s, and a 1900-era pharmacy graces the Georgina Village Museum in Sutton West; finally, the Western Development Museum and pioneer Village of North Battleford, Saskatchewan recreates a pharmacy shop of the early 1920s. See Griffenhagen and Stieb 73-86.

3. In the United States there are six museum villages in addition to Williamsburg that have restored pharmacies. In Connecticut, Mystic Seaport's Bringham Apothecary Shop (originally in Wilmington, Delaware) interprets the period from 1870-1885. The Druggist's Shop of the Farmer's Museum in Cooperstown, New York, is a recreation of a village physician's office built in 1832. Henry Ford's eclectic Greenfield Village in Dearborn, Michigan, provides the setting for the 1835 Phoenixville (Connecticut) Post Office and Apothecary. The Vernon Drug Store, located in Museum Village, Monroe, New York, is a typical country drug store of the period from 1890 to 1920. A Prairie Drug Store is part of the Bonanzaville, U.S.A. Pioneer Village and museum of West Fargo, North Dakota. The Utah Pioneer Village of Farmington, Utah, features a reconstruction of the 1893 pharmacy of G. P. Crabtree of Cairo, Illinois. See George B. Griffenhagen's series entitled "Early American Pharmacies" published in *Journal of the American Pharmaceutical Association*, Practical Pharmacy Ed. (hereafter cited as

JAPhA PPE) 14 (1953): 732 and 15 (1954): 124, 172, 306. See also George E. Osborne, "At Mystic Seaport: Pharmacy History Recaptured," JAPhA NS 4 (1964): 538-40; Ernst W. Stieb, "The Past Recaptured: 16. The H. R. & W. Bringhurst Drug-gists and Chemists Pharmacy," *Pharmacy in History* 18 (1976): 76; "Come to Detroit," JAPhA PPE 2 (1941): 216-17; Griffenhagen and Stieb 45, 52, 65.

4. Griffenhagen, "Early American Pharmacies: XXI. The Pasteur-Galt Apothecary Shop," JAPhA PPE (1954): 245. The interpretation by "apothecary" Norman Marshall is highlighted in Beverly M. Bowie's "Williamsburg: Its College and Its Cinderella City," *National Geographic* 106 (1954): 439-86.

5. Ernst W. Stieb, "The Past Recaptured: 6. The Niagara Apothecary," *Pharmacy in History* 15 (1972): 42. Also see Peter John Stokes, "The Niagara Apothecary," *Bulletin of the Ontario College of Pharmacy* 20 (1971): 115-18; Stokes, "The Restoration of the Niagara Apothecary," *Bulletin of the Ontario College of Pharmacy* 17 (1968): 33-34; and Ernst W. Stieb, "Rough and Tumble Restoration," *Pharmacy in History* 14 (1972): 65-69.

6. See Robert A. Buerki, "Dedication of the Ohio Village Pharmacy," *Pharmacy in History* 28 (1986): 161-62.

7. Buerki, 162.

8. Basic to the purpose of the course are the following: John Uri Lloyd, *Origins and History of All the Pharmacopoeial Vegetable Drugs, Chemicals and Preparations, with Bibliography* (Cincinnati: The Caxton Press, 1921), Vol. I, *Vegetable Drugs*; Friedrich A. Flückinger and Daniel Hanbury, *Pharmacographia, A History of the Principal Drugs of Vegetable Origin*, 2nd ed. (London: Macmillan and Co., 1879); *The Pharmacopoeia of the United States*, 5th Decennial Rev. (Philadelphia: J. B. Lippincott & Co., 1876); George M. Woods and Franklin Bache, *The Dispensatory of the United States of America*, 14th ed. (Philadelphia: J. B. Lippincott and Co., 1876); Edward Parrish, *An Introduction to Practical Pharmacy*, 2nd ed. (Philadelphia: Blanchard and Lea, 1859); Francis Mohr and Theophilus Redwood, *Practical Pharmacy: The Arrangements, Apparatus, and Manipulations of the Pharmaceutical Shop and Laboratory*, ed. William Procter, Jr. (Philadelphia: Lea and Blanchard, 1849); and Edsel A. Ruddiman, *Incompatibilities in Prescriptions*, 2nd ed. (New York: John Wiley & Sons, 1900).

9. See David L. Cowen, "Tying the Knot—Secundem Artem," *Pharmacy in History* 25 (1983): 145-46.

10. The syllabus for Pharmacy 694.01, "History of Pharmacy II," includes the following assignments for the first week:

LECTURE: PHARMACY PRACTICE IN MID-NINETEENTH-CENTURY AMERICA

Required Reading: John Uri Lloyd, "A Pharmaceutical Apprenticeship in America Fifty Years Ago," *Journal of the American Pharmaceutical Association*, 4 (1915), 1333-41.

"The Dispensing Counter," "The Dispensing of Medicines," and "Means for Preserving Cleanliness," in Francis Mohr and Theophilus Redwood, *Practical Pharmacy*, ed. William Procter, Jr. (Philadelphia: Lea and Blanchard, 1849), pp. 15-21 and 325-27.

Also See: "On the Furniture and Implements Necessary to the Dispensing Office or Shop," in Edward Parrish, *An Introduction to Practical Pharmacy*, 2nd ed. (Philadelphia: Blanchard and Lea, 1859), pp. 33-53.

LABORATORY: PHARMACY PRACTICE IN THE NINETEENTH CENTURY

Laboratory Reading: "On the Writing of Prescriptions," "The Dispensing of Liquids," and "Labeling," in Parrish, pp. 575-80 and 670-74.

Also See: "On Weights and Measures . . .," in Parrish, pp. 53-60.

Prepare: "Liquor Plumbi Subacetatis," The Pharmacopoeia of the United States, 5th Decennial Revision (Philadelphia: J. B. Lippincott and Co., 1876), hereafter referred to as "USP V," p. 218, reduced 1/16.

"Glycerin Paste," Parrish, p. 674, or

"Paste Preserved With Acetic Acid," Parrish, p. 674.

Practice labeling prescription bottles using steel-nibbed pens, ink, and a blotter; adhere to a prescription vial using the technique outlined in Parrish, p. 674; cork the vial, using a cork press (Parrish, p. 672).

A DETAILED SYLLABUS FOR THE ENTIRE COURSE CAN BE OBTAINED FROM THE AUTHOR AT THE OHIO STATE UNIVERSITY COLLEGE OF PHARMACY, 500 WEST TWELFTH AVENUE, COLUMBUS, OHIO 43210-1291.

11. Steve Benowitz, "19th-Century Pharmacy Methods Are Re-enacted," OSU on Campus, 26 June 1986: 6; Barbara Mellott, "Pharmacy Learned . . . the Old Way," (Mansfield, Ohio) News Journal, 5 August 1986: 1-C; Ruth Hanley, "Medicines of the Past," Columbus (Ohio) Dispatch, 26 August 1986: 4-C; and "Village Pharmacy Charms Visitors," (Ohio Historical Society) Echoes 25.11 (November 1986): 3.

12. "Have You Heard? Historical Pharmaceutical Techniques," Pharmacy in History 30 (1988): 51.