Pharmacopoeias

For centuries, physicians and pharmacists vied for the right to define and compile drugs.

BY CHRISTOPHER S. W. KOEHLER

A pharmacopoeia is simply a compendium of drugs, along with information about their preparation. Historically, they have ranged from herbals—lists of plants with medicinal properties (real or alleged)—to lists and recipes used by apothecaries, to the modern formularies used by health care plans and recognized by governments. Along the way, pharmacopoeias have helped those who prepare drugs to separate themselves as a distinct discipline among the healing professions, culminating in modern pharmacy in the 19th and 20th centuries.

Early pharmacopoeias

Perhaps one of the earliest pharmacopoeias is the *De Materia Medica* (ca. 79 A.D.) by the Greco-Roman military physician Dioscorides. *De Materia Medica* described hundreds of pharmaceutical preparations made from vegetable, animal, and mineral sources.

Later, in the second century of the present era, Galen (131–201 A.D.), who wrote widely about many aspects of medical practice, shaped pharmaceutical practice for centuries to come. Not only did he have a busy medical practice that catered to gladiators and emperors, but Galen also stocked his own pharmacy. This pharmacy contained hundreds of medicines made from animal and vegetable ingredients.

Although Galen influenced medieval medicine heavily, medieval pharmacy was much more a matter of local remedies. Recently, the attention of historians of medicine and pharmacy has focused on the work of a medieval nun, Hildegard of Bingen (1098–1179). As Abbess of the Benedictine convent in Rupertsburg, she compiled and organized information about the pharmaceutical uses of plants and kept records of efficacious formulae.

A century later, one of the largest sources of pharmaceutical information was the mid-13th-century *Compendium of Medicine* of Gilbertus Anglicus. Gilbertus's *Compendium* contained instructions for making numerous drugs, as well as guides to diagnosis and prognosis. It relied on a vast array of 400 ingredients.

ILLUSTRATION: NATIONAL LIBRARY OF MEDICINE

Medicine was an academic pursuit, but apothecary was not, and while medicine continued to be conducted in Latin, during the Renaissance, pharmacy came to be marked by the use of the vernacular. The *Compendium* was translated into English in the early 15th century, indicating, perhaps, that apothecaries increasingly distinguished themselves from others who sought to govern health.

Specialized grocers

The word *apothecary* comes from the Latin *apotheca*, a place where herbs, spices, and wine were sold. During the Middle Ages in England, it came to describe a person who sold these commodities from a shop or stall. London apothecaries were originally members of the Grocers' Guild, and both derived from the Guild of Pepperers, formed in 1180. By 1316, they had been joined by the Spicers.

In 1428, these trades were incorporated as the Worshipful Company of Grocers. Among other things, these grocers sold herbs and drugs which they compounded and dispensed to the public. This group—grocers who sold herbs—achieved separate status on December 6, 1617, when James I (James VI of Scotland) granted a royal charter for their incorporation.

This was part of a larger European trend in which national pharmacopoeias were published by officially recognized and sanctioned groups of apothecaries. The College of Medicine in Florence adopted an *Antidotarium* early in the 16th century, while the Senate of Nuremberg adopted the "Dispensatory" of Valerius Cordus as the official standard for drugs and remedies a few years later.

The rulers of Brandenburg adopted an official *Dispensatorium* in 1608, forerunner of the Prussian Pharmacopoeia. The first truly national pharmacopoeia, however, was the *London Pharmacopoeia* of 1618, followed some 20 years thereafter by the *Paris Pharmacopoeia* of 1639.

London Pharmacopoeia

The Royal College of Physicians, incorporated by Henry VIII in 1518, considered the

question of an official pharmacopoeia in 1585. But the College was in no hurry, for the first pharmacopoeia was not printed until 1618, and on April 26, 1618, James I commanded that all apothecaries follow that and only that official listing of drugs and preparations. It should be noted that this pharmacopoeia was compiled by physicians, an occurrence that shows up continually in the history of pharmacopoeias, as physicians and pharmacists struggled to decide who had the authority to define official drugs.

The first *London Pharmacopoeia* contained 1028 simples (single-ingredient drugs) and almost as many preparations and compounds. There were almost 300 herbs listed, and as many roots and seeds. It should be kept in mind that medicine in this era recognized many drugs that by early 21st-century standards are medically useless, if not actually poisonous, so the recipes included powders of various gems, as well as drugs like oil of wolves and oil of bricks, to say nothing of the potentially poisonous animal and plant products.

The *London Pharmacopoeia* was updated periodically, and each revision claimed to have eliminated the spurious and superstitious. The sixth edition (1788), for example, paid special attention to the use of chemistry in pharmacy, some 400 years after Paracelsus first advocated it. Significantly, this edition was the first authorized English-language edition.

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The 10th and last *London Pharmacopoeia* appeared in 1851. The Medical Act of 1858 authorized the fusion of Edinburgh and Dublin pharmacopoeias with the London edition, and the first British pharmacopoeia was issued in 1864 and reissued in 1884 and 1898.

Today, Britons are served by the *British National Formulary*, a joint publication of the British Medical Association and the Royal Pharmaceutical Society. It grew out of the health insurance formularies in use in the 1930s and was first produced in 1949 after the adoption of the National Health Service.

The U.S. Pharmacopoeia and the National Formulary

Although lacking the long history of the *London Pharmacopoeia*, the history of pharmacopoeias in the United States reflects the same professionalization of pharmacy and the efforts of physicians to impose uniform standards on the drug trade.

The *United States Pharmacopoeia* (USP) first appeared in 1820. Much like the *London Pharmacopoeia,* the USP was started by a group of physicians who sought uniformity in the drugs and medicines prepared and sold by pharmacists, who were rapidly forming a profession. Despite the fact that many physicians and pharmacists turned to the USP as their guide to drugs and medicines, the USP had no legal or enforceable authority until 1906, when the Pure Food and Drug Act was passed. Despite the lack of recognition from the federal government, many state or local bodies adopted the USP as their standard.

For the next 50 years, the USP reigned as the sole guide to drugs in the United States. By the 1880s, however, things began to change. Not only did the task of revising the USP fall to pharmacists—a major recognition of their status—but the American Pharmaceutical Association published the *National Formulary* (NF), a guide to drugs and medicines that existed in parallel to the USP for almost a century.

Throughout the 19th century in the United States, pharmacy worked to define itself as an independent profession emphasizing the making and dispensing of prescription drugs from ingredients and standard preparations. The list of necessary preparations and ingredients was termed

"officinal". The objective of the USP was to maintain and publicize standards for these officinal drugs.

From the beginning, however, the NF sought to list those "un-officinal" medicines and local remedies excluded from the USP. Although the NF did include some castoffs from the USP, it was intended to detail and standardize preparations made of many ingredients, whereas the USP focused on those drugs containing a few ingredients. The USP set the standard for those drugs that were generally the first used therapeutically, whereas the NF detailed those drugs whose popularity justified inclusion.

But the NF also aimed to protect the status of the pharmacist as an expert knowledgeable about drugs and medicines, and to protect pharmacists from the drug manufacturers, who in the 19th century were just beginning to industrialize. This threat had two prongs: mass-production of ingredients and preparations that pharmacists had traditionally made themselves and patent medicines.

No mere dispensers

For many professional pharmacists, the personal mixing of their own preparations was a hallmark of their professional status. They sought to stave off becoming "mere" dispensers of ready-made medicines. The rise of a pharmaceutical industry spelled the end of the professional apothecary-cum-pharmacist. The industrial application of chemical and medical research led to the production of new drugs beyond the resources of any corner druggist to make. Then, too, industry had an economy of scale which allowed it to produce drugs more cheaply and produce them more purely and cleanly.

If an industrialized drug trade threatened the independence of professional pharmacists, the explosion of patent medicines at the end of the 19th century threatened their reputations. Because pharmacists had traditionally made their own drugs, there had also been proprietary drugs and labeling, as well as different ways of making the same compounds. In part, the NF sought to standardize the common preparations and publish recipes for proprietary compounds.

At first glance, patent medicines looked like the locally popular medicines compounded by pharmacists, but such elixirs lacked all standards. Many contained alcohol (and many more were mostly alcohol) or drugs like opium or cocaine. This threatened the reputation carefully built by pharmacists as professionals knowledgeable about medicines. The NF was a way to educate the public and the medical profession about high-quality ingredients (or their lack!). It was a losing battle, but one that professional pharmacists waged well into the 20th century.

Ultimately, the Pure Food and Drug Act (1906) and the Food, Drug, and Cosmetic Act (1938) solved the patent-medicine problem. Throughout the 20th century, the contents of the two listings, the USP and the NF, converged steadily, and the government assumed some responsibility for maintaining the quality and efficacy of drugs. In fact, by 1960, the conceptual distance between the two pharmacopoeias was minimal, and discussion of a merger ensued. This merger took place on January 2, 1975.

Over the centuries, pharmacopoeias have served not only as standard references for drugs and other pharmaceuticals, but also as a means for pharmacists to distinguish themselves among the medical professions. With these standards, pharmacists transformed themselves from mere vendors of herbs and potions to highly trained professionals charged with ensuring that patients receive the right medicine for the job.

Further reading

Cowen, D. L.; Helfand, W. H. *Pharmacy: An Illustrated History;* Harry N. Abrams: New York, 1990.

One Hundred Years of the National Formulary: A Symposium; Higby, G. J., Ed.; American Institute of the History of Pharmacy: Madison, WI, 1989.

Wallace, S. Mostly Medieval: Exploring the Middle Ages; 1999; www.skell.org.

Wooten, A. C. *Chronicles of Pharmacy;* USV Pharmaceutical Corp.: Tuckahoe, NY, 1972.

Worshipful Society of Apothecaries of London. The Society: Origins and History; www.apothecaries.org.uk/society_f/origins_f.html.

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