

# Great Moments in Pharmacy: Development of the Robert Thom Series Depicting Pharmacy's History

George B. Griffenhagen

*Pharmacist George Bender and artist Robert Thom collaborated to provide the profession with unique insights into its origins.*

The remarkable series of 40 oil paintings known as *Great Moments in Pharmacy* had its origins in the mind of a single pharmacist during the Great Depression. Nurtured for more than a decade, and pursued with fervor for 20 years after that, the idea led to the creation of these paintings and the accompanying stories, which for 50 years have used the tools of art and narrative to present highlights of the most important events in the ancient profession of pharmacy.

In this article, developed to commemorate the American Pharmaceutical Association's sesquicentennial year, readers will find a description of how the dream of this pharmacist, coupled with vigilance of a talented and detail-oriented artist, led to development of this major series of paintings on the history of pharmacy. Prominent paintings in the *Great Moments in Pharmacy* series are presented here with an emphasis on those works set in the Americas and relevant to the founding of APhA and its impact over the past 150 years.

## Turning a Dream Into Reality

George A. Bender (1904–1985) was the pharmacist who had this grand dream. Born in Wisconsin and graduating from the South Dakota State College Division of Pharmacy in 1923, Bender first conceived the idea for the series during the early years of his journalism career—first as editor of the *North Western Druggist* from 1929 through 1932 and then as editor of the *NARD Journal* from 1933 until 1945.<sup>1,2</sup> It was during this period that a series of illustrations depicting episodes in the history of surgery was sponsored by Davis & Geck, manufacturers of surgical sutures.<sup>3</sup> Then came another series of prints, *Search and Research*, sponsored by Abbott Laboratories.<sup>4</sup>

Bender collected every one of these prints. As he studied them, and as he grew more and more interested in the histories they portrayed, he kept asking himself, “Why doesn't someone do some-

thing like this for pharmacy?” He even pitched the idea to Abbott Laboratories, but the company turned him down. Thus, while the means to develop a pharmacy history series eluded Bender, the dream began a 10-year gestation period.

Bender left the National Association of Retail Druggists (NARD; now the National Community Pharmacists Association) in 1945, and, after a year with *American Druggist*, he joined Parke-Davis on January 1, 1947, as editor of its house organ, *Modern Pharmacy*, which had been published by Parke-Davis since September 1904.<sup>5</sup> Within a month after becoming editor of *Modern Pharmacy*, Bender began putting out feelers about his old idea, a history of pharmacy in pictures.<sup>6</sup>

Even though *Modern Pharmacy* was an ideal medium because it would support four-color reproductions, Bender realized that artists can be expensive and searching for historical facts can be time-consuming. Knowing that the attainment of his dream required support from Parke-Davis executives, he made his first presentation to Vice President Harry J. Loynd, proposing a modest series of 12 to 18 pictures accompanied by stories to be published in *Modern Pharmacy*. But Loynd rejected Bender's proposal.

Bender tried a different approach. He wrote a seven-page proposal, “Pictorial Interpretations of Pharmacy Through the Ages,” and submitted it on January 12, 1949, to Parke-Davis executives. In his proposal, Bender provided estimated costs for 27 paintings and identified the advantages that such a project would accrue to the sponsoring firm. The written approach proved successful: His proposal was approved.<sup>6</sup>

Even with the approved proposal in hand, Bender knew much difficult work lay ahead. His original plan was to

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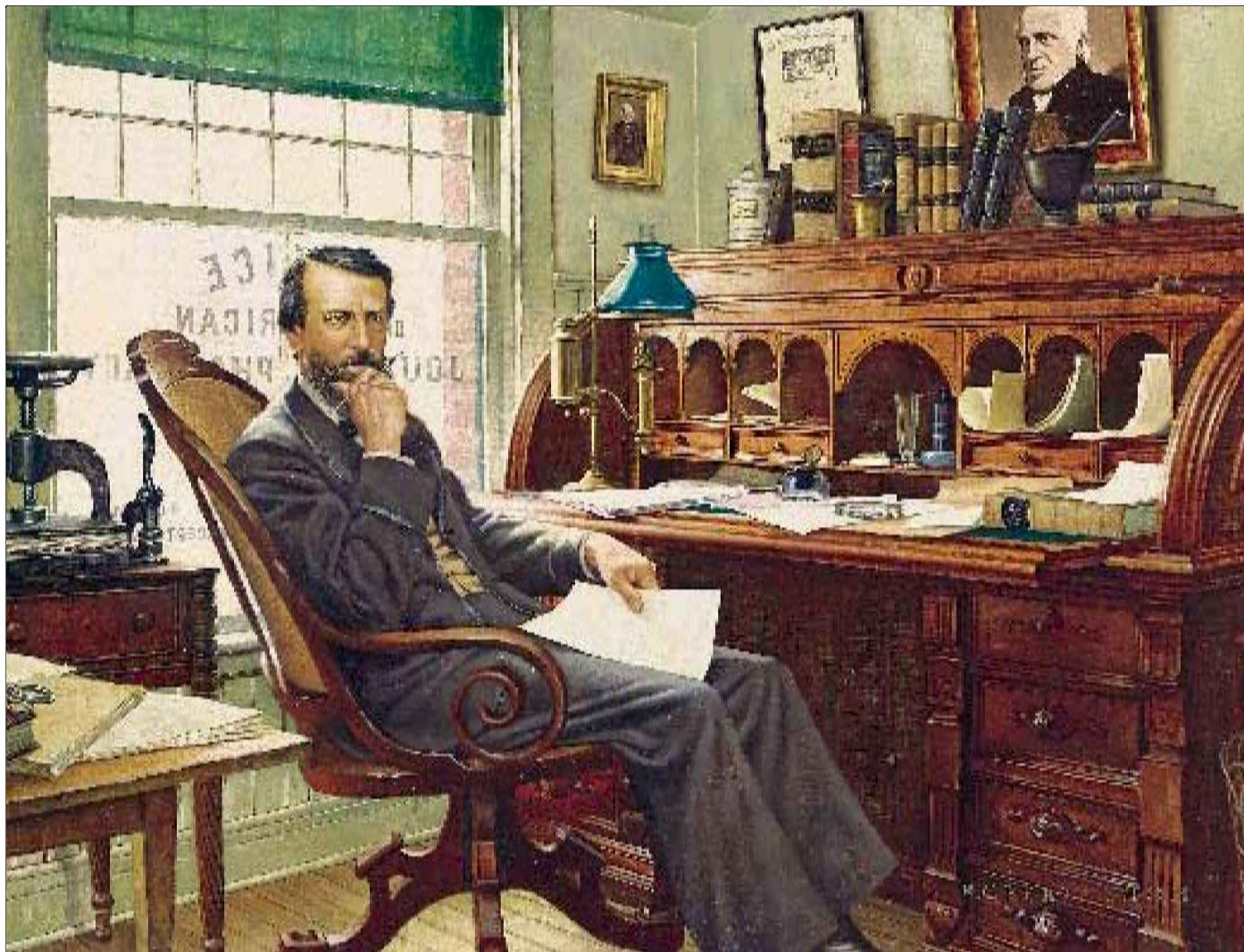
produce a series of color photographs similar to Davis & Geck's history of surgery series. However, Bender's early advisors convinced him that the use of the medium of photography would not convey the intended historical message. So, as early as April 1947, Bender began searching for an artist by inviting proposals from various commercial art firms. He was dissatisfied with the quality of work and the prices of many early contenders.<sup>7</sup>

One artist who visited his office did interest him, however, and Bender gave him a trial assignment: produce the Christmas cover for *Modern Pharmacy*.<sup>8</sup> The artist was Michigan-born and Columbus, Ohio, Institute of Fine Arts graduate Robert A. Thom (1915–1979),<sup>9</sup> who produced a cover that was unusually detailed and well received. When Bender discussed his dream of a series of paintings on pharmacy history with Thom, the artist took off on his own for Chicago, where he produced a caveman painting based on one of the dioramas at the Field Museum.<sup>7</sup> Titled *Before the Dawn of History*, the painting showed primitive men using natural

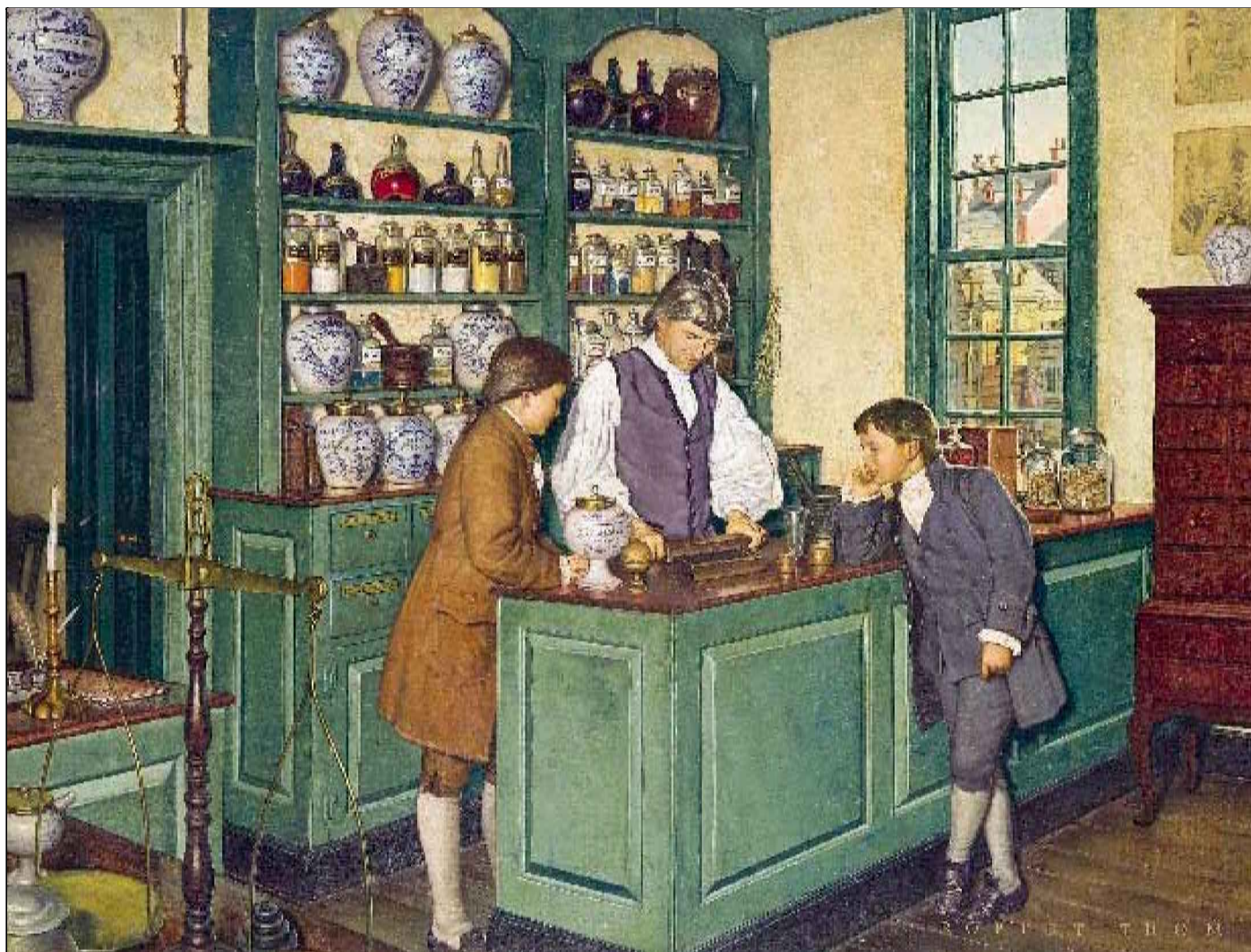
materials to heal their wounds. Bender thought it was a great start, and Thom was selected as the artist for the series depicting the 40 most important events in pharmacy's history.

Bender then proceeded to round out his project team by seeking historical guidance from the American Institute of the History of Pharmacy (AIHP) in Madison, Wisc. Bender took Thom's caveman canvas to the 1949 APhA Annual Meeting in Jacksonville, Fla. He unveiled the painting and explained his ideas at a private dinner attended by George Urdang, Glenn Sonnedecker, and Arthur Uhl. These three men encouraged Bender to continue the project,<sup>7</sup> but it was still 2 years before the first story line and painting would appear in *Modern Pharmacy*.

Bender termed his narratives for the paintings "story lines" rather than "histories"; this was a deliberate effort to distinguish between the "waffling of scholarship" and the "facts" whose reliability was of greatest importance. So that the paintings would accurately depict the periods in question, Thom and Bender



**The Father of American Pharmacy—William Procter Jr. (1817–1874).** *Community pharmacist, pharmaceutical educator, pharmaceutical scientist, and association executive are all titles appropriate for William Procter Jr.; he is seen here in his office as editor of the American Journal of Pharmacy. As Gregory Higby describes, “for American Pharmacy, Procter has served as a symbol of identity and pride.”*



**The Marshall Apothecary (1729–1825).** Irish immigrant Christopher Marshall (1709–1797) established a Philadelphia apothecary shop in 1729. He is depicted here in 1754 demonstrating the use of a pill machine for his two sons, Christopher Jr. (1740–1806) and Charles (1744–1825) who, with the founder’s granddaughter, Elizabeth, continued to operate the pharmacy until 1825.

painstakingly researched artifacts, costumes, and colors, frequently consulting museum curators about specific details.<sup>7</sup> Bender subsequently explained, “Thom’s job is to put the breath of life into the long dead past. This is one of the things that the artist has to portray as he tells the story on canvas.”<sup>10</sup>

## Going Into Print

The formal announcement of the program in the November 1950 issue of *Modern Pharmacy* apprised readers that the next issue would introduce “for the first time a comprehensive series of full-color pictures depicting the history of pharmacy.” Bender wrote: “These pictures will be in the form of inserts, two pages in size, suitable for framing.”<sup>11</sup> *Before the Dawn of History*, Thom’s original caveman painting, was hailed in the January 1951 issue of *Modern Pharmacy* as “a sort of prologue to the series [which]

goes back perhaps 400 centuries for pharmacy’s beginnings.”<sup>12</sup> The story line described how ancient man learned from instinct to assuage his wounds with water, mud, and various leaves.<sup>13</sup>

By the time the third painting appeared, Bender explained that the title of the series had to be changed from *Forty Centuries of Pharmacy* to *A History of Pharmacy in Pictures* because the former title had been in use since 1937 by the *American Professional Pharmacist*.<sup>14</sup> The cover of the September 1953 issue of *Modern Pharmacy* linked the central figures of the paintings from the *Before the Dawn of Time* to the first painting set in North America, *Louis Hébert, Apothecary to New France (Canada)*. The story line for the latter painting described how Hébert, a young Parisian apothecary, came to the New World in 1605 to look after the health of the pioneers and to experiment with various native medicinal plants.<sup>15,16</sup>

Pharmacists showed much interest in the series as soon as the paintings began appearing in the Parke-Davis journal. They began

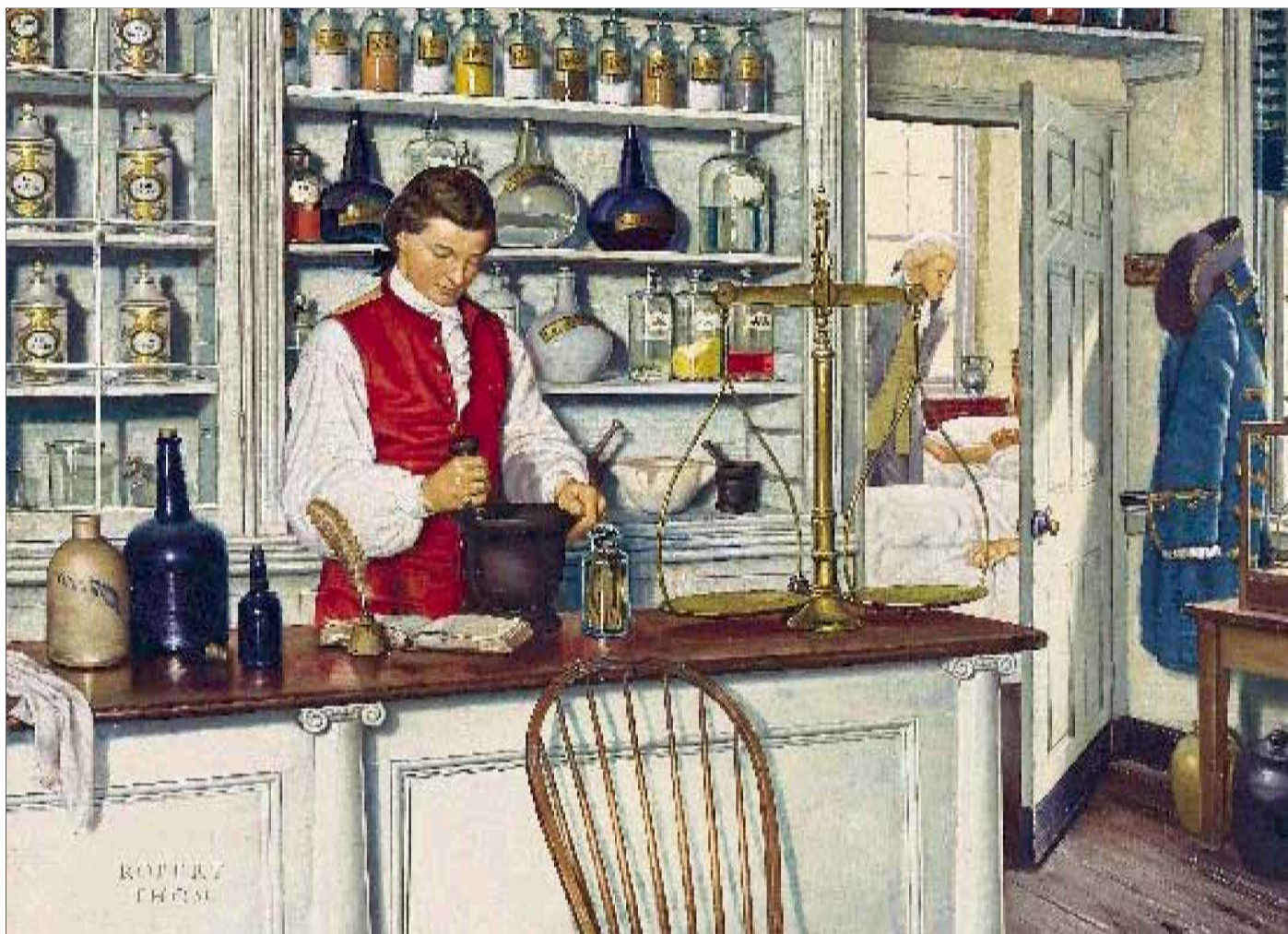
asking the question, “How long does it take the artist to paint one of these pictures?” Bender’s 1953 response was, “It may take three or four weeks for artist Thom to place the picture on canvas, but some have taken as much as six months research before a brush is dipped in color.”<sup>17</sup>

Robert Thom spent nearly 5 months in Europe in 1953 visiting the actual sites where some of pharmacy’s most significant events took place; these included the School of Pharmacy in Paris where William Procter Jr. was the first American to address an International Congress of Pharmacy, held August 21–24, 1867.<sup>18</sup> To obtain portrait images for the painting, Bender wrote to the pharmacy associations in the countries represented at the Paris Congress.<sup>7</sup> Apparently, Bender received photographs of only 9 of the 17 delegates, and only those faces are depicted in the painting; only the back sides of the other delegates are shown.

Thom also depicted William Procter Jr. (1817–1874) in two additional Parke-Davis paintings: *The Founding of the American Pharmaceutical Association* (page 176), described later, and *The*

*Father of American Pharmacy* (page 171), in which Procter is shown seated in his office at the Philadelphia College of Pharmacy. From that desk, as editor of the *American Journal of Pharmacy*, Procter penned 550 original articles bearing his byline from 1837 to 1873 in addition to hundreds of “editorials,” “varieties,” “gleanings,” and “pharmaceutical notices.” Bender explained, “It will be noted that his appearance changes with age. Prior to his European tour in 1867, Procter kept his face cleanly shaved; but while in Europe he allowed his whiskers and moustache to grow, and continued that custom for the remainder of his life.” Procter was the only individual depicted repeatedly in the series; he appears in 3 of the 40 Parke-Davis paintings. He certainly deserved the honor, as is explained in the definitive biography by Higby.<sup>19</sup>

In May 1951 Bender announced that “negotiations are underway for the development of a full-color window display utilizing these illustrations.”<sup>20</sup> The first six prints were available from Parke-Davis by November 1951 to pharmacists request-



**The First Hospital Pharmacy in Colonial America (circa 1755–1756).** John Morgan (1735–1789), is shown here at the Pennsylvania Hospital as staff apothecary. Morgan subsequently obtained a medical degree and served as physician-in-chief for the Continental Army in 1776, while advocating the importance of the separation of the practice of pharmacy from the practice of medicine.



**Craigie—America’s First Apothecary General (circa 1755).** *Bostonian Andrew Craigie (1754–1819) was appointed commissary of medical stores on April 30, 1775; in less than 2 months Craigie was caring for the wounded at the Battle of Bunker Hill, as shown here. Two years later, the Continental Congress created the position of Apothecary General, and Craigie was the first to be appointed.*

ing them,<sup>21</sup> and so before the history of pharmacy series was 1 year old, its paintings “were available to pharmacists and the public in three media: gatefold inserts, art prints suitable for framing, and window displays for enhancement of the professional decor of pharmacies.”<sup>6</sup> By November 1952 the second set of five prints was available, described as “Parke-Davis Professional Pharmacy Window Display RP-21,”<sup>22</sup> and subsequent sets of six prints were made available on an annual basis.

## Taking the Show on the Road

The first photographs of pharmacy window displays using the Parke-Davis prints appeared in September 1952.<sup>23</sup> By the summer of 1953, the prints had been shown in Great Britain, Ireland, Italy, Portugal, and South Africa.<sup>24</sup> Then, in September 1953, prints were given to delegates attending the International Pharmaceutical Federation Congress in Paris.<sup>25</sup>

The paintings were first displayed publicly as a series in 1951, at the Annual Meetings of APhA in Buffalo, August 27–30; the Canadian Pharmaceutical Association in Calgary, Alberta, August 20–24; and NARD in Minneapolis, October 15–19. As more paintings were added,<sup>6</sup> the series became a regular feature of the APhA meetings, including the 1952 APhA centennial meeting in Philadelphia.

All 40 paintings were exhibited together for the first time at the 1956 APhA Annual Meeting in Detroit.<sup>26</sup> A similar exhibit of the completed collection at the 1957 convention of the Canadian Pharmaceutical Association in Montreal posed a new problem. The captions had to be translated into Canadian French for display alongside the English versions.<sup>27</sup>

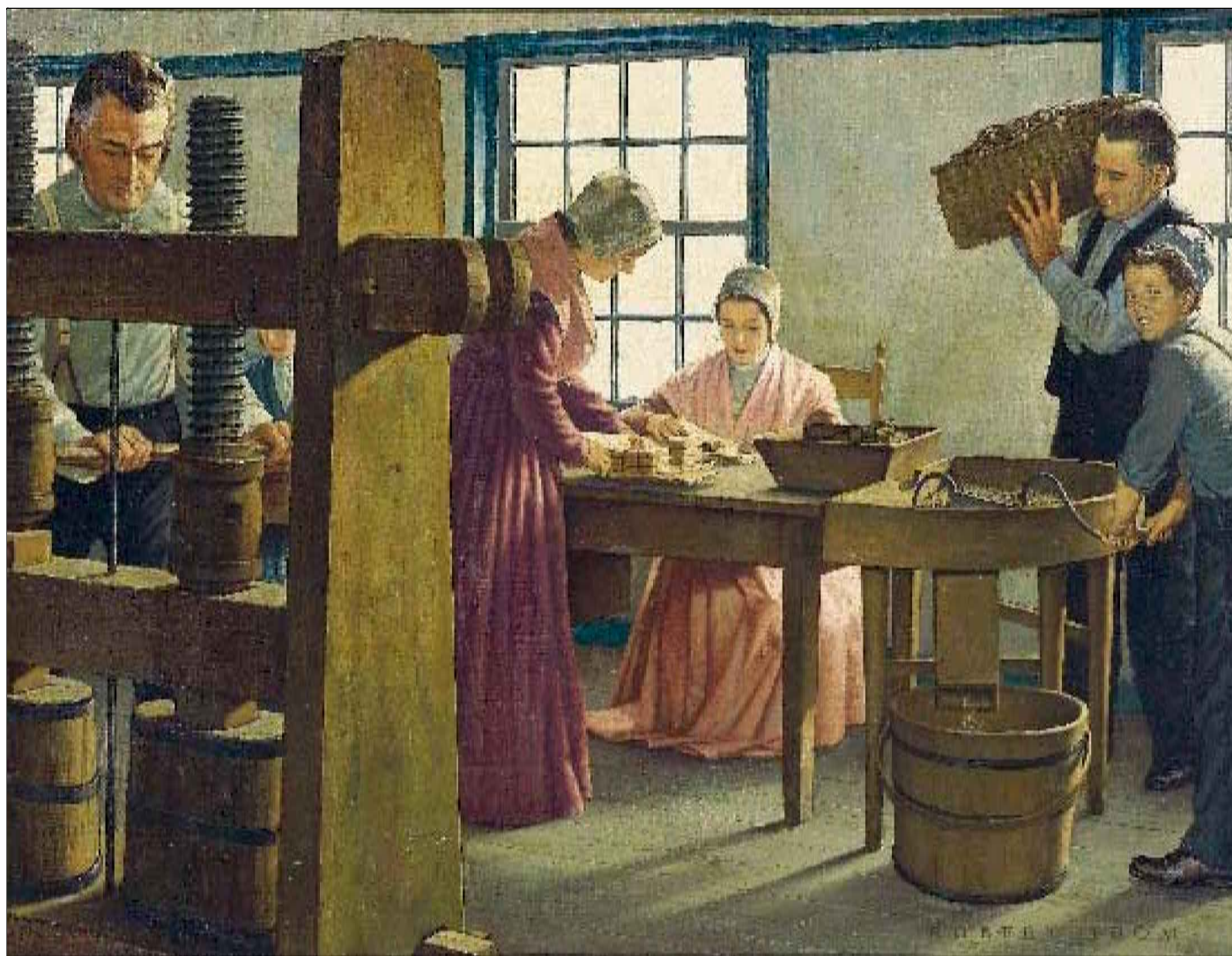
In 1956 Bender visited me at the Smithsonian Institution, when I was assistant curator for medicine and public health. There, we arranged for the first 30 of the paintings to be exhibited in the rotunda of the Arts and Industries Building in Washington, D.C., where they were seen by more than

300,000 visitors.<sup>28</sup> Other museums that have exhibited the paintings were the Denver Institute of Arts, New York Metropolitan Museum of Art, the Oriental Institute of Chicago, and the Hôtel des Invalides in Paris.<sup>7</sup>

As early as November 1951, Bender reported, “Many pharmacists are framing the new sets of prints for their home as well as for their pharmacy.”<sup>21</sup> A little over a year later (March 1953), Bender announced that the House of Frames in Detroit had offered to prepare framed sets of six of the prints.<sup>29</sup> Then, in 1957, Henry Heydenryk Jr., head of the House of Heydenryk of New York, wrote an article in *Modern Pharmacy* recommending the right and wrong frames for the 40 paintings; he also offered to provide hand-finished frames with prints on mounted masonite.<sup>30</sup>

Bender and Thom, traveling together or separately, had covered nearly a quarter-million miles over a 10-year period doing research for the stories and pictures in the series, visiting,

whenever possible, the actual sites where the events took place. As careful as the author–artist team was to correct any errors before the prints went to press, one painting had to be recalled after it was published. It was a painting of two French pharmacists extracting the first quinine from cinchona in 1820.<sup>31</sup> Shortly after publication of the print, I raised a question concerning the percolator that appeared in the painting, asking, “Had percolators been available to pharmacists in 1820?” George Urdang and I conducted further research and confirmed that the process of percolation was not adapted for pharmaceutical use until 10 years after Caventou and Pelletier gave quinine to the world.<sup>32</sup> Thom corrected the original painting by showing filtration, which had been clearly documented in Pelletier’s report, and Bender distributed a revised print of this painting.<sup>6</sup>



**The Shakers and Medicinal Herbs (circa 1830).** *The first U.S. industry in medicinal herbs was established by the United Society of Shakers. Commencing cultivating herbs in 1820, the Shakers of Mount Lebanon, N.Y., gained wide recognition in the 1850s by compressing powdered herbs into “bricks” as shown here. The business was purchased by the Tilden Company in 1893.*



**The Founding of the American Pharmaceutical Association (1852).** Twenty pharmacists from eight states gathered around a table at the Philadelphia College of Pharmacy to sign the Code of Ethics. Seated at table (left to right) are Edward Parrish; Daniel B. Smith, president; William Procter Jr; corresponding secretary; George Coggeshall, recording secretary; Alfred B. Taylor, treasurer; and Joseph Laidley.

## Focusing on America

Many of the paintings in the *Great Moments in Pharmacy* series had Americana themes. While the first 16 paintings paid deserved tribute to the accomplishments of the apothecaries and their predecessors in Babylon, China, Egypt, Persia, and Europe, many of the remaining 24 paintings in the series were devoted to pharmacy in the Americas, especially in the English colonies and the United States. The following sections consider some of the major works that depict the contributions of American pharmacists to the progress made by the profession over the past 300 years, including the 150 years of APhA history.

## American Pharmacy Is Born

The earliest painting reproduced in this article is *The Marshall Apothecary* (page 172), which depicts a pharmacy that operated

in Philadelphia from 1729 to 1825.<sup>33,34</sup> The background for the painting was the Pasteur-Galt Apothecary Shop<sup>a</sup> in Colonial Williamsburg, Va.<sup>35</sup> On the shelving behind Christopher Marshall (who died in 1796) and his two sons is a collection of period English Delft drug bottles alongside anachronistic 19th-century American salt mouths and tincture bottles.<sup>36</sup> Marshall is showing his sons how to operate a pill machine that was widely used in Europe as early as the 1760s,<sup>37</sup> but the story line accompanying the print errs by identifying Elizabeth Marshall, rather than Elizabeth Greenleaf, as “America’s first woman pharmacist.”<sup>38</sup> Elizabeth Marshall commenced practice in 1804, but Elizabeth Greenleaf was practicing pharmacy in Boston as early as 1727.<sup>38</sup>

*The First Hospital Pharmacy in Colonial America* painting (page 173), set in Philadelphia’s Pennsylvania Hospital in about 1755,

<sup>a</sup>A photograph of the Pasteur-Galt Apothecary Shop, including period shelware, appears in Reference 35.

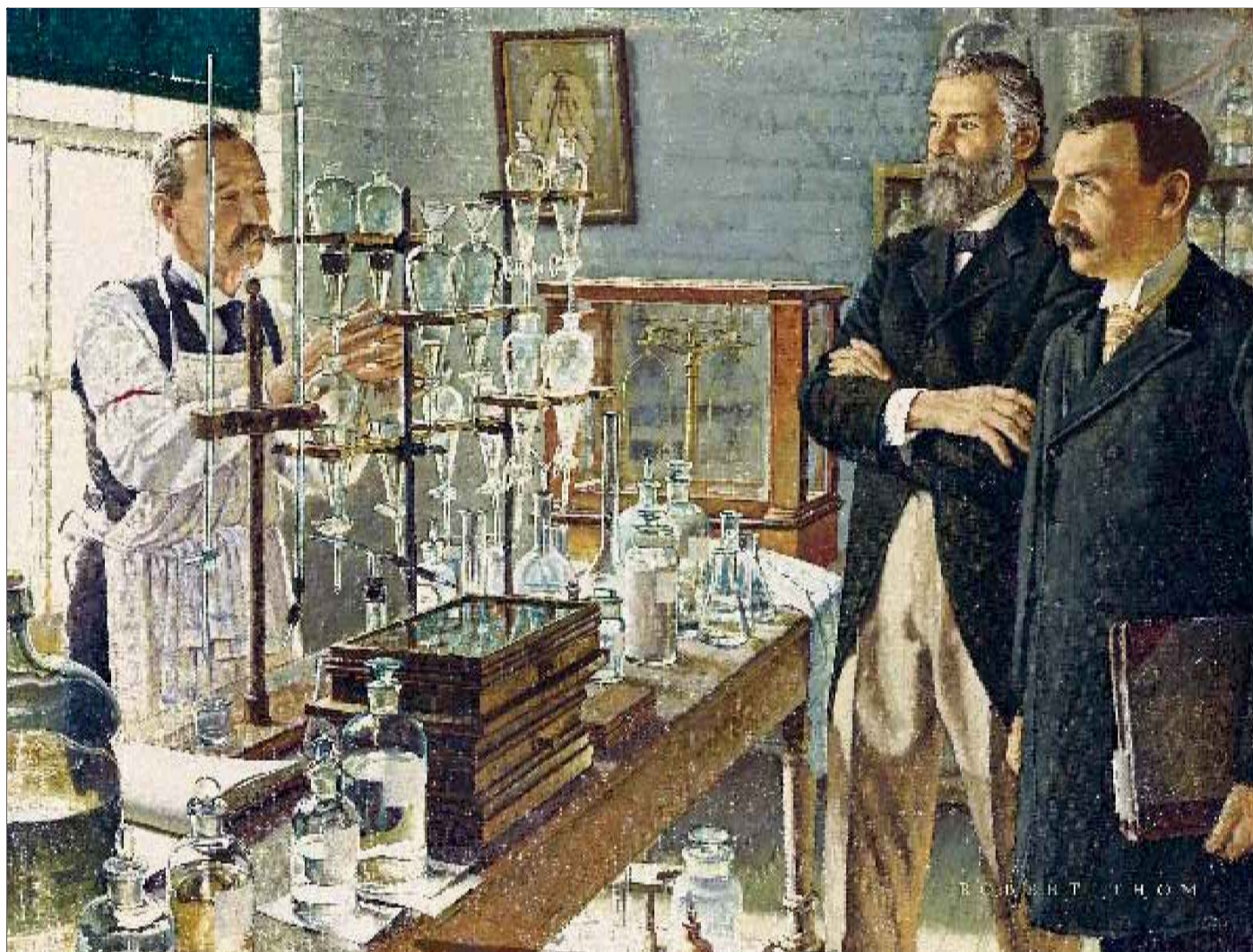
inspired many responses.<sup>39,40</sup> Viewing the Venetian blinds in the remote upper right corner of the picture, critics wrote, “You slipped up this time. A modern blind in a colonial window? How absurd!” This time, Bender had the answer. Marco Polo, in 1295, brought back from the court of Kubla Kahn the first authentic venetian blind. These window coverings are listed in import invoices to the American colonies in 1755 and were installed in Mount Vernon, Monticello, Williamsburg, and Philadelphia’s Independence Hall.<sup>41</sup> Thom used the Hugh Mercer Apothecary Museum in Fredericksburg, Va, as the background for this 18th century painting, and for this reason it shows anachronistic 19th-century French porcelain drug jars and 19th-century American glass drug bottles.<sup>42–45</sup>

The painting *Craigie—America’s First Apothecary General* (page 174) portrays Boston pharmacist Andrew Craigie caring for the wounded at the Battle of Bunker Hill on June 17, 1775.<sup>46,47</sup> The first rendering of the painting portrayed cannons firing on Bunker Hill behind Craigie dressed in full uniform. A trip to Boston’s First

Corps Cadets Army Museum and Library revealed that the British drove the patriots off Breed’s Hill, not nearby Bunker Hill. The casualty station could not have been at the top of the hill; in fact, it was 1 mile down the hill from the battleground. The Bostonian Society revealed that the battle was essentially one between uniformed British regulars and a little-trained group of civilian patriots, few of whom wore uniforms. Before releasing the newly revised painting for publication, Bender and Thom showed it to experts at the Bostonian Society and the Massachusetts Historical Society for their reactions. Their criticism of that version was that “the men’s clothes are too clean—they’ve been working and fighting.” To correct that problem, Mr. Thom’s brush was again applied to the canvas before it went to the waiting lithographers for processing.<sup>48</sup>

### American Pharmacy Establishes Itself

The painting titled *American Pharmacy Builds Its Foundation*



**The Standardization of Pharmaceuticals** (circa 1883). Parke-Davis was one of the first American firms to produce standardized pharmaceuticals. At work on the left is Albert B. Lyons (1841–1926), founding secretary of the APhA Scientific Section, who developed assay procedures permitting Parke-Davis in 1883 to introduce for the first time chemically assayed fluid extracts.



depicts the founding on February 23 and March 13, 1821, of the Philadelphia College of Pharmacy in Philadelphia's Carpenter's Hall, the same building where the first Continental Congress assembled on September 5, 1774. In 1821, Bender explained, the term "college" was used to designate an association as well as an institution of learning. Thus, the painting records the creation of both the first pharmacy society in the United States as well as the first school of pharmacy on the North American continent.<sup>49,50</sup>

*The Founding of the American Pharmaceutical Association* (page 176) depicts 20 delegates<sup>b</sup> signing the Association's Code of Ethics, according to some Parke-Davis descriptions.<sup>51,52</sup> Exactly when did this signing take place? The original proceedings of the meeting records that the Code of Ethics was adopted at the October 7 afternoon session, but "was laid on the table to await the final action on the preamble of the Constitution." So the scene depicted in the painting had to have taken place at the final session on the morning of October 8, when "the preamble was taken up and after a mere verbal alteration was adopted."<sup>53</sup>

Bender sought portrait photographs of the 20 delegates to be shown seated around a table, but he was unable to find portraits of five delegates either in the APhA Foundation Archives or in the AIHP Kremer's Reference Files in Madison, Wisc. Consequently, Thom had to avoid revealing facial images for four of these founding members. Charles L. Bache from California was one of the delegates whose portrait photograph was not found, yet Thom improvised by providing Bache's facial likeness in the upper right hand corner of the painting. Was it a special tribute to Bache, who, on his return voyage home, contracted yellow fever crossing the Isthmus of Panama, and succumbed on board ship on December 28, 1852?

Why did Thom exclude Cincinnati pharmacist Edward S. Wayne from the painting? "Satisfactory credentials" for Wayne as a delegate from the Cincinnati College of Pharmacy were received and reported to the convention by the credentials committee.<sup>53</sup> However, Wayne failed to arrive for the meeting, and he is recorded in his biography as an "absentee delegate." Thom's exclusion of Wayne from the painting was accurate. Original portrait photographs of APhA founders can be seen in several publications, and these offer interesting comparisons with Thom's artistic representations.<sup>54,55</sup>

During the 1974 APhA Annual Meeting, Parke-Davis President Joseph D. Williams offered to have Robert Thom prepare a second original painting of the founding of APhA, and the offer was promptly accepted. Williams was back in 1975 to make the presentation at the opening session of the APhA Annual Meeting in San Francisco, and a full-color print graced the cover of the July 1975 issue of the *Journal of the American Pharmaceutical Association*.<sup>56</sup> The new painting hung in the Board Room at APhA headquarters until 2000. By that time, the painting had

faded so badly that it was placed in storage, and it was replaced by a new photographic print of the APhA founding provided by Parke-Davis. Why did the new painting fade? Because Robert Thom had brushed new paint over a black-and-white photograph of the original canvas, and it is the background photo that subsequently disappeared, giving the impression that the paint itself had faded. Framed prints of the painting have been presented to retiring APhA presidents for the past 2 decades.

Background research for *The Shakers and Medicinal Herbs* (page 175) produced some unexpected finds.<sup>57-59</sup> Bender discovered a detailed description of the Shakers' activities in the herb and extract business written in 1855 and published in the July 1857 issue of *Harper's New Monthly Magazine*. The account provided a precise description of the two-story Herb House in the center of Mount Lebanon, N.Y. The lower floor was devoted to the packing of roots and herbs, which were placed in "phials, bottles, and jars, labeled, and packed for the market." The second floor included the drying rooms. An adjoining building, called the Extract House, was used for extraction of herb juices by boiling them in huge vacuum pans. The 1857 *Harper's* article also pictured woodcuts of the Herb House in 1855, a crushing mill, a hydraulic press, and the finishing room. Thom chose to depict in his painting a man operating an herb press, and two women wrapping and labeling herbs that were dried, chopped, and pressed into "bricks" for sale to apothecaries to compound prescription medications.<sup>6</sup>

## American Pharmacy Makes Its Mark

*A Revolution in Pharmaceutical Education* depicts how Albert B. Prescott pioneered new concepts at the University of Michigan in 1868 that eventually transformed American pharmaceutical education.<sup>60,61</sup> Prescott's idea to exclude apprenticeship as a prerequisite for graduation as a pharmacist clashed with the pharmaceutical educators and organizations of the day. So when he arrived at the 1871 APhA Annual Meeting, Prescott was denied a seat as a voting delegate. But 28 years later, after the profession had begun to adopt Prescott's model of academically based pharmaceutical education, this maverick became APhA president (1899-1900) and the 1900-1901 president of the Conference of Pharmaceutical Faculties, whose name was changed in 1925 to the American Association of Colleges of Pharmacy. In 1956 Parke-Davis presented the University of Michigan College of Pharmacy with a framed painting of Prescott based on a detail from Thom's original canvas,<sup>62</sup> and this larger-than-life-size painting still looms over Wolverine pharmacy students in a stairwell at the Ann Arbor campus. The Pharmacy Leadership & Education Institute now provides copies of this painting to recipients of its Glaxo-SmithKline/Albert B. Prescott Leadership Award, given annually at the APhA Annual Meeting to young leaders in the profession.

Two paintings created special problems. When Bender undertook research on *The Pharmacopeia Comes of Age*,<sup>63</sup> he felt

<sup>b</sup>See also Reference 52, which reads, "They are gathered about a table on the occasion of the signing of the first Code of Ethics."

compelled to visit E. R. Squibb & Sons Vice President Jack Toohy to request permission to include Edward R. Squibb in the painting. Toohy referred Bender to George Squibb, who explained that his grandfather had lost his right hand as a result of a tragic fire in his ether laboratory. Moreover, Edward Squibb's eyelids were so severely damaged by the heat and smoke that he could not close them. Artist Thom went on to capture these physical details on the canvas.<sup>5</sup>

As it turned out, however, the facts uncovered by Bender's careful research were only partially correct. Squibb's biographer<sup>64</sup> records in detail how the laboratory fire on December 29, 1858, left Squibb with "everted eyelids," requiring him to wear goggles by day and by night "to fasten his eyelids together with strips of isinglass plaster so that he could sleep with closed eyelids." But it was Squibb's left hand—not his right hand, as George Squibb remembered—that was amputated, and this was not until 1896, when the ulceration of the scar tissue resulting from the 1858 fire became infected. Thom's painting shows a healthy left hand while concealing the right hand. Ultimately, however, this nod to both truth and delicacy was of little import, because Squibb still had both hands in 1877, which is the year that the painting depicts.

*Wrestling the Jungle's Secrets*<sup>65</sup> also created some concerns. Even though some critics believed that this was not one of the most important 40 events in pharmacy's history, Bender defended his decision by noting that Henry Hurd Rusby was "a scientific adventurer sent by Parke-Davis to the Amazon jungle [returning] with 45,000 botanical specimens." However, one of Rusby's daughters was upset by her father's "brimmed hat" depicted in Thom's painting; she insisted that her father either went bare-headed or wore a "tweed steamer cap on his jungle rambles."<sup>7</sup> The painting, however, was not revised.

Two other paintings were devoted to the "pioneering" contributions made by Parke-Davis. *The Standardization of Pharmaceuticals* (page 177) records the fact that Parke-Davis was one of the first American firms to standardize drugs. In 1880 the firm hired chemist Albert B. Lyons (1841–1926), who proceeded to devise methods to standardize various fluid preparations. By 1883 Parke-Davis had introduced 20 chemically assayed fluid extracts of botanical drugs.<sup>66–68</sup> Lyons subsequently served as founding secretary of the APhA Scientific Section in 1887–1888 and was elected APhA honorary president in 1913. Bender does not identify the two men on the right who are watching Lyons continue his research to improve assays for pharmaceuticals.

*The Era of Biologicals* emphasizes that Parke-Davis was one of the first firms to manufacture diphtheria antitoxin following French bacteriologist Emil Roux's 1894 announcement that he had developed a method to produce the antitoxin on a large scale. Diphtheria antitoxins were first produced by Parke-Davis in 1898, the same year that Emil von Behring of Germany received a U.S. patent for the manufacture of diphtheria antitoxin. Both the H.K. Mulford Company of Philadelphia (which was also producing diphtheria antitoxin) and Parke-Davis vowed to fight the patent in U.S. courts,

## Entire Series of Great Moments in Pharmacy

Before the Dawn of History<sup>a</sup>  
 Pharmacy in Ancient Babylon  
 Pharmacy in Ancient China  
 Days of the Papyrus Ebers (Ancient Egypt)  
 Theophrastus: Father of Botany  
 The Royal Toxicologist: Mithridates VI  
 Terra Sigillata: An Early Trademarked Drug  
 Dioscorides: A Scientist Looks at Drugs  
 Galen: Experimenter in Drug Compounding  
 Damian and Cosmos: Pharmacy's Patron Saints  
 Monastic Pharmacy (Middle Ages)  
 The First Apothecary Shops (Baghdad)  
 Avicenna: The Persian Galen  
 Separation of Pharmacy and Medicine  
 The First Official Pharmacopeia (*Nuovo Receptario*)  
 The Society of Apothecaries of London  
 Louis Hébert, Apothecary to New France (Canada)<sup>a</sup>  
 The Governor Who Healed the Sick (John Winthrop)  
 The Marshall Apothecary: An American Dynasty<sup>a,b</sup>  
 The First Hospital Pharmacy in Colonial America<sup>a,b</sup>  
 Carl W. Scheele: Greatest of Pharmacist-Chemists  
 Craigie—America's First Apothecary General<sup>a,b</sup>  
 Serturmer: First of the Alkaloidal Chemists  
 Caventou, Pelletier and Quinine<sup>a</sup>  
 American Pharmacy Builds Its Foundations<sup>a</sup>  
 The Shakers and Medicinal Herbs<sup>a,b</sup>  
 Founding of the American Pharmaceutical Association<sup>a,b</sup>  
 European and American Pharmacy Meet (Paris)<sup>a</sup>  
 The Father of American Pharmacy—William Procter Jr.<sup>a,b</sup>  
 A Revolution in Pharmaceutical Education (Prescott)<sup>a</sup>  
 The Pharmacopeia Comes of Age<sup>a</sup>  
 The Standardization of Pharmaceuticals<sup>a,b</sup>  
 Wrestling the Jungle's Secrets (Rusby)<sup>a</sup>  
 Stanislas Limousin, Pharmacal Inventor  
 The Era of Biologicals (Diphtheria Antitoxin)<sup>a</sup>  
 The Development of Chemotherapy (Forneau)  
 Pharmaceutical Research  
 Pharmaceutical Manufacturing Comes of Age  
 The Era of Antibiotics (Penicillin)<sup>a</sup>  
 Pharmacy Today and Tomorrow<sup>a,b</sup>

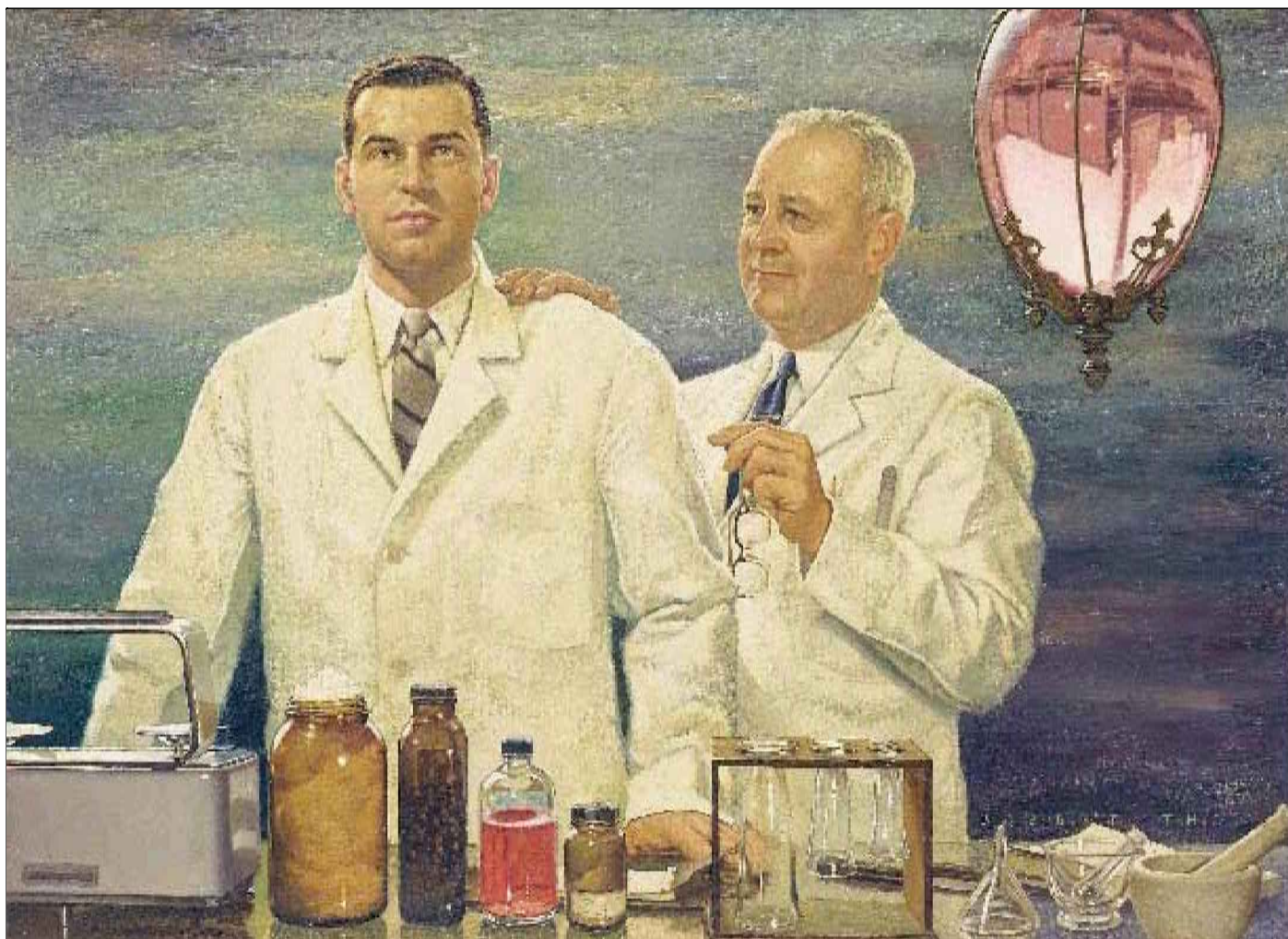
<sup>a</sup>Mentioned in article.

<sup>b</sup>Pictured in article.

and von Behring did not make any serious attempt to enforce his U.S. patent. Parke-Davis established a separate research laboratory in 1902, one of the first among all industries in America, and the following year the firm secured the first license issued by the U.S. Treasury Department for the manufacture of biologicals.<sup>69,70</sup>

## Modern Pharmacy Takes Its Place

A framed picture of Alexander Fleming hangs on the wall of



**Pharmacy Today and Tomorrow.** When George Urdang was asked to critique this painting, he told Bender that “the historian shuns the role of prophet.” If George Bender were still living today, he would certainly admit that neither he nor his consultants were able in 1964 to predict the future of the pharmacist as the provider of pharmaceutical care.

the laboratory scene depicted in *The Era of Antibiotics*. It was Fleming who, one day in 1928, accidentally allowed several of his petri dishes on which staphylococci were growing to remain uncovered near an open window at St. Mary’s Hospital in London. The next day, he found that they had been contaminated by an airborne fungus, later identified as the mold *Penicillium notatum*, which inhibited the growth of the bacteria. But it was not until 1940 that Howard Florey and Ernst Chain extracted a stable form of pure penicillin. The demands of World War II stimulated exploration to produce penicillin in bulk, resulting in the introduction of deep tank fermenters equipped with air dispensers, agitators, heat, and pressure control, as depicted in the Parke-Davis painting.<sup>71</sup>

Bender went on to relate in the story line that Parke-Davis had introduced its first broad-spectrum antibiotic, chloramphenicol (Chloromycetin), in 1947, describing it as “one of the most dramatic chapters in the history of antibiotics.” Neither Bender, nor anyone else at Parke-Davis, could have anticipated the toxicities

of chloramphenicol that soon became evident, including the infamous gray baby syndrome caused by maternal use of this agent late in pregnancy. For this, Duffin and Li<sup>7</sup> faulted Parke-Davis in their historical analysis of the series.

The final painting in the pharmacy series, *Pharmacy Today and Tomorrow* (above), depicts two pharmacists, a white-haired father and his son, gazing off into the future.<sup>72</sup> When asked to critique this painting, George Urdang responded that it was too “vague” for him to research. Bender admitted that no research would be needed, after which Urdang supplied three pages of serious criticism, and cautioned, “Go ahead, but the historian shuns the role of prophet.”<sup>7</sup>

## Describing Pharmacy’s Heritage

Parke-Davis Vice President Carl Johnson suggested in 1953 that a similar series should be developed for the history of

medicine. Four years later, after the pharmacy series was completed, *A History of Medicine in Pictures* began publication in the January 1957 issue of the Parke-Davis journal *Therapeutic Notes*.<sup>73</sup>

The medical history series never reached as widespread an audience as did the history of pharmacy prints. Physicians did not have the same display space that was available in most pharmacies. More than 15,000 spontaneous requests for prints were received by Parke-Davis between 1959 and 1961, but the majority came from teachers and students rather than from physicians. Therefore, the distribution of prints was curtailed, rather than expanded, after 1960.<sup>7</sup>

Bender's dream of finalizing the project with the publication of a book lay quiescent until *A History of Medicine in Pictures* was completed in 1964. Bender then sought permission to publish the two series in book form. Initially, some printers regarded this as too expensive, while others expressed interest only in the medical series, maintaining that the public would have no interest in pharmacy. After one and a half years, the Northwood Institute, a Michigan education center, agreed to publish the books if Parke-Davis would agree to purchase a "basic quantity" of each. Both books were published in 1966 under the imprint of Northwood Institute Press.<sup>74,75</sup> Recalling that some printers declined to publish the pharmacy edition, Bender was vindicated when *Great Moments in Pharmacy* went back to press within 1 year for a second edition.

In the early 1990s the original paintings in this series were valued by Sotheby's at \$800,000, and the complete collection is stored in Chicago.<sup>7</sup> They remained the property of Parke-Davis until 2000, when Pfizer became the owner after it merged with Parke-Davis, and prints can still be found for sale at flea markets, some being sold for as much as \$100 for a mint set of six.

## Closing Out Two Illustrious Careers

After completing the Parke-Davis assignments, artist Thom was engaged by the Bell Telephone Company for several other projects, including the history of printing and communications. Because of his health, Thom and his wife, Helen, moved to Texas. During a visit with their sons in Michigan over the 1979 Christmas holidays, Mr. and Mrs. Thom were killed in an automobile accident.<sup>9</sup>

Retiring from Parke-Davis in 1969, Bender moved to Arizona, where he joined the faculty at the University of Arizona College of Pharmacy and taught history of pharmacy from 1970 to 1974. Bender served as editor of the AIHP periodical *Pharmacy in History* from 1966 to 1984, and was elected twice as AIHP president and then as AIHP honorary president. Even after his diagnosis of cancer, Bender authored a book, *A History of Arizona Pharmacy*, published only 3 months before his death in Tucson on September 12, 1985.<sup>1,2</sup>

Bender received many honors, including an honorary master's degree from the Philadelphia College of Pharmacy and Science in 1945, an honorary degree of doctor of science from his alma mater, South Dakota State University, in 1958, and the Wayne State University meritorious service award in 1965.

AIHP honored Bender with the 1976 Kremers Lecture Award, which he used to describe his experiences in achieving his dream of capturing the history of pharmacy in pictures.<sup>6</sup> Bender concluded his 1976 Kremers Award lecture with the following words:

"Like no other media, these two series—the fulfillment of a dream that began 40 years ago—have spread the story of 5,000 years heritage enjoyed by the profession of pharmacy and medicine far and wide. It is hoped from that dream there has developed a better understanding of the sincerity and skills of the practitioners of the twin professions and of the services which they offer to the public."

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