

4. The addition of citric acid to milk of magnesia will stabilize it against development of bitter taste and increase in alkalinity in an ordinary glass bottle even on storage at elevated temperatures; 0.1% of citric acid seems to be sufficient for all practical purposes.

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## WILLIAM WITHERING AND THE INTRODUCTION OF DIGITALIS INTO MEDICAL PRACTICE.\*

BY LOUIS H. RODDIS.<sup>1</sup>

"The Botanical Professor gives annually a gold medal to such of his pupils as are most industrious in that branch of science. . . It will hardly have charm enough to banish the disagreeable ideas I have formed of the study of botany." This is the view of the "Gentle Science" held by one, when a medical student at the University of Edinburgh, who was to be one of the greatest of English botanists and, perhaps, the greatest medical botanist.

William Withering, the discoverer of the use of digitalis, was born in Shropshire, England, on March 17, 1741. Shropshire is one of the most beautiful counties of England, and its position adjacent to Wales gives it a record of historical tradition similar to the counties on the Scottish border. The English call the county Salop and its residents Salopians. The highest point in the county, near Withering's birthplace, is a small mountain called the Wrekin, and the local toast

is "To all around the Wrekin." The oaks of Shropshire are so celebrated that that tree is often referred to as the "Shropshire weed." A plant that also grew like a weed around every cottage and along every path was the foxglove (*Digitalis purpurea*).

At Edinburgh, Withering had among his professors such men as Cullen, the author of the celebrated "Practice of Medicine" and the famous anatomist, Alexander Monro, who was distinguished from his equally famous son by the title of Monro *primus*. This son, Monro *secundus*, was succeeded by his son, Monro *tertius*. The professorship in anatomy was held at Edinburgh by these three Monros for over 125 years, an example of a real medical dynasty.

After graduating in 1766, Withering went to the little town of Stafford, where he remained for nearly ten years as a country doctor. His practice here was not so large but that he had plenty of opportunity to study botany and mineralogy.



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There is a romantic story relative to his beginning as a botanist. The young lady whom he afterward married was one of his patients. She was an amateur artist, and it was to obtain objects for her pencil and brush that he began to collect flowers and plants of the vicinity. Feminine charms thus overcame the dislike for botany which he had expressed when a student. In 1776 he published the first important English flora written in the English language, the previous descriptions of British plants by Johnson and Ray having been in Latin.

Withering moved to Birmingham about this time, where he became a physician to the newly founded general hospital. He was succeeded at Stafford by Thomas Fowler of Fowler's Solution fame, who was a lifelong friend of Withering. In a few years he established a medical practice said to have been one of the largest, if not the largest outside of London. He still found time for botany and mineralogy, to make meteorological observations, and to publish papers and books on botany and on mineralogical subjects. His distinction as a botanist is remembered by the botanical genus, *Witheringia*, while the mineral Witherite commemorates him as a mineralogist. As if this was not enough to occupy his time, he was also a musician, performing on the harpsichord, flute and the bagpipes. He was also a breeder of cattle, and was one of the first to introduce the Jersey cattle from the Channel islands to the mainland of England. Withering's fame, however, really rests upon his discovery of the use of digitalis in medicine. How his attention was first called to it is best told in his own words:

"In the year 1775 my opinion was asked concerning a family receipt for the cure of the dropsy. I was told that it had long been kept a secret by an old woman in Shropshire who had sometimes made cures after the more regular practitioners had failed. I was informed also that the effects produced were violent vomiting and purging; for the diuretic effects seemed to have been overlooked. The medicine was composed of twenty or more different herbs, but it was not very difficult for one conversant in these subjects to perceive that the active herb could be no other than the Foxglove."

He began to use this remedy in his practice with great success in cases of cardiac dropsy, and in 1785 published "An Account of the Foxglove and Some of Its Medical Uses." Medical men everywhere quickly adopted the use of the drug. It was included in the pharmacopœias of the day, and it has remained in them ever since. Its introduction into use was one of the greatest contributions made by eighteenth century medicine.

Withering used at first a decoction and later an infusion, but finally discarded these for the powdered leaves. He favored the leaves gathered just before blossoming time and removed the midrib. The leaves were then dried in the sun or before a fire. They were then rubbed down "to a beautiful green powder." He gave adults one to three grains of this powder twice a day. He strongly urged against overdosage. Although he regarded digitalis as primarily a diuretic he noted that "it has a power over the motion of the heart to a degree yet unobserved in any other medicine and that this power may be converted to salutary ends." Withering's final conclusions in regard to the uses and effects of digitalis were so sound that our present clinical practice 150 years later (this year is the 150th anniversary of the announcement of Withering's discovery), does not differ materially from his own methods.

If we were to select ten indispensable drugs in the practice of medicine, digitalis, would be one of them. We must not forget that Withering gave us this drug and, furthermore, taught us the clinical use of it, for he was really a great clinician, as well as a great investigator.

Withering suffered from tuberculosis, and in 1793 he published an excellent modern treatment for that disease. He died of tuberculosis in 1799. When dying, one of the most celebrated of puns was uttered by a friend, who remarked that "The Flower of Physicians was now withering." He lies buried in Edgbaston Churchyard, and the foxglove appropriately adorns his monument.

### MEDICINE MAKING AS DEPICTED BY MUSEUM DIORAMAS.\*

BY CHARLES WHITEBREAD.<sup>1</sup>

Museums do what they can to give publicity to collections of interest to special groups by encouraging staff members to prepare papers for presentation at conventions and for publication in association journals. This is done to make the collections of use to those who do not find it convenient to visit the museum.

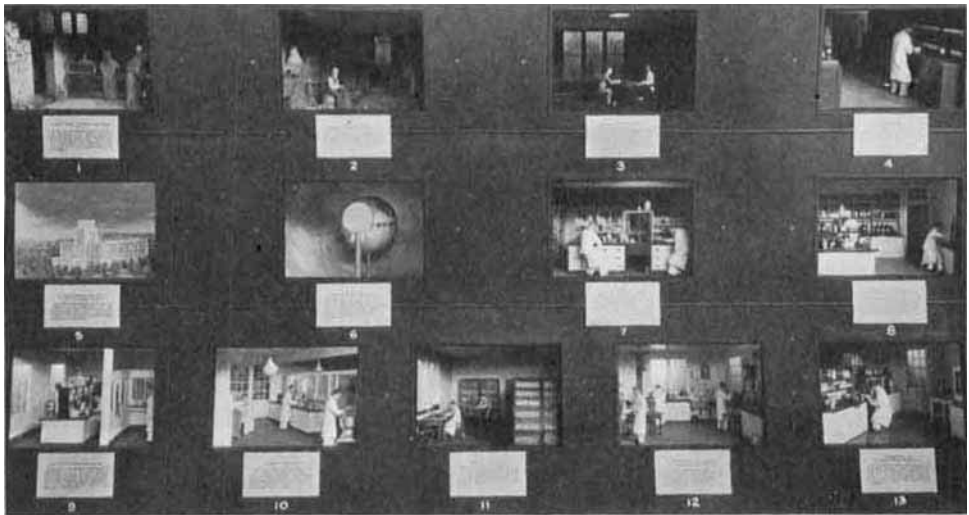


Fig. A.—Dioramas of historical and scientific phases of medicine-making.—*Courtesy of U. S. National Museum.*

The collection of dioramas outlined here illustrates historical and modern phases of medicine making. Pictures of the dioramas are shown, the general labels being lettered and the descriptive legends numbered. These labels and legends were prepared for the laity, but they will be of interest to members of the medical and pharmaceutical professions as well. Reference to the letters and numbers in the following text and illustrations will make it easy to follow the story.

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