
Pharmaceutical and Chemical Laboratories in Eighteenth-Century Germany

*Ursula Klein**

Among the leading German chemists in the 1780's, J. C. Wiegleb (1732-1800), M. H. Klaproth (1743-1817), L. Crell (1745-1816), J. F. Gmelin (1748-1804), J. F. Westrumb (1751-1819), F. C. Achard (1753-1821), J. F. A. Götting (1753-1809), F. A. C. Gren (1760-1798), and S. F. Hermbstädt (1760-1833) – Wiegleb, Klaproth, Westrumb, Götting, Gren and Hermbstädt were apprenticed and became practicing apothecaries, and Wiegleb and Westrumb remained apothecaries throughout their professional careers.¹ Around half of the one to two hundred Germans carrying out chemical investigations and acknowledged as “chemists” in the 1780s became acquainted with chemistry as pharmaceutical apprentices and practicing apothecaries. The interconnectedness of pharmaceutical art and chemistry in eighteenth-century Germany also becomes manifest from analysis of the readers of and contributors to professional periodicals such as the *Chemische Annalen*. Among the 564 German subscribers to Crell's *Chemische Annalen* between 1784 and 1789, 260 (46%) were apothecaries, and among its German contributors more than 40% were apothecaries as well.

The socio-cultural German context can hardly explain how owners of apothecary's shops and manufacturers of remedies became acquainted with the practice and theory of chemistry and how they became visible as skilled and knowledgeable chemists in the Republic of Letters. What kind of activities earned them the attention of a learned and supportive audience? What were the sites and resources of these activities? How did apothecaries' chemical investigations relate to pharmaceutical manufacture? As a matter of fact, A. S. Marggraf, like other apothecary-chemists, did not begin his career as a chemist after leaving the pharmaceutical business, but rather developed it alongside, and even in conjunction with that business. Furthermore we may ask why apothecaries, who were trained in an artisan system of apprenticeship and earned their living as merchants and manufacturers of remedies, merged so smoothly with other factions of chemists,

* Max Planck Institute for the History of Science. Boltzmannstrasse 22. 14195 Berlin.
klein@mpiwg-berlin.mpg.de

for instance those who had earned a medical doctorate or were mining officials and assayers. Were there any aspects of the actual practice of apothecaries that were similar to other chemists' practice? Were there, in addition to individual talent, collective beliefs, and state intervention, any collective material resources and elements of the practice and material culture of pharmacy that enabled apothecaries to carry out the same or similar kinds of chemical investigations as chemists working at other artisan sites or at academic institutions?

It can be argued that Marggraf, like other German apothecaries who became renowned chemists, was a truly hybrid apothecary-chemist, and further, that an indispensable condition for the existence of the persona of an apothecary-chemist in the eighteenth and early nineteenth centuries was the high degree of correspondence between the material culture and practice of pharmacy and the material culture and practice of "academic chemistry." Apothecaries did not have to bridge a huge gap between a rigid "realm of recipes" and pharmaceutical routine, on the one hand, and a realm of innovative, pure chemical science, on the other. Rather, pharmaceutical art and academic chemistry overlapped in the eighteenth and early nineteenth centuries, in Germany and elsewhere in Europe. Laboratories, pharmaceutical and academic-chemical, were the institutions where manufacture (in the case of pharmaceutical laboratories) or technological inquiry (in the case of academic chemical laboratories) and inquiry into nature were firmly entwined.²

As a consequence of the introduction and acceptance of "chemical remedies" during the seventeenth century, in the eighteenth century the pharmaceutical art was in a state of continuous change and innovation.³ There was hardly any recipe for the manufacture of chemical remedies that was not questioned, varied, improved or replaced by a new one. And there was hardly any chemical remedy that was not on the test-bench for possible adulteration or a material that had not yet been identified unambiguously. Chemical techniques and instruments, connoisseurship of chemical substances, and chemical analysis became significant tools for mastering problems of manufacture. Inversely, the solution of problems of manufacture provided insight into the "nature" of substances and their chemical transformations. The similarity of the material culture and techniques of manufacture in eighteenth-century pharmaceutical art to the material culture and experimental techniques of academic chemistry enabled apothecaries to shift their activities smoothly from pharmaceutical manufacture to the chemical investigation of nature, or to perform chemical analyses alongside pharmaceutical manufacture. Likewise, it enabled chemists performing experiments at academic

chemical laboratories to shift from inquiries into nature to pharmaceutical and other technological inquiries.

Notes

¹ See Karl Hufbauer, *The Formation of the German Chemical Community (1720–1795)* (Berkeley: University of California Press, 1982).

² For a further discussion of the theme and a more elaborate bibliography see Ursula Klein, “Apothecary-Chemists in Eighteenth-Century Germany,” in *New Narratives in Eighteenth Century Chemistry*, ed. Lawrence M. Principe (Dordrecht: Springer, 2007), 97–137; Ursula Klein, “Apothecary’s Shops, Laboratories and Chemical Manufacture in Eighteenth-Century Germany,” in *The Mindful Hand. Inquiry and Invention from the Late Renaissance to Early Industrialisation*, eds. Lissa Roberts, Simon Schaffer and Peter (Amsterdam: Royal Netherlands Academy of Arts and Sciences, 2007), 246–276; See Ursula Klein, “Die technowissenschaftlichen Laboratorien in der Frühen Neuzeit,” *NTM* 16 (2008): 5–38.

³ See Erika Hickel, “Der Apothekerberuf als Keimzelle naturwissenschaftlicher Berufe in Deutschland,” *Medizinhistorisches Journal* 13 (1978): 259–76; Erika Hickel, *Apotheken, Arzneimittel und Naturwissenschaften in Braunschweig, 1677–1977*, (Braunschweig: Hagenmarkt-Apotheke, 1977); Wolfgang Schneider, *Geschichte der pharmazeutischen Chemie*, (Weinheim: Verlag Chemie GmbH, 1972).