1989

Review: 'Alexander von Humboldt und die Pharmazie'

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contact was less intimate and extensive than that of the general consultant. The specialist-consultant provided research expertise in his special area through actual laboratory work and by keeping the company abreast of new developments in his area. Swann uses two University of Wisconsin pharmacologists, Arthur Loevenhart and Arthur Tatum, as examples of this type of collaboration. Finally, there were collaborations that emerged to work on a single therapeutic agent. These were short-term marriages of convenience but often had long-term consequences for both partners. Swann uses as illustration of this typology the work of Eli Lilly and Company with University of Toronto scientists in the development of insulin and the work of the same company in producing liver extracts in collaboration with scientists at Harvard and Rochester. Swann does an excellent job in showing the sticking points of these two Lilly collaborations, building for the insulin story on Michael Bliss's model study. But the more important lesson is contained in the benefits to both sides. These were financial to be sure, but they also brought academic recognition for the university scientists, including Nobel Prizes, and near revolutionary changes in research and development at the Indianapolis pharmaceutical company.

John Swann has written a book of large significance to several fields of history. Like all such books it will serve as a spur to further research by historians. There is certainly room for other scholars to add to our understanding of biomedical research in universities and pharmaceutical companies during the first four decades of the century, though one suspects that the general outlines of Swann's story will stand as additional cases are brought to light. Other historians will need to investigate more thoroughly than Swann has the business of pharmaceutical manufacturing and marketing. Even more important, however, is the need to move forward in time. Swann's book ends in 1940 (with a brief but interesting epilogue about the present), before the immensely important collaborations of World War II, collaborations in which a third player, government, entered the game. What happened during the 1940s and after is something scholars and policymakers in many fields need to know. The research will be difficult. More archives will need to be opened. More scholars of Swann's talents will need to understand the importance of this subject. *Academic Scientists and the Pharmaceutical Industry* will show the way.—JAMES H. MADISON, *Department of History, Indiana University.*

HUMBOLDT AND PHARMACY

WOLFGANG-HAGEN HEIN, *Alexander von Humboldt und die Pharmazie*, Veroffentlichungen der Internationalen Gesellschaft für Geschichte der Pharmacie e.V., Neue Folge, Band 56 (Wissenschaftliche Verlagsgesellschaft, 7000 Stuttgart 1, Postfach 40, FRG, 1988; 130 pp.; DM 29).

During the late eighteenth and early nineteenth centuries, when generalists rather than specialists and individuals rather than organizations dominated the course of scientific development, German naturalist Alexander von Humboldt (1769–1859) stood out as a leading figure in such diverse yet interrelated fields as geography, geology, botany, medicine, and pharmacy. And despite the massive body of historical writings on Humboldt, little is known concerning his contributions to pharmacy and his relationship to the discipline's practitioners. Wolfgang-Hagen Hein ably fills this void in scholarship with his well-researched *Alexander von Humboldt und die Pharmazie*. The significance of this topic to the history of science should not be underestimated, since during Humboldt's lifetime pharmacy not only was transformed in terms of new knowledge concerning both inorganic compounds and organic natural products, but also because as a discipline it was an important source of manpower for the "new" chemistry initiated by Lavoisier and others. Beginning with the turn of the nineteenth century an emerging generation of chemists left the apothecary shop for the opportunities of the rapidly developing German university. These former apothecaries—like Heinrich and Gustav Rose—applied the knowledge and skills gained during apprenticeship within a new institutional setting and thus provided much of the academic leadership necessary for the gradual evolution of chemical science in Germany in the decades before Justus von Liebig's spectacular rise to preeminence.

Although the author is aware of the powerful influence that pharmacy played on chemistry during the period under consideration he perhaps wisely chose to restrict his study to Humboldt and his contacts among pharmacists. As a model of scholarship, Wolfgang-Hagen Hein used George Urdang's study on Goethe and pharmacy, but a different kind of product resulted. Unlike Urdang's work, the author had few primary manuscript materials available and thus was forced to reconstruct the past in a way in which the

often expected microscopic detail associated with this genre of scholarship is missing. Nevertheless, this absence of diaries and letters can be interpreted as being a disguised blessing, since by attacking the periphery rather than the center of his topic Hein has skillfully produced a splendid collective biography of these pharmacists contemporary to and associated with Humboldt.

Organizationally the author divided his monograph into three main sections beginning with the role of pharmacists during Humboldt's formative years. After discussing the important influence of Carl Ludwig Willdenow and to a lesser extent that of Sigismund Friedrich Hermbstaedt, J.F. Göttling, J.W. Ritter and Nicolas Vanquelin, Hein examined the significance of Humboldt's 1799–1804 expedition to the Americas. Humboldt took to Venezuela, Colombia, Ecuador, Mexico, Cuba, and the United States a scientific methodology that was in part derived from his contacts with pharmacists like Willdenow, and his subsequent inquiries and observations resulted in the introduction of a host of new substances to Western Europe. For example, Humboldt's systematic study of the distribution and varieties of Cinchona Bark led to future investigations concerning its cultivation in India and elsewhere. Other natural products sent to Humboldt's pharmaceutical network in Europe for analysis and evaluation included Tolubalsam, curare, and guano, and these substances were later used to treat a wide variety of ailments and diseases.

Upon Humboldt's return in 1804 the nature of his contacts with the pharmacy community subtly changed since his fame and status were now firmly established within court circles and scientific communities. Yet Humboldt remained tied to a dynamic network of pharmacists that served him by funding valuable sources of information. Emphasis was no longer placed upon scientific methodology and theory but rather on the wide ranging factual data necessary for his written works, including observations and chemical analyses introduced in his capstone *Kosmos*. The mature Humboldt's most significant relationships with pharmacists included ties with Franz August von O'Etzel, Heinrich Rose, Heinrich Robert Göppert, Johann Christian Poggendorff, Samuel Heinrich Schwabe, and Hermann Schacht. For Hein the elucidation of these relationships proved to be most difficult due to the lack of primary source material, since Humboldt rarely saved letters. To overcome this obstacle the author cleverly employed the Sotheby's auction catalogue of Humboldt's library in order to better understand the relative influence of these individuals. Using this strategy a sense of the relative influence that these figures had on Humboldt and his thinking during the last two decades of his life crystallizes, and unfortunately this is perhaps the best one can do since Humboldt's books were destroyed in a fire prior to the auction.

In conclusion, Wolfgang-Hagen Hein's *Alexander von Humboldt und die Pharmazie* is far more than a work on Humboldt. Indeed, it is a study whose strength lies in the biographies of those pharmacists in contact with the German naturalist, and thus it serves as a useful source of information dealing with the late eighteenth and early nineteenth century European pharmaceutical community.—JOHN A. HEITMANN, *History Department, University of Dayton.*

DES DILEMMA

ROBERTA APFEL AND SUSAN FISHER, *To Do No Harm: DES and the Dilemma of Modern Medicine* (Yale University Press, New Haven, CT, 1984; x + 199 pp.; price unavailable).

Modern pharmacology came into being as a pivotal science of modern medicine. With its development in twentieth-century America came a mechanism for bringing the laboratory sciences to the bedside and the pharmacists into the American system of allopathic medicine.

The authors are medical doctors, psychoanalytically oriented psychiatrists who have worked with victims of DES and interviewed the doctors who took part in the tragedy. They use the accounts by the actors to give us the experience of DES, through the lenses of their psychodynamic framework. Thus the doctor's dilemma is one of a desire to heal and the painful realization that he violated his moral imperative "to do no harm."

Apfel and Fisher are even more interested in the psychodrama for the patients who trusted these doctors. As clinicians, they draw on their own practice with DES mothers and daughters set up for tragedy and disillusion by their (post World War II) desires for children and "normal" family life. This setting draws us into the experience of mothers who felt violated by their personal doctors when their science failed, and into the experience of daughters who felt cheated by their mothers who harmed them even in utero.