

David Knight. *Ideas in Chemistry*. New Brunswick: Rutgers University Press, 1992. Pp. 213. Cloth, \$47.00; paper, \$18.00.

This is no run-of-the-mill (or run-of-the-laboratory) history of chemistry. As the title indicates, it is a history of "ideas in chemistry," and this approach allows David Knight, professor of history at the University of Durham, England, to range widely over intellectual history, including historiography. Knight is one of those historians who believes that a history, properly written, should be an interesting story, relatively true, going somewhere. For Knight that "somewhere" involves a modified progress theory in which chemistry originated in the occult, grew in scientific status and influence through a complex mix of speculative theory and empirical research, reigned as "queen of the sciences" in the nineteenth century, then declined to its current "reduced" status as a "service science."

In an informal yet erudite manner Knight explains how chemistry had its origins in alchemy, a complex synthesis of God, man, and nature. Knight's writing has a wonderful grace and clarity; for instance:

Alchemists were not . . . concerned simply with matter and its transformations, but saw these as symbols also of changes in people as God's spirit worked upon them. A character change from baseness to nobility was a true conversion or transmutation parallel to that of lead to gold; and the imperishability of gold recalled the eternal life which awaited God's elect.

From such beginnings arose the science of chemistry. During the sixteenth and seventeenth centuries mechanical analogies reigned. Scientists were supposed to gain knowledge by analyzing and synthesizing, by taking things like clocks apart and putting them together again. It became more important "how" the "pushes and pulls" worked than "why" they worked. Those who delved deeply into the nature of things favored the ancient atomic theory (much different from today's version) that correlated well with hard mechanical objects.

Beginning with Boyle, however, and culminating with Lavoisier and the concept of elements, chemistry liberated itself from mechanics, physics, and the atomic theory (the irony of this will be seen later) and entered the "golden age" of the nineteenth century. Chemistry went from strength to strength through the discovery of various "airs," including the eventually disproved phlogiston. Black, Priestly, Scheele, Davy, Faraday, and many others explored, exposed, and clarified the nature of matter until it seemed that nothing could successfully challenge the reign of the chemists. Then a strange thing happened (to be witty, which would be in keeping with the style of this book) on the way to the laboratory: The atomic theory of physics emerged (partly due to the findings of chemists) to illuminate the fundamental structure of matter. Thus chemistry was reduced to its present status as a service science. "Whatever the future may be, the foundations of chemistry do now seem to be rooted in physics; and those who seek the most fundamental science will no longer flock to lectures on chemistry as they did two hundred years ago."

This is Knight's story—a complex and fascinating one. The above sketch does not begin to do justice to its richness. Besides good solid chemistry and physics, there are a wealth of allusions to and illustrations from other sciences, philosophy, literature, historiography, sociology, and everyday life. And this is what makes the book so difficult to evaluate. To the author's admission that it is "impressionistic and personal" some readers might add "idiosyncratic." This reviewer believes that intellectual historians and historians of science will find much useful information and enjoyment in the book, but novices in the field might do best to read a more conventional history of chemistry before delving into this rich brew of ideas in chemistry.

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