A SENSE OF HISTORY

A sense of history is particularly important in many areas of chemical documentation. History, however, is different things to different people. To some, it is like love—embracing dates. To others, it is like mythology—dominated by heroes and villains, or, in the vernacular of the day, goodies and badies. To others, it is like gambling—a matter of chance *vis-a-vis* the odds of nature. To others, it is like PERT—a progression of critical incidents.

History is none of these. It is our legacy. It is the information and knowledge we have of and from our past.

Dates, people, the odds of nature, and critical incidents have been important in the devolution of history, especially in the teaching of history to the young. Of the four, scientists are least aware of dates. Even to a historian of science, there are few, if any, 1215's, 1492's, 1776's, 1789's, 1914's, etc., and there certainly is no October 12 or July 4. On the other hand, science is replete with name-associated reactions, equations, laws, and constants, such as the Grignard reaction, the Clausius-Clapeyron equation, Boyle's law, and the Boltzmann constant. Although name-association is a way of honoring scientists for their accomplishments, it has been used primarily as a communication shorthand.

The matter of chance, the odds of nature, and being in the right place at the right time are part and parcel of the legends in science, as is the factor of the critical incident. There are many examples of these in the usual historical accounts of science, such as Archimedes (more famous for the word of revelation, *eureka*, than for solving the alloy problem), Newton (how fortuitous that he rested under an apple tree), Kekulé (his vision without the use of pyschedelic drugs led to our benzene construct, Goodyear (whose great accidental moment resulted in the rubber industry), and others.

By and large, scientists have little concern for the past, and their education, for the most part, is devoid of the history of science. Although the present has been determined by the past and science is understood only through the past, we think of science as progressing toward the future, and not as progressing from the past.

Our involvement with the present and anticipation of the future are consequences of the phrase *research and development*. Even the general public today comprehends the logical progression of research to development of a new product or process. What is less comprehensible is the progression of research to research, development to research, and development to development. Even the literature of science, as disclosed in books and journals, reinforces the concept of the history of science as a linear expansion into the future. Similarly, when we look back at our own individual research, we tend to view it and to tell it as a linear unfolding. But this is not the way science has evolved or is evolving.

How science has evolved and is evolving are discernible only through the multidimensions of history. Science is certainly a cumulative process, but not a cumulative process in isolation from all other factors of history. Printing, without which science would still be a part of philosophy, was made possible through the evolution of art forms, and not by a process of research and development. The concepts, theories, instruments, and methods of science are possible because of the evolution of language into a high level of maturity through the "story-tellers" and "poets" of the world.

It is doubtful whether man's powers of observation are any greater today than they were when early man discovered fire, domesticated animals, and established agriculture. What modern man really has going for him is recorded history, and the more sense of this history he has, the greater is his understanding of what science is about.

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