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The Scientist's Perspective

Who does not recognize today that the impact of science on society is truly overwhelming in importance, and that the future welfare, if not the very existence, of human society will depend increasingly upon the public understanding of science—not so much of the facts or even the concepts of science as an understanding of what science really is and how it yields its results? Scientists deplore the popular image of science as a benevolent genie who will provide any gift the Master of the Lamp may demand, or the popular conception of scientific method as a sort of “intellectual machine that inevitably grinds out ultimate truth in a series of orderly, predictably sequential ‘steps,’ with complete accuracy and certainty” [H. K. Schilling, in a paper presented at a meeting of Section L of the AAAS in Atlanta]. Nevertheless, few scientists care to undertake the labor of explaining the real nature of science; in fact, but few of them take time to think the matter out for themselves. The philosophy of science and the history of science are glaringly neglected by the very practitioners of science itself.

The result is a fatal blindness that afflicts most of those who write the scientific textbooks that introduce college and university students to their fields. Nine out of ten of these books, in my experience, present their science as a series of established facts and polished generalizations—*obiter dicta* handed down in an authoritarian fashion. How rarely does one find any evaluation of evidence or any description of the experimental means whereby the evidence was gathered. How trebly rare to get any hint of the errors and confusions and false starts of able scientists, or any indication that the “truth” of today is so often a synthesis of views once held to be mutually contradictory (for example, epigenesis and preformation in the formation of the embryo; the corpuscular and the wave theories of light). Is it any wonder that our younger scientists, fed on such a distillate, lack the perspective that becomes more and more necessary to interpret science to the public, which benefits from it and supports it, but has no firsthand acquaintance with it?

While listening during the December meetings to a symposium of the History of Science Society, on the occasion of the first presentation of the Sartory medal to George Sartory himself, I heard papers on “The origin and diffusion of the crank” (Lynn White, Jr.) and on “The theory of the rainbow: medieval triumph and failure” (Carl B. Boyer) that fully illustrated the dependence of scientific discovery on the intellectual “atmosphere” of the times, and the failure of discoveries to be appreciated because they were ahead of the scientific thinking of the day. I was struck by the obvious need to give more attention to the nature of science and scientific methods. Yet at the same time I felt dismay that the history of science is so dominated by historians and, I might add, the philosophy of science by philosophers, while the contributions made by practicing scientists to either field are relatively few.

Science is a typically human, typically social, indeed typically communal enterprise. To perform good experiments and make logical interpretations of our data are not enough. To teach facts and theories in an authoritarian way vitiates the spirit of science. We are part of a living, developing community of science, and only by paying heed to our past and considering our foundations can we fulfill our social responsibility.—BENTLEY GLASS, *Johns Hopkins University*.