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University of Pennsylvania Press, 1969; Joseph  
Agassi, "Sir John Herschel's Philosophy  
of Success," *Ibid.*, pp. 1-36.

The newly issued *Historical Studies in the Physical Sciences* is "an annual journal devoted to the history of the physical sciences in the post-Scientific Revolution period," edited by Dr. Russell McCormach, Assistant Professor of History and Philosophy of Science, University of Pennsylvania. The editorial board consists of sixteen scholars from six countries, among whom we find the name of Dr. Tetu Hirosige, Nihon University, Tokyo. "Articles may be submitted in foreign languages; if accepted, they will be published in English translation," according to the "Notice to Contributors."

Volume 1 contains the following eight papers:

- Joseph Agassi: Sir John Herschel's Philosophy of Success
- D. C. Goodman: Wollaston and the Atomic Theory of Dalton
- Theodore M. Brown: The Electric Current in Early Nineteenth-Century French Physics
- S. G. Brush & C. W. F. Everitt: Maxwell, Osborne Reynolds, and the Radiometer
- Martin J. Klein: Gibbs on Clausius
- Tetu Hirosige: Origins of Lorentz' Theory of Electrons and the Concept of the Electromagnetic Field
- John L. Heilbron & T. S. Kuhn: The Genesis of the Bohr Atom
- V. V. Raman & Paul Forman: Why Was It Schrödinger Who Developed de Broglie's Ideas?

Among these papers, the present reviewer will take up only the first one, which is the results of Dr. Joseph Agassi's study mainly of John Herschel's work, *Preliminary Discourse on the Study of Natural Philosophy*, London & Philadelphia, 1831.

The time of John Herschel was a period of great transition in science and scientific thought, owing to the rise of Dalton's atomism, the appearance of electrochemistry and of electromagnetism, the overthrow of Newton's optics, and so on. "Doubts about Newton, about science, and about modes of research and modes of publication all found their way to public attention. Herschel tried to handle them and restore an order of sorts in the scientific community." Agassi proposes that he did so "by publishing his views in a definitive essay about science in general." Thus came out Herschel's *Preliminary Discourse*.

It is composed of three parts. The first is on the nature and advantages of physics. Having first established the value of science, Herschel "launches an attack on those who oppose science as anti-religious and on those who support science from purely utilitarian considerations." He then tells that science is composed of abstract and empirical components, and goes on to the law of causality. Although *a priorist* arguments are contained in Herschel's view, he was much too empiricist to be considered even mildly Kantian, nor was it probable that he ever read Kant. However, Agassi could add that Herschel studied Isaac Watts's *Logic*, 1724, which was once very popular.

The second part of Herschel's book deals with the empirical aspects of science. He discusses prejudices and induction, illustrated by historical examples. "Herschel is one of the last exponents of the orthodox Baconian doctrine of prejudice." "Copernicus, Kepler, Galileo, and Boyle all found some facts, partly due to his own inspiration, but he, Bacon, was the reformer of philosophy, the herald of Newton's success!" "Herschel seems merely to reiterate naively Bacon's view that no real science existed before Bacon, and to present the rest of the history of science as the history of inductive reasoning." Thus his "*Preliminary Discourse* seems to be a modernized version of Bacon's *Novum Organum*." In this work, however, the theory of *independent* tests is almost entirely Herschel's own invention and is a very important contribution to the theory of testing hypotheses, according to Agassi.

The third part of Herschel book is a history of the physical sciences. Beginning with a classification of the sciences, which includes a passage on light, he describes Newton's corpuscular hypothesis. "In defense of Newton's conduct Herschel says that the corpuscular hypothesis had explained all the then known phenomena, including Newton's own discoveries. He was confident that 'had the properties of light remained confined to these, there would have been no occasion to have resorted to any other mode of conceiving it.'" This statement was to be meanwhile refuted by Whewell and by Mach. Herschel also says that the rival hypothesis of Huygens seemed to be less capable of explaining diffraction. Herschel deals with other aspects of history of physical sciences, but the revolution in optics was, Agassi thinks, the major subject of his history.

The nineteenth century may be considered as the century of the philosophy of *success*, according to Agassi. "Herschel's emphasis on success permeates his book. The idea that science is identical with scientific success, intellectual as well as material, is implicit throughout, and explicit in quite a number of places." Herschel might have been "more of an originator than reflector of the philosophy of success," but Agassi has to say that he has too little evidence to support this view of his own. It deserves to be mentioned, in either case, that Herschel's philosophy is identical with Bacon's with but a small difference and Bacon's philosophy of hope is in a way an early predecessor of Herschel's philosophy of success.

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