A Puritan of Science

Science and Cultural Crisis. An Intellectual Biography of Percy Williams Bridgman (1882–1961). MAILA L. WALTER. Stanford University Press, Stanford, CA, 1990. xii, 362 pp., illus. $42.50.

P. W. Bridgman a "scientific puritan"? This tag seems more befitting of one of those high-collared colonial divines who dabbled in natural philosophy. "Puritan" seems an inappropriate label for a modern, down-to-earth Harvard physicist who not only parlayed painstaking studies of high pressures into a Nobel Prize but also pushed a hard-nosed scientific philosophy known as operationalism. However, historian of science Maila Walter argues convincingly that Bridgman was a puritan, not in his religious outlook (he was anything but a God-fearing zealot) but in his general intellectual disposition.

We can capture the essence of this disposition by leaving Walter's book for a moment and recalling George Santayana's 1935 novel, *The Last Puritan*. Santayana found in his Boston-bred protagonist "hatred of all shams, scorn of all mummeries, [and] a bitter merciless pleasure in the hard facts." Walter finds similar traits in Bridgman, a "scientific puritan" who also, coincidentally, grew up in Boston environs. The traits appear as Walter tells the story of the physicist's life, especially his personal response to a 20th-century crisis of meaning—a crisis having both intellectual and moral dimensions.

Bridgman's exposure around 1920 to the emerging theories of relativity and the quantum signaled a heightening of his personal crisis of meaning. Rattled by the erosion of traditional meanings of scientific concepts, the young Harvard professor sought clarification in "operational analysis." Convinced of the human rather than transcendental basis of knowledge, Bridgman contended that the meanings of all physical concepts, when correctly formulated, are synonymous with corresponding sets of actual operations.

As he continued to struggle with the meaning of measurement in thermodynamics, relativity, and the new quantum mechanics, he soon distanced himself from earlier versions of operationalism. Because of his classical, empiricist background, however, he never could grasp the full epistemic import of quantum mechanics. Rather, he responded to the new physics by becoming preoccupied with the limits of human knowledge—limits that he increasingly viewed as moral imperatives. His earlier emphasis on the personal aspect of operational inquiry hardened into a "radical existential subjectivism" in which he extended his rejection of metaphysical absolutes from the cognitive realm to religious, social, and political realms. "In the last analysis," he wrote in 1936, "science is only my private science, art is my private art, religion my private religion, etc." Unfortunately for him, his view of the private and subjective nature of science met with indifference if not disdain. And ironically, the radically subjective operationalism to which he had turned for direction ultimately left him stranded under a "shadow of existential despair." In his novel, Santayana identified the tragedy of his "last puritan": "a moral nature burdened and over-strung, and a critical faculty fearless but helplessly subjective." Unwittingly, Santayana had written an epithet for Bridgman.

Percy Williams Bridgman. [Niels Bohr Library, American Institute of Physics]

Walter tells the story of her last puritan more as a commentator than a chronicler, willing to correct Bridgman's analyses when they were wrong and to complete his chains of inquiry when he left them dangling. In effect, Walter offers an expansive interpretative essay rather than a constrained scholarly biography. Bridgman is her vehicle for a discerning tour of the intellectual and moral issues that troubled scientifically minded Americans during the first half of the 20th century.

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Medical Assessment

Effective Care in Pregnancy and Childbirth. IAIN CHALMERS, MURRAY ENKIN, and MARC J. N. C. KEIRSE, Eds. Two volumes, boxed. Vol. 1 (parts 1–4), Pregnancy. Vol. 2 (parts 5–10 and index), Childbirth. Oxford University Press, New York, 1989. xxxiv, 1516 pp., illus. $400.

A Guide to Effective Care in Pregnancy and Childbirth. MURRAY ENKIN, MARC J. N. C. KEIRSE, and IAIN CHALMERS, with the editorial assistance of Eleanor Enkin. Oxford University Press, New York, 1989. xiv, 376 pp., illus. $45; paper, $24.95. Oxford Medical Publications.

Effective Care in Pregnancy and Childbirth ("*ECPC*") is very different from the traditional clinical textbook its title might suggest. Such texts emphasize what care-givers know (the signs, symptoms, pathogenesis, natural history, and prognosis of diseases encountered in a particular clinical discipline). *ECPC* focuses on what they do, that is, on their diagnostic, prophylactic, and therapeutic interventions. But what makes *ECPC* unique scientifically is its systematic review of the existing evidence bearing on the effectiveness of those interventions.

The book opens with a discussion of different epidemiologic research designs and their merits or otherwise in reducing systematic and random errors in estimation of treatment effects, and the second chapter summarizes the "materials and methods" used to collect and synthesize the evidence bearing on those effects. Following the principles laid out in the first chapter, the editors have chosen to base their syntheses primarily on evidence from randomized controlled clinical trials. The trial results used as the data for these syntheses are contained in the electronic *Oxford Database of Perinatal Trials*, the first version of which was released by Oxford University Press in 1988 and which has been regularly updated ever since (for an account of the project see I. Chalmers *et al.*, *Controlled Clinical Trials* 7, 306 [1986]). The database of course contains results of trials published in the conventional medical literature. But in an effort to avoid bias stemming from the tendency of investigators to submit and journal editors to accept reports that demonstrate "positive" treatment results, the book's editors have also surveyed over 40,000 obstetricians and pediatricians in 18 countries to find out about trials that may have been completed but not published. Moreover, authors responsible for the syntheses of individual topics were encouraged to write to the original investigators for any information obtained that was not provided in the published reports.

The chapter authors were also asked to