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Physicists in Conflict by Neil A. Porter

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suggest, therefore, a picture of a national style not much absorbed in pure science.

The volume concludes with an over two-hundred-page section of short biographies (with references) of the most notable Dutch scientists and bibliographical guides to van Berkel's survey and the historiography of the field. The index refers to proper names only.

Whatever one might think about the debate over national styles, the arguments in this volume serve well for presenting a great deal of information, both new and well known, which makes this an important reference work. Moreover, taking the views of its authors into account will be the *sine qua non* of historical work on Dutch science in the near future; the volume can also serve as a good starting place for any historian interested in approaches to science in a nation. Perhaps it can be said that in the best tradition of Dutch scholarship, the editors have produced a work of thoroughness, usefulness, and tolerant argumentativeness.

HAROLD J. COOK

**Neil A. Porter.** *Physicists in Conflict*. xvi + 275 pp., illus., figs., bibl., index. Bristol, England: Institute of Physics Publishing, 1998. \$49, £30.

This book, meant for students and the general reader, examines both internal and external conflicts in physics. Neil Porter first presents primarily classic cases of the conflict between physics and religion (Hypatia, Roger Bacon, Giordano Bruno, Galileo, Kepler) and between physics and politics (Henry Tizard and F. A. Lindemann on strategic bombing, Robert Oppenheimer and Edward Teller on the A-bomb and security). He also discusses internal conflicts such as the dispute between Ludwig Boltzmann and the positivists concerning atomic theory; the question of delusory "N-rays"; Albert Einstein's disagreement with Niels Bohr on quantum mechanics; the steady-state theory versus the big bang in cosmology; multiple, as opposed to plural, particle formation; and magnetic monopoles.

The case studies are very clearly written and make use of relatively recent sources. Porter's accounts of the Galileo affair and of the steady-state/big bang controversy are particularly fair-minded and balanced, avoiding, in the former, the usual polarization of "science versus religion" and, in the latter, big bang triumphalism.

The last two disputes fall within Porter's own field of research, and historians of science will be especially interested in his chapter on multiple versus plural particle formation, as here Por-

ter draws on his own conversations with the participants in the debate. Unfortunately, given that such material is unavailable to others, Porter does not date or document his conversations or personal contacts, though he does reference original articles. In his presentation of the monopole story Porter goes too far in avoiding details and provides only a tantalizingly brief sketch.

Porter's discussion of positivism versus atomic realism depends too heavily on Steven Weinberg's slanted account of the evils of positivism and of philosophy in general for physics. Some consideration of the areas in which positivistic or instrumental approaches proved valuable—for example, ancient astronomy and quantum theory—would be welcome.

Occasional misleading phrasings produce misinformation. The bibliographical notes imply that no works of Petrus Perigrinus are now extant. Porter's casual observation that the Nazis and the German physicists opposed relativity because Einstein was Jewish fails to acknowledge the internal conflict between German theoretical physicists and the "Aryan physics" fanatics and Nazi politicians on this issue and the triumph of the former because of weapons development during the war.

Porter's conceptual framework for his discussions of conflict in physics is neither as clear nor as well organized as the case studies. In the first and last chapters he outlines a number of miscellaneous considerations concerning conflict, including a few references to concepts from game theory, such as those of Thomas Schelling. One wishes he had developed this theme further, as it might help illuminate investigations into conflicts between schools of research. Porter underestimates the frequency of fraud and bluffing in sciences outside physics—in biomedical and IQ research, for example. He claims, citing Erwin Schrödinger, that physicists do philosophy only when they have stopped doing research, but he does not note that Schrödinger was doing philosophy just before he created wave mechanics. Nor does he mention that Einstein studied David Hume, Ernst Mach, and others just before formulating his theory of special relativity. (Porter does remark on Mach's influence on Einstein's general theory—thus contradicting his own thesis about philosophy.)

Despite these criticisms, Porter's work is a very clear, accessible, and quite accurate survey of a number of fascinating debates within physics. It should be very useful for students and the interested general reader. It is unfortunate, however, that the book is not available in a less ex-

pensive format that would make it available to a much wider readership.

VAL DUSEK

**Deanna Petherbridge; Ludmilla Jordanova.** *The Quick and the Dead: Artists and Anatomy.* Preface by **Susan Ferleger Brades.** 120 pp., illus., bibls., index. Berkeley: University of California Press, 1998. \$24.95 (paper).

Although scholars in history of science tend to privilege the written word and those in art history tend to privilege fine art, some in both fields are beginning to take into account a wide range of material objects. *The Quick and the Dead* is a fine example of the cross-disciplinary, more encompassing works now being produced. By bringing together images of the body created for scientific purposes with similar images created for artistic purposes, this volume enriches our understanding of both artistic and anatomical traditions. It also reminds us that professions that today are distinct from one another once had much in common.

Appropriately, then, this illustrated history starts with the Renaissance, when artists and anatomists alike sought to understand the human body, both inside and out, and often worked together in art schools and around dissecting tables. By delineating the organs, muscles, and bones of actual cadavers, these men "made a huge contribution to the newly emerging 'sciences' of body knowledge" (p. 9). But however truthful to nature they hoped to be, they produced a variety of anatomical images—drawings, paintings, engravings, collages, and sculptures—that clearly reflect dominant artistic and cultural conventions of their time. Thus, for instance, even when shown with her viscera exposed to full view, a woman would be posed modestly.

*The Quick and the Dead* was written in conjunction with a National Touring Exhibition of the same name, organized by the Howard Gallery in London and shown at three venues in England during the year 1997–1998. Deanna Petherbridge, Professor of Drawing at the Royal College of Art in London, curated the show and wrote the basic text. Ludmilla Jordanova, Professor in the School of World Art Studies and Museology at the University of East Anglia, contributed a supplementary essay. Of the 172 anatomical objects and images in the show, 93 are illustrated in the book, in full color where appropriate. The contents are arranged thematically and include such topics as the use of skeletons

and artificial models (*ecorches*) in classrooms and their appearance in finished works of art; animated skeletons or partially dissected bodies that appear quite alive, depicted in this way so as to counter the natural revulsion to images of this sort; and the use of classical sculptures as examples of ideal proportions. A wonderful example here was "Smugglerius," the flayed cadaver of a hanged criminal, forced into the pose of the Dying Gladiator and cast in plaster and then drawn by generations of students at the Royal Academy School in London. As an unexpected but welcome addition to the basic story, Petherbridge has included several works from the 1990s in which artists use historical conventions in decidedly contemporary ways.

Finally, scholars seeking more information about the ideas presented in *The Quick and the Dead* will want to read Mimi Cazort, Monique Kornell, and K. B. Roberts, *The Ingenious Machine of Nature: Four Centuries of Art and Anatomy* (Ottawa: National Gallery of Canada, 1996).

DEBORAH JEAN WARNER

**Sally Gregory Kohlstedt; Michael M. Sokal; Bruce V. Lewenstein.** *The Establishment of Science in America: 150 Years of the American Association for the Advancement of Science.* Foreword by **Stephen Jay Gould.** Introduction by **Keith Benson and Jane Maienschein.** xvi + 236 pp., illus., apps., index. New Brunswick, N.J./London: Rutgers University Press, 1999.

Despite the wording of its main title, this book documents the story not of "the establishment of science in America" but of an organization established by American scientists at Philadelphia in 1848, the American Association for the Advancement of Science (AAAS). The story of the association is told here in three chronological sections, each written by a historian eminently qualified by his or her long-standing interest in the association and past studies of the topic.

In a discussion entitled "Creating a Forum for Science," Sally Kohlstedt surveys the association's first half-century. Fired by the rising nationalism of the mid-nineteenth century, American scientists set out to learn from the European model of scientific organizations and eventually surpass it. In its first fifty years the association relied largely on its annual meetings to define what a scientist should be, subject his work to the criticism of his peers, disseminate it by reading and publishing papers, and convey it to the public through the press, which covered the