

noted for further consideration. While the strengths of this volume were apparent, it left me with a slight concern that only a small portion was related to spectroscopy, where molecular and atomic beams have had and continue to have a significant impact.

The second volume clearly reflects the author's tastes and inclinations. The presentations on fast beams, velocity measurement and selection, and state selection, while accurate, place more emphasis on methods and techniques that are not widely used today in the molecular beam community. This is perhaps most clearly

shown in that only a brief discussion of optical methods in state selection is given. There are literally tens of approaches using incoherent or coherent methods, not only for state selection in atoms or molecules but for size- or composition-selected clusters as well. The treatment in Scoles's first volume placed considerable emphasis on spectroscopic techniques, although they are now somewhat dated. The remaining portions of Pauly's second volume on cluster beams, slow atom beams and traps, and atom optics are more modern and useful. While the latter topics are covered extensively

by a number of contributors in the first section of the book edited by Compargue, I preferred the chapter by Pauly. The single-author approach again had a decided advantage.

At the risk of sounding ethnocentric, Pauly's effort reflects a traditional European view of atom and molecular beams. There is a decided emphasis on the physics behind the techniques and applications, with less emphasis on both spectroscopy and chemistry; the approach from the US seems to be the complement.

The two volumes by Pauly clearly belong on the shelf for individuals interested in beams. The reasons are that the first volume presents a unified description of the basic theory and principles, while the second contains a recollection of the past and present methods, with the promise of new techniques for the future.

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For Better or for Worse: The Marriage of Science and Government in the United States

▶ Alfred K. Mann
Columbia U. Press, New York,
2000. \$27.50 (240 pp.).
ISBN 0-231-11706-X

"Marriage" is the metaphor that Alfred Mann uses to describe the last half-century relationship between two willing partners: the US federal government and the science establishment.

It was "Love at First Sight: 1939 to 1945" when science and engineering inventions enabled the winning of the "physicists' war," World War II, with inventions such as radar, code-breaking techniques, bomb sights, and nuclear weapons. The relationship of the government and the science establishment has its roots in the successful Manhattan Project partnership.

Although the basis for the relationship was contributions to the war effort, Mann dismisses the Department of Defense, claiming, "DOD is not recognized as a major funder of basic scientific research in colleges and universities." This is a surprising claim, because the basic and applied research funds that DOD sent to universities, say in 1999, roughly equaled the combined total funding from DOE and NASA. However, the author focuses only on civilian agencies.

The "Courtship: 1945 to 1955," covers the period in which President Harry S. Truman supported the notion that the work of the science establishment, especially universities, would be vitally important to the country's future well-being. Congress then wrote the prenuptial agreement into law. The relationship was to be based on funding of basic research by multiple federal agencies in areas related to agency mission. NSF would support science, engineering, and education broadly at the basic level; to a great extent, specific projects would be selected by the science establishment itself.

The "Marriage: 1955–1965" started auspiciously as NASA pursued a program to react to the Soviet sputnik surprise by putting a man on the moon, the Atomic Energy Commission (AEC) focused on "Atoms for Peace," and the research budgets at NIH and NSF grew.

The "End of the Honeymoon: 1965–1975" occurred when scientists became disillusioned and distrustful of the government's Vietnam War policies. The AEC failed to convince the public that nuclear-powered energy generation was part of their future. Congress demanded that basic research be more focused toward national goals. President Richard M. Nixon abolished the position of the president's science adviser and the President's Science Advisory Council.

Mann argues that, as in marriage, there came a period of "Estrangement and Reconciliation: 1975–1985." Those were the years in which the AEC morphed into the Department of Energy. Also during this time, the Three Mile Island nuclear accident frightened the public. US spacecraft-shuttles from Earth to orbit and back were halted after the Challenger disaster. The peer-review process was challenged and studied in depth. It was adapted to the new environment, but that process survived as a respected tool for the selection of research grant awards. Management tightened, but the science establishment expanded during this decade.

By the "Golden Anniversary: 1985–1995," the "compact between the science establishment and the federal government remained intact and as felicitous as long-term compacts between the government and its citizens are likely to be." Other nations copied the US model of government support of science but, in general, not quite faithfully enough to achieve the vitality of the US system.

With the cancellation of the high-energy Superconducting Super Collider project came a low point of the "fifty-year partnership" of the physics

community and the government. "Of the four major, civilian federal science agencies," Mann asserts, "the DOE has become the one most in need of substantial repair." NSF remained constant to its main mission of funding basic science in diverse areas. Recovering from the Challenger accident, NASA firmly established a mission of scientific inquiry with satellites like the Hubble Space Telescope, the Compton Gamma-Ray Observatory, and the Cosmic Background Explorer. NIH prospered and launched the genome project.

Mann concludes with an argument that scientists should be more influ-

ential—as advisers—in the setting of policy in the science agencies, as was the case in the very early days of the marriage. An argument that Mann might have made is that scientists have a very poor record of volunteering to spend a few years inside these agencies to participate in both the setting and implementation of policy.

Mann might still agree with a sentiment from Robert Browning, who penned, "Grow old along with me! The best is yet to be, . . ."

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