

controversies around his other policies, led to his retirement as director of the USGS in 1894. Although he remained director of the Bureau of American Ethnology, the end of his life was mostly taken up with writing. He produced textbooks on geology and geography and wrote on human evolution.

[See also **Anthropology; Evolution, Theory of; Geography; Geological Surveys; Geology; High Schools, Science Education in; Higher Education and Science; Science; and Smithsonian Institution.**]

BIBLIOGRAPHY

- Rabbitt, Mary C. *Minerals, Lands, and Geology for the Common Defense and General Welfare*. 2 vols. Washington, D.C.: U.S. Geological Survey, 1979–1980.
- Worster, Donald. *A River Running West: The Life of John Wesley Powell*. New York: Oxford University Press, 2001.
- Zernel, John J. "Powell, John Wesley (1834–1902)." In *The History of Science in the United States: An Encyclopedia*, edited by Marc Rothenberg, pp. 450–451. New York and London: Garland Publishing, 2001.

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PRESIDENT'S SCIENCE ADVISORY COMMITTEE

The President's Science Advisory Committee (PSAC) was formally established by President Dwight D. Eisenhower in November 1957 as part of his response to the Soviet launching of the satellite *Sputnik* on 4 October that year to provide him and his newly appointed science advisor with advice on the government's science, technology, space, and defense policies. Composed of about 20 politically moderate scientists and with Eisenhower's and later President John F. Kennedy's trust, the committee was effective in pushing for a civilian space program, nuclear arms control,

increased funding for science and education, and environmental protection, but its influence declined in the late 1960s under Presidents Lyndon B. Johnson and Richard M. Nixon until Nixon abolished it in 1973 over a series of policy disagreements.

The PSAC had its predecessor in the Science Advisory Committee of the Office of Defense Mobilization (ODM) in the Executive Office of the President that was established as a response to the outbreak of the Korean War by President Harry S. Truman in 1951 and retained by Eisenhower. Shortly after the launching of *Sputnik*, which shook American confidence about winning the Cold War with the Soviet Union, this committee met with Eisenhower and persuaded him to appoint a full-time presidential science advisor to help him coordinate government policy involving science and technology. For the same purpose, the first occupant of this position, James R. Killian Jr., in turn convinced Eisenhower to reconstitute, expand, and upgrade the ODM committee into the PSAC in the White House, reporting to both the president and the science advisor. Throughout its history, the PSAC elected the science advisor as its chair although it had the right to select another member.

During the remainder of the Eisenhower presidency, the committee worked with the science advisors—Killian from 1957 to 1959 and George B. Kistiakowsky from 1959 to 1961—to establish the National Aeronautics and Space Administration (NASA) as a civilian agency; to rationalize the American missile programs; to centralize the Department of Defense, especially in the area of military technology; to increase federal funding for science and education; and to push forward the negotiations toward a nuclear-test-ban treaty with the Soviets. Under Kennedy and his science advisor Jerome Wiesner, the PSAC expanded into environmental policy with its report *Use of Pesticides* in 1963, which vindicated Rachel Carson's sounding the alarm about the harmful effects of the uncontrolled use of DDT and other pesticides. Under Johnson and his science advisor Donald F. Hornig, the committee expanded its role in environmental policy with its 1965 report, *Restoring the Quality of Our Environment*, which

warned about the danger of greenhouse gas emissions and global warming. The committee initially opposed the launching of the Apollo project to land an American on the moon, because of its costs and lack of scientific and military benefits, but later, after the decision was made, worked with NASA to make it a success.

Tension grew between the PSAC and the White House in the late 1960s and early 1970s as some current and former members of the committee, along with many in the scientific community, opposed the Johnson and Nixon administrations' conduct of the Vietnam War and their technology policies, especially the latter's push for the Anti-Ballistic Missiles and the Supersonic Transport. Nixon's science advisors—Lee DuBridge from 1969 to 1970 and Edward E. David from 1970 to 1973—tried but failed to reconcile the two sides until Nixon abolished the committee in 1973. A similar group, the President's Council of Advisors on Science and Technology, was established by President George H. W. Bush in 1990.

[See also Carson, Rachel; Environmentalism; Global Warming; Higher Education and Science; Killian, James Rhyne, Jr.; Military, Science and Technology and the; Missiles and Rockets; National Aeronautics and Space Administration; Nuclear Weapons; Pesticides; Research and Development (R&D); Satellites, Communications; Science; Space Program; Space Science; and Technology.]

BIBLIOGRAPHY

- Herken, Gregg. *Cardinal Choices: Presidential Science Advising from the Bomb to SDI*. New York: Oxford University Press, 1992.
- Killian, James R., Jr. *Sputnik, Scientists, and Eisenhower: A Memoir of the First Special Assistant to the President for Science and Technology*. Cambridge, Mass.: MIT Press, 1977.
- Wang, Zuoyue. In *Sputnik's Shadow: The President's Science Advisory Committee and Cold War America*. New Brunswick, N.J.: Rutgers University Press, 2008.

Zuoyue Wang

PRIESTLEY, JOSEPH

(1733–1804), natural philosopher, chemist. Fearing imprisonment by British authorities, Joseph Priestley arrived in the United States in 1794 at the age of 61. He was publicly welcomed in New York City and in Philadelphia for being a long-standing friend of Americans and their experiment in republican government. He was also famous as a Unitarian theologian and natural philosopher. Three years earlier, a mob in Birmingham bent on destroying the property of all who questioned the status quo burned down Priestley's church, home, and laboratory. He and his wife were moreover eager to join their three sons, who were already in Pennsylvania unsuccessfully attempting to found a settlement of like-minded liberals in the hinterlands of the state. That first summer in America the senior Priestley left Philadelphia for a property chosen by their sons in Northumberland, Pennsylvania, 150 miles from Philadelphia.

Priestley's first work in natural philosophy, *The History and Present State of Electricity, with Original Experiments* (1767), was encouraged by Benjamin Franklin, then serving in London as a representative of several North American colonies. *The History and Present State of Discoveries relating to Vision, Light, and Colours* followed in 1772. Then Priestley turned to the chemistry of gases as his major interest in natural philosophy. That year he created the first artificially carbonated beverage by dissolving "fixed air" (CO₂) in water. Among his other noteworthy achievements, he isolated and identified the properties of nitric oxide, nitrogen dioxide, anhydrous hydrochloric acid, ammonia, nitrous oxide, sulfur dioxide, oxygen, and silicon tetrafluoride. Priestley's names for these gases reflected his commitment to phlogiston, a single substance imparting various properties that was lost or gained in many common chemical reactions: combustion, metallurgical processes, and respiration. His experiments showed that plants respire as well as animals and have the capacity of restoring vitiated air to breathability by supplying "dephlogisticated air" (oxygen).

On the basis of old experiments and new ones conducted in his purpose-built laboratory in

2014

THE OXFORD ENCYCLOPEDIA OF
**THE HISTORY OF
AMERICAN SCIENCE,
MEDICINE, AND
TECHNOLOGY**

Hugh Richard Slotten
EDITOR IN CHIEF

VOLUME 1
ABORTION DEBATES AND SCIENCE—LUMBERING

OXFORD
UNIVERSITY PRESS

New York, 2014