BOOKS

Physics, Physicists and the Cold War Chill

American Science in an Age of Anxiety: Scientists, Anti-Communism, and the Cold War

Jessica Wang
U. North Carolina P., Chapel Hill, N.C., 1999. 375 pp. $49.95 hc ($19.95 pb) ISBN 0-8078-2447-X (0-8078-4749-6 pb)

Reviewd by Robert H. March

The cold war created a relationship between science and the US government that is still to be reckoned with. In *American Science in an Age of Anxiety*, Jessica Wang, a historian at UCLA, explores the origins of this relationship, and especially its loyalty and security provisions, in the decade following World War II. Though the title specifies "science," the monograph is almost exclusively concerned with physics and physicists.

The story begins in the heady days of 1946 when a group of atomic scientists, flush with prestige from their wartime triumphs and under the aegis of the newly formed Federation of American Scientists (FAS), waged a successful public campaign for the McMahon Act, which created the Atomic Energy Commission (AEC) as a civilian rather than a military agency.

The honeymoon proved short-lived. As relations between the US and USSR deteriorated, conservatives launched a hunt for the "traitors in our midst." The politics of scientists became a particularly sensitive issue. Support for open scientific communication or international control of atomic energy became grounds for denial of security clearance.

At the core of the struggle sat the House Un-American Activities Committee, which sought the return of nuclear research to military control. But HUAC faced a classic legislative turf battle with the Joint Committee on Atomic Energy. The AEC itself, chaired by the New Deal liberal David Lilienthal, hoped to create a security system that would protect the civil rights of its scientific staff. In this three-way tug of war, FAS opted to play insider politics and did manage to achieve some minimal concessions toward due process in AEC security.

In the hands of anonymous panels, military security arrangements remained arbitrary and capricious. Wang cites one example of an individual apparently denied clearance based on membership in the American Association for the Advancement of Science!

The situation worsened in the fateful year between the summers of 1949 and 1950, which saw in rapid succession the creation of the People's Republic of China, the testing of the first Soviet A-bomb, the confession of atomic spy Klaus Fuchs and subsequent arrest of Ethel and Julius Rosenberg, and the start of the Korean War. The National Science Foundation was born in this period, with a provision that required fellowship applicants to file a loyalty oath and noncommunist affidavit.

In the 1950s, it became difficult to hold international scientific meetings in the US—as many as half of the foreign invitees were denied visas by the State Department, which also arbitrarily withheld passports from Americans whose travel was deemed "not in the national interest." Thus chemist Linus Pauling had to win the Nobel Prize in order to be issued an unrestricted passport to travel to Sweden to claim it. In 1958, a Supreme Court decision in the case of physicist Bruce Dayton finally established a constitutionally protected right to free travel.

The removal of the security clearance of J. Robert Oppenheimer in 1954 proved a turning point. It has been widely regarded as excessive and even irrational, and led to revisions of the AEC security code that at last provided genuine due process.

Wang devotes considerable space to five case studies: Harlow Shapley, Edward Condon, Eugene Rabinowitch, John and Hildred Blewett, and Robert Vought. Prominent scientists like Shapley, Condon, and Rabinowitch had some success in defending themselves, while Vought and the Blewetts found themselves in precarious circumstances and had to rely on the good offices of their superiors.

The case of Condon provides a particularly poignant example. Starting in 1946, he incurred the personal animosity of Representative J. Parnell Thomas, chairman of HUAC. The committee continued to harass Condon for years thereafter, even after Thomas was driven from office and into prison in 1950 for payroll fraud. Though a past president of the American Physical Society and a member of the National Academy of Sciences, Condon was hounded from public service as director of the National Bureau of Standards. He then went into industrial research, until his clearance was finally cancelled in 1954 at the behest of then–Vice President Richard Nixon.

Wang concludes that "the search for potential spies motivated by ideology was by its very nature a low-probability enterprise, one that would identify hundreds of false positives for every true positive," while missing altogether those motivated by simple greed.

This is a scholarly monograph, and, as such, it is a bit too challenging for casual, bedtime reading. But it is largely free of jargon and would make profitable reading both for scientists who lived through the events it recounts and for younger colleagues who may find some of its revelations astonishing.

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Rayleigh–Bénard Convection: Structures and Dynamics

A. V. Getling
World Scientific, River Edge, N.J., 1998. 245 pp. $48.00 hc ISBN 981-02-2657-8

It was 45 years ago that George E. Uhlenbeck advised a class of physics students that "the books on fluid dynamics have been written by engineers and mathematicians, so they are either too thick or too thin." Though this remark lost some of its pungency when the English translation of *Fluid Mechanics* by Lev D. Landau and Evgenii M. Lifshitz (Pergamon, 1959) appeared, there were still not many books on the subject that physicists might enjoy. But things have been looking up,