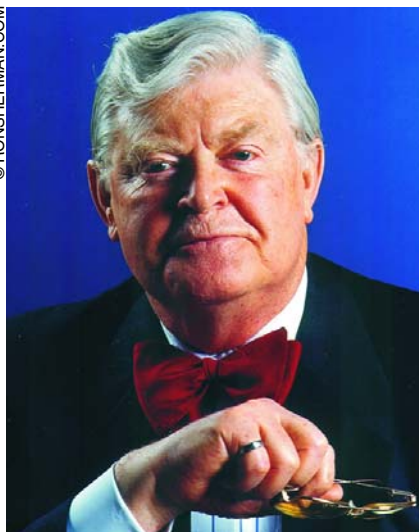




David Allan Bromley

From 1955 to 1960, Allan was at Chalk River Laboratories, where an exceptional group of scientists launched a golden age of nuclear physics in Canada. Using the lab's tandem Van de Graaff accelerator, they extended the new concept of nuclear deformation to light nuclei and discovered resonances in carbon-12 on carbon-12 scattering that, later at Yale, led to the concept of nuclear molecules. The group was so prolific that the *Canadian Journal of Physics* became almost required reading during that period.

Two of Allan's signature characteristics emerged around that time: his penchant for bow ties and his appreciation of the power of technology in science. He helped pioneer the use of silicon semiconductor particle detectors and high-resolution Ge(Li) (germanium doped with lithium) gamma-ray detectors, and forever altered the trajectory of nuclear spectroscopy.

Allan went to Yale in 1960 and revolutionized nuclear physics by leapfrogging the scale of tandem energies with the MP ("Emperor") accelerator. The accelerator was housed at Yale's A. W. Wright Nuclear Structure Laboratory (WNSL), which he founded in 1961 and directed from 1963 until 1989. By enabling Coulomb-barrier nuclear reactions with much heavier projectiles, the accelerator opened up new research areas. In the ensuing years, Allan became the father of heavy-ion physics, a status that was later cemented with the multivolume *Treatise on Heavy-Ion Science* (Plenum Press), published during the mid- to late 1980s.

The lab immediately became a leading center for nuclear structure research. From 1965 to 1989, WNSL produced more PhDs in experimental nuclear physics than any other insti-

tution in the world. In the late 1960s, Allan again showed his innovative use of technology: He collaborated with former student Joel Birnbaum, then at IBM, to install one of the first on-line computer data-acquisition and accelerator control systems.

Allan was chair of the Yale physics department (1970–77), Henry Ford II Professor of Physics (1972–93), and Sterling Professor of the Sciences (1993 until his death). Called on to reprise his early engineering skills to restore that field at Yale to its early glory, Allan served as dean of engineering from 1994 to 2000 and was the driving force in launching the hugely successful new bioengineering and environmental engineering programs.

Allan loved teaching and he was loved by his students, to whom he was an exceptional, if demanding, mentor and supporter, available no matter how busy he was. He had an innate ability to see what physics question might be troubling a student and would say just the right words to dispel clouds of confusion.

Allan indeed had a way with words, albeit sometimes exaggerated. We recall the "Bromley factor" of 5280 relating to Earth's oblateness; a crisp comment to a student who wanted to take a short break for choir practice, reminding him that he had a watershed, career-altering decision to make; an insight into the nature of matter; or guidance in science policy. Another appealing trait was Allan's intense loyalty. He became lifelong friends with several of his students, including Birnbaum and Joe Allen, who carried a 1965 publication that he coauthored with Allan on a *Columbia* shuttle mission.

Allan soon emerged as an influential adviser in science and government circles: He helped found the American Physical Society's division of nuclear physics in 1966, chaired the physics survey committee of the National Academy of Sciences; (1969–73), and was president of the American Association for the Advancement of Science (1981) and APS (1997). He was on President Ronald Reagan's White House Science Council (1981–89) and the National Science Board (1988–89).

In 1989, President Bush appointed Allan the first assistant to the president for S&T, a cabinet-level position with direct access to the president, with whom he also had strong personal ties. Allan simultaneously served as director of the Office of Science and Technology Policy (1989–93) and greatly enhanced its influence.

Allan was an especially effective adviser who advanced an ambitious

agenda for S&T. He quickly learned how things got done in the White House, formed the necessary alliances, worked with the relevant federal agencies and the President's Council of Advisors on Science and Technology—which he cochaired from 1989 to 1993—and convinced the president to move much of that agenda into action. To coordinate agency cooperation, Allan reinvented the Federal Coordinating Council for Science, Engineering and Technology, which was key to the success of the Global Change Research Program, among other interagency programs.

Allan's constant preaching about the links among basic research, technological advancement, and economic growth led to the first national technology policy to motivate increased cooperation between governmental and private sectors. With the support of the Carnegie Foundation, Allan established the remarkably successful Carnegie (G8) Group of top government S&T policy officials who meet in off-the-record sessions to discuss S&T issues of global importance, to improve mutual understanding, and to foster tangible international cooperative activities. Allan's effectiveness in Washington stemmed in part from his enormous scientific accomplishments and high stature in physics, but was also due to his direct and penetrating style and tenacious approach to everything he did.

Allan received numerous honors, including APS's 2001 Nicholson Medal and, in 1988, the presidential National Medal of Science, which is administered by NSF.

Allan possessed just the right balance of intellect, strategic thinking, creativity, assertive charm, and dogged determination to accomplish so much—in his research, his scientific administrative careers, and during his time in the White House. Science and the nation are much the better for him. He is greatly missed.

Richard F. Casten

*Yale University
New Haven, Connecticut*

Neal Lane

*Rice University
Houston, Texas*

LeRoy Franklin Cook Jr

High-energy theorist and physics educator LeRoy Franklin Cook Jr, professor emeritus at the University of Massachusetts Amherst, died peacefully at his home in Amherst on 6 January 2005. The cause of death was metastatic melanoma.

Born in Ashland, Kentucky, on 12 December 1931, Roy, as he preferred to be called, grew up in Long Beach, California. He attended the University of California, Berkeley, and earned his BS in physics there in 1953. Following two years of service in the US Army at the White Sands Missile Range in New Mexico, where he worked on missile flight tracking, he returned to Berkeley and received his MS in physics in 1957 and PhD in 1959. His doctoral dissertation, "Multiple Meson Production in Nucleon-Anti-Nucleon Annihilations and Polarization Effects in Cascade Showers," was done under the supervision of Joseph V. Lepore.

Roy subsequently moved to Princeton University in 1959 to become a member of the physics faculty. Six years later, he relocated to Amherst to join UMass as an associate professor of physics. He was promoted to professor in 1968 and remained on the faculty until his retirement in 2001.

At Amherst, Roy initiated an NSF-sponsored research program in high-energy theoretical physics in 1965 and expanded the program in 1967 to create a multi-investigator research effort. As head of the department of physics and astronomy for the periods 1969–75 and 1979–85, he guided the department with confidence and a steady hand through good and bad budget times. During those periods, he was heavily involved in planning a new building to house part of the department and in staffing the astronomy program. He was a well-organized and highly regarded classroom instructor, and a generation of physics graduate students took his yearlong course in quantum mechanics.

In 1968, Roy chaired the university's curriculum study committee,

whose Cook Report resulted in significant changes to the core requirements in the College of Arts and Sciences curriculum. The committee's recommendations led to clarification of core requirements and standardization of senior honors for the fledgling honors program. Eventually, the university established an honors college.

Beginning in the early 1980s, Roy led a campaign to improve communication and interaction between UMass Amherst faculty members and regional teachers at the K–12 level. With funds from the Dwight D. Eisenhower Professional Development Program and the Massachusetts Board of Regents, he worked to create lab-based opportunities for hands-on learning that teachers could export to their classrooms. In 1993, that effort led to Project Update, funded by NSF, which involved four of the five campuses in the UMass system, with Roy as the principal investigator. Project Update brought in experts to inform high-school teachers on topics of contemporary physics, offered summer workshops to teachers, and created a resource center. The program's efforts resulted in teacher-led workshops sanctioned by the American Association of Physics Teachers.

Roy spent a number of years on the university's systemwide management negotiating team, and is remembered for his deep understanding of and insights into employee and management issues. In 1999, he became the faculty associate to the dean of the College of Natural Sciences and Mathematics. In that role, he conducted a thorough study of the college's outreach activities, including the identification of issues relevant to assessment and rewards for such activities. He received the University Outstanding Service Award in 2004 at a luncheon in his honor.

Roy was active on a number of other committees. He chaired the chancellor's lecture series committee (1976–82), which was instrumental in selecting and honoring distinguished faculty members, and was chairman of the personnel committee of the College of Natural Sciences and Mathematics (1989–90). Roy's committee work wasn't limited to UMass, though. He chaired the American Physical Society's New England section (1990–91) and was section representative to the society's national council (1992–93). In 1996, he was chairman of APS's committee on education.

Following his retirement, Roy traveled and enjoyed fishing and wine, his lifelong passions. His colleagues inside and outside the university respected

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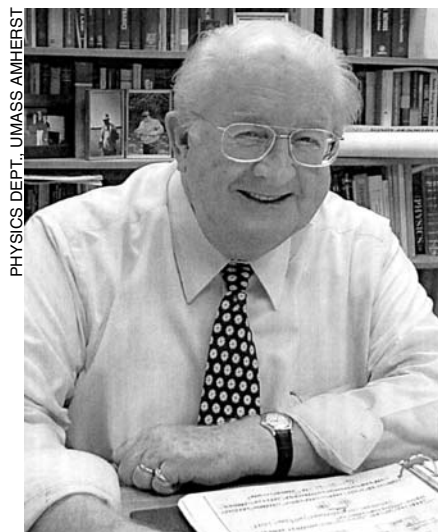
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LeRoy Franklin Cook Jr.

him for his good will, dedication, sense of responsibility, ability to get things done, and warm friendship. He showed us admirable courage, strength, and grace in the face of his medical situation. We miss him and his great enthusiasm about all things, especially his family.

Robert B. Hallock

University of Massachusetts Amherst

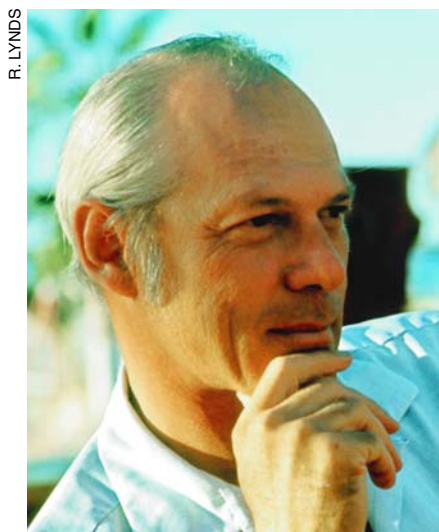
Austin Keith Pierce

The builder of the world's largest solar telescope, Austin Keith Pierce, was a leader in astronomy for decades. Groomed by the heavy hand of industrialist Robert R. McMath, he helped pull astronomy into the era of big science supported by government funding. Keith was born in Tacoma, Washington, on 2 October 1918, and died of cancer on 11 March 2005 in Tucson, Arizona.

Before World War II, a student who wanted to become an astronomer was discouraged unless he or she had an inherited income. As a career, astronomy offered no money or future. Even the largest observatories operated on shoe-string budgets. For example, Mount Wilson Observatory, the product of the entrepreneurship of George E. Hale, only had light bulbs under 40 W. But massive government war efforts like the Manhattan Project changed all that. Keith, as a graduate student first under Ernest Lawrence at the Radiation Laboratory in Berkeley, California, never worried about 40-W bulbs. In Berkeley's can-do atmosphere, and later at the Oak Ridge, Tennessee, isotope separation plants, Keith learned physics technology through techniques such as high-vacuum practices and glass blowing, in optics, and via electronics and detectors.

As a youth, he had absorbed the rudiments of telescope building from his father, who taught mathematics at the University of Nebraska. *Amateur Telescope Making*, edited by Albert G. Ingalls (Scientific American, 1928), was their bible. Keith received an AB degree in physics at the University of California, Berkeley, in 1940. His PhD thesis, under Charles Shane, who held positions in both the astronomy department and the Rad Lab, was on the intensity of the solar magnesium *b* lines. For that, Keith used a Fabry-Perot interferometer with the department's 10-inch coelostat. He built his instruments in the Rad Lab shops, which were adjacent to the campus.

Keith then went to the University of Michigan and the McMath-Hulbert Observatory. After the war, govern-



Austin Keith Pierce

ment support for science was available. Astronomers boldly proposed to the fledgling NSF that some sort of a national observatory be formed and a 24-inch telescope for stellar photometry be placed near Yuma, Arizona. Into that near-vacuum stepped McMath. He steered astronomy—often through Keith—toward a national observatory to serve both solar and stellar astronomers' interests based only on the quality of their proposals.

McMath envisaged a new solar telescope and soon sent Keith to Europe to see firsthand the good and the bad of solar telescopes. Keith was particularly impressed by innovations at the Pic du Midi Observatory, in Toulouse, France, under Jean Rösch. The Europe trip and many other events led him to a concept that included an aperture of 1.5 m, an all-reflective light train to fully use Earth's atmospheric transmission windows from 0.3 to 20 microns, and active temperature control of the telescope and its internal environment to ensure good image quality.

McMath brought in the architectural firm of Skidmore, Owings, and Merrill to design the building. After Kitt Peak, Arizona, was selected as the site, the firm proposed to cantilever the telescope from the north summit so the tracking mirror would be 500 m above ground. Ira S. Bowen, Mount Wilson's director, suggested the radical idea that it be placed atop the nearby Baboquivari Mountains—the highest point is 2356 m—with an elevator bored through granite for ready access to the valley floor! As with many large physics labs, the final design was not limited to fixed instrumentation but could accommodate nearly any experimental equipment later developed.

The telescope saw first light in 1962. One of its principal instruments was a 13.5-m double-pass vertical spectrometer, which now contains two of the world's largest gratings. Using it, Keith carried out four seminal solar-spectrum investigations in the 1960s and 1970s that took full advantage of the telescope. Those fundamental works described the characteristics of 11 500 spectral lines seen in emission at the solar limb; the true central intensities of 40 important spectral lines, corrected for spectrograph-scattered light; definitive wavelengths of 14 624 solar absorption lines from 292 to 908 nm, referenced to thorium laboratory standards; and a quantitative specification of solar limb darkening.

Keith enjoyed reading the adventures of travelers like Richard Burton and Ernest Shackleton. His own sense of adventure was expressed in backwoods drives with his family: When they encountered a fork in a road, they always took the smaller, more intriguing one. He liked hiking but always wore a necktie. Once when asked why, he responded, "You never know who you might meet."

Besides building the monumental telescope, rededicated on its 30th anniversary as the McMath-Pierce Solar Telescope, Keith provided outstanding scientific leadership to the solar division staff of Kitt Peak National Observatory for its first 13 years. The imprint of his scientific work remains strong today, especially in the IR spectrum.

William Livingston

John Harvey

*National Solar Observatory
Tucson, Arizona*

Herman Postma

Herman Postma, longtime director of Oak Ridge National Laboratory (ORNL), died of a cerebral hemorrhage on 6 November 2004 while on vacation in Hawaii.

Postma was born in New Hanover County in North Carolina on 29 March 1933. His parents had emigrated from the Netherlands, and were still struggling financially, but Postma proved to be an outstanding student and won a full scholarship to Duke University. In 1955, he graduated at the top of his class with a BS in physics.

He entered graduate school at Harvard University under adviser Richard Wilson, who recalled, "Herman was one of the few of my students who did not have to have everything explained three times before it was