

Obituary

Harlan J. Smith 1924–1991

On October 17, 1991, some of the energy, enthusiasm and boldness departed astronomy; on that date, Professor Harlan J. Smith died in Austin, Texas, of complications related to cancer. Professor Smith was the Edward Randall, Jr., MD, Centennial Professor of Astronomy at The University of Texas at Austin. He had previously served as Director of the McDonald Observatory for twenty-six years and as Chairman of the Department of Astronomy for fifteen years. In 1991 he received the Distinguished Public Service Medal from NASA “for a lifetime of service to the astronomy and space communities.” He was a member of the editorial board of this journal since 1983. Harlan Smith was an enormously energetic and bold proponent of astronomy in all its breadth: research, teaching, the exploration of the solar system, and especially public education.

Harlan Smith was born in Wheeling, West Virginia, on August 25, 1924. At the age of 11 years he was given full access to a community telescope of 18-cm aperture, and a life-long interest in science was born. In 1942, his final year of public schooling, Smith was a national runner-up in the Westinghouse National Science Talent Search. From this he had several university scholarship opportunities, but the war intervened. Upon reaching the age of 18 that year, he enlisted in the U.S. Army Air Corps where he was assigned to the meteorological branch. There followed a year of training in physics and mathematics at Denison University in Ohio and a final three months at Harvard University learning new meteorological equipment. This encounter with Harvard was, in his own words, “a real eye-opener, and I determined to attend Harvard after the war.” Smith spent his war years at various sites in the United States and the Pacific, being discharged in early 1946.

In the summer of 1946 he began his program of study at Harvard, which led to a B.A. in 1949, an M.A. in 1951, and his Ph.D. in 1955. In his Harvard Ph.D. dissertation Smith identified, and coined the name for the “dwarf Cepheid” variables as a class of pulsating star distinct from the RR Lyrae variables with which they had previously been classified. While he never really returned to research in variable stars, his experience with that field prepared him for a much more significant discovery later. During his years at Harvard, Harlan Smith developed friendships that he would nurture for many years; one such was with M. K. Vainu Bappu, the founding editor of this journal, with whom Smith maintained a close personal friendship until Bappu’s untimely death in 1982.

It was also at Harvard that Smith met Joan Swift Greene, a student at Radcliffe College, who became his wife in 1950. Joan Smith was born and raised in China as the daughter of a medical missionary, and she sparked his interest in that country.



Harlan J. Smith

1924–1991

Twenty five years later, as China emerged from the Cultural Revolution, Smith became an advocate for astronomical cooperation with China. He visited there several times to support astronomical development, and he hosted many Chinese astronomers and students in Texas. He delighted in telling the story of how he and a hotel clerk in Europe circumvented their language barrier by discovering that both spoke Mandarin! Harlan and Joan Smith raised four children who all survive him.

Prior to completing his dissertation, Smith received an Instructorship at Yale University and moved his family there in 1953. In the ten years that he spent in New Haven, he rose steadily through the professorial ranks; to Assistant Professor in 1957 and to Associate Professor in 1960. He extended his research interests to the new field of radio astronomy; became active in national astronomical affairs as co-Editor of the *Astronomical Journal* (1958–1963) and as Acting Secretary of the American Astronomical Society (1961–1962); established many of the professional relationships that would help him populate an astronomy department in remote Texas during the next decade; and he made his most important research contribution – discovery of the optical variability of Quasi-Stellar Objects.

In collaboration with Dorrit Hoffleit, Smith examined nearly eighty years of photographs from the Harvard plate collection in a search for variability of the newly discovered class of “radio stars.” The first object studied (3C48) gave a negative result in 1961, but upon identification of the brighter QSO 3C273, a new search proved successful. Their discovery of the wholly unexpected and remarkable variability of 3C273 was announced at the April 1963 meeting of the American Astronomical Society, and the discovery paper appeared only two months later as Smith and Hoffleit, 1963, *Nature*, **198**, 650. While their demonstration of optical variability was an important observational contribution, their recognition that the time scale of variability required 3C273 to have solar system dimensions established the foundation of all theoretical interpretations of QSOs from that time forward. Twenty two years later, I listened to Harlan Smith talk about this discovery in his lecture accepting the Randall Professorship. His excitement and his delight were still palpable, yet tinged with a sense of wonderment that he had had the privilege to be involved in such a seminal contribution.

Later in 1963 Smith moved to Austin as the first University of Texas Director of the McDonald Observatory and as the new Chairman of a fledgling astronomy department. The department had been formed in Austin in 1958 as Texas prepared to take control of McDonald Observatory from the University of Chicago, which had overseen construction and operation of the observatory for thirty years. For the next twenty five years, Harlan Smith led a phenomenal expansion of this program.

When Smith took charge in Austin there were four faculty and a similar number of support staff. Under his direction the research programs in Austin expanded into radio astronomy, solar system programs, astronomical instrumentation, variable stars, and theory and expanded upon historically strong programs at McDonald Observatory in extragalactic astronomy and stellar spectroscopy. Today there are approximately sixty Ph.D. astronomers in the combined observatory and departmental staffs and a support staff of more than one hundred and twenty five people. The strength of the program Smith created is exemplified by the statistic that in the past decade Texas researchers have been awarded the Herschel Medal of the Royal Astronomical Society, the Gill Medal of the Astronomical Society of Southern Africa and, from the American Astronomical Society, the Russell Lectureship, the Heineman Prize, the Warner Prize,

the Pierce Prize (twice), and the Cannon Award. Another of Smith's legacies is that fourteen years after he yielded the Departmental Chairmanship to rotation among the faculty (in 1978), the separately administered Observatory and Department continue to work smoothly together.

As Director, Smith led a rejuvenation in McDonald Observatory facilities. He brought James Douglas from Yale to construct a large radio interferometer near Marfa, Texas, during the 1960s. In 1967, he augmented the radio program by moving a 5-m millimeter-wave radio dish to the Observatory. He convinced NASA, the National Science Foundation and the University of Texas to share the cost of a 2.7-m reflector, which was dedicated in 1969 as the third largest telescope in the world. A 76-cm telescope was installed in 1970. He welcomed the Apollo Laser Ranging Experiment onto the 2.7-m telescope, which led to international pre-eminence for McDonald Observatory laser ranging programs. A dormitory for visiting astronomers was constructed in 1969 and fifteen new staff residences were added to the mountain in 1974.

In 1978 Smith began planning for a 7.6-m telescope for McDonald Observatory. For the next seven years he devoted most of his effort to the technical and financial nurturing of that project. But with the fall in oil prices, the Texas economy crashed in 1985 and with it went the political and financial support for such a project. The failure of this project was perhaps his greatest professional disappointment. Characteristically, Smith wasted no time in finding another, equally bold undertaking. In 1986 he negotiated a collaboration with Pennsylvania State University to participate in their Spectroscopic Survey Telescope, an innovative 8.5-m telescope to be constructed at McDonald Observatory.

Harlan Smith loved what he called "public outreach," the communication of astronomy to the public. He made it a requirement in his department that all faculty teach undergraduate students and that promotion be related to ability in that important undertaking. As a result, the University of Texas now teaches astronomy to approximately 6,000 undergraduate students per year. He instituted a newsletter on astronomy that distributes 100,000 issues annually, and he provided encouragement and start-up funds for what was to become the award-winning radio program *Star Date*, heard by ten million people per week throughout the world. His efforts not only to accommodate, but to welcome, visitors of McDonald Observatory led to the construction of a visitors' center in 1980 which now serves 120,000 people per year. At his insistence, the 2.7-m telescope remains the largest telescope in the world open to the public for viewing one evening per month.

Throughout his career Smith actively served the larger astronomical community by participation in numerous national committees. A sampling of his contributions gives some indication of the breadth of his influence in U.S. astronomy: member of the National Academy of Science *ad hoc* committee on the Large Space Telescope, 1966–1970 (which eventually became the Hubble Space Telescope); Chairman of the Planetary Division of the American Astronomical Society (AAS), 1974–1975; Council member of the AAS, 1975–1978; Vice President of the AAS, 1977–1979; member of the Space Science Board of the National Research Council, 1977–1980; member of the Board of Directors of the Association of Universities for Research in Astronomy (AURA), 1972–1983; Chairman of the Board of AURA, 1980–1983; Chairman of the Management/Operations Working Group for Planetary Astronomy (NASA), 1988–1991.

Not only was Harlan Smith recognized by his colleagues through selection for such prestigious assignments, he also received other honors: honorary Doctorates from Nicolaus Copernicus University (1973) and from Denison University (1983), selected as the Edward Randall, Jr., MD, Centennial Professor of Astronomy (1984), and, most recently, received the Distinguished Public Service Medal from NASA (1991).

It is a dry summary of a man's life only to list his accomplishments and honors. There was so much more to Harlan Smith. He was bee keeper, whose gifts of honey were always welcome. He had incredible personal loyalty to people, standing by them, as he did for me on more than one occasion, when it may have been wiser not to do so. His steady, piercing gaze seemed almost to look into one's soul. He always had an aphorism to quote, with a twinkle in his eye, as justification for a course of action. When budgets argued against a purchase, he would smile and say, "Tom, God will provide," (Psalms 22:8). Upon laying the foundation for some distant goal, he would quote Lao-Tzu, "a journey of a thousand miles must begin with a single step."

Harlan Smith was a dreamer. He dreamed of a time when every person on the planet would look at the stars with awe and understanding; he dreamed of a McDonald Observatory pre-eminent among the world's astronomical centers; he dreamed of telescopes on the Moon; and he dreamed of colonists on the Moon and Mars, because it is in our nature to go there. So, I offer a quote from Goethe that I never heard Harlan say, but which seems to apply to the man so well: "What ever you can do, or dream you can, . . . begin it. Boldness has genius and power and magic in it." Harlan Smith dreamed boldly, and acted on those dreams to the betterment of all astronomy.

Thomas G. Barnes III