

scientific community into affordable, workable space experiments. His stature eased the tensions between NASA and outside scientists that resulted from the agency's practice of making scientific decisions internally, not by the customary process of peer review. The practice was adopted partly because of its use in NASA's predecessor, the National Advisory Committee on Aeronautics, and partly because of the technical difficulties involved in integrating experiments into viable spacecraft.

ROBERT C. SEAMANS JR
Massachusetts Institute of Technology

Charles Donald Shane

Charles Donald Shane, distinguished astronomer and director of the Lick Observatory from 1945 until 1958, died 19 March at the age of 87.

Shane was born on 6 September 1895; he graduated from the University of California, Berkeley, in 1915; served in World War I, and received his PhD at Berkeley in 1920. Shane and Mary Lea Heger were married during their joint tenures as graduate students in astronomy in Berkeley. Charles Shane joined the Berkeley faculty in 1920, became chairman of the astronomy department and served on several of the more important faculty committees. During World War II, he became assistant director of the Radiation Laboratory at Berkeley, and later personnel director at the Los Alamos Laboratory, where he reported directly to General Leslie Groves.

Shane was appointed director of the Lick Observatory in 1945. Those of us who returned to the isolation of Mt. Hamilton immediately after the war found a dreary, disorganized institution. Under Shane's firm administration, the Mt. Hamilton "inmates," as he called the population, grew from the traditional 50 or so to 105, the 120-inch Shane telescope was built, and a new, young staff of astronomers was gathered. New buildings appeared; two old ones were removed. The Lick Observatory had run down; but Shane rewound it and then provided the momentum that still abides.

Although most of Shane's days on Mt. Hamilton were occupied by administration, with the assistance of Carl Wirtanen he managed to find time to employ the 20-inch Carnegie astrographic telescope to photograph the entire sky observable from Mt. Hamilton. Concurrently, he used the plates for the famous Shane-Wirtanen galaxy counts. These counts, which cover a magnitude range to 19.5, are still the most complete and most carefully unified example of this type of information available to astronomers.



Charles Donald Shane and Mary Lea Shane in a photograph taken by Donald E. Osterbrock in July 1982 at Scotts Valley, California (courtesy Lick Observatory, University of California).

Shane's genius as an administrator was tapped by the Associated Universities for Research in Astronomy when he served as its first president from 1958 to 1962. During that time, he established the Kitt Peak National Observatory and the southern hemisphere branch, the Cerro Tololo Inter-American Observatory. Kitt Peak has subsequently become one of the largest, best equipped, most active and most respected observatories in the world.

Shane was a generous, modest and kindly man, with a fine, robust sense of humor. He is greatly missed by his colleagues, but his important accomplishments ensure that he will be remembered by future generations of astronomers.

GERALD E. KRON
Pinecrest Observatory

Mary Lea Shane

Mary Lea Shane, born Mary Lea Heger, 13 July 1897, died at the age of 86 on her birthday in 1983.

Shane received from the University of California in Berkeley her BA in astronomy in 1919 and her PhD in 1925. She married Charles Donald Shane in 1920, starting an association that benefited astronomers and their science for the next 63 years.

As a graduate student, she discovered that the spectra of some stars contained sharp sodium D lines that did not share the radial velocity shift of the star. Her interpretation of the phenomenon followed soon after—the lines originated in interstellar clouds of a material that contained neutral sodium—and contributed in an important way to the understanding of interstellar material. After her marriage, though, she decided to devote herself to her family and her husband's career.

By the time Shane became a resident

of Mt. Hamilton, the Lick Observatory had had 57 years of colorful history. During this period, almost all documentation, even the most trivial, had been saved and stored in a growing collection of redwood boxes deposited in the lower level of the 36-inch refractor dome. A diary dated just after the 12-inch telescope had come into service in 1881 recorded: "Arrived today—two loads of sand—one king." The king was King Kalakaua of Hawaii, who was interested enough to take the awful 26-mile trip to Mt. Hamilton and who became one of the first persons to look through the 12-inch telescope. Mary Shane realized what a treasury of information was contained in those boxes, conceived the idea of the Lick Archives, and undertook the task of organizing them. The Archives were given a permanent site at the library of the University of California, Santa Cruz, and renamed The Mary Lea Shane Archives in 1982.

GERALD E. KRON
Pinecrest Observatory

John C. Jamieson

John C. Jamieson of the University of Chicago died on 26 June 1983 in Chicago after an extended illness. He was born in 1924 in Missouri and entered the University of Chicago as an undergraduate in 1940. He returned there after the War, finishing his undergraduate work and continuing as a graduate student in the geology department. He received his doctorate in 1952 and later joined the staff of the department (now the department of geophysical sciences). He became a full professor in 1965.

Jamieson's experimental research centered on the determination of the crystal structure and elastic moduli of minerals and metals under high pres-

tures and temperatures. With Andrew Lawson he conceived a technique to obtain x-ray diffraction patterns of materials compressed between two tungsten-carbide anvils. Using this technique, they were the first to identify the crystal structure of iron in its transformed state above 130 kilobars. Throughout his career, Jamieson continued to use the technique to identify the structures of other metals and minerals that are stable only at high pressures. In addition, he introduced the use of diamond anvils to produce very high pressures while simultaneously recording x-ray diffraction patterns. During the summers of 1959 to 1963, he worked with Paul De Carli at the Stanford Research Institute on techniques to recover materials after shock compression by high explosive detonations. They were the first to recover diamond from shock-compressed graphite.

From 1963 Jamieson served as a consultant with the Los Alamos National Laboratory, mainly with the shock-wave physics group. His work there encompassed shock recovery, elastic moduli measurements at very high pressures, and x-ray diffraction under shock compression. Most recently, he had joined with Laboratory personnel in using the Stanford Synchrotron x-ray source to develop the first simultaneous high-pressure, high-temperature standards for x-ray diffraction.

BART OLINGER
Los Alamos National Laboratory

Kirk Alfred Shinsky

Kirk Alfred Shinsky, assistant professor of physics at the University of California at Berkeley, died of cancer 6 September 1983. He was 31 years old.

In high school he became interested in particle physics and won a National Westinghouse prize for his study of proton-proton interactions with an apparatus he had built. His undergraduate studies were at Cornell; he did research both at the Cornell Laboratory of Plasma Studies and at Brookhaven National Laboratory. His graduate studies were at Princeton University, where he specialized in high-energy experimental physics. His thesis experiment, carried out at the electron-positron storage ring at the Stanford Linear Accelerator Center, was the inclusive production of hadrons emitted from electron-positron annihilations. He received his PhD in 1978.

From 1978 to 1980 Shinsky was a member of the staff at Cornell University and participated in the construction of the CESR electron-positron

storage ring. He supervised the construction of the dipole magnetic coils for the storage ring and the design of its ultra-high vacuum system.

He joined the faculty at the department of physics at Berkeley and the staff at the Lawrence Berkeley Laboratory in 1980. He was involved in a search for the effects of right-handed weak currents at TRIUMF, the Canadian accelerator in British Columbia, and also participated in the development and initial tests of a hadron calorimeter segment for the detector to be installed at the 2-TeV $\bar{p}p$ collider at Fermilab. At the same time and until his death, he was working on a design for a vertex detector for CLEO.

Shinsky made important contributions to experimental particle physics. His untimely death leaves his Berkeley colleagues with a great sense of loss.

L. M. FALICOV
W. CHINOWSKY
University of California
Berkeley

Richard D. Present

Richard D. Present, professor of physics at the University of Tennessee at Knoxville, died on 2 July 1983 at the age of 70. He had retired this year after 37 years on the faculty.

A native of New York City, Present received his BS degree from the City College of New York in 1931. From there he went to Harvard University, where he received his PhD in physics in 1935 at the age of 21, working under John Van Vleck. His graduation was followed by an instructorship at Purdue (1935-40), a fellowship at the Joliot-Curie Institute in Paris (1937-38), a research position at Harvard (1940-41) and an assistant professorship at New York University (1941-43). Like the careers of many physicists of his generation, his was interrupted by research related to the war: He joined the Manhattan Project in Oak Ridge in 1943 and made important contributions to the theory of the gaseous diffusion process for the separation of uranium isotopes.

He joined the University of Tennessee at Knoxville physics department in 1946 as associate professor and became a full professor in 1948. He served as a consultant to the Clinton National Laboratory (which later became the Oak Ridge National Laboratory) from 1946 to 1948. Afterwards he devoted his time to teaching and research at UTK. He was instrumental in developing the PhD program in physics, which began operation in 1947. In the early years of this program many of our graduate students were employed at Oak Ridge. Present played an impor-

tant role in establishing a branch of our graduate program there in conjunction with the Oak Ridge Institute of Nuclear studies. He was also chairman of the APS Southeastern Section 1964-65.

His early interest was the electronic structure of molecules. He later worked in nuclear physics, preparing fundamental papers on proton-proton scattering, nuclear fission, nuclear forces and the magnetic moments and electrical quadrupole moments of nuclei. His war-time work on the gaseous diffusion process led to his interest in kinetic theory, his graduate course on this subject, and his popular textbook, *Kinetic Theory of Gases*. More recently his work concentrated on the theory of molecular interactions and statistical mechanics. His real love was for the kind of calculation whose results can be compared with experiments, instead of abstract theories with few theoretical predictions. He was a versatile theorist with a sound physical intuition. His critical comments about their work were greatly valued by his colleagues as well as by students.

Over the years, Present taught a wide variety of theoretical physics courses. He was renowned for his well organized and clearly presented lectures.

WILLIAM M. BUGG
EDWARD G. HARRIS
University of Tennessee, Knoxville

George W. Brindley

George W. Brindley, professor emeritus of mineral sciences at Penn State, died 23 October 1983. Born 19 June 1905 in Stoke-on-Trent, England, he received a bachelor's degree in physics in 1926 and a master's degree in 1928 from Manchester University, England. He received a doctorate in physics from Leeds University in 1933. Brindley came to Penn State in 1953, working as a research professor of mineral sciences until 1955, when he was named professor of solid-state technology and head of the department of ceramic technology. In 1962, he was named professor of mineral sciences, serving in that capacity until his retirement in 1973. He was also one of the founders of Penn State's Materials Research Laboratory.

Brindley was internationally recognized for his work as a clay mineralogist and crystallographer. He was president of the Clay Minerals Society, editor of *X-Ray Powder Data File* and associate editor of *Clay and Clay Minerals* and *American Mineralogist*. The excellence of his teaching was recognized by the establishment of an award for undergraduates in his name at Penn State. □