James R. Arnold 1923-2012

James R. Arnold, a Univ. of California, San Diego, nuclear chemist and visionary scientist, died at 88 on Jan. 6 in La Jolla from complications of Alzheimer's disease. He was founding chairman of UC San Diego's chemistry department and first director of the California Space Institute.

Arnold was born in Metuchen, N.J., on May 5, 1923. At 16, he entered Princeton University, where he earned his doctoral degree in chemistry in 1946. His doctorate was awarded for his work on the Manhattan Project, the military program that produced the atomic bomb and stirred the fears of nuclear fallout that led him to join the Union of Concerned Scientists.

After earning his doctorate, he helped University of Chicago chemist Willard Libby develop radiocarbon dating in 1949. In 1955, Arnold joined the faculty at Princeton, where he expanded his investigations into the planetary sciences by studying the effects on meteorites of cosmic rays, the high-energy particles that speed through space. His work produced a method for recording the age of rocks, which helped scientists understand "how long a meteorite has been a rock in space and where it might have come from," Arnold once explained.

His research on cosmic rays drew him to the UC San Diego, where he founded the chemistry department in 1960. He became a longtime consultant to NASA, where he helped the young agency as early as 1959 in setting science priorities for missions, including the Apollo missions to the Moon. He is remembered as being instrumental with other scientists in leading the agency to establish the national lunar sample research program for analyzing the more than 800 pounds moon soil and rocks returned between 1969 and 1973 by the Apollo missions. For over two decades, Arnold and colleagues traced the history of lunar material being bombarded by cosmic rays and extended our record of the energy output of the Sun by millions of years, thus significantly increasing our understanding of the age and composition of the Moon and also of the history and evolution of the Solar System. The continued legacy of this work on lunar material led to major discoveries even in the recent years. For his contributions,
NASA awarded him in 1970 its top medal for "exceptional scientific achievement." Arnold also received the Department of Energy’s E.O. Lawrence Award in chemistry and metallurgy.

Arnold founded the California Space Institute in 1979 to foster innovation in space research and was its Director for the first 10 years.

In 1980, Eleanor Helin and Eugene Shoemaker named an asteroid after him, (2143) Jimarnold, after he created a computer model describing how meteorites traverse the asteroid belt between Mars and Jupiter.

He held Univ. of California San Diego's Harold Urey Chair in chemistry from 1983 until his retirement in 1993. The annual Jim Arnold Lecture recognizes his contribution by inviting an interesting speaker who has made significant contributions to chemistry and the space sciences to campus each spring.

In his last decades, Arnold advocated the colonization of space.

Arnold's survivors include his wife, Louise, and three sons.

Prepared by Athena Coustenis

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