



## IN MEMORIAM

Lawrence H. Aller  
Professor of Physics and Astronomy, Emeritus  
Los Angeles  
1913–2003

Lawrence Hugh Aller, who entered UC Berkeley without having finished high school and who became a UCLA astronomy professor and a leading figure in 20th century astronomy and astrophysics, died March 16, 2003. He was 89.

Professor Aller was born in the humblest of conditions in Tacoma, Washington, on September 24, 1913. His father, an occasional printer and gold prospector, thought that the use of the mind was a waste of time. With fierce persistence and dedication, Dr. Aller pulled off a most difficult feat: getting into college without having finished high school (as a result of being dragged to work in his father's primitive gold mining camp). His interest, sparked by leaflets from the Astronomical Society of the Pacific and by a venerable astronomy textbook, led the young Mr. Aller to a correspondence, and finally a meeting, with Donald Menzel of Harvard, who persuaded the admissions director of the University of California at Berkeley to admit him in 1932.

He earned his bachelor's degree in 1936, and went on to Harvard, earning a master's in 1938 and a Ph.D. in 1942, where he was trained in atomic physics, as well as astronomy. As a member of Harvard's distinguished Society of Fellows, he studied with Menzel and developed his interest in stellar and nebular astronomy. After working in the War effort, Dr. Aller made his professorial debut at Indiana University, where he stayed until 1948, leaving for the University of Michigan. Residing there for the next 14 years, he established his research reputation and helped develop the Michigan graduate program. In 1962, the opportunity arose to return to California, to UCLA, where he again was instrumental in founding a Ph.D. program (notwithstanding resistance from some faculty members at UC Berkeley). At UCLA he stayed, departmental chair 1963-1968, through his retirement in 1984, doing research right up to the end. Eight other schools received him as visiting professor.

Professor Aller knew that to make inroads in astronomy, he needed to apply physics to the observations, which he ardently sought. Little pleased him more than gathering photons, except perhaps for making atomic calculations with which he could analyze spectra. His real love was gaseous nebulae, specifically planetary nebulae (which he called his "hobby"), the graceful shells of gas surrounding dying stars that are on their way to becoming white dwarf stars. It is likely that Dr. Aller contributed more, across the board, to our knowledge of planetary nebulae than any other astronomer.

Another major theme in Dr. Aller's career was quantitative analysis of stellar spectra with a primary goal of measuring the chemical composition of stars. He was among the first to champion the idea that large differences in the ratios of elemental abundances existed among various types of stars. Yet a third principal research interest of Dr. Aller was analysis of the photosphere of the sun. Elemental abundances in the sun are a benchmark against which studies of the origin and evolution of the solar system and the cosmos must be compared. Over a period of decades, working with different collaborators, Dr. Aller published major papers that established the solar abundances.

Professor Aller's theoretical and observational research contributed enormously to astronomy (his bibliography lists over 500 publications), but, for many, he will be remembered also as an outstanding educator. At Michigan, he taught a two- semester course in advanced general astronomy that covered nearly everything, in addition to a remarkable four- semester sequence in astrophysics (general, stellar atmospheres, nebular astrophysics, and stellar interiors). These were backed up by an extraordinary set of books that he authored. These included, in 1953, *The Atmospheres of the Sun and Stars* (revised a decade later), a tour de force of the physics of stellar plasmas and radiation transfer that became the bible of a generation of astronomers. *Nuclear Transformations, Stellar Interiors, and Nebulae* appeared a year later, and *Gaseous Nebulae* two years after that (rewritten 1984 as *Physics of Thermal Gaseous Nebulae*).

Professor Aller's honors included election to the National Academy of Sciences in 1962, election to the American Academy of Arts and Sciences in 1961, and selection for the American Astronomical Society's Henry Norris Russell Prize in 1992. This top AAS award, given annually, is based on lifetime achievement in astronomical research.

In 1941, Lawrence married Rosalind Duncan Hall (who survives), and together they raised three children: Hugh, Gwen, and Raymond. Not only did one son become an astronomer, but so has one granddaughter (a dynasty established).

Dr. Aller was absorbed by news and politics, hating injustice and ignorance, including especially the problems of scientific illiteracy and (stupid) actions of U.S. politicians. His historical commentaries on astronomy and politics and his concern for the future of the world are missed by his colleagues at UCLA and elsewhere.

Benjamin Zuckerman