



**Marshall Brucer, MD**  
1913-1994

Nuclear medicine has, throughout its history, seemed to attract unusual, creative and even flamboyant personalities who have advanced both the theory and practice the medical use of radionuclides. One of these exceptional individuals was Marshall Brucer, organizer, writer, educator, historian, who—in his unorthodox style—made valuable contributions to the Society of Nuclear Medicine (SNM), and gave unique scientific, philosophical and historical gifts to nuclear medicine over more than four decades. While he was not one of the twelve members of the original Founders Group credited with creating the SNM, Brucer became active in the Society and profoundly and beneficially affected its early growth. With his outspoken and fiercely honest manner, his arguments were critical to its survival in an intensely political and often hostile environment. He served as SNM's fifth President from 1957-1958. For these early activities he received a Special Award of Honor from the Society of Nuclear Medicine in 1964. Marshall Brucer was always especially proud of his role in the first selection of a physician (Herman L. Blumgart, MD) as the Nuclear Pioneer by SNM, and of coming to the 1969 Annual Meeting in New Orleans to present the lecture honoring Dr. Blumgart.

In 1962 Dr. Brucer retired from the nuclear medicine laboratory and from the “smoke-filled rooms” of Society governance, and therefore may not be well known to newer members of the Society. However, he remained a known and admired figure to many of us and he did not retire from being a diligent scholar and educator.

One of his first post-“retirement” projects was the development of the Trilinear Chart of the Nuclides for medical use. This colorful 1968 chart (and booklet) can still be found in nuclear medicine services. Out of the research for the Trilinear Chart came the identification of 119 radioactive parent-daughter relationships that could lead to their use as radionuclide generators. Even some of his contemporaries may be unaware of his authorship of a series of “how to do it” clinical nuclear medicine pamphlets, which he illustrated himself; he was an artist as well as a creative and accomplished cartoonist. Many do know, however, that he became a unique historian of nuclear medicine and remember his *Vignettes in Nuclear Medicine* for which he drew most of the illustrations.

The development of the *Vignettes* led Marshall Brucer to track ideas that had surfaced in nuclear medicine back to their ancestry, only to find that each idea had many generations of ancestors. He claimed to discover that there never were any new ideas in nuclear medicine, only re-use of ideas from other fields that were not new either. After years of research into the history of science, from which huge amounts of historical data were acquired, the advent of the personal computer made it possible for Brucer to organize his historical material and begin a monumental work eventually published as *A Chronology of Nuclear Medicine* in 1990. This chronology cites some events before the year 1600, but begins formal treatment at that time, and continues to detail the bits and pieces of nuclear medicine history through 1989.

A prolific writer, Brucer, published several hundred *Vignettes*, papers, pamphlets and articles, the latest being, an invited historical paper, in 1993.

He fought a constant battle with the possibility that hysteria about the hazards of radiation could stifle radiation's potential for good; he never ceased promoting the idea that radiation is necessary, even good for you. He worried that the result of these fears would be that patients would be “protected from needed diagnosis.” He also never ceased to deliberately overstate his case with an irritating but eloquent style that served to command the attention of others and often charmed even his most reactive adversaries.

## In Memoriam

Marshall Brucer was born in Chicago, IL, on July 27, 1913. He attended high school and college in the Chicago area, receiving ScB (1938) and MD (1942) degrees from the University of Chicago. Brucer entered military service in July 1942, and after Medical Field Service School Officers Course, entered Parachute School of the Airborne Command in October 1943. He served for two years as Surgeon, Airborne Command, reaching the rank of Lt. Col. before leaving the service.

Brucer began his civilian medical career in the Physiology Department, University of Texas Medical Branch, Galveston, TX in 1946. In December 1948, he became Chairman of the newly formed Medical Division of the Oak Ridge Institute of Nuclear Studies (ORINS) in Oak Ridge, TN. He enrolled in the ORINS-Atomic Energy Commission (AEC) Basic Radioisotope Course in 1949 and continued to be a student of radioisotopes.

When the Medical Division of ORINS became interested in the application of radioiodine to the diagnosis and therapy of thyroid disorders, Brucer pursued the proper use of instrumentation and experimented extensively with proper thyroid radioiodine uptake measurement, particularly with regard to standardization of the measurement. Brucer then devised a family of clothing-store mannequins, each containing a "thyroid gland" loaded with a known mixture of  $^{133}\text{Ba}$  and  $^{137}\text{Cs}$ , known as "mock iodine," and sent them all over the world to see what measurements in the various laboratories would produce in "thyroid uptake." This effort brought him into a working relationship with P.R. Bell's group at Oak Ridge National Laboratory (ORNL) that stimulated the promotion of energy-selective detection of gamma radiation from in vivo sources.

During this time, Dr. Brucer was also very active in the development of internal and teletherapy uses of radioactive material to treat cancer. The year 1952 alone saw the publication of 12 papers on this subject. From 1952-1961 (inclusive), Brucer published 109 papers on such topics as in vivo dispersions of colloidal gold, teletherapy, brachytherapy, pathologic changes in thyroids following irradiation, thyroid uptake calibration, biodistribution and effects of several radionuclides, education of physicians in medical uses of radioisotopes, and many others, including the acute radiation syndrome.

In 1958, Brucer's attention was directed to this last topic when his flight to Los Angeles to preside at the Fifth Annual Meeting of the Society of Nuclear Medicine was interrupted by a critical accident that occurred at the Y-12 installation of the Oak Ridge complex. Several people suffered short, high exposures of gamma and neutron radiation in the accident. They were cared for at ORINS Medical, and much of what we knew about the

acute radiation syndrome was, for a long time, derived from this incident. Also in 1958, Brucer began the organization of the Southeastern Chapter of SNM.

In 1962, the advance of his multiple sclerosis caused his retirement from the chairmanship of the Medical Division of ORINS, and he moved with his wife, Patricia, and son, John, to Tucson, AZ where he continued to serve as counselor to the Southeastern Chapter. Brucer became a consultant to Associates in Laboratory Medicine, St. Mary's Hospital, in Tucson and as late as 1993 went in to St. Mary's on Tuesdays to look at last week's scans.

Throughout his tenure at ORINS, Marshall Brucer received many prestigious awards, (including a Special Certificate in Nuclear Medicine by the American Board of Radiology 1956, and a Special Award of Honor by the American College of Radiology, 1961), special memberships, appointments and consultantships, many of which were international, and was granted a patent for his invention of "mock iodine."

In his later career, he received the U.S. Atomic Energy Commission Citation for Outstanding Achievement (with a gold medal in 1965). In 1972, he received the first "Marshall Brucer Award for Outstanding Contributions in Radiation Medicine" from the Arizona Center for Radiation Oncology Studies of the University of Arizona. In 1984, Brucer became the first person to receive the Society's Distinguished Educator Award. In 1984, Brucer also was awarded the Gold Medal of the American College of Nuclear Medicine "In Recognition of Outstanding Service to Nuclear Medicine." Oak Ridge Associated Universities (formerly ORINS) awarded him a plaque in 1988, "In Recognition of Historical Contribution to Radiation Accident Management." In 1991, the Southeastern Chapter of SNM created in his honor, "The Marshall Brucer Award for Distinguished Service."

Active right up until his death, he had a "Letter to the Editor" published in the Arizona Daily Star (Tucson) on February 15, 1994. His most recent complaint to this author was that the 120 megabytes of hard disk space in his computer was insufficient for his needs.

Marshall Brucer is survived by his wife, Pat, of Tucson, their son, John, of Altadena, CA and his sister, Irene Scheider of Show Low, AZ. He will be missed by all who knew him; for those of us who were privileged to know him well or for whom he served as mentor, our loss and our gratitude for knowing him are both great. His indelible mark on nuclear medicine will never be erased.

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