

Howard Earle Skipper: In Memoriam (1915–2006)

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Retired: Southern Research Institute, Birmingham, Alabama

Howard Earle Skipper died at his residence in Mountain Brook, Alabama on January 2, 2006 at age 90. He was born on November 21, 1915 at Avon Park, Florida to Chesley Allen Skipper and Estelle Wiggins Skipper. He grew up in Sebring, Florida, and in his youth he worked on his father's cattle ranch and earned money by performing diving exhibitions.

He attended the University of Florida on an athletic scholarship where he was captain of the swimming team, was on the SEC All-Conference diving team, and played center and linebacker on the university's varsity football team. At the University of Florida, he met and married a law student, Margaret T. Edwards (1940), his life-long partner. They were married 44 years until her death in 1984. They had two children, Howard Earle, Jr. and Margaret Ann Skipper (Lawrence Willson), and two grandsons, Matthew Skipper Willson (Kathryn) and Andrew Booth Willson.

Dr. Skipper earned the Bachelor of Science degree (1938), the Master of Science degree (1939), and the Doctor of Philosophy degree in Biochemistry and Nutrition (1941) at the University of Florida.

He served in the Chemical Warfare Service, U.S. Army (1941-1945). He was Chief of the Toxicology Section, Medical Division at Edgewood, Maryland (1941-1943); Chief Biochemist for the Australian Field Experimental Station, Queensland (1943-1944); and Technical Director for Eastern Technical Unit, Chemical Warfare Service, New Guinea and the Philippines (1944-1945). Immediately after the end of World War II, he went to Japan as a member of Karl Compton's Scientific Survey group to survey the status of Japanese research and development, and accepted the sword from the head of the Japanese Chemical Warfare Service when he surrendered. Dr. Skipper retired as a Lt. Colonel of the U.S. Army.

His commitment to cancer research began during his wartime studies of nitrogen mustard, when he became convinced that this compound could be not only a weapon but also a healer. Dr. Cornelius Packard Rhoads, a medical corps colonel who was head of the Army's Chemical Warfare Service from 1943 to 1945 and later director of the Sloan-Kettering Institute for Cancer Research in New York, was so impressed with Dr. Skipper's work that he recommended him when Southern Research Institute (SRI) was seeking someone to start a biochemistry program at the relatively new research organization. However, Dr. Skipper was interested in cancer research and, coincidentally, an Alabama philanthropist was interested in contributing to human welfare, thus began the cancer program at SRI that was to become known worldwide.

The busy early years at SRI were not without hazard. Dr. Skipper was invited to join a team to investigate the "Red Tide" that threatening Florida fishing. The boat that was taking the team to the "red" area exploded, and were it not for the plane that accompanied the boat and called for help, the new cancer program might have ended on that day.



Dr. Skipper began to assemble a talented research team to gather the knowledge that he felt was necessary to pursue his research goals. The three divisions of the team were led by Drs. L. Lee Bennett, biochemist; Frank Schabel, virologist; and John Montgomery, organic chemist. Many other scientists contributed their talents to the research, and Dr. Skipper gave full credit to the research team for their scientific input, creativity, and dedication to the cancer research effort. During the middle years of the last century, his Southern Research team worked closely with his former Chief in the Chemical Warfare Service, Dr. Rhoads, who became the first Director of Sloan-Kettering after the war, and with Dr. Gordon Zubrod, Clinical Director of the National Cancer Institute (NCI), to help choose and coordinate the most promising areas of cancer research. He was never too busy to talk to clinicians and advise them about strategies of therapy.

Recognition of the cancer research program grew, and Dr. Skipper was appointed Director and Head of Organic and Biochemical Divisions in 1949, was named Vice President of SRI and Director of the Kettering-Meyer Laboratory in 1964, was elected President of SRI in 1974, and was named President Emeritus on January 1, 1981.

He developed quantitative animal models to study the effects of drugs on cells that were killed and cells that survived chemotherapy. With these models, he developed protocols for administration of drugs or combinations of drugs to kill malignant cells faster than they could grow back. Based on these studies, he found that imprecise doses of anticancer drugs could not eliminate the malignant cell population. He also developed the theory that a specific dose of a given drug will kill the same percentage, not the same number, of cancer cells in a wide variety of cancer cell populations. Dr. Vincent DeVita, Director of the NCI, at the dedication of

the Howard E. Skipper Chemotherapy Laboratory at SRI in 1981, recalled that "The impact of Dr. Skipper's work reverberated across the field like a 'whipcrack' and changed the field practically overnight, in medical terms, from one that relied almost totally on empiricism to a field that was heavily laced with inductive reasoning."

Dr. Skipper served as Professor of Experimental Pathology, School of Medicine, and as Professor of Investigative Medicine, Department of Medicine, University of Alabama in Birmingham.

He held offices in the Advisory Committee on Isotopes, U.S. Atomic Energy Commission (1953-1956); Scientific Advisory Committee, Sloan-Kettering Institute (1953-1971); Experimental Therapeutics Study Section, NIH (1954-1956); National Advisory Cancer Council, Public Health Service (1958-1962); Chairman, Cancer Chemotherapy Review Board, NIH (1958-1960); and President's National Cancer Advisory Board (1972-1977).

He published more than 200 scientific articles and wrote a series of "Skipper Booklets," which addressed, in great detail, the problems associated with chemotherapy of cancer. Only a few of these booklets were subjected to the rigorous reduction in length and editing that was required for publication. Dr. Skipper was

much too interested in proceeding to the next problem to spend time on a booklet that he considered finished. During his career, he had little time for hobbies, but he pursued gardening with beautiful roses and lapidary (gem cutting) with the same enthusiasm that he did his research.

Dr. Skipper's dedication to the cancer research effort was recognized by many distinguished awards, including the Robert Rossier deVilliers Award of the Leukemia Society of America (1974); the Albert Lasker Award for Basic Medical Research (1974); Ernst W. Bertner Memorial Award, M.D. Anderson Hospital and Tumor Institute of the University of Texas System Cancer Center (1976); Bristol-Myers Award for Distinguished Achievement in Cancer Research (1980); Charles F. Kettering Prize of the General Motors Cancer Research Foundation (1982); American Cancer Society Annual National Award (1982); and Honorary Degree, Doctor of Science, *honoris causa*, from the University of Florida (1989).

Although Dr. Skipper excelled in numerous and varied undertakings and received wide recognition and many awards during his career, he remained an unassuming and affable person who was admired and liked by those that worked with him. Perhaps this was one of his greater accomplishments.