

obituaries

weapons and fusion research. He was leader of the group that in 1950-52 successfully measured the D-T, D-D and D-He³ cross sections below 120 keV.

During the war, in theoretical collaboration with Enrico Fermi and Edward Teller on controlled use of fusion energy, he had defined a workable shape of a confinement vessel for the thermonuclear plasma and calculated energy production. It was natural then that Tuck would become one of the early champions and leaders of the US thermonuclear program that started in 1952. He initiated the experimental and theoretical program at Los Alamos in 1952 with toroidal pinch experiments. Contrary to many others, he envisaged the project to be a research program; a self-sustaining thermonuclear reaction would be so difficult that a reactor should not be thought about until the problems could be worked out on a small scale.

Tuck's contributions to the thermonuclear fusion program were many. In addition to serving as a member of the US Fusion Steering Committee, he proposed a collective process for trapping energetic plasmas known as entropy trapping, devised unique minimum-B confinement geometries and led the group of scientists credited with the first laboratory demonstration of thermonuclear fusion. Through Tuck's leadership in Project Sherwood, the Los Alamos Laboratory became one of the leading fusion laboratories in the US and the world.

Following his retirement in 1973, Tuck was a frequent lecturer and consultant to the scientific community. He occupied the Walker-Ames Professorship, University of Washington, 1974. His recent studies and talks on "ball lightning" have given considerable impetus to the understanding of this elusive phenomenon.

Tuck was a delegate at the United Nations Atoms for Peace Conference at Geneva in 1958. In 1960, he officially toured the Russian controlled thermonuclear installations as part of the Atomic Energy Commission exchange delegation.

He was a Fellow of the American Physical Society, served on the editorial boards of the *Physical Review* and the *Journal of Applied Physics* and, along with two others, served as editor of the annual *Review of Plasma Physics and Controlled Thermonuclear Research*.

Jim Tuck was a physicist with diverse interests, an ardent supporter and a strong leader of fusion research and an innovator of unique ideas and concepts. He was also a stern critic of projects and ideas that violated his



PHOTO BY DAVIS

TUCK

physical sense. The fusion community has lost one of its strongest supporters and will miss his keen wit and idiosyncrasies—he was great fun to work and be with.

D. A. BAKER
HARRY DREICER
H. RALPH LEWIS
JOHN MARSHALL JR
N. METROPOLIS
JAMES A. PHILLIPS
WARREN E. QUINN
LOUIS ROSEN

Los Alamos Scientific Laboratory

Henrietta H. Swope

Henrietta H. Swope, astronomer noted for her work in establishing the distances to galaxies, died on 24 November 1980. She was educated at Columbia University (AB, 1925) and Radcliffe College (AM, 1928), and spent the next 14 years at the Harvard Observatory. During World War II she was a member of the scientific staff of the radar laboratory at MIT; she also served as a mathematician in the US Navy Hydrographic Office. After the war, Swope taught astronomy (1947-52) at Barnard College.

From 1952 to 1978 she was assistant, then research fellow, at Mount Wilson

and Palomar Observatories. Working with Harlow Shapley, she helped establish the famous period-luminosity relation for Cepheid variable stars, thereby permitting determination of the Sun's position in our galaxy and of distances to other galaxies.

In 1962, using plates taken with the 200-inch Hale reflector by Walter Baade, Swope determined the distance to the Andromeda galaxy to be 2.2 million light years.

A gift she made to the Carnegie Institution of Washington made possible the initial development of the Las Campanas Observatory in Chile and the establishment there of a 40-inch telescope that is named in her honor.

William E. Stephens

William E. Stephens, who had been professor of physics at the University of Pennsylvania, the head of its physics department, and the dean of its College of Arts and Sciences, died on 17 July 1980. He was 68 years old.

Stephens studied at Washington University and earned a PhD in physics at Caltech in 1938. He taught at Stanford and then in 1941 went to Penn. His research interests were nuclear physics, photonuclear reactions, mass spectroscopy and nucleosynthesis. □