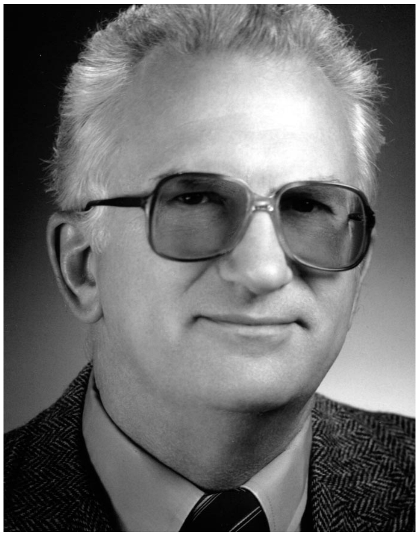

WILLIAM THOMAS 'TOM' PINKSTON

mechanics and nuclear theory to atmospheric physics for liberal arts students, always with a flair for the elegant as well as for careful and comprehensive analysis.

Tom was best known for developing, in 1965, the Pinkston–Satchler inhomogeneous differential equation still used as the Standard Model for calculating the nucleon overlap integrals for light nuclei. This was the first microscopic approach for treating effective nucleon–nucleon forces and had a significant effect on the development of nuclear shell models. The approach is still in use, a remarkable endurance record for an early model. Tom also contributed important results to the theory of shape coexistence in heavy nuclei, Coulomb fission, and heavy-ion potentials.

Tom was chair of Vanderbilt's physics and astronomy department for 14 of his 37 years at the university. His gentlemanly demeanor was a serviceable cloak for a resolute firmness; one of the few decorations in the chair's office during his term was the sign "What part of NO do you not understand?" Tom served on more than 70 councils and committees at Vanderbilt during his career. What one colleague called Tom's "probity of judgment" made him welcome in the most important policy councils of the university and as chair of the faculty senate from 1995 to 1996.

Outside the university, Tom served as a consultant to the US Army Missile Command in Huntsville, Alabama (1959–65) and the Oak Ridge National Laboratory (1959–66); as a councilor for Oak Ridge Associated Universities (1980–92); as a board member for the Southeastern Universities Research Association in Washington, DC (1988–92); and as chair of the southeastern section of the American Physical Society (1987–88).

Tom directed the PhD work of about a dozen students and published many research papers or book chapters on the theory of nuclear structure and reactions. His research reputation was recognized by the Alexander von Humboldt Foundation in Bonn, Germany, which presented Tom with a Senior US Scientist Award in 1979.

Tom was an exemplary faculty member, a congenial and effective scientific leader and administrator, and a devoted husband, father, and grandfather. Those who were privileged to know him will remember his gentle good humor, the faithfulness of his friendship, his manifold kindnesses to students and colleagues—and the fact that he was an ardent and accomplished fly fisherman.

JOSEPH H. HAMILTON
WENDELL G. HOLLADAY
MEDFORD S. WEBSTER
Vanderbilt University
Nashville, Tennessee

Sidney Siegel

Sidney Siegel, a solid-state physicist who became a respected pioneer in nuclear reactor development, died of cancer on 15 March 2001 at his home in Pacific Palisades, California. He also was one of the first scientists to study the effect of radiation on solids.

Born in New York City on 10 January 1912, Siegel began his career as a physicist in the 1930s at Columbia University. At that time, solid-state physics was just emerging as a specific branch of physics. He earned his bachelor's degree in physics at Columbia in 1932. As a graduate student under S. L. Quimby, Siegel was one of the first to experimentally investigate the relationship between magnetic and mechanical properties of nickel. This investigation was aimed at testing some consequences of Werner Heisenberg's 1932 theory of ferromagnetism. Siegel received his PhD in physics in 1936; his thesis was on the relationship between the magnetic and mechanical properties of nickel.

During World War II, working as a research engineer with the Westinghouse Electric Corp in Pittsburgh, Pennsylvania, Siegel helped develop an influence exploder for electric torpedoes and an airborne radar system. After the war, in 1946, Westinghouse sent Siegel to participate at what is now Oak Ridge National Laboratory in the design of a pilot-scale, gas-cooled reactor for civilian power—the Daniels power pile. The reactor was designed with graphite as a moderator. Eugene Wigner, then director of ORNL, had predicted that graphite in a reactor would swell and otherwise deteriorate under the intense bombardment of fast neutrons. Siegel, with his background in solid-state physics, was one of the earliest pioneers in the study of this so-called Wigner effect.

SIDNEY SIEGEL

While at ORNL, Siegel attended the Oak Ridge School of Reactor Technology. Many of the alumni of this school became prominent figures in the unfolding American development of power reactors. Among the students was (then) Captain H. G. Rickover.

In 1949, Siegel returned to the newly organized Bettis Field reactor laboratory, which was operated by Westinghouse for Rickover's Naval Reactor Branch of the Atomic Energy Commission. At the time, two naval reactors were being worked on: a sodium-cooled intermediate neutron reactor (SIR) at General Electric and a pressurized water thermal neutron reactor—originally called submarine thermal reactor (STR) and, later, pressurized water reactor (PWR)—at Westinghouse. Although prototypes of both reactors were built, the US Navy adopted the Westinghouse STR rather than the GE SIR.

Siegel played an important role in these earliest days of naval reactors, when many combinations of coolant and moderator were proposed and some were actually built. He assembled and then headed a group of capable young physicists and engineers to conduct the critical experiments on the core of the STR and to analyze the reactor's solid-state aspects. But of the perhaps 10 different combinations of coolant and moderator, only the PWR (and its relative, the boiling water reactor) survived, mainly because it was based on the extensive and expensive effort of Rickover's Nuclear Navy.

Siegel, like several other leaders of reactor development, chafed at Rickover's imperious scrutiny. In 1950, he left Westinghouse to become the associate director of the newly founded nuclear program of Atomics International, a division of North American Aviation Inc.

The main job of Atomics International at the time was to design and build a 500-kilowatt (electrical) graphite-moderated, molten-sodium–cooled reactor. Siegel was project engineer for this very successful reactor experiment. This experiment was followed by a much larger sodium-cooled reactor sponsored by the Consumer Public Power District of Nebraska. However, that reactor developed serious leaks in the stainless steel cans that enclosed each graphite module.

Because Atomics International had so much experience with sodium as a coolant, the company became heavily involved in the sodium-cooled fast breeder project, which was the main line of advanced reactor developments in the US. The primary focus of the breeder programs was the so-called Clinch River Fast Breeder, which was to be built in Oak Ridge but was abandoned. Siegel, at the time, served as the main technical spokesman for the Atomics International version of fast breeders.

In 1973, Siegel returned to ORNL as associate lab director and coordinator for the NSF-sponsored program on energy and the environment. He retained this post until 1975, when he retired to California.

Siegel served as both vice president (1965) and president (1966) of the American Nuclear Society. He also practiced his extraordinary talents as an art photographer and creator of exquisite large wood sculptures.

I knew Siegel well and was one of his great admirers. Beyond his capabilities as a solid-state physicist and a technical administrator, he was widely learned and able to convey his thoughts in unusually lucid prose. He represented the best of the nuclear pioneers: He was thoughtful, knowledgeable, and articulate. Many of his colleagues shall miss him, as shall I.

Alvin M. Weinberg
Oak Ridge Associated Universities
Oak Ridge, Tennessee ■