WILLIAM L. NUTTING (1922-1992).

Ruth D. Nutting, Michael I. Haverty, and Brad Kard

Bill was born in Pepperell, MA, on July 26, 1922. As a boy he showed intense interest and aptitude for things biological, and was encouraged by his parents and grandparents. His early collections of insects, plants, and animals were extensive. At the suggestion of his grandmother that he document his endeavors, from age 10 he kept a daily diary of his scientific activities, giving us first hand insight into his early life and pursuits. He did well in school and entered Harvard College in 1940. With the United States' declaration of war during his second year, he accelerated his studies, graduating in 1943 with a BA in biology.

Following graduation, he immediately enlisted in the Navy and completed Officer Candidate School, receiving a commission as an Ensign. Following service in the Pacific Theater, Lieutenant Junior Grade Nutting was released from active duty and enrolled in Harvard under Professor F. M. Carpenter, where he studied the comparative morphology of the orthopteroid heart. His drawings of the cockroach heart appear in entomology texts today.

An excellent scientific artist, he drew many illustrations for the publications of L. R. Cleveland, a parasitologist. These illustrations depicted the relationship between the reproductive cycle of gut protozoa found in the primitive, wood-feeding roach, *Cryptocercus*, and molting of this host insect. He continued to work with Cleveland as a post-doctoral fellow.

As graduate students, Bill and Floyd Werner made insect collecting trips to Cuba, Mexico, and the southwestern United States. Subsequently, he accepted a position at the University of Arizona in Tucson in September 1955. He arrived with his wife, Ruth, and two young sons, not suspecting their stay would last a lifetime.

Bill worked on control of the khapra beetle, an East Indian grain pest, and developed and taught insect morphology, physiology, and behavior, keeping these popular courses up-to-date and relevant to current discoveries from year-to-year. He conducted field research that led to several summers teaching field zoology at Harvard and Boston University. Under his direction, 17 students earned MS degrees, and 11 completed their Ph.Ds.

By the early 1960s, Bill's research focused on the behavior and ecology of termites, investigating the influence of weather and temporal aspects on termite swarming. He worked on the Santa Rita Range Reserve, south of Tucson, studying foraging and demographics of termites. He put his practical knowledge to use by providing teaching sessions for Arizona pest control operators. He also

advised the public on identification and control of all types of wood-destroying insects.

Although he worked most often in Arizona, in 1964, he investigated the biology of Mexican termites in Jalisco. In 1980, he worked in Nairobi, Kenya, as the project leader of the Grassland Termites Research Programme for the International Centre for Insect Physiology and Ecology. The Nuttings traveled the world, collecting termites wherever they went. This led to the extensive termite collection currently housed at the University of Arizona.

Bill was sought out by students and colleagues for his extensive knowledge of the literature of insect morphology, physiology, and behavior, especially for termites and orthopteroids. He kept a file of carefully chosen references, and published numerous research papers and several chapters in textbooks. He was a member of many honorary and scientific societies, and served as the President of the North American Section of the International Union for the Study of Social Insects in 1983.

He retired from teaching in 1983, but two years later returned to the University of Arizona as Acting Head of the Department of Entomology. He continued his research on the biogeography of termites even when terminally ill with cancer. Bill died on March 8, 1992.

He is remembered with deep respect by those who knew him and of his work.

HETEROTERMES AUREUS, THE DESERT SUBTERRANEAN TERMITE: RESEARCH OVERVIEW

Susan C. Jones
Department of Entomology, Ohio State University
Columbus, OH 43210

Heterotermes aureus (Snyder), the desert subterranean termite, is the most common of the subterranean termite species in the Sonoran Desert below ~1,220 m. It occurs in the desert areas of southwestern Arizona; southeastern California; and Sonora, Sinaloa, and Baja California in Mexico (Pickens and Light 1934, Jones and Nutting 1989). Its tolerance of high temperatures and desiccation (Collins 1969, Collins et al. 1973) enables it to occupy these desert regions. The distribution of *H. aureus* apparently is limited by low rather than high temperatures (Haverty and Nutting 1976).

The role of *H. aureus* in the detritus cycle has been extensively studied with regard to soil movement and alteration (Nutting et al. 1987), wood preferences (Haverty and Nutting 1975a, 1975b), and rates of dead wood production and consumption (Haverty and Nutting 1975c). The methodology of using toilet-paper