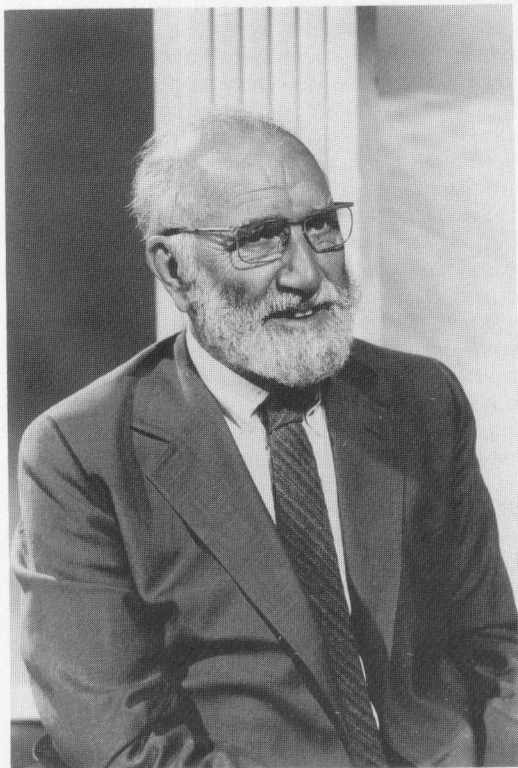


## OBITUARIES

### WILBUR GEORGE DOWNS

1913–1991



Wilbur G. Downs, April 1981

He was one of our most versatile scientists, an intellectual who as a constant searcher of knowledge had the ability to put it to constructive use. Wilbur George Downs was born August 7, 1913, in Perth Amboy, NJ. He died in Branford, CT on February 17, 1991.

Wil's boyhood was principally spent in Saranac Lake, NY, with 3 brothers and a sister. From an early age he showed a keen interest in natural history which remained with him all his life. At Cornell University, he might have pursued a career in medical entomology had the needed faculty stimulation existed. Instead he settled on medicine, but while still an undergraduate he spent 3 summers as a Field Staff Member of the New York Biological Survey, which proved a valuable experience in later life. While studying at Cornell Medical College, he and colleague Gustave Dammin utilized the summer of 1937 learning about tropical parasitology

with Professor Pedro Kouri at the University of Havana, Cuba.

After obtaining his MD degree, Wil was intern and resident in medicine at New York Hospital from 1938 to 1940. During this period, he specialized in internal medicine and venereal diseases under Dr. Walsh McDermott. In those days syphilitic paretics were frequently treated with malaria parasites to induce a high fever which might destroy the microorganisms in the brain. McDermott's department cooperated with the Rockefeller Foundation's International Health Division (IHD) laboratories across the street where Dr. Lowell Coggeshall was conducting malaria investigations. Wil acted as errand boy, delivering malaria-infected blood as well as interesting himself in Coggeshall's studies. The latter was impressed with Wil's acumen and urged him to apply to Dr. Wilbur Sawyer for a Rockefeller Foundation (RF) appointment. Sawyer replied with a fellowship to study for a Master of Public Health degree at the Johns Hopkins University School of Hygiene and Public Health (1940–41) following which Wil joined the Foundation's IHD field staff. In 1940, Wil married Helen Hartley Geer of New York.

Downs's first assignment was to Trinidad, B.W.I., during the latter half of 1941 where he initiated malaria investigations. In 1942 he was inducted 1st Lieutenant, MC into the Army of the United States. Wil's malaria studies in Trinidad continued until 1943 when he was transferred to the South Pacific as Malaria Control Officer, first in the New Hebrides, then to the Russell Islands and New Georgia. In 1944 he was on Bougainville, and in 1945 he became Malaria Control Officer followed by Acting Chief of Preventive Medicine on Okinawa. During this period, Downs was associated from time to time with the US NAMRU II on Guam. In 1946, Wil retired from the army and returned to the Rockefeller Foundation.

Wil Downs was one of a small group of physicians who delighted in a prolonged tropical experience resulting in exposure to and familiarity with a great variety of tropical diseases. Throughout the war years, Downs' inherent curiosity brought him into close contact with many other diseases: dengue, venereal diseases of various kinds, leprosy, schistosomiasis, filariasis, scrub typhus, tuberculosis, intestinal parasites, fungal infections, etc. Furthermore, he had to

prescribe treatment for many of these afflictions as well as initiate measures for controlling same.

His 1941-42 epidemiological survey of malaria in Trinidad and Tobago ranks as one of the classic studies in the field. Aided by top notch medical entomologist Raymond Shannon, botanist Colin Pittendrigh and Guyanese malariologist Horace Gillette, these 4 carried on a complete study of the local malaria problem and made good practical recommendations for its control. They defined the principal vectors (*Anopheles aquasalis* and *Anopheles bellator*) and their distribution, identified the breeding places (coastal swamps, *aquasalis*, and specific epiphytic bromeliads, *bellator*) and studied their flight and feeding habits (in time and space). Detailed spleen and parasite surveys of school children were conducted to verify or expand on previous findings. Microscopists were given rigorous training and closely supervised. Anophelines of many species were brought in from the wild and examined for natural infections. Other specimens were exposed for feeding on hospitalized malaria patients or malaria-infected paretics whose parasite and gametocyte counts were closely monitored and then the incubated anophelines were examined for oocysts and sporozoites to determine which species were the most susceptible to infection.

Detailed studies were made of the bromeliad flora, the species defined, the optimum growing sites recognized and ecological studies undertaken of the relationship of 2 bromeliad-inhabiting anophelines to the various species of bromeliads and where in the ecosystem they found their preferred niches. These studies eventually led to the control of the "bromeliad malaria" by killing the plants with a dilute copper sulfate spray, thus destroying their anopheline breeding sites. And finally, close liaison was maintained with government engineers who were effecting control of many *aquasalis* larval habitats through the use of concrete tide gates at the sandbar mouths of rivers and streams.

In Mexico, from 1946 to 1952, he directed an RF public health and malaria investigation program. Special clinics as well as training centers (for public health nurses, inspectors, malariologists, etc.) were organized within several of the state governments; in addition, cooperative malaria projects were carried out with the Ministry of Health. Together with colleagues Eulogio Bordas and L. Navarro, valuable long term studies with far reaching effect were initiated with DDT, studying its residual action over time as well as when applied to mud (adobe) surfaces. The effect on the incidence of *Anopheles pseudopunctipennis*-transmitted malaria was carefully related to single annual or biennial DDT

spraying. Likewise, the effect of the DDT on the behavior of the house-haunting anophelines was closely examined. These were landmark studies of the effect of surface composition on the effectiveness of a sprayed residual insecticide. Malaria parasite and spleen surveys were conducted in various parts of the country and recommendations made to the government. Investigations of an entomological nature were varied, including descriptions of new mosquitoes, establishment of insectary-breeding anopheline colonies for malaria transmission experiments and morphological and ecological studies of various species of anophelines.

From Mexico, the RF sent Downs back to Trinidad in November 1952 where he founded the Trinidad Regional Virus Laboratory and directed activities until 1961. This laboratory was well conceived and efficiently operated. The staff, both professional and technical, was well trained (most of the latter by Downs) and had a notably fine *esprit de corps*. There was an excellent, self-contained mouse colony, and tissue culture was soon introduced. Valuable museum collections of mammals, birds, arthropods and plants were created for reference purposes. A well thought-out field program operated at all times. Studies of mosquito behavior and ecology were strongly encouraged, as were those directed at other medically important hematophagous arthropods. Viruswise, the Trinidad laboratory's investigations were highly successful. Thirty-five viruses, mostly new to science, were recognized and much information accumulated on their ecology. Laboratory studies determined the susceptibility of various native mammals, birds and mosquitoes to many of the new agents recovered from the field. Valuable new knowledge was acquired for several human virus infections, and a yellow fever outbreak in all its ramifications was carefully studied. Wil was a strong advocate of "shoe-leather" epidemiology, and much of the success of the field program can be attributed to his persistent and untiring search for follow-up blood specimens of people hidden away in the countryside and often masquerading under an alias or popular name. But those second specimens were "jewels" in the sense that they were frequently the "open sesame" to important knowledge of the virus infection afflicting the unfortunate victim. All of these activities were the result of the cohesive force stimulated by Downs's magnetic personality, wide ranging interests and administrative skills.

From Trinidad, Downs was recalled in August 1961 to the Foundation's headquarters in New York City where he was made an Associate Director of the Medical and Natural Sciences Division and given overall responsibility for the

RF's world-wide arbovirus research program. When the Foundation's New York laboratory was transferred to Yale University, Downs became Professor of Epidemiology and Director of the newly created Yale Arbovirus Research Unit, which he headed from 1963 to 1971. That laboratory achieved its own distinction and became WHO's principal Reference Center for Arboviruses. In 1971, Downs resigned from the RF but continued his teaching and student advising activities at Yale as a Lecturer. From 1973 and thereafter he was appointed Clinical Professor of Epidemiology.

During his New York stewardship of the international arbovirus program, Downs's travels took him to many tropical countries, particularly Africa south of the Sahara where he saw much evidence of the havoc wrought by malaria, onchocerciasis, yellow fever, malnutrition and the newly recognized Lassa fever and other arena viruses. He repeatedly visited India and Southeast Asia. In more recent years he organized health- and disease-oriented studies associated with the Senegal River impoundment project. He made numerous trips to the area and at one time spent several months with colleagues engaging in parasite and arthropod survey work.

Wil Downs' technical skills and talents were broad. He was a highly skilled malariologist, virologist, parasitologist, epidemiologist, entomologist and ecologist. He was a keen, critical observer and had a deep and understanding knowledge of natural history. During his years in the tropics, he immersed himself in studies of the local fauna and flora. He was an enthusiastic and knowledgeable ornithologist and competent mammalogist, versed in the ways of wild animals as well as the preparation of museum specimens. He maintained a collection of native orchids and interested himself in hybridization experiments. He was a first class active fisherman of both fresh and saltwaters, ingenious tier of trout flies, versatile sportsman and expert marksman (a member of Trinidad's national rifle team at one time). A man of many interests, he was photographer, stamp collector, guitarist and bookbinder. As a bibliophile, he recognized one of man's most precious commodities—books! His library contained myriads of publications. A voracious reader, his ability introduced him to literature written in Spanish, French, German and Russian. The basement of his home housed a small

laboratory with microscope, darkroom and stacks containing a multitude of volumes on entomological and medical subjects. Elsewhere were large collections of books on birds, mammals, fish, plants, geology and other subjects. In recent years Wil had been collaborating with Vernon Nelson compiling a catalog of the Caddis-flies (Trichoptera) of Connecticut. He was the author/coauthor of over 150 scientific articles as well as a book with Max Theiler, *The Arthropod-Borne Viruses of Vertebrates*.

Wil was a first class administrator. He served on numerous *committees* and *boards*, both government and other, in many instances chairing same. These included: WHO Expert Committees on Malaria and Arboviruses, Committee on Arbovirus Reagents (USPHS-NIH-NIAID), Armed Forces Epidemiological Board, etc. *Lectureships*: several, including American Society of Tropical Medicine and Hygiene's Charles F. Craig (28th) and Fred L. Soper (3rd). *Awards*: Military, several, including the Bronze Star; Civilian, Richard M. Taylor Award (American Committee of Arthropod-Borne Viruses), Walter Reed Medal (ASTMH).

Wil Downs's most cherished project was the creation of an overseas research experience for Yale Medical School students. This program, now designated the Downs Student International Health Travel Fellowships, has been in operation since 1965. It has provided stimulating experiences to a legion of young people, permitting them to work in foreign countries, observe health problems first hand and undertake modest research under alien and sometimes frustrating, albeit rewarding, circumstances.

Wil Downs is survived by his wife of a second marriage, the former Dorothy Gardner (Wil's first wife passed away in 1972); a son, William Montague of Kapaa, HI; stepson, Thomas of Bainbridge Is., WA; three daughters, Helen Haller of Ithaca, NY, Anne Carroll of Omaha, NE, and Isabel of Santa Barbara, CA; stepdaughter, Nancy Leedy of Bainbridge Is.; a brother, Ray of New Hope, PA; a sister, Jessie of La Conner, WA; and 15 grandchildren.

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