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MEMORIAL OF HAROLD DOUGLAS WRIGHT

November 11, 1921-July 7, 1969

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Harold Douglas Wright, professor of mineralogy in the Department of Geochemistry and Mineralogy at The Pennsylvania State University, passed away at the age of 47 at his home in State College, Pennsylvania on July 7, 1969 after several years of failing health.

For 19 years he served hundreds of Penn State students as their professor in courses in mineralogy, optical crystallography, and radioactivity in geologic settings. His graduate students enjoyed a close relationship with him and will always remember and admire him. He was serious yet had a subtle sense of humor; reserved, yet never distant or uncommunicative; meticulous, yet not overdemanding; conservative, yet always ready to accept new challenges. Students and colleagues respected him for his integrity, his frankness, and his dignified, friendly manner.

He was born the younger son of Frank James and Anna Zigler Wright on November 11, 1921 at Bridgewater, Virginia. Frank Wright was a geomorphologist who, as a graduate student, had studied under Douglas Johnson at Columbia University. Over the years there developed a life-

long and deeply cherished association of the Johnson and Wright families which was to have a profound influence on the lives of Frank Wright's sons; Harold was given the name Douglas after the Columbia geomorphologist.

In 1924 the elder Wright moved with his family to Granville, Ohio to begin a quarter century of service as professor of geology at Denison University. Harold grew up in Granville, was educated in the town's public schools, and entered Denison in 1939. His undergraduate work was interrupted by poor health and again in 1943-1946 by military service as a meteorologist in the United States Army Air Force. His training for this role included taking courses at the Universities of Wisconsin and Chicago which were later applied to fulfill his undergraduate degree requirements. During his service years he was stationed in China and India with the rank of first lieutenant.

In 1944 Harold married Marjorie McCracken. He returned to Denison in 1946 and was graduated the following year with an A.B. degree. Like his father and his elder brother Robert before him, he then undertook graduate study in geology at Columbia University. His work leading to the A.M. degree (1948) and the Ph.D. degree (1952) was directed by J. Laurence Kulp and Paul F. Kerr respectively. Harold's first contribution to mineralogy, "Thermal study of rhodochrosite" (1949), co-authored with Kulp and Holmes and published during his graduate days, was an investigation by differential thermal analysis to establish the form and variations of the thermal curve of that mineral and the effect of cation substitution on its thermal behavior. His subsequent research interest in uranium mineralogy and the geology of uranium deposits was initiated while at Columbia with a study of the mineralogy and paragenesis of a uraninite deposit at Caribou, Colorado (Wright, 1951 and 1954), the subject of his Ph. D. dissertation. His description of the alteration halo of a vein of uraninite-bearing sulfide ore in monzonite is similar to that described at Butte, Montana by Sales and Meyer and at Boulder, Colorado by Lovering.

During his three years at Columbia (1947-50), Harold held a scholarship, taught at Barnard College, and in his third year was awarded a Columbia Fellowship—a special distinction inasmuch as only three such fellowships were awarded each year in all the physical sciences at Columbia. Kerr relates that Wright ". . . was not only an excellent student, but personally, was very likeable. He formed many friendships among the students and took advantage of the many cultural features that New York has to offer . . . Harold Wright was always a gentleman. Although he worked hard, he was always considerate of those around him and was always willing to take the time to help a fellow student . . ."



Harold Douglas Wright

In 1950 Harold joined the faculty of The Pennsylvania State University in the College of Mineral Industries as Assistant Professor. He was subsequently promoted to the positions of Associate Professor in 1957 and Full Professor in 1965.

During the 1950's, with the aid of several graduate students, he extended his research in uranium mineralogy, much of which was supported by the Atomic Energy Commission. The uranium content of pyrite, chalcopyrite, sphalerite, and galena coexisting with uraninite in vein deposits was found to be up to 10^4 times greater than in the same minerals from veins in nonuraniferous districts, thereby demonstrating that the uranium content of these base metal sulfides might serve as an indication of the uranium concentration in the ore-forming solution and as a means of prospecting for favorable areas of uraninite deposition where radiation is below the level of field counters (Wright and Shulhof, 1956). Uraninite deposits of the Boulder batholith, Montana received special attention. With Shulhof (Wright and Shulhof, 1957), Harold investigated the mineralogy and geology of the Lone Eagle mine and later described an unusual type of galena resulting from grain-for-grain replacement of uraninite from that mine (Shulhof and Wright, 1959). Primary mineralization of three uranium-bearing "siliceous reef" veins—the W. Wilson, G. Washington, and Free Enterprise mines in the northern part of the Boulder batholith—was studied in detail by him and Bieler (Wright and Bieler, 1960; Bieler and Wright, 1960) with emphasis on the host rocks, their alteration, and the mineralogy and trace element chemistry of the veins. With Emerson he described the secondary uranium minerals, their distribution and genesis in the W. Wilson deposit near Clancy, Montana (Emerson and Wright, 1957; Wright and Emerson, 1957).

During 1959-60, while on sabbatical leave with a Fulbright research scholarship, Harold spent three months at the Max Planck Institute for Chemistry at Mainz, Germany on radiochemical procedures for activation analysis of trace elements in sulfides, preceded by a month in Tennessee at the Oak Ridge Institute of Nuclear Studies. Another eight months was devoted to field and laboratory studies at the University of Oslo investigating in particular the uranium and thorium content of the subvolcanic alkalic rocks of the Oslo region (In preparation).

After returning to the United States, Harold entered a new phase of research which was to become the principal research interest of his last years—synthesis of sulfides and trace element distribution in coexisting synthetic sulfides as a potential geothermometer. With Hutta, Barnard, and Halbig, each engaged as graduate research assistants, he investigated and published on the incorporation of several elements in hydrothermally synthesized sphalerite and galena (Wright, Hutta, and Bar-

nard, 1963; Hutta and Wright, 1964; Wright, Barnard, and Halbig, 1965). The Research Corporation and the National Science Foundation generously supported this phase of research. During this time he closely followed developments in activation analysis, including visits to various laboratories and attendance at several activation analysis conferences. By the time of his death he had initiated a program for activation analysis of natural and synthetic sulfide minerals at Penn State.

Harold Wright was a Fellow of the Mineralogical Society of America (member, 1954; fellow, 1959), the Geological Society of America (member, 1951; fellow, 1959), and the American Association for the Advancement of Science (member, 1966; fellow, also 1966) and a member of the Society of Economic Geologists (1956) and The Society of the Sigma Xi (1950). He is listed in *American Men of Science* and *Who's Who in the East*. He served regularly on the committee for selection of students for National Science Foundation Fellowships.

He was a member of the Church of the Brethren of Bridgewater, Virginia and at State College attended the Baptist church.

For a long time Harold knew that he had nephritis. During the last years of his life as his physical condition deteriorated, requiring extensive hospital and home care, he gave special attention to his family, to the development of his sons, James A. (born 1949) and Thomas H. (born 1951), and their transition from high school to college at Penn State. His courage, love of mineralogy, and dedication to his students and colleagues remained with him to the end. He is survived by his wife and two sons.

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