

# Memorial to William Harold Stuart

## 1910–1987

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William Harold Stuart was a geologist who pioneered in advising civil engineers about foundation problems. The skills that he developed in this way broadened into a mastery of man-to-man communication that endeared him, until his death on 5 March 1987, to all who had the good fortune to know him. Small wonder that in addition he served his adopted city of Portland, and his church, with distinction while in his private life he was a devoted father and husband whose special attention to his wife in recent years became an inspiration to all their friends.

He was born on 26 June 1910 at Bremen, Ohio, the son of John and Lorena (Scholl) Stuart. After finishing his schooling at Bremen High School, he entered The Ohio State University, from which he graduated with a baccalaureate degree in geology. He remained a keen student all his life, but his “graduate work” was achieved in the field, with the result that he achieved real eminence in his chosen specialty. As Wordsworth said of his Happy Warrior (and that Harold was, but in peace and not in war):



who, with a natural instinct to discern  
what knowledge can perform, is diligent to learn.

“Diligent to learn” Harold Stuart was, indeed, right to the end of the road.

After graduation, Harold started work in 1934 as an inspector with the Zanesville District of the U.S. Army Corps of Engineers, so that, from the very start of his professional life, he was engaged in the application of geology in civil engineering work. He would probably have been more surprised than anyone else if he had then known that this was the beginning of a lifetime of experience, lasting 39 years, with the world-renowned Corps. After just four years in the Zanesville District, he was appointed a geologist with the Little Rock District, advancing to the position of District Geologist in 1942, an appointment he held until 1947.

During these wartime and post-war years, his work was largely concerned with the foundation of dams, both earthfill and mass concrete, large and small, in Arkansas and Mississippi. Nine of the dams, the sites of which he investigated, were constructed. Carefully nurturing his growing experience he slowly developed an uncanny ability in assessing the essential geology of dam sites, seeing far beyond the findings of test borings. In his work at the site of the Bull Shoals dam, for example, he recognized that the original site was underlain by solution cavities, with the result that it was abandoned and a geologically more suitable site was selected.

In 1940, his services were loaned to the Nashville District office of the Corps to assist with the original investigation of the site for the Wolf Creek dam in Kentucky, an unusual tribute to the reputation he had already achieved. This was a difficult site, underlain by limestones and shale varying in age from Mississippian to Ordovician with some indication of karstic structure, but remedial measures were designed and the completed dam served well for sixteen years. (Signs of leakage then developed, and a major rehabilitation program was completed in 1970.)

His progress in the Corps was marked in 1948 by his appointment as Division Geologist to the North Pacific Division with its headquarters in Portland, Oregon, a position he held for eight years. His duties were then extended by his appointment as Chief of the Division's Geology, Soils and Materials Branch. It was from this position that he retired in 1973 after seventeen years of devoted service. Thereafter he acted as a consulting geologist to a number of prestigious clients, but he restricted himself to projects that required his personal attention, continuing this activity, although at a much reduced rate, until his final illness made it necessary for him to "hang up his geological hammer."

The work of the North Pacific Division of the Corps included activities in Wyoming, Idaho, Oregon, Montana, Washington, and Alaska. Harold Stuart was responsible for all geological studies for USCE projects in all these states and for the regular inspection and certification of dams in this vast area. He was therefore associated with some of the major engineering projects of the Northwest, the names of which are well known—the Libby dam in Montana; the Dalles, the John Day, and the McNary dams on the Columbia; and many others. Some of these great projects involved tunnels; one of the longest was eleven miles long. His activities had involved him in work in thirteen states, while his later consulting assignments took him to the Middle East and South America.

He therefore became an engineering geologist of singularly wide experience and well-balanced judgment, his opinions always respected by the civil engineers with whom he worked, as well as by fellow geologists. It was but natural, therefore, that he was meticulous in keeping careful (and tidy!) notes, relying on good photography (usually his own) to supplement his observations. His friends and colleagues testify to the fact that he was no martinet, having the desirable trait of "always praising people for their efforts instead of finding fault with their actions." In discussion he was ever the mediator, always listening carefully to every point of view before coming to a decision if it was his to make. Not surprisingly, he was always particular about his appearance, always neat even in his field clothes. He is still remembered for having pioneered, in the North Pacific Division office, the practice of carrying an umbrella on rainy days!

Always ready to share his vast experience with others, he was as good a writer as he was a speaker. Unfortunately, however, as the list below will show, he wrote little for publication, his many excellent reports being still in the files of the Corps. His far-flung professional duties just did not give him the time that is so essential for the preparation of even the shortest scientific paper to the standard that he would have regarded as essential. His main publication, on uplift pressures beneath dams, has already become a classic in the literature of engineering geology. It is significant that it was published in the *Proceedings of the American Society of Civil Engineers*, mute testimony to his standing in the engineering profession.

His main professional affiliations were naturally with geological and engineering societies. He was a Fellow of the Geological Society of America, active in its Engineering Geology Division, of which he was the chairman in 1969. He was an early member of the Association of Engineering Geologists, being, for example, one of the ten founding members of the Portland-Oregon Section, established in 1965. In recognition of his professional work and society activities, in 1981 he was elected an Honorary Member of AEG.

He was a registered professional engineer in the state of Oregon and a Fellow in the American Society of Civil Engineers. His active membership in ASCE and AEG prompted him to encourage joint meetings of the two groups in Portland. He was also a member of the Society of American Military Engineers, Sigma Gamma Epsilon, and a registered geologist in the states of Oregon, California, Arizona, and Utah. He devoted a good deal of effort, with others, in working for the registration of geologists to be legalized in Oregon, efforts that bore fruit in 1977.

Beginning in 1973, Harold Stuart was involved in many discussions with his own city of Portland (to which he was very attached) regarding the establishment of an advisory Geotechnical Board to assist the city with the control of new building; this was finally achieved in 1980. This post-retirement activity was naturally in the public eye, but most of his other activities after 1973 were known only to

his family and close friends. Suffice to say that he used his years of retirement well, being in every sense a good neighbor, described at his memorial service as the Good Samaritan of his neighborhood.

He had a wonderful sense of friendship in full measure; his wide-ranging activities in geology having given him a host of friends all over North America. Some of these friends have kindly helped with the preparation of this tribute, inadequate as it is, written more than two thousand miles from Portland. His home was a house of joy. He had married Florence Callihan soon after graduation, on 27 July 1933, and theirs was a happy life together for over fifty years. They were blessed with a son, John, and then a daughter-in-law, and in due course with two grandchildren—all regular visitors—as well as Harold's two sisters, who survive him.

There this record could stop, but normal restraints must be put aside if the full measure of Harold Stuart is to be on the record. In 1981, Mrs. Stuart, Florence to all who are privileged to know her, was suddenly stricken with a grievous ailment which left her almost totally incapacitated. Harold went into action; the house was quickly adapted to gracious wheelchair living; engineering gadgets were developed to facilitate travel by automobile; their happy life carried on and the laughter continued. Their attendance at Sunday worship was almost continuous; this helped the very slow rehabilitation achieved through medical and nursing care. Harold continued with his duties as a member of the Board of Trustees of Pioneer United Methodist Church. And at his wife's insistence, he carried on with a few special geological consulting assignments, located not too far from Portland. This continued after he had been afflicted with a dread disease, at first controlled but which eventually took its toll on 5 March 1987, with Florence in her wheelchair at his side, instead of he at hers. He was, in truth, the Happy Warrior, who

... when brought  
Among the tasks of real life, hath wrought  
Upon the plan that pleased his childish thought:  
Whose high endeavours (were) an inward light  
That (made) the path before him always bright.

#### SELECTED BIBLIOGRAPHY OF W. H. STUART

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