

Memorial to Arthur M. Piper

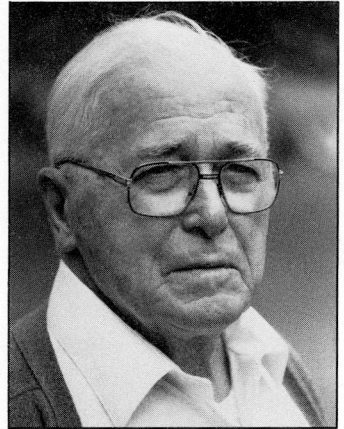
1898–1989

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Arthur Maine Piper died December 31, 1989, at Pacific Grove, California. Thus ended a long and fruitful career almost entirely within the Water Resources Division of the United States Geological Survey. Over the period of that career, some 48 years, he moved from field reporting on the occurrence of ground water in rural areas to administrative and technical advisory roles to the Director of the Survey and to Science Advisor to the Secretary of the Interior.

Art Piper was born September 20, 1898, in Thomaston, Maine. His father became a building contractor in Medford, Massachusetts; Art attended college at Tufts University (then Tufts College) in Medford. He was graduated from the Engineering School at Tufts in June 1919 with a B.S. degree in chemical engineering. His senior thesis on smelting a cement-copper residue was awarded first prize by the DuPont Company in competition among eastern colleges and universities. There followed a stint at the University of Idaho as a research fellow, and he received the M.S. degree, in metallurgy, there in June 1920. For the next six years he was on the staff of the Idaho Bureau of Mines and Geology, first as a topographer and then as a geologist; simultaneously, he was a part-time candidate for another M.S. degree, this time in geology; he received it in June 1925. His thesis, "Paragenesis of the primary ores from the Rex and Success Mines, Coeur d'Alene District, Idaho," was also an award winner.



Piper's interest in geology soon shifted to its application to ground-water problems. Still at Idaho, he worked on ground-water availability in several valleys in southern Idaho, and (with others) on the municipal well system for the City of Moscow. There, and also at Idaho Falls, he encountered the specialized problems of the occurrence of water in basaltic lava flows. This stood him in good stead later on in Washington and Oregon.

In August 1926 Piper joined the Ground-Water Branch (then a division) of the United States Geological Survey. Stationed in the Washington, D.C. office, he was first assigned to field studies of the occurrence of ground water in southwestern Pennsylvania and north-central Tennessee, and later back to the West in the Willamette River Basin, the Dalles area, and the Harney Basin, Oregon. There he also reported on geologic conditions at dam sites on the Willamette and Siletz Rivers for the Conservation Division of the Survey. These reports were all internal and administrative.

In 1931 Piper was designated project chief of the Mokelumne River investigation in Lodi, California, a study of recharge from streams flowing off the Sierra Nevada slope to the alluvial deposits of the California central valley. In 1935 he became district geologist at Portland, Oregon. From there he made dam-site investigations and performed other advisory work for the conservation division of the Survey, and for the Corps of Engineers in other western and southwestern states, and also began to develop ground-water studies in cooperation with the State of Oregon and with various municipalities. As the number of local cooperative ground-water

investigations increased, he began guiding younger men into the intricacies of studies that were more than geologic reconnaissance from which inferences about hydrology were drawn. In this, Piper seemed to adopt the "sink or swim" method. I vividly remember, while in the field in the 1940s, wondering why Piper was back in the office doing "paper work" while I was out there being asked questions by farmers and water-works engineers that I didn't know how to answer.

Although deeply involved in administrative work, and during the war years engaged in numerous field examinations of water-supply sites for military and defense establishments, Piper took an active part in some major ground-water studies, notably in southern California, to which his early chemical training contributed. For example, for the Long Beach-Santa Ana area he developed a method of plotting chemical analyses of waters on a tri-linear graph, thus providing a ready means of classifying and comparing waters by chemical make-up, as well as a sensitive but quick-acting Wheatstone bridge for measuring conductivity of waters. He considered the 1953 paper resulting from this work, written with A. A. Garrett, to be one of his best.

As the leadership of these cooperative investigations shifted into younger hands, Piper spent more and more time on inter-divisional and departmental groups dealing with the utilization of water resources on state and regional levels. He continued, however, to relate geology to some of the broader and even "coming" problems of water management. In 1946 he was the water-supply specialist attached to the expedition for the economic appraisal of ex-Japanese mandated islands of the western Pacific, and later was involved in selection of a site for the National Reactor Testing Station (ultimately placed at Arco, Idaho) and geologic aspects of the first underground detonation of an atomic device at the National Test Station, Nevada, and of its predecessor in the Aleutian Islands of Alaska. Piper retired from full-time work on September 30, 1968, but he continued for about four years as part-time consultant and advisor.

Art Piper was a man of many talents, scientifically and technically. Whether consciously or not, he blended his early chemical and metallurgical training with geology in applications to the problems at hand. Ever the engineer, he never lost sight of the controlling role of the geologic framework in the solution of problems. After retirement, he was unable to "sit still" and returned to an early interest in photography. At the last he was teaching color enlarging at the Carmel Foundation, Carmel, California.

Piper was elected a Fellow of the Geological Society of America in 1928 and was affiliated with the Engineering Geology and Geohydrology sections of the Society. He was a member of the American Institute of Mining and Metallurgical Engineers, Society of Economic Geologists, Geological Society of Washington, Geochemical Society, American Water Works Association, and Geological Society of the Oregon Country, the "G-sockers."

While at the University of Idaho, Art met Norma Yount, also a student at the university, and they were married at Twin Falls, Idaho, in 1923. At the time of his death, they had been married for 66 years. Art is survived by Norma, their two children, Martha and John, six grandchildren and five great-grandchildren.

As a person, Pipe was reserved, though with a keen but not obvious sense of humor. He was devoted to his family and was a loving husband and father. He was meticulous and precise in all that he did. For handwriting he used a 3-H pencil, which he customarily sharpened with a penknife. His writing was very compact, and although his tutelage was sometimes pretty strict, those who worked with him over the years learned a great deal about putting thoughts and observations on paper. Single-mindedly devoted to the job at hand, he worked long hours, particularly in the field or away from home, even measuring water levels in observation wells by flashlight long after dark, to the annoyance of at least one aspiring geohydrologist. Pipe expected people to do their best, but he was harder on himself than on others. He was interested in the progress of younger subordinates, though his natural reserve tended to conceal that. After all, he was a Maine Yankee. As leisure time permitted he made unobtrusive efforts to relate to

those who worked with him, and those efforts became easier in later years. I recall more than one dinner at his home topped off with delicious chocolate cake. Norma Piper made one every week for years. After all, "What other kind of cake is there?"

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