IN MEMORIAM

WILLIAM MAURICE EWING

Dr. W. Maurice Ewing, Professor of Geological Sciences, was born in Lockney, Texas, on May 12, 1906. He died in Galveston, Texas, on May 4, 1974, at the age of sixty-seven. He is survived by his widow, Harriett Greene Ewing, whom he married in 1965, two sons, Jerome H. K. Ewing, and Peter Ewing, and two daughters, Hope H. Ewing and Margaret S. Ewing.

Dr. Ewing received his B. A. in Physics and Mathematics from Rice University in 1926. He continued his education at Rice University completing his work in Physics for the M.A. in 1927 and the Ph.D. in 1931.

Dr. Ewing's entire career was devoted to education and research. This included valuable services as a consultant to the United States Government and to industry. He began his teaching career while still a graduate student at Rice. He served there as a teaching fellow from 1926 to 1929. While completing his dissertation, he became an Instructor in Physics at the University of Pittsburgh, from 1929 to 1930. From Pittsburgh he went to Lehigh University, where he served as Instructor in Physics, 1930 to 1936, and as Assistant Professor from 1936 to 1940. At Lehigh he began his career as a teacher of Geophysics, which lasted until his death. In 1940 he was promoted to Associate Professor of Geology, at Lehigh and was granted a leave of absence to become a Research Associate at the Woods Hole Oceanographic Institution. This was a turning point in his career. He remained at Woods Hole from 1940 to 1944, when he went to Columbia University as Associate of Geology, from 1944* to 1947. He became professor of Geology in 1947 and in 1959 he was named Higgins Professor of Geology. Largely through Dr. Ewing's efforts, Columbia received gifts to establish and endow the Lamont Geological Observatory (later to become the Lamont-Doherty Geological Observatory). He was the first Director of the Observatory, serving from its founding in 1949 until he came to Texas in 1972.

In 1972, Dr. Ewing and a number of his associates came to The University of Texas Medical Branch at Galveston to join the new Division of Earth and Planetary Sciences in the Marine Biomedical Institute

He did not report to Columbia for active duty until June, 1946, because he continued in war-related research at Woods Hole until that time (subsequently changed to the Marine Science Institute). Dr. Ewing was named Chief of the Division and served until his death.

Throughout his career of nearly fifty years of teaching and research--which in Dr. Ewing's mind were two facets of a single activity, as inseparable as flesh and blood--Dr. Ewing and his students felt a close identification. He was never the ivory tower scientist working in seclusion. He 'was deeply involved in the work of his students and associates. This is strikingly illustrated by the appended bibliography of over three hundred and fifty papers, of which he was author or coauthor, a scant two dozen list Ewing as the sole author. Over one hundred and thirty co-authors are listed most of whom were among the 200-plus graduate students with whom he worked. They represent a substantial part of the Who's Who in Geophysics; he took more pride in their achievements than almost anything else.

It can truly be said of him that he was a scholar and a teacher. This undoubtedly is the accolade he would have valued the most.

Maurice Ewing's leadership was shown in every facet of his life, but never more than in his personal relations with his students, colleagues, and staff. He acted as confessor and advisor to them, many times at the cost of interference with his own research, and then he would do without his proper rest in order to "catch up."

He was bubbling over with ideas and concepts and 'wanted each of them to be tried out immediately, exhausting his students with the urgency of getting the equipment built or the research complete without delay. Yet no one could complain, because he worked harder and longer than anyone around him. His "vacation" trips inevitably included three or four business contacts each day. On one occasion his wife convinced him to spend a week resting at a small lake in the

woods where there was no phone service. He later told one of his colleagues that the first day he was restless, the second he was uneasy, and the third he packed up and returned to the laboratory.

He was chief scientist at sea on more than fifty cruises. At such he would rarely rest more than three or four hours before he had to return to the deck to see that all was going well. He rarely assigned a particular task to anyone, but preferred to describe the opportunity in such glowing terms that the subordinate would volunteer to carry it out. Thus he led instead of directing, although he held the title of Director for years. ,

He frequently started a project and turned it over to someone to carry out. He would then leave it to the latter unless he was specifically asked for help. After a suitable period he would ask how the project was progressing. When the assistant had finished proudly telling him of the success he was having, Dr. Ewing would ask a simple question or two concerning a facet of great importance that the investigator had overlooked, much to his chagrin and surprise, as he had supposed he advanced the project far beyond anything Ewing had originally conceived.

He had a very well developed sense of humor for everyday affairs, and could always top anyone's story. However, he would not tolerate any humor in his work, pointing out that many serious errors or omissions resulted from "humorous" statements or events, which were allowed to distract people from their work.

He studied and read incessantly, although he always complained how poorly he was able to keep up with the literature. He normally carried a brief case bulging with reprints and bulletins that often weighed some fifty pounds, so that he could keep abreast of developments.

Although he was interested in sports and was always up to date on the happenings in the sport world, he seemed never to read about them or to watch games other than an occasional football game. He avidly kept up with the world events in the newspapers, on television, and with the newsmagazines coverage. His slant on it often differed greatly from those of the writers and he showed great perspicacity for important events. For example, he got leave of absence and persuaded several of his students to join him at Woods Hole to begin World War II research in

September, 1940, more than a year before Pearl Harbor and more than three months before the National Defense Research Committee came into being.

Maurice Ewing was unwilling to dilute his efforts or waste time on things outside the mainstream of his interests. Therefore, he was not a "joiner" and was an active member of only about half dozen national scientific societies, including the National Academy of Sciences; he was an honorary member or fellow, or corresponding member, of a greater number of such societies in the U.S. and seven foreign countries.

In the societies where his principal interests lay he was willing to carry his share of the load. He served the American Geophysical Union as vice-president, 1953-1956; as president, 1956-1959; and Was Associate Editor of the Union's Journal of Geophysical Research from 1949 to 1953. He was vice-president of the Seismological Society of America, 1952-1955, and President, 1955-1957.

He was also an Associate Editor of Deep Sea Research from the time it was founded in 1953 until the end of 1973, and of Quaternaria from the time of its founding in 1954. When he died he was helping, as a member of its editorial board, to get the new journal Quaternary Research under way.

Dr. Ewing's outstanding contributions to geophysics were recognized by the conferring of eleven honorary degrees by universities in the United States and four foreign countries. He was also awarded fifteen medals and prizes including the National Medal of Science, the Vetlsen Award of Columbia University, the Navy's Distinguished Service Award, the gold medal of the Royal Astronomical Society, the Agassiz Medal of the National Academy of Science, the Medal of Honor from Rice University, the Wollaston Medal of the Geological Society of London, the Day Medal of the Geological Society of America, the Bowie Medal of the American Geophysical Union and the Powers Medal of the American Association of Petroleum Geologists.

In addition to the above, the highest honor of the Geological Society of America, the Penrose Medal, was awarded posthumously to him at the annual meeting of the Society in the fall of 1974.

He received other honors, invitations to present important addresses before distinguished audiences, etc., too numerous to mention individually.

It is impossible to outline in any detail the numerous contributions that brought him so many honors. Even a brief summary of the most important-ones is very impressive. Throughout his long career the mysteries of the great ocean basins of the world were a continuing challenge. In. pursuit of this challenge, he eventually brought to bear all of the methods of modern geophysics, inventing or perfecting many of the instruments now in use for exploration of the oceans. Soon after his appointment to the faculty at Lehigh University, he initiated seismic studies on the continental shelf of eastern North America and shortly afterward, extended these studies to the deep ocean basins. The resulting data on thickness of sedimentary deposits and the seismic velocity and thickness of underlying basement rocks demonstrated the fundamental difference between the character of the rocks underlying continents and those underlying ocean basins and emphasized the sharpness of the boundary between these two domains. As a result the then widely accepted view that the oceans were underlain by foundered continental crust had to be abandoned and the essentials of the modern concepts of ocean basin structure were clearly delineated.

The topography of the great submarine mid-Atlantic ridge was studied in numerous ship crossings and elaborated by the use of reflection and refraction seismography, gravity, and magnetic observations. With his colleagues, Ewing helped to show that the mid-ocean ridges form a nearly unbroken chain encircling much of the globe. Using the deep-sea seismic reflection equipment, developed at Lamont, the research vessels Vema and Conrad conducted a worldwide mapping of the sediments accumulated on the ocean floors and at the same time collected magnetic, gravity, and heat flow data. This vast flow of data contributed enormously to the present concept of oceans as youthful features, originating at the mid-ocean ridges by a process of-intrusion of

mantle rocks, followed by lateral displacement of the cooled crust, a process known as sea-floor spreading.

During a cruise in 1954, he and his companions discovered the Sigsbee knolls in the Sigsbee Deep of the Gulf of Mexico and suggested that they might be salt domes. Fourteen years later the Glomar Challenger who's Chief Scientists for the cruise were the Director and Associate Director of the Lamont-Doherty Geological Observatory, drilled through typical salt dome caprock on one of these knolls and collected a core saturated with hydrocarbons. Ewing, though long away from his native Texas, is quoted as saying the core smelled "Just like East Texas during the boom."

During his long career in ocean explorations Ewing invented and encouraged the development and use of the deep-sea camera and the piston corer as well as other oceanographic instruments. While working for the Navy during the war, he discovered the existence of the SOFAR Channel, a continuous layer in the deep ocean where sound energy is trapped by focusing, thus providing a mechanism for a long-range communications system.

Shortly after the war Ewing and his students developed a new long-period seismograph and developed a theoretical basis for interpretating surface seismic waves propagating outward from earthquakes, using dispersion analysis to define the velocity structure of the earth's outer layers. This technique applied worldwide to earthquakes confirmed the layered structure of oceans, which had been first demonstrated by his refraction studies.

Today the Earth Sciences are in the midst of an exciting revolution of thought with the development of the new concept known as plate tectonics. Evidence on which new scheme is based has come largely from exploration of the deep oceans. It has been said that Maurice Ewing, more than any other single person, laid the foundations for this revolution.

This Memorial Resolution was prepared by a Special Committee consisting of F. Earl Ingerson (chairman, John C. Maxwell, William M. Rust and John L. Worzel.