

# Presentation of the O. E. Meinzer Award to George Burke Maxey

CITATION BY O. M. HACKETT

The O. E. Meinzer Award is made each year to the author of a paper selected as a distinguished contribution to hydrology and published within the past five years. The seventh recipient of the award is George Burke Maxey for his paper entitled "Hydrology of Desert Basins," published in the *Journal of Ground Water*, vol. 6, no. 5, 1968.

Burke Maxey is Director of the Water Resources Center at the Desert Research Institute and professor at the Mackay School of Mines, University of Nevada. He is currently on sabbatical, serving as consultant to the U.S. Atomic Energy Commission on hydrology. Burke received his A.B. degree from the University of Montana in 1939, his master's from the Utah State University in 1941, and his doctorate from Princeton in 1951. He has had 30 years of experience in hydrology and geology, which include eight years with the U.S. Geological Survey (1941-1948); six years as professor at the University of Connecticut (1949-1955), during which he spent two years with the USGS in Libya; seven years as professor at the University of Illinois (1955-1962), where he also was with the Illinois State Geological Survey; and since 1962, he has been with the University of Nevada.

In recent years, he has been a consultant to the state of Montana and to the United Nations in Kenya and Poland, advising on the development of comprehensive water resources basin plans. He has served on numerous national and international committees, including the committee on Geologic Aspects of Radioactive Waste Disposal and the Panel on Production of Mineral Fluids of the National Academy of Sciences-National Research Council. He has served on the U.S. National Committee for the International Hydrologic Decade and is on the U.S. Geological Survey's Advisory Committee of Water Data for Public Use. He is also serving on the Governance Committee for the American Geologic Institute. He has served on the Commission of Ground Water of the International Union of Geodesy and Geophysics as its Vice-President in 1957-1960 and as its President in 1960-1963.

In recognition of his outstanding talents as a teacher, he was selected as a distinguished lecturer for AAPG in 1959 and 1960. He effectively demonstrated the need for petroleum geologists and others to understand more about the field of ground-water geology. Burke Maxey has continued to serve as a visiting geoscientist for AGI for many years and as a visiting scientist in geophysics for the American Geophysical Union. He is the author of more than 50 papers in ground-water geology, including, in addition to the paper for which he is receiving the Meinzer Award, two other outstanding papers, "Hydrostratigraphic Units," published in the *Journal of Hydrology*, vol. 2, p. 124-129, 1954, and "Application of Some Geohydrologic Concepts in Geology," a paper co-authored with J. E. Hackett and published in the *Journal of Hydrology*, vol. 1, no. 1, p. 1-19, 1963. For the past few years, he has been writing papers related to the comprehensive water plan of Montana.

Of all his many activities and contributions, he probably has been most effective as a dynamic teacher, as an enthusiastic and critical advisor to graduate students, and as a dedicated, and at times controversial, spokesman for the entire profession of hydrogeology. He established one of the first hydrogeology centers in the country at the University of Illinois for training of professional hydrogeologists. His great contribution, which directly affects all of us here, is that of being a founder and first chairman of the Hydrogeology Division.

His paper, "Hydrology of Desert Basins," is an outstanding contribution in that it synthesizes many concepts of geology, hydrology, and chemistry to explain clearly the functioning of hydrologic basins in an arid climate and demonstrates the economic implications of water development and management in such an environment. Now on behalf of the Hydrogeology Division, I present to George Burke Maxey the certificate and silver bowl of the O. E. Meinzer Award.

RESPONSE BY GEORGE B. MAXEY

*Mr. Chairman, fellow hydrogeologists, and guests:*



George B. Maxey, 1971 Recipient of the O. E. Meinzer Award

It is indeed an honor and pleasure for me to be able to accept today this O. E. Meinzer Award. It is even more a privilege since I knew Dr. Meinzer and profited immeasurably from that association, not only from the technical instruction and guidance he afforded, but also from a warm and sincere personal relationship. I doubt that I would be standing here today if I had not received the scholarly and personal attention that he projected both directly and indirectly through the many scientists and engineers that he trained. I recall that my first supervisors when I joined the U. S. Geological Survey, Harold E. Thomas and Eldon Dennis, were avid admirers of Meinzer; and from him both received much of their training and inspiration which

they generously passed on to me. In addition to these personal benefits, I cannot help but mention that my whole career was not merely affected but indeed was shaped and directed by the outstanding contributions of this man. On the basis of his fundamental scientific work, his dynamic energy and interest in international as well as national areas, and his sound and widespread field work in a variety of terrains, he founded the science of modern ground-water hydrology. He initiated and fostered the working of scientist-engineer teams, bringing together the basic disciplines of hydrogeology (a not necessarily happy marriage but one that modified classical descriptive geology and the quantitative sciences and melded them into a highly workable and successful interdisciplinary effort). He initiated and successfully conducted the cooperative ground-water program between the states and the federal government, thus broadening the field of applied hydrogeology and tremendously increasing our store of substantive information. In effect he initiated and fostered the development of the hydrogeologic environment in which I have lived with most of you during my professional life.

Mr. Meinzer essentially shaped the branch of the U. S. Geological Survey in which I served my apprenticeship and early professional career. This group, then the Ground Water Division, together with the universities at which I taught (Princeton, Connecticut, Illinois, and Nevada), the Illinois Geological Survey, the Desert Research Institute, and the Mackay School of Mines, supplied the administrative, scientific support, and working milieu which nearly all scientists in this day and age need to successfully accomplish meaningful research. To these organizations, I express my gratitude and acknowledge a large obligation. For the almost unqualified support afforded by the Illinois Geological Survey and the Desert Research Institute, I am especially indebted.

All of us in this room are well aware of the development of the science since Meinzer's death. We have seen a growing need and an appropriate response to the applications of quantitative methods and tools—especially the development and application of computers to hydrogeologic problems and the initiation of modeling techniques that offer great promise in the future, especially for prediction and planning. The continued recognition and increasing application of thermodynamics and advanced chemical, physical, and mathematical procedures have occurred largely in our time, stemming from the fertile soil that Meinzer and his colleagues cultivated and from the seeds sowed by other pioneers, including C. S. Slichter, J. Dupuit, P. Forchheimer, M. K. Hubbert, M. Muskat, and C. V. Theis. I think I need not enlarge upon this theme except to emphasize as I have to my students for the last 20 years, that in the successful quantitative and realistic description of hydrogeologic problems lies their ultimate solution and the justification for our efforts to understand natural problems and solve them for the benefit of mankind.

This award brings recognition, not just of a paper entitled "The Hydrogeology of Desert Basins," but of a complex heritage of family, friends, teachers, colleagues, and students; and it is in tribute to this heritage that I humbly accept this award. To my mother and father who somehow developed in me a profound and lasting

respect for the Christian spirit, for tolerance, and for scholarship and scientific endeavor; to my wife who has given generously and graciously of her time and resources often at the expense of real hardship; to my many friends who helped me through the dark periods of doubt and frustration and taught me that at no time is a man wholly alone; to my teachers especially, among many, Don C. Evans, a superb naturalist and molders of young scientists, and Charles Deiss, Jesse P. Rowe, J. Stewart Williams, Ben Howell, Erling Dorf, Harry Hess, John Maxwell; to my colleagues, frequently teachers and trainers as well, John B. Lucke, John C. Frye, Charles Lane, George Pike, C. V. Theis, Nelson Sayre, Vic Stringfield, M. King Hubbert, and Joseph Toth among many others; and to my students, many now colleagues as well, who have consistently demonstrated that the teacher is a student also. Especially I emphasize that my many discussions with Patrick Domenico, Martin Mifflin, Robert Farvolden, and William Back led to the writing and publishing of the award paper.

With sincere recognition of the earnest assistance and support of all of these—family, friends, organizations, teachers, colleagues, and students—I proudly accept this award. I assure you that I intend to continue to do my best to support this profession and science and to contribute in my small way to the advancement of hydrogeologic science and to the attainment of the aims of the Division and the Society.