Presentation of the O. E. Meinzer Award to John D. Hem

CITATION BY WILLIAM BACK

Thank you, Mr. Chairman, fellows, members, and guests. It is a great pleasure for me to have the honor to be the citationist for John Hem. Our Chairman has asked me to keep my comments brief because the formal citation, along with John’s response, will be published in the Bulletin; I am not going to try to enumerate his many accomplishments, honors, and awards, or we would be here long past the dinner hour.

In these few minutes, I want to try to put John’s career into the proper perspective of time and space. John has worked for the U.S. Geological Survey for a long, long time. In fact, he is a little sensitive about how long it has been, and he asked me not to tell you the number of years, so I am not going to. Before lunch, I told John
that I would like to tell you who was president of the United States when he joined the Survey. He said, "President Roosevelt." I had done some checking earlier and knew this to be true. Then he paused, the way John does when he's thinking, and said, "Please make sure they understand it was Franklin and not Theodore!" John has served under 10 presidents, 15 secretaries of the interior, and 7 of our 11 directors and has survived under 7 division chiefs—so far.

When I joined the Survey, John was already a highly acclaimed, widely recognized, successful scientist; I have been with the USGS parts of 6 decades, and he has one more than I do, for a total of 13 decades. When you get the two of us on the same podium, you are deep into paleohydrologists!

John has a long list of publications, many of which are seminal papers. For example, his work provides the basic understanding of the geochemistry of iron, manganese, and aluminum. John has not only been a most productive researcher, but he has also been quite active in professional societies and has presented numerous papers and contributed to the proceedings volumes. He is a fellow of the major chemical and hydrologic societies and has served as symposia organizer and chairman of many prestigious committees. The Division of Geochemistry of the American Chemical Society recently held a plenary session in honor of John Hem. He has received the Distinguished Science Award from the National Water Well Association and the Distinguished Service Award of the Department of the Interior, which is his highest award and given for exemplary service.

Of all John's publications, I am particularly pleased that the Committee selected Water-Supply Paper 2254 (1959, 1970, 1985) as a basis of his Award. This was the first book on geochemistry of water, and it is still a most useful and comprehensive textbook. It is truly a classic. Many of you know that I have done a lot of lecturing and training of young scientists in many parts of the world and most of that has been little more than explaining how to apply the material that John has in this book. I have told John that I think I have done as much to make him famous as he has, because I have personally distributed hundreds of copies of his book to all continents except Antarctica—and I'll send copies there as soon as I hear that penguins have learned to read!

So, John, that is why I am so pleased to have the opportunity to thank you formally in public for all the help that you have given me and so many others. You have been a role model with your meticulous laboratory experiments, your sound scholarship, and most of all, the inspiration you have provided by your dedication to science and deliberately refusing to be seduced by the glory and power of administrative positions.

As sincerely as I can say it, on behalf of hydrogeologists throughout the world, we thank you for your pioneering and continuing efforts in developing the science of chemical hydrogeology.

Mr. Chairman, may I formally present to you John Hem, the recipient of the O. E. Meiner Award for 1990.

RESPONSE BY JOHN D. HEM

It is indeed a most satisfying feeling to be the recipient of the 1990 O. E. Meiner Award, and I thank you, Bill, for your very generous words of citation. I also want to thank the members of the Geological Society of America who have chosen me for this honor.

One of the characteristics I have noticed among certain senior citizens (this term means "someone older than I am") is colorful reminiscing about the good old days when everything was a lot better than it is now. Those of us whose thought processes have not yet fallen victim to the increasing entropy brought on by age know such ideas are generally not totally accurate or realistic. A lot of what happened to most of us in the past was not all that wonderful, but we all share a human tendency to remember what we enjoy and forget what we don't enjoy. Today is an occasion I shall never forget, and I am deeply grateful to all of you for being here.

To go back to the beginning, in 1940, about 18 months after I had joined the USGS, I completed a Chemistry Major Bachelor's degree program at George Washington University and received a field assignment as Junior Chemist, P-1, as it was called then, on a project in Arizona that was supervised a few levels higher in the bureaucracy by Oscar Edward Meiner himself. He paid our project a visit during the summer of 1941, when each of us had a chance to explain what we were trying to accomplish.

In general, that project was intended to determine the total water supply and demand and evaluate the hydrologic cycle within a section of the Gila River valley upstream from the San Carlos Indian Reservation, with special attention to the effects of phreatophytes, such as the salt-cedar that grew in dense thickets along the river channel. I was eager to demonstrate the value of water chemistry as one of the tools that would help show what was going on out there, where much of the water stayed underground and out of sight, but was still intimately related to the surface flow in the river. That general idea has continued to motivate much of my professional activity from that day to this, some 50 years later, in collaboration with my associates in the hydrologic sciences.

It is certainly not news to any of you that hydrology is indeed very much an interdisciplinary science. The first edition of the book for which I am being honored today had its roots in my conviction that natural water chemistry needed more recognition and integration as one of the disciplines of hydrogeologic science. Its first draft manuscript was completed in the mid-1950s after I had accepted a reassignment from chief of the Albuquerque Water Quality District to a newly designated Research Section in the USGS Water Resources Division at the Denver Federal Center. After extensive colleague reviews and various hassles associated with the publication process, the first printed copies were released in 1959. An early recipient of the Meiner Award, the late Charles McGuinness, was most helpful in the editorial polishing of the final draft.

Although I was confident that the book would have considerable in-house usefulness, there were other factors at work that I had underestimated, and the demand for the book was a lot stronger than expected. Five printings were made altogether, from 1959 to 1968. I was encouraged to prepare a second, revised edition, and it appeared to me appropriate to add somewhat more sophisticated chemical discussions as well as new findings of our own and those of other researchers in water chemistry in the 1960s. The second edition was also a box-office success, and it also went through five printings. I am not sure how many copies were produced in each printing, but the record is not bad considering that the demand was spontaneous.

The third edition, released at the end of 1985, was a general updating of the sections of the book in which important new developments had occurred. It, too, continues to be in demand and is currently in its third printing. The first and
MEDALS AND AWARDS FOR 1990

second editions of Study and interpretation of the chemistry of natural water were both designated by the USGS as Water-Supply Paper 1473. For the third edition, however, the number was changed to Water-Supply Paper 2254.

I have been especially gratified to note that a considerable part of the demand for these books has been from college and university students whose career plans may involve them in hydrogeology or aqueous geochemistry. I hope, as I suppose all authors do, that some of my own enthusiasm for the subject will come through to them in spite of my rather prosaic treatment of it. As a practicing scientist, of course, I probably am not expected to turn out inspirational material.

When I looked back through the first and second editions of the book recently, I was rather surprised by some of the ignorance I displayed in the first edition. I think I would not recommend using that edition for any serious purpose at this late date.

I have already mentioned the need for interdisciplinary approaches in geohydrology. This will if anything become more urgent in the future as we are called upon to deal with new problems such as those related to anthropogenic pollution and climate change. Within my own research interests, the availability of new instrumental techniques for examining and characterizing solid-phase surfaces and their interfaces with gases and liquids offers much promise. New approaches to hydrochemical modeling that could be derived from applications of coordination chemistry, or the chemistry of self-organization in steady-state nonequilibrium open-chemical systems in ground-water aquifers, offer opportunities for innovative new work. I hope to be able to continue to contribute to these efforts. Again, I thank all of you for your recognition of my activities.