

## LIFE AS A GEO-HYDROLOGIST

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It seems somewhat presumptuous to be writing anything resembling autobiography as requested by the Newsletter editor. I don't think of myself as either having lived long enough or accomplished things momentous enough to be of particular interest to anyone else. However, at a small birthday party a year or so ago, one guest asked if I would share some highlights of my life. Also at times people are unexpectedly deferential or what I consider needlessly helpful (I can still put my coat on by myself), so perhaps the time has come. A few highlights of a generally ordinary life may encourage others of similar status to send in theirs.

I came to Princeton from the St. Louis Country Day School ('28) in the days when college admission was much easier than it is now, and perhaps when ancestry was a more important factor. My father was of the class of '99, and other relatives had graduated as well. My brother, David, came along later in '36. For a number of reasons I was allowed to postpone entrance for a year, and so was of '33 rather than '32. My Princeton career was quite undistinguished and academically somewhat of a struggle. I had to make up a course in summer school Sophomore year, and I signed up for two: a course in Mechanics and a particularly interesting one in English History, in both of which I did all right.

I also needed additional credits to graduate. Having studied Osteology with Prof. Marcus Farr and thinking about a career in Vertebrate Paleontology, I elected to study and review a large book by retired Prof. William B. Scott describing his discoveries of fossil mammals in deposits of the Tertiary Geologic Age (*Editor's note: From 65,000,000 B.C., when the dinosaurs disappeared, to about 2,000,000 B.C.*) in Spain and South America. I completed this reading course and received my diploma in September.

Otherwise I had a pretty good time. I was on baseball and basketball squads, but not good enough to get a letter. Several classmates became close friends, of whom several are still living, including George Perera,

Oscar Mertz, Ed Holschuh, and unfortunately more who are not, including Chuck Hellerson, Walt Compton, Bud Emerson and George S. Graham. I learned a lot, perhaps chiefly to recognize what I didn't know, and something about relating to people.



*Bobbie and Joe Upson at the Firestone Winery, Los Olivos, CA in October 1989. Owned by A. Brooks Firestone, P.'58.*

Highlight No. 1 in my life was the summer of 1932 fossil hunting in the Badlands of South Dakota with Prof. Glenn Jepson and in the company of Al Whitlock and Andy Whitfield of '33, John Clark, a graduate student, and one Potenziano Sylvestre Jose Mendoza Taoatao, indispensable cook and general helper. His two maxims for successful fossil hunting, (1) don't go too far from the road and (2) where there are coprolites there are fossils, were helpful if not entirely accurate. (For those interested, coprolites are fossilized dung).

In the summer of 1933 I was, I think unilaterally, admitted by Kirtley Mather as a graduate student at Harvard. There I matured as a student, earned a PhD degree and changed my field of interest from Paleontology to Geomorphology (*Editor's note: Study of the surface features of the earth*) and Glacial Geology.

Highlight No. 2. In the Agassiz Museum, and by no means fossilized, I met Roberta Hastings who was a student of Paleobotany and Geology, becoming an Honors graduate of Radcliffe College in 1938, the same year I received my degree. We were married in August of that year and have since had a good and happy life of nearly 60 years together. We have shared field work under some pretty primitive conditions, like living in an unheated one-room cabin without amenities during a cold October and November in the eastern Oregon desert. We have two fine children and four grandchildren—Highlight No. 3. Our son Walter was Princeton '64, PhD University of Maryland '73 and our daughter Roberta Ann was Middlebury '67 and Princeton Theological Seminary MDiv '70.

Shortly after our wedding, we went by way of New Mexico to Moscow, Idaho, where I had a job as Instructor teaching Geology at the University. In those days there

were so many young Instructors at Idaho that, as the quip went, the way to distinguish the Faculty from students was that the Faculty wore hats. Seriously, there were students at the School of Mines who couldn't afford to buy a hat. My wife Bobby also joined the student ranks and earned a Master's Degree in Geology.

After a semester of teaching, I realized that I was supposed to impart enough geological knowledge so the students could pass the Federal Civil Service Exam for Junior Geologist (starting rank). Thinking that the best way to find out about the exam was to take it, I did. And passed it! After that I was in the system and began receiving job offers from the government. The situation at Idaho not being particularly happy at the time, I accepted an offer and in February 1940 joined the U.S. Geological Survey, Water Resources (then) branch. (The U.S. Geological Survey, founded under the leadership of Major John Wesley Powell and others in 1879, was charged with the task of discovery, mapping and evaluation of the Nation's mineral and water resources particularly in the western states.)

I was assigned to the Portland, Oregon office in the Ground Water Division, and to a field job to appraise the potential for finding additional ground-water supplies for the City of Bremerton, Washington. The city provided water to the Navy Yard, and was anticipating additional demand. I used to wonder why I, a novice, should be out in the field trying to answer questions while the experienced supervisor was back in the office doing paper work. Also, I learned that when someone asked me what I thought of dowsing or water witching, he either was a dowser himself or had a relative who was. Anyhow, the City of Bremerton had ample sources for additional water.

After a little work in south central Oregon (that cold October and November), I was transferred to Santa Barbara, California, as the geologist in a larger office where the task was to estimate the natural perennial yield of each of the five main agricultural valleys of the County. We lived in Santa Barbara for 8 years. Our two children were born there. That was during the war. I did a lot of field work in the Santa Ynez Valley and drove down the San Marcos Pass road many a Saturday night with hooded parking lights for illumination. Occasionally I was assigned a small job that contributed more or less directly to the war effort—1940 to 1945.

In 1949 we were transferred to Sacramento. There the Survey began work in cooperation with the State of California. The California Water Plan envisaged moving

water from the Sacramento River Basin where water was abundant, to areas in the southern part of the state such as the Los Angeles Basin and other areas where water was in short supply and the needs of the growing population were anticipated to exceed the available supply. The Survey's job was to estimate the amount of water perennially available under natural conditions. This estimate would be used by the state to determine how much water they needed to move from North to South. I worked on some of the smaller coastal valleys.

In 1952 I was transferred to Long Island, N.Y. to be in charge of ground water investigations in New York and New England. This involved general supervision of work in five sub-offices. Thus I became the experienced field geohydrologist doing the office paper work. The main problem in Long Island was to determine the position and estimate the rate of landward movement of the salt water body adjacent to the underground fresh water body, from which municipal water supplies were taken.

The years on Long Island were interrupted, Highlight No. 4, by the receipt in 1957 of a Rockefeller Public Service Award. This was a little known personal philanthropy of John D. Rockefeller III, designed to encourage Federal employees who, as a group, he felt were unappreciated by the general public. The award provided complete support for a year of study or other endeavor of one's own choosing. I devised a program to study, in Holland, Dutch methods for managing fresh-water resources in what was essentially a salt-water environment. The program was accepted and I became one of eight awardees that year out of about 100 applicants. The fact that Bob van de Velde '33 was on the evaluation committee, which I didn't know until later, probably didn't do any harm. Incidentally, Churchill Eisenhart '34, son of Dean Eisenhart, was also one of the eight. The Geological Survey gave me a year's leave of absence and I took my family to the Netherlands for what proved to be an outstanding experience for us all. Though most of my time was spent in Holland working with Dutch National Water Supply engineers and with municipal water-supply engineers and managers, school vacations allowed visits to Italy, England and Denmark, where in addition to sight-seeing, I made interesting and instructive contacts with geologists and ground-water hydrologists in those countries. I also developed some facility in the Dutch language as did Bobbie who had to deal with Dutch shopkeepers and others. People used to ask me why I wanted to learn to speak Dutch: "Only 15 million people in the whole world speak Dutch", they said. That may be true but the skill came in handy at

times, notably on one occasion helping to resettle a refugee Dutch family sponsored by our church. We found the Dutch people most cordial and helpful—especially those who knew what it was like to live in a country not your own, and we made some good friends and still keep in touch with some of them.

Returning from the Netherlands, I remained on Long Island for a few years mostly engaged in supervising independent studies aimed at understanding the relationship between the occurrence of ground water and the location and nature of deposits and erosional features associated with the retreat of the last ice sheet in New England. For example, most of the abundant ground-water supplies are in extensive deposits of sand and gravel formed by melt-water streams flowing from the stagnating ice.

In 1963, I was transferred to the Washington, D.C. office of the Water Resources Division of the Survey to assist in the administration of the Research program, eventually becoming in charge of that program. After about ten years in Washington it was time to quit, so I retired in June 1973 completing some 34 years with the Geological Survey. Funny thing—life didn't stop.

Any recounting of Highlights would be incomplete without something on the spiritual side of life. Although I was brought up in a Christian family and attended Presbyterian and Congregational churches more or less faithfully for many years—even being in lay leadership positions at times—it was not until 1966 that I experienced a definite spiritual awakening and came to know what Christianity really is. In the late 50's and early 60's, both Bobbie and I sensed a growing dissatisfaction with "church" as we were experiencing it. In brief, we felt there ought to be more to Christianity than attending worship, joining in "coffee hour", paying our money and trying to be good. So we began looking for what we thought of as the reality behind the faith as expressed. We did this in part through meeting with others in small groups for prayer and fellowship, and largely by studying the Scriptures.

To make a long story short, on February 26, 1966, Highlight No. 5, at a meeting of a para-church organization, we made a deliberate and adult commitment of our lives to Jesus as Lord, and received what was known as the Baptism of the Holy Spirit. We went out of that meeting later in the afternoon feeling as if we were 3 feet off the ground, and our lives were changed. The immediate result for me was the way it changed the way I looked at my fellow human beings.

Secondly, it made the Scriptures come alive and make sense. The experience validated experientially many things touched on there, and which I had heard expressed intellectually in churches. Some of my ideas were revised, some not. I became a fundamentalist, but not the Biblical literalist. As a geologist, I know that the earth was formed closer to 4 billion years ago than to six thousand. As a Christian, I think that the whole process, including human development, was initiated by God, is maintained by Him, and has a divine purpose; and that one day we will know what there is in the eternal life that He has in store for us. Meanwhile our job is to be open to His will, sensitive to His leading, and in so far as we are able, to live to His glory.

Since that day, I have had times of great joy, often a sense of being used by God to bring help and love to others sometimes in ways that can only be called miraculous. Through it all is a sense of purpose in my life. I am not here simply by chance, and to get through it as best I can on my own. That's very helpful to know in retirement.

The other side of the coin is that my experience and subsequent readings have put me at odds with the humanistic philosophy and general relativism (that is, not recognizing any external standard of right and wrong) that pervades our society today, including much of the organized church, as well as our Alma Mater. But that's another story.

We left the Washington in 1979 to take up year-round residence in New Hampshire at what had been for a few years a summer home. So far in retirement, now about 25 years, I am fortunate to have generally good health, as does my wife. We keep busy, travel some, including a separate trip with each grandchild. On occasion I contribute geologic and hydrologic expertise to my Town (Sandwich, N.H.) through its Conservation Commission of which I was at one time Chairman and continue as a member.

For good or ill, Princeton as of the early 30's will always be a part of me. Although there are things about present day Princeton that I don't care for, I am proud to be part of any good works and to be counted as an alumnus. I was able to attend the 60th Reunion of our Class, and God willing, will attend the 65th. Greetings to all Classmates who read this account.