

Biography of Joseph H. Birman (1924-2015)

By Richard J. Proctor and Daniel H. Birman

Preface by son Daniel H. Birman

I'm not a geologist. I'm a journalist. But my father, he was both. Joe Birman was a highly regarded geologist who reported what he observed about Earth, its hidden mysteries, and its fascinating connections to the people who asked – his students, his clients, and his friends. That's pretty much what I do for a living, sans the science part.

On December 23rd 2015, I sat with my father and bade him farewell just shortly after he passed away. He was 91. In a few months, my father's closest friends and colleagues, along with former students, employees and his two sons, would attend a service orchestrated by a dear family friend (also his former student) Donna Edwards, my brother, David, and by me. I spent weeks thinking about and writing his eulogy. And when the day came to tell his story, I did so with an eye toward history – his family's emergence in America – his fascinating journey, his humor, his depth, and his love of art, science and life. We did so at a place he called home for most of his life, Occidental College.



Figure 1 - Joe in 2014

Somewhere around this time, another dear family friend and colleague of my father, a well known geologist, Richard Proctor, challenged me to help write a biographical sketch about this great man so that his professional life might be remembered by one of the professional organizations to which my father belonged. Richard sent an outline and it sat in my inbox for months. I would pull it out onto my computer desktop and work away at it. But here it generally sat because I just wasn't ready. I suppose perspective takes time.

In the months that followed, I had the labor and love of working through mountains of files, boxes of stuff that my father collected from the time he was a child until his death. Damned if he didn't save everything. Photographs, yearbooks, personal letters, professional correspondence, lecture notes, personal musings – perhaps thousands of this and that. I found a letter from Hillary Clinton giving my father a hard time because he had corrected President Clinton about the use of the word, "Potable". She wrote back for the President. My father took a pen to the letter and corrected the grammar. He would do these things. He once sold Occidental College while the President of the college was out ill. He of course circulated his bill of sale to the entire faculty, making it clear that the price included the purchase of the geology department. And his

students would pull pranks on him as well. One day he arrived at the college only to find that his office was no longer there. Students managed to insert drywall into his doorway, plaster it over and paint it perfectly. This was the typical Joe Birman two-way-street of being a prankster and having pranks played on him

My most amusing find, though, was a stack of about 30+ envelopes containing bank statements inside each. On the outside of each envelope, were scribbled notes like this: *bank says I have \$12,000, I say I have \$51*. Each envelope had its own – and usually quite large – disparity, each indicative of a man who could reason science, but who could not balance a checkbook.

Among the many things I waded through was what shall remain a prize to locate – the closest thing to capturing my father's thinking and observations. This is a collection of field notebooks from some of his greatest journeys to uncover stories about Earth. He mapped glacial pathways in the Sierra Nevada – I know, because my brother and I, along with two of his students, backpacked with him as field hands (aka cheap labor). Each with rock picks in our hands, we would wander through glacial moraines, pound on boulders, and call out weathered vs. fresh granite. The sturdy geologist would stand with Brunton compass in hand, a map, hand lens, his own pick, look at rock samples, and mark our findings. This would become part of his growing wealth of information on glacial decline in the west.

Prior, in 1963, he went to Turkey and did the same thing (without us, I was 8, and child labor laws would have prevented this). He made his way to Mt. Ararat, and other nearby ranges and mapped the glacial decline there. He was arrested for his efforts for having been a westerner in a forbidden area. Oh, he had gotten all the right permissions as a scientist and professor at Occidental College, but nevertheless a village on the path to Ararat certainly didn't care who he was. He wrote in his field book that he was generally fine moving around Turkey because of the moustache he grew that made him look like a Turk. Pictures show his captors in this setting as a friendly group, or at least as they smiled for the camera. They probably enjoyed his company as they waited for a local mayor to bail him out. Typical Joe – take a tense situation and turn it into a fun part of his journey.

My colleagues – journalists/documentary producers – and I began looking at his field notebooks, and his written analyses of the work he did in Turkey, and a subsequent and unpublished paper he wrote about the linking of glacial decline about 5,500 years ago or so, and the rise of the waters in the Persian Gulf. He surmised that this water level rise probably buried evidence of a civilization predating the Sumerians in the region.

The paper was unpublished because the reviewers, though they thought his science was solid (so it appeared from the notes I read) wanted him to refine his thinking a bit more, and shorten the paper. I can almost hear my father saying words to the effect, “To hell with that!” and moving on to his next thing. Yet it bothered him most of his life that it wasn't published, and he always intended to get back to it.

As I look back through these and other papers, I realize that I had no idea growing up just how interesting this guy was. I spent a lot of time with my father during his last eight years of life and watched him through physical and mental decline. It was the later that was most troubling.

The man who could brilliantly play Beethoven or Mozart or Hayden, or Chopin on his 1909 Chickering piano, could no longer do any of that. And the man who ventured on nearly all of Earth's continents at one time or another to observe and report his findings, could no longer tell a story about any of that either. Both the artist and the scientist had retreated within the mind of a man, no, a breed of a man we will rarely get to know in life.

So now, nearly a year-and-a-half after his passing, I send along my notes and contributions to our dear friend, Richard, who understood – better than most – just what this guy contributed to science and to us.

Abstract



Figure 2 Mapping the Sierras 1950's

Geologist/Geophysicist Joe Birman led a fascinating life. For more than six decades, he contributed to the profession as a creative scientist, a teacher, and mentor to several generations of geologists. Early in life, he trained B-17 navigators during WWII to fly in bad weather. He earned his degrees at Brown University, Caltech, and UCLA. He was a beloved professor at Occidental College and well known for prankster humor among faculty, administrators, and students; his fascination with glacial geology found him mapping glaciation in the Sierra Nevadas in California; he trekked through Turkey in the 1960s to map glaciation on Mt. Ararat; his work caught the attention of Jacques Cousteau, he turned his attention to *geohydrology*; developed and patented a technology using shallow temperature probes to trace the movement of ground water, and leakage in dams and then built a consulting business that lasted 60 years; he was a classical pianist; he was an avid sailor; he was an amateur magician; an artist, and he even took part in a clandestine robbery

when his wife smuggled an apple from Sir Isaac Newton's garden that eventually became an iconic tree on the Occidental College campus.

Early life

Toma Dobkin and Leon Birman were Ukrainian Jewish immigrants to the United States. The Dobkin family came to America around 1916, and Leon Birman came a few years later. Toma Dobkin's father built a tobacco farm in Ellington, Connecticut. Leon Birman, escaped Russia on the back of an onion cart to Europe, sailed to Argentina to become a gaucho, ventured to Palestine for work, then Egypt and eventually came to America. Leon worked in Hartford as a salesman, and in classic boy-meets-girl fashion, found his wife on the Dobkin farm during his routine calls with goods for sale.

Little did Leon and Toma know that their one and only son, Joseph, born on June 2nd, 1924 in West Hartford, would become a great scientist and teacher. He was Lieutenant in the US Army Air Corps 1942-1946. His job was to teach pilots and navigators how to handle their aircraft in fog.

Personal life

During World War II, Joe met Dolores Holdsberg near her home in Sioux City, Iowa. She visited the officers' club and caught the eye of a guy playing the piano. They were married shortly after and spent nearly 25 years together. They had two sons, David and Daniel, both of whom reside in southern California. Later, Joe married Barbara Veasart, and they remained together until she died in 2007.

Education

Joe graduated from East Providence High School in 1942. Working through many boxes of his papers and things he has saved through the years, finds three yearbooks filled with inscriptions from friends and teachers. He was clearly a popular guy.

Joe's parents insisted that he learn to play the piano beginning at age 5, something that ended up being one of his major passions in life. His friends were Beethoven, Mozart, Bach, Liszt, Rachmaninoff, and Shubert (just to name a few), and he was quite comfortable in any setting to share his mastery of their music.

He went to Brown and graduated in 1948. His paths as a geologist and as a mischief-maker began there and were quickly cast in concrete. College was as much for the fun he could create as it was for learning. But then this is how he conducted himself throughout life. There were always at least two ways to look at things, he always chose the amusing because it was much more interesting to do so.

While Brown was a great achievement for him (he had an uncle who taught there and inspired him to attend), he found geology in New England to be quite boring. After serving as an officer in the Army Air Corps, he decided to use the G.I. Bill to attend a school out west, and certainly closer to more interesting geology. He successfully busted into Caltech in 1950, where he developed a firmer grounding in the direction he would eventually take in the profession. With encouragement from faculty members **Robert P. Sharp** and **Richard H. Jahns**, he studied the glaciation sequences in the Sierra Nevada. After trekking over much of the Range and looking closely at the granitics at high altitudes, he indeed figured out the glaciation history. He then decided to transfer to UCLA for his thesis work, earning his Ph.D. at UCLA in 1957. His published Sierra Nevada glaciation work is a major contribution to Quaternary science (see especially 1964 GSA reference).

A trek through Turkey



Figure 3 - Village jail, Locals pose for photo, Mapping glacial decline

Was Mt. Ararat high enough to experience alpine glaciation? This thought gnawed at Joe for several years. So in 1963 he made arrangements to see for himself. With a NSF research grant and an interpreter, he traveled to Turkey, starting from Istanbul and onto a remote eastern part of the country. As recorded in his field books, the journey was a perilous adventure. In one tribal village, they were detained in a jail for several days until the local mayor could verify his permissions for mapping in the region. When the interpreter told them that this was a famous American scientist, Joe was welcomed as royalty. The mayor took them to his home where they had a feast with the other village dignitaries. In the morning, the mayor provided an armed escort to the next village, where they explained who Joe was, and this episode was repeated several times. Joe finally climbed a portion of Mt. Ararat and proved that glaciation indeed occurred (see 1967 reference).

His work in Turkey in the early 1960s, led him to publish a paper in the GSA in 1967, *Glacial Reconnaissance in Turkey*. Then later, in 1978 with his own supposition about retreating glaciers in the region leading to a significant rise and subsequent change of geography in the Persian Gulf continued to interest him. He submitted another paper to the GSA that suggested that the outcome of glacial decline may have buried evidence of earlier civilization in the region. One of the readers sent it back; he wanted it shortened. Joe was too busy, or didn't want to do

anything about it, so he didn't.

Meanwhile, his research gained a great deal of attention for an unpublished paper. He received a call from **Jacque Cousteau**, who contacted Joe to discuss a possible collaboration. They met on several occasions to discuss his ideas. Cousteau intended to go snooping around underwater in the Persian Gulf in search of evidence. The timing didn't work out in large part because of the geopolitical climate.

At Occidental College, Los Angeles



Figure 4 1970's Oxy graduation - with then president, Richard Gilman

Joe was professor of geology at Occidental College from 1950-84. He was honored in April 2005 by grateful students, led by **Harry Lawrence** and **Claude Fiddler**, who created the "Joseph H. Birman Geology Scholarship." He had previously been awarded Occidental College's Teacher of the Year Award, 1972.

In 1978, Joe and his second wife, Barbara, took a trip to England. They were both intellectuals and travel was an occasion to trace the routes of the great thinkers and

artists. Shakespeare and Sir Isaac Newton were on the list, as was Stonehenge, a complex monument from the late Neolithic period. These captured their imaginations, but then so did Yorkshire pudding and clotted cream. The day before they left for home, they made a stop at Sir



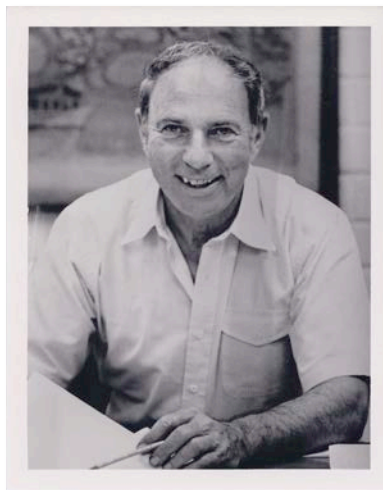
Isaac Newton's home. They had to see the famous apple tree at his birthplace at Woolsthorpe Manor in Lincolnshire. An apple from THE tree was on the ground, so Barbara decided to put it in her purse and brought it back as a prized souvenir.

Between the two of them, they managed to smuggle this piece of produce through customs on both sides of the pond. Joe then took the apple out of the house without Barbara knowing about it, and asked his colleagues in the biology department at Oxy to see if there might be a way to cause the seeds to grow. Within a few years, a seed from that apple turned into an apple tree, which can be seen next to the Chapel, at the Herrick Interfaith Center on campus.

Consulting Geologist/Geophysicist

In the 1950s he had a crazy idea that every geologist tried to talk him out of pursuing. He imagined that shallow temperature probes could be used to trace ground water movement. He constructed some sandboxes in his lab at Occidental College with about \$100 worth of materials. For months, he used laboratory thermometers, tubing with moving water, and a few hot plates buried under sand all constructed to see if he could distinguish subtle heat transfer. He tried this on a larger scale and convinced the college to allow him to drill holes so that he could bury larger-scale temperature probes on campus. He observed subtle changes that could be interpreted as moving fluid.

Later, one of his colleagues hooked him up with Santa Fe Railroad because they were trying to locate a well in a desert region. He used his newly developed thermal method in an area that drillers proclaimed had no water. He located several good producers and became a hero. From the success of this work, he started his company, Geothermal Surveys, Inc., in 1961, patented the thermal technique and hung his shingle as a ground water geologist.



Joe was a Registered Geologist in three states, an Engineering Geologist, Registered Geophysicist, and a Registered Hydrogeologist. He balked at using his credentials for anything other than signing reports, and he hated the term hydrogeology. He wrote a paper, in his typical tongue-and-cheek style, entitled, Why I Hate Hydrogeology. He just saw things from multiple points of view – it's not about water controlling geology, it's about geology controlling water. He called himself a Geohydrologist.

Joe fascinated a lot of interesting people. Former President of AEG, the late **Glenn Brown**, was a Director of Joe's company, Geothermal Surveys, Inc., later to be known as GSi/water, as

Figure 5 1980's at his company, GSi/water

was a former famous Oxy alum, the late Lieutenant Governor **Robert Finch**. Finch served with Ronald Reagan when he was Governor, and later served as Secretary of Health under President Nixon. Finch had a law practice in Pasadena and was an admirer of Joe's work both at Occidental and with the work of his company. **George Moss** of the Roscoe Moss Drilling Company, **Victor Vesey** a former California Representative, **Richard Gilman**, former President at Occidental College, **Robert Thomason**, a former executive with Occidental Petroleum, and several other people of great influence.

Each tried, unsuccessfully, to transform the academic scientist to become more of an entrepreneur over the years. They all gave up hope that he would turn his business into something hugely successful, as they all knew it should have become. Instead, they were delighted by Joe's insistence that it was never about money, and always about getting the science right. So a few times each year they would get together for a Board meeting, nag about his lack of proper marketing, and enjoy a great lunch – usually at the Caltech Athenaeum.

Joe had a great variety of clients ranging from big corporations to individual farmers and small water agencies. The list includes the Army Corps of Engineers, U.S. Bureau of Reclamation, California Department of Water Resources, the Metropolitan Water District of Southern California, as well as engineering firms handling big government projects, landfill owners, mining operators, and private landowners. His work took him throughout the western United States, Mexico, Africa, South America, and the Middle East.



Figure 6 - 2012 Joe at Eaton Canyon

Joe enjoyed anything having anything to do with solving complex ground water problems whether to find a good source, or leakage through dams, or to deal with water contamination. One unusual job took him to Pennsylvania to use his probes to locate underground coal fires. His clients mostly came to him via word of mouth because Joe hated to do the work of marketing and sales. So his clients did that work for him. They would come to him; he would turn them into friends for life. This somehow made the business part okay because each project was personal. Success was constant, and failure never an option.

Dan writes, this was how Joe lived his life, and this was nothing extraordinary for him, just how it ought to be done. Live large, look for things to do, find the excitement in everything, and win.

Toward the end of his life, Joe still managed to occasionally emerge through the confusion caused by dementia to enjoy music, and boxes of research all around him as the indicators that he did exactly what he wanted to do, and lived the way he wanted to live. Okay, so he moved files to all the wrong boxes and occasionally put a sandwich in the cupboard, but I kind of think that he might have done this anyway – the prankster came full circle.



Personal notes by Richard J. Proctor

I can't recall when I met Joe. It was probably in the 1970s, maybe at a local AEG meeting, maybe when he came to the Metropolitan Water District of Southern California (MWD) where I worked at the time, to explain his unique services, or maybe at the Caltech geology library, which he visited often, and I was a visiting associate professor then. At any rate, he and our wives became good friends, to the point of having dinners together, attending concerts at the Hollywood Bowl, and visiting his and Barbara's vacation home in Idyllwild high in the San Jacinto Mountains. One trip included joining the Birmans for Thanksgiving. Barbara went to great trouble to cook a turkey, and handed to Joe as it came out of the oven. His only job was to wait 20 minutes to let the turkey cool down and then slice. But Joe was anxious to try Barbara's electric knife and started cutting away immediately. We all ate shredded turkey for dinner.

After I left the MWD in 1980, I accompanied Joe on several business trips to help pitch his specialty to the Corps of Engineers on detecting leakage through their earthfill dams, and helped install his thermistor probes into existing dams. But the main job he and I were involved in is a classic of why projects don't get built because of emotional hysteria: In the 1980s I was contacted by a geologist for a large company, to assist with an Environmental Impact Report. They wanted to build the largest landfill, in the Mojave Desert, to handle all of Los Angeles and Riverside Counties future trash. The site was the huge abandoned iron ore mine, the Kaiser Eagle Mountain open pit, located 170 miles east of Los Angeles, and ten miles from the nearest town of Desert Center. The pit is about two miles long and a thousand feet deep. The idea was to transport the waste to the site in by train, in sealed containers, which would require rebuilding about 40 miles of old Kaiser railroad from Indio to the site. Sounded like a good idea, in that the waste was safely containerized, far from civilization, and had an existing open pit to fill. I saw that the job was too big for me alone, so I convinced the owner to hire two other geologists, one an expert on groundwater, and one an expert on earthquakes.

Joe Birman and his company were brought on to do a major site characterization. And our colleague, **Roy Shlemon** came aboard to assess the age of surface faults within the mine site. So in the summer heat (daily over 105 degrees) while Joe's company was thoroughly engaged at the site doing various geophysics, installing monitoring wells, using Joe's thermal monitoring, and various other tasks, the three of us did our own mapping of the geology, analyzed airphotos, backhoed for faults, and were investigated data from test holes for hydrologic and groundwater evaluation.

Results: no active faults, no problem with contamination of the very deep groundwater. The company held local open meetings explaining what the project was about to agencies and politicians, almost all laymen. Unfortunately, some vocal objectors in the audience saw only negative aspects to the project, confusing scientific fact and junk-science fantasy. Then the newspapers said that the project was going to contaminate the desert groundwater all the way to Palm Springs and to Joshua Tree. Joe's company had proved this to be impossible, nevertheless, emotions won over science, and the project stopped.

A draft Environmental Impact Report was supplied to all interested agencies, showing absolutely no environmental damage would occur, with containerized waste filling an existing pit, lined with plastic, to be covered with earth. Nonetheless, a judge in San Diego ruled that there might be a chance that the landfill could do some harm, and ordered the end of the project. Interestingly, I note that a less-investigated landfill operation was later approved near Indio, and is placing waste atop the San Andreas Fault.

Professional Membership

American Institute of Hydrology (Certified Professional Hydrologist)

American Institute of Professional Geologists (Charter Member, CPG 316)

American Society of Agricultural Engineers (Associate Member)

Association of Environmental and Engineering Geologists

California Groundwater Association (Well Standards Committee)

Geological Society of America (Fellow)

Groundwater Resources Association (Lifetime Achievement Award)

National Ground Water Association (Life Member)

National Water Well Association (AGWSE)

Sigma Xi Honorary Scientific Society

Society of Mining Engineers of AIME

Registered Geologist in Arizona, California, Oregon

Registered Geophysicist in California

Registered Engineering Geologist in California

Registered Hydrogeologist in California

Bibliography of Joseph H. Birman

Clastic dikes in weathered granite-gneiss, Rhode Island, 1952: American Journal of Science, p. 721-734.

Pleistocene glaciation in Upper San Joaquin Basin, Sierra Nevada, 1954: California Division of Mines and Geology, R.H. Jahns, Editor, Bulletin 170, Chapter 5, p. 41-44.

Glacial geology of the east and west slopes, Sierra Nevada, California, 1959: Geological Society of America, vol. 70, p. 1709.

Additions to classical sequence of Pleistocene glaciations, Sierra Nevada, California, 1963 (with Robert P. Sharp): Geological Society of America (Joint Caltech/UCLA paper)

Stripping-coal deposits on Lower Lignite Creek Nenana Coal Field, Alaska, 1964 (with Clyde Wahrhaftig): USGS Circular 310, p. 1-11.

Glacial Geology Across the Crest of the Sierra Nevada, California, 1964: Geological Society of America Special Paper 75. (with colored maps)

Glacial Reconnaissance in Turkey, 1968: Geological Society of America, vol. 79, p. 1009-1026. (also [Amazon.com](https://www.amazon.com) pamphlet)

Geothermal exploration for ground water, 1969: Geological Society of America, vol. 80, p. 617-630. (with fold-out map)

Thermal monitoring of leakage through dams, 1971 (with A.B. Ismilla and J.B. Indreland):

Geological Society of America, vol. 82, p. 2261-2284.

Late Quaternary geology of the Persian Gulf Region and its Historical Implications, 1978: Department of Geology, Occidental College, typed manuscript, 62 p.

Thermal monitoring of leakage through dams, 1985: Proceedings, *Conference on Hydropower/ASCE*, Las Vegas, p. 1374-1381.

Thermal tracing of migrating fluids, 1990: *First USA/USSR Joint Conference on Environmental Hydrology and Hydrogeology*, Leningrad, USSR: Kendall/Hunt Publishing Company, p. 354-357.

Contributor to *Handbook of Groundwater Development*, 1990: Wiley Interscience.

The use of shallow ground temperatures for tracing migrating fluids, 1992: p. 417-423 in *Engineering Geology Practice in Southern California*, edited by B.W. Pipkin and R.J. Proctor: Star Publishing Company, Belmont, CA, 769 p.

Hamlet's Lament or Soliloquy by a Sierra Nevada Damsite (poem), 1993: USCOLD Issue No. 100, published by U.S. Committee on Large Dams, p. 28.

The case for a Burbank fault, San Fernando Valley, California, 1995: *GSA/AEG Environmental and Engineering Geoscience*, vol. 1, no. 4, p. 417-426.

Why I Hate Hydrogeology (Slightly Expunged for Public Consumption), 1996: Keynote Address to Groundwater Resources Association Fifth Annual Meeting. (Abstract reprinted in Google, and herein)

