

FROM THE ARCHIVIST'S CORNER

ROBERT H. DOTT, JR.



Linkages

Among the several Wisconsin geo-dynasties, the most remarkable surely is the Link clan. Five members of this family are linked to UW Geology, and three other Links found their ways into our science by other means.

by Robert H. Dott, Jr.

Badger geologists are familiar with the Weeks geologic dynasty, which has provided so much philanthropic largesse to our department. Three Weeks

brothers graduated in geology from Wisconsin, Lewis (BA 1917), Herbert (BA 1920), and Albert (BA 1923). Then there is our unusual Laudon family. Lowell was a legendary member of our faculty (1948-1975), and his four sons, Tom, Dick, Bob and John, all majored in geology. At his father's retirement party, Dick related that he was "30 years old before he realized there was any other option than geology." I have a fascination with such coincidences and intertwinings of peoples careers, so I want to tell you about another unusual family, the Links.

Our UW geology linkage began with Walter K. Link, born in 1902 in La Porte, Indiana to a German Lutheran minister's family. He was the ninth of 10 children. His oldest brother, George, characterized the family environment as "stimulating but demandingly severe with a praise-stingy father." Walter remembered as a lad on the way home from swimming picking up some nuts shed in a farmer's field. Inquisitive mother wondered if he had asked permission; the answer being "No," Walter was sent back five miles to return his harvest and to tell the farmer.

He asked his older brother, Ted, about a career in geology. The reply was "To be an oil geologist, you have to learn to live a dog's life. You've got all the earmarks of a dog, so go ahead." And so Walter followed his next older brother, Karl (a biochemist), to the UW in

1920. Fellow students were Albert and Herbert Weeks. He financed his education with a tuition scholarship supplemented by part time jobs as baby sitter, headwaiter, and summer assistant with the State Survey. In 1924 he graduated with a bachelor's degree in geology, and the following year took graduate work. Walter somehow had acquired the nickname "Brutus" and was known for his outgoing enthusiasm, sense of humor and love of cigars.

Walter met his first wife, Miriam Wollaeger, in our department, where she, too, was a geology major. Miriam was from Milwaukee, a descendant of the founder of the Gettleman Brewery. She was exceptionally talented academically, athletically, and musically. "She had the largest working vocabulary of any person I ever met," says daughter, Joan Coles, and "She was the best automobile driver, male or female, that I ever saw," reports a son. Miriam graduated in 1927, married Walter later that year, and sailed off to South America to honeymoon until he had to return to the jungle.

In 1926 Walter Link had begun a distinguished 29 year career with various branches of the Standard Oil Company of New Jersey (SONJ). He started as a junior geologist doing reconnaissance mapping in Venezuela, Colombia, and Ecuador with mules as the only mode of transport. In 1928, he traded Latin American for Asiatic jungles when he and Miriam sailed to the Dutch East Indies (now Indonesia), where their first two children, Peter and Joan, were born. Walter worked all over Indonesia and New Guinea. He told of drilling 25,000 shallow core holes in Indonesian jungles as well as mapping the surface structure of the 100 million barrel Benakat field. There were also tales of co-existence in South America and Indonesia with large snakes, crocodiles, leeches, high voltage eels, head hunters, and Motilone Indian arrows five feet long and tipped with poison. In retrospect, however, he reckoned that crossing a traffic-jammed street in 1950's Caracas was more dangerous.

From Indonesia, the family moved in 1935 to Ada, Oklahoma for two years (now there was a change), and then to Shreveport, Louisiana, where Walter spent three years exploring in the Gulf Coast region during a period of discoveries of several new fields in Louisiana and Arkansas. Son Andrew was born in Shreveport.

While at Shreveport, Walter met a wildcatter to whom he offered some casual observations on the local geology, which apparently helped the man drill some very successful wells. This gesture won the lifetime friendship of H.L. Hunt. From 1940 to 1945, Link was SONJ's manager for much of Latin America. With the advent of World War II, German submarines were wreaking havoc with



Above, Miriam Wollaeger Link about 1928.
Left, Walter K. Link in Chicago about 1955.

oil tankers in the Caribbean, so there was great incentive to find oil nearer to the United States than Venezuela. The family lived in San Jose, Costa Rica (1940-1943), where the children remember two active volcanoes visible from their balcony. Havana, Cuba was the next stop (1943-1945), where Walter and Miriam were divorced. For the next ten years, she and the children alternated between Havana and Milwaukee.

After the war, Walter was manager for the International Petroleum Co. for northern South America with an office in Bogota. Then, from 1947 to 1953, he was chief geologist for SONJ in New York. During much of his SONJ career, Link was associated with our own Lewis Weeks as well as with that legendary Esso geologist, Wallace Pratt.

In 1954 Walter made a major career change. He accepted an invitation to establish an exploration program for the new Brazilian petroleum monopoly, Petrobras, with a budget of over \$100 million per year. This led to a detailed evaluation of the petroleum potential of all of onshore Brazil, but at the end of his six-year contract, Walter recommended that Petrobras look offshore instead. His advice was ignored and he was vilified mercilessly as the messenger with bad news in spite of having discovered 500 million barrels of new onshore oil for Brazil. The company proceeded to waste seven years and a billion dollars before finally taking his advice.

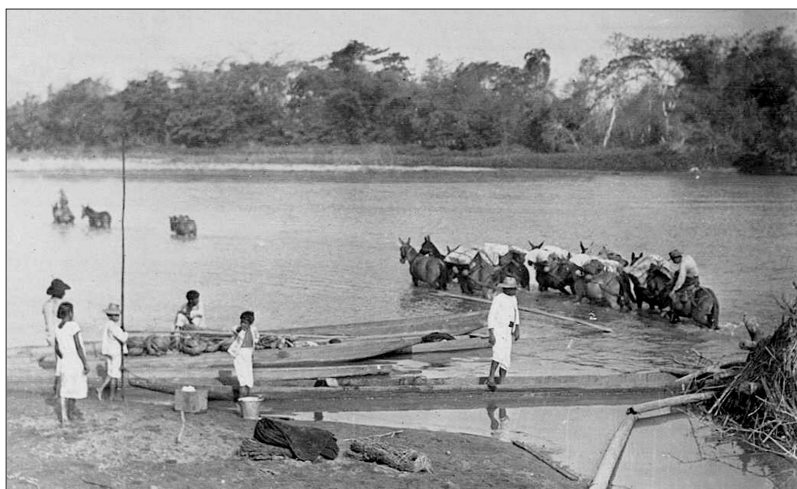
After six years in Brazil, Link became a consultant to Pan American International for Australia, Burma, and Sumatra (1961-1964). Subsequently he was also consultant to such companies as Pan Arctic, Frontier, Dome Petroleum, and Hunt International (remember that wildcatter near Shreveport?). Walter Link was regarded by his peers as a brilliant petroleum explorationist and an inspirational leader of the many younger geologists who had the good fortune to work under him. At the time of his death in 1982, Walter was being nominated to receive the AAPG's highest award, the Sidney Powers Medal.

Illustrative of Walter Link's outgoing good humor is a story often told by Professors Emmons and Gates. Brutus showed up at a Geological Society of America meeting in New York City in 1948 to join a Wisconsin alumni breakfast. Emily Hahn, by then a well known writer for the *New Yorker*, was also present. In 1926 she had been the first woman to graduate in engineering from Wisconsin. Although her BS was in mining engineering, she had taken a lot of geology, so was well acquainted with our department and had overlapped Brutus and Miriam as students. Emily was a fearless 1920's feminist, who had badgered her way into engineering, and continued to lead a colorful and unconventional life thereafter.

After lunch, Brutus offered Emily a cigar, which she declined and offered him one of her own instead.

All three of Walter's and Miriam's children, Peter, Joan, and David Link, followed their parents' lead to Madison, where they also majored in geology.

Peter earned the BS in 1953 and the MS in 1955. After a two-year Army stint, he joined SONJ. Instead of following father into the jungles, however, he chose an opposite way into the Libyan Sahara



Walter Link's pack-mule train crossing a river in Venezuela in 1928.

(1957-1961) and then to Ardmore, Oklahoma (1962-1963). A slump in the petroleum industry drove Peter—and quite a few others—back to graduate school, where he earned the PhD (1965) under Lowell Laudon. In characteristic Link style, his research was far away in the Yukon wilderness. Next he worked for ARCO as a research structural geologist in Dallas (1965-1970) and then at the AMOCO research center in Tulsa (1970-1973). I remember running across Peter occasionally during the 1970's when I visited my parents in Tulsa. In 1973, Pete began a consulting career, and from 1979 to 2001, he also was a lecturer for Oil and Gas Consultants International (OGCI), which offers a variety of short courses for petroleum industry workers around the world. Pete lectured in 115 countries on basic petroleum geology, reservoir geology, and structural geology.

He has retired to Colorado, where he indulges his favorite hobby, photography; he offers slide shows about most any part of the world based upon his vast travels and photographs. Pete also does volunteer field guiding and mentoring for local school children.

Joan Link intended to major in chemistry, but filled out her freshman schedule with introductory geology, and "the rest is history," she says. She received the BS in 1954. Having excelled in mineralogy, she then chose to earn the PhD in mineralogy at the University of Utah (1963). She was ahead of the times, however, and was so disillusioned with the employment opportunities for women in our field that she earned a second PhD in psychology (1981). After a successful career as a clinical psychologist in Utah (see *Outcrop* for 2000, p. 9–10), she retired in 1997.

Like her mother, Joan is a woman of many talents. She has been an ardent advocate for the environment. She has served on Utah committees for mined land reclamation and power plant siting, and has worked on national committees for coal utilization. As if these were not enough, she has served the Salt Lake City Chamber Music Society and writers' workshops; and she writes poetry.

Finally, David "Andy" Link followed his siblings, and earned his bachelor's degree in 1960. Big sister told him not to major in geology because, "There are enough geologists in this family." So he began in engineering, but after his sophomore year, he concluded that engineering was "not his bag" and secretly switched to geology. Andy

was a student in the first summer field course that I taught in 1959. I sent him to Oregon the next summer as a field assistant for PhD candidate Mike Widmier, and then, in the fall, to Chile and Antarctica with another PhD candidate, Marty Halpern. Andy's fluency in Spanish and a strong back were obvious enhancements for our project at a Chilean base on the Antarctic Peninsula. After a tour in the Marine Corps, Andy entered UCLA and obtained the MS in 1970. To add to small-world phenomena, he was a fellow student with Carl Bowser and Gordon Medaris just before they migrated to Wisconsin.

Andy then moved to Northwestern, doing his research in family style in faraway Alaska. After completion of the PhD in 1977, he, too, joined the petroleum industry. Andy first worked Gulf Coast geology, but then succumbed to the Link international disease and switched to the North Sea, northwestern Australia, and the South China Sea. In the mid-1980's, Andy followed his brother into a combination of consulting and lecturing for OGCI.

So much for the Walter Link clan. Meanwhile, Walter's next

older brother, Theodore (b. 1897; d. 1980), had chosen geology earlier, but at the University of Chicago rather than Wisconsin. He graduated in 1918 (returned in the late 1920's to complete a PhD) and had joined the petroleum industry. His first assignment was in Oklahoma with the Carter Company, a division of SONJ. Here he crossed paths with my father, who was also a new trainee. In 1920 Ted moved to Calgary, Alberta to launch an exploration program for Imperial Oil Limited, the Canadian branch of SONJ. Brace yourself for another coincidence. My brother-in-law's father, Frederick Bird, a civil engineer, worked for Imperial as Link's land man, and so my brother-in-law grew up with Ted's children. In 1940, a Carter Oil Co. seismic crew was sent from Oklahoma to explore in Alberta with their new tool. Ted's oldest son, Tom, and S. Fred Bird were given summer jobs with this first-ever seismic crew in Canada. Stuart Fred Bird remembers summer visits from some of Ted's and Walter's siblings. One of these was George "Tommy" Link, oldest of the clan and a distinguished plant pathologist at the University of Chicago. He fell in love with the Lake O'Hara region in the Canadian Rockies over the ridge from Lake Louise, and devoted many summers to the development of a trail system in that area.

Ted Link's first Canadian project was a reconnaissance down the MacKenzie River in far northwestern Canada, where oil seeps had been reported. Foul weather stranded his party on an island long enough for him to map what appeared to be a large anticline. In 1925 a cable tool rig was skidded over ice to drill what turned out to be the discovery hole for the Norman Wells oil field. Link was flown in by ski plane to sit the well, but a rough landing broke the propeller. Always-resourceful Ted hired a local native resident to carve a new one.

Being so isolated, the well was shut in until World War II, when the U.S. Army felt a need for a petroleum supply near Alaska. Thus was launched the ill-advised CANOL project (for "Canadian Oil").* The Alcan Highway was built to supply the effort, more wells were drilled, and a 580 mile-long, four inch pipeline was constructed from Norman Wells to Whitehorse, where a refinery was built. Pipelines also were to extend to the port of Skagway and to Fairbanks. The Army was naive about the problems of Arctic permafrost and winter temperatures, so the entire project cost far more and took a year longer than had been estimated. Refined products reached their destinations for only six months near the end of the war, and the project had required far more energy to construct than it ever supplied. This miserable record triggered a massive congressional investigation in 1943 under the chairmanship of Senator Harry Truman.

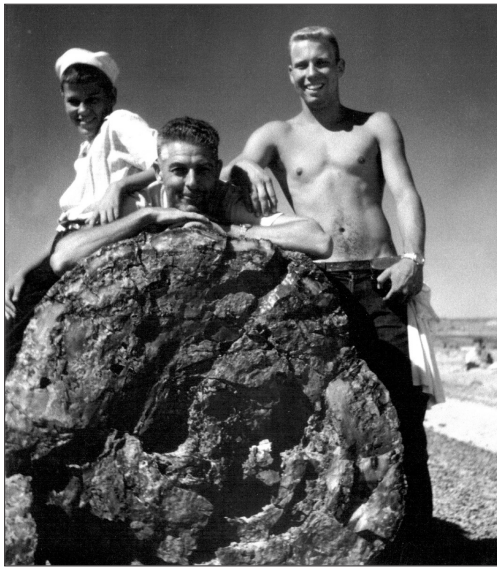
*Coincidentally, Lowell Laudon, then at the University of Kansas, was hired as a consultant to the CANOL project to conduct further field work in support of the Norman Wells field. Apparently this was Lowell's first Arctic experience.



Miriam Wollaeger (fourth from the left) on the Devils Lake mapping course in 1925(?)—Instructor Freddie Thwaites is at the far right.



Joan Link Coles on the Devils Lake mapping course in 1952, almost three decades after her mother. Left to right: Rhoda Huntley, Mary Ellen Replogle, Joan Link, and Genevieve Richwalski.



Walter Link reclining on a petrified tree trunk (Triassic) with sons Andy (left) and Peter (right) at the Petrified Forest National Monument, Arizona, in 1951.

After more wells were drilled, Ted Link realized that the Norman Wells reservoir was an ancient reef rather than a simple anticline. He went on to pioneer the discovery of Alberta's subsurface Devonian reefs, including the famous Leduc field discovered in 1947, which really launched Canada's modern oil industry. I remember hearing him lecture eloquently about Leduc when I was in college.

In 1957, Ted was president of the AAPG and he was honored with several awards. Like his brother, Walter, Ted Link was greatly admired by those who worked with him. Both men practiced superb professionalism, had no tolerance for pomposity, and were renowned humorists and practical jokers.

There is a Dott family postscript to the Ted Link story. My sister, Bobette, was to be married to S.F. Bird, who had graduated from the University of Oklahoma in 1944 and had begun working as a petroleum engineer at Talara, Peru, with International Petroleum Co., yet another SONJ branch. Because of wartime travel restrictions, my parents could not go to Peru to participate in the wedding, but Ted Link was to be visiting the Talara operation at just the right time in 1945 to give my sister away. Not only was he well acquainted with the groom's family, but he was also acquainted with my father, which made a happy solution to a potential matrimonial crisis.

Ted's second son, Bob, also became a petroleum geologist in Calgary, and a nephew of Walter's and Ted's, George Link, worked in the petroleum industry as a chemical engineer with Esso and Aramco. George had many different foreign assignments, and was the general manager for a consortium of companies in Iran when the unrest began that soon led to the unseating of the Shah and the ousting of Westerners. During that upheaval in 1979, George was nearly killed by a bomb thrown into his car; he jumped out just before it exploded. This incident is recorded in Daniel Yergin's well known book, *The Prize* (1991).

This leaves one more Link to consider in our story chain.

Karl Paul Link was born between Walter and Ted. He attended

the University of Wisconsin, but went astray into biochemistry. It was in Karl's laboratory that the compound dicumarol was isolated in fermented clover during the late 1940's. It causes thinning of blood, which Karl recognized would make it of great value for preventing clot formation in cardiac patients and, in larger doses, for eradicating pests such as rats through internal bleeding. Under the commercial name Warfarin, his discovery earned large sums of patent royalties for the Wisconsin Alumni Research Foundation (WARF) to help support further research and other activities at the University. Many of you alumni no doubt profited from those royalties through assistantships and research expenses! Karl, a legendary campus character and liberal thinker (in contrast with his conservative brothers), modified his professional cards to read "Karl Paul Link, Rattor." He was investigated by the FBI during Senator McCarthy's early 1950's witch hunt, and once approached a sleuth following him, introduced himself, and asked "How may I be of help?"

Karl Link's youngest son, Paul, also caught the joy of geology. During the summer after he graduated from high school, he took introductory geology in our department from Lou Maher before enrolling at Yale. After dabbling with humanities, Paul followed his uncles and cousins into geology. He seized an opportunity to spend a year at the University of Adelaide in South Australia, where he completed an honors thesis on Proterozoic tillites. This experience led him on to the University of California at Santa Barbara for the PhD (1982), which involved further studies of Proterozoic glacial deposits in the western states under John C. Crowell.

Since 1980, Paul has taught in the department of Geology at Idaho State University in Pocatello, where he has directed 70 MS theses, has chaired the department, and has been a leader in community outreach. He is currently an officer in GSA's Sedimentary Geology Division. Coincidentally, Paul's boyhood home in the Highlands on the western side of Madison was only a block or so from C.K. Leith's long time residence called Moraine and but a few more blocks from the former George P. Woollard home. Maybe there is something special in the Highlands soil.

In two generations, no fewer than eight Links pursued geology and nine earned the PhD in some science. All of the Links whom I have known were unusually strong, intelligent personalities. Some were a bit eccentric, and Ted was a great clown. Not even the Weeks or the Laudons can match their collective record!

Sources:

Memorials for both Walter and Ted Link published in the *Bulletin of AAPG*.

A 1951 article in *Argosy* magazine about Walter Link ("I Hunt Black Gold").

Correspondence with Peter, Joan, Andy, and Paul Link.

Reminiscences by S.F. Bird of Ted Link and family.

Pamphlet about George "Tommy" Link and his trail blazing around Lake O'Hara.

Outcrop for 2000 article about Joan Link by John Fournelle.

A 2002 article in *Invention and Technology* about the Canol Project ("Pipe Dreams").

Department archives.

All photos used in this article were provided by the Link family.