



GSA GeoTales IV

Memories from GSA members
volume 4

Dedication

GSA GeoTales, Volume 4, is dedicated to the memory of Dr. Phillip LaMoreaux and his love of “story telling”. Phil and I brainstormed the idea of doing a GeoTales volume in 2003 and our idea became a reality in 2004. Now GeoTales has grown into four volumes, full of special memories from GSA’s special people. It was my privilege to have worked with Phil LaMoreaux and to have called him my friend.



Donna L. Russell
Director of Operations
GSA Foundation
Fall 2009



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Printed in the USA - Limited Edition
Redpoint Design & Associates

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Ata Island

I was relieved from the mid-watch and wandered onto the deck of the S.P. LEE. We were working in the southwest Pacific near Tonga in 1982, and had sixteen air guns deployed and a long hydrophone streamer over the fantail as we probed for basins and ancient reefs that might contain oil and gas.

Ata Island, a volcanic island in the Kingdom of Tonga, beckoned to me and I decided to collect rock samples from the dormant volcano's lava flows. I asked the first mate, Dave, and the third engineer,



Bill, to accompany me to the island in a small Zodiac boat. We gathered equipment, clothes, and food in order to stay all night on the island while the ship continued collecting geophysical data. We climbed into survival suits and Dave put the boat over the side with a crane.

At the closest point to Ata Island, about a two-kilometer distance, the ship slowed to three knots. We jumped into the boat and Dave started the outboard motor as the boat was lowered into the water. We headed for the uninhabited island as the ship continued on its preset track line. Dave was handling the boat. We located a small pocket beach and headed for it. Dave cut the motor at the top of a large wave, too far out in the surf zone. The boat lost its momentum and the power of the wave catapulted us into the surf. We were swept under the water. The boat came down on Dave's head, slamming him into the sand. I yelled at Bill to hold the boat and waded out to grab Dave, who was floundering in the water. Blood ran across his face from a scalp wound. I pulled him through the surf and onto the beach while Bill brought in the boat and collected some flotsam that had fallen out. I sat Dave on a rock, opened the first aid kit, and dressed his wound.

The tide was coming in. Bill and I carried the boat to the top of a rock terrace, which measured about twenty meters long and five meters wide. When large waves broke, water flooded the terrace. I tried to call the ship

on the hand-held VHF radio, but there was no answer. Our sleeping bags were wet and only six oranges and a jar of peanut butter had survived the unexpected soaking; we rationed them for dinner and breakfast.

It was a long and wet night. I woke Dave every hour, fearing that he had a concussion. The next morning I poured more antiseptic on Dave's scalp wound and put on a fresh bandage. As Bill cleaned the spark plug and pumped up the boat, I wandered along the steep slopes of the island to collect rocks. When I returned the tide was out and the boat and small crew were ready. We pushed the boat into the water as large waves broke against the beach. I pulled the starter rope, the motor purred, and we bounced safely through the surf.

We motored to the south side of the island knowing that the ship would come that way on its track line. I shut off the motor and tried calling on the radio, but there was no answer; the ship was too far away. We drifted with the current.

Similar to airplanes in landing patterns, about a dozen Albatrosses—with wingspans of more than six feet—flew around us, taking turns to swoop directly over our heads. We ducked each time. About two hours passed before static on the radio alerted us that the S.P. LEE was approaching. I started the motor and vectored the Zodiac to intercept the ship. A hook was thrown; we attached it to the boat and the crane plucked us from the water. The hungry and sunburned explorers were relieved to be back on the ship.

Petrography, chemical analyses, and isotope studies were completed on the rocks. The geologic community now knows the age and geologic history of Ata Island, the southernmost volcano in the Kingdom of Tonga.

- Tracy L. Vallier



Vampire

In the summer of 1962, I started my MS fieldwork in Galicia (Northwestern Spain). My task was to map and carry out a structural analysis of a small area in the high grade metamorphic Variscan orogenic belt.



The worst day in my life was not caused by wild animals (grizzlies, snakes, or mosquitoes), neither by weather conditions (hurricanes, flood), but was caused by people, by these gentle, hospitable people of Galicia. Fifty years ago Galicia was very primitive. Most villages in the interior of Galicia had no roads; to get there, you needed a donkey, or you just walked.

One day I was walking toward one such village. According to my map it was called Loyos. Suddenly, I was startled by loud screams. I continued walking toward the village. I felt that something was not right. I stopped in the village and asked a villager for directions. I knew of course where I was, but I wanted to make contact. However, the villager didn't answer. I continued and left the village. I couldn't have walked for more than 40 meters when I heard loud screaming behind me. I turned around. A crowd

of about 50 farmers came toward me angrily shouting, and brandishing machetes and hayforks. I am pretty certain that if I had tried to escape, I would have been killed. Thus, my reaction was to walk back toward the crowd. The villagers surrounded me and kept their weapons ready. They indicated that they wanted me back in the village. Thus, in this magic circle of armed villagers I slowly returned to the center of the village.

When the people at last lost their anger, I tried to talk to them. However, there was nobody who spoke Spanish; they spoke only Galician and I did not understand Galician. After an hour or so a guy arrived who



Galicia, Spain

did speak Spanish. I explained what I was doing and in a short while they let me go.

I returned to my campsite in Sierra de Outes and told my adventure to Manolo, the owner of a small store who had adopted me. His advice was to go to the police and to the mayor of Sierra de Outes and tell them my story. Next day two policemen walked to Loyos to find out what really had happened. They returned roaring with laughter. In a short time everybody in Sierra de Outes knew about it, and every time a person saw and recognized me, he would point at me and start laughing crazily. The people of Loyos apparently thought that I was a vampire. The hair on my head had become very blond because of the bleaching effect of the intense Spanish sun, but my moustache and beard, which I cultivated to show off when back in Leiden (The Netherlands), were red-colored resulting, according to the people of Loyos, from all the blood that I had sucked from unwitting children in their community. From then on I was called "El vampiro de Loyos." My geologic map of the area has in its center a white spot. I never went back to Loyos.

Today, about half a century later, the land is crisscrossed by beautiful highways. The villages look prosperous. I don't think that geologists with whatever hair color will be attacked anymore.

- Hans G. Avé-Lallemant



As a pre-schooler, going with my Grandfather to the Ohio State Museum in Columbus (he was a volunteer curator). The excitement over being shown bright shiny minerals; strange bugs and shells; so many rocks! I was hooked at 5 years of age!

- John T Dutro

Train Stories

Dan Merriam was on a Senior Fulbright Research exchange to Leicester University in England in 1964-65. He was doing field work east of Leicester in Rutland County where he noticed that there was a 'pufferbelly' waiting on the tracks at the same place everyday. Talking with the engineer, he learned it was a short shuttle between two main north-south rail lines. Knowing John Harbaugh was coming for a visit and a train enthusiast, Merriam made arrangement with the engineer for a ride. When Harbaugh saw the coal-fired engine and train he was trilled and I told him we were going to get a ride. John started to get on one of the cars when I told him we were riding in the engine, which we did - a once in a lifetime experience.



On another occasion working in the field in northern Italy, where we had just crossed the border from Austria, John Harbaugh spied a coal-fired train engine and cars at a depot. We stopped to look and watch events involving the pufferbelly and trains cars. While watching the activity at the station, we noticed several Italian soldiers around the train at the station and they noticed us. They immediately came to interrogate us apparently thinking we were up to no good and demanded to know what we were doing there. We finally convinced them we were just interested American tourists by showing them our Hertz car rental agreement.

- Dan Merriam

Florida-style Mapping

I graduated from the University of North Carolina at Chapel Hill in August 1948, and began work the same month with the Ground Water Branch of the U.S. Geological Survey in Tallahassee, Florida. The assistant State Geologist at that time was Dr. Robert O. (Bob) Vernon whose major project was a stratigraphic study of the Eocene age limestone in Citrus and Levy Counties along the central Gulf Coast.

In April 1949, Bob invited me to accompany him on a field trip to the area and my supervisor thought that was a good idea. Shortly after reaching the area we began to see limestone layers exposed in the drainage ditches along the highway which Bob thought we should stop and identify. With my previous field experience being among the metamorphic rocks of the North Carolina Blue Ridge, I guess I assumed we would use our geologic hammers to break off pieces of limestone which we would look at through our hand lenses.



Dr. Robert O. (Bob) Vernon

To my surprise Bob opened the trunk of the car and took out a box containing a binocular microscope. He then placed the microscope on the box, took a comfortable seat on the ground, and began to study limestone fragments looking for the index foraminifera that would identify the formation. Clearly, mapping limestone formations in Florida was different than mapping metamorphic rocks in North Carolina!

- Ralph Heath

*Mapping the Grand Hogback
Monodine, Colorado for my
Ph.D. Thesis.*

- Frederick N. Murray



George Gaylord Simpson, Focused Genius

Genius: *a. an exceptional intellectual or creative power or other natural ability or tendency; b. a person having this; c. a person or spirit regarded as powerfully influencing a person for good or evil.*

—Illustrated Oxford Dictionary, 1998

Until I became a student at Swarthmore College in 1945 I had never met a genius outside my house. At least none that I recognized. Admittedly my ability to identify geniuses was small. Growing up in the Big Horn Basin of northwest Wyoming and going to school for twelve years in Worland, had not exposed me to the species. Or so I would have said, excepting my mother.

At Swarthmore there was Dresden in mathematics. Two-inch goatee, mustache, mostly gray hair, bespectacled, a short man, he certainly looked the part. I do not remember his full name, if I ever knew it. In the 1947 *Halcyon*, the yearbook published by students of the junior class, he is simply Dresden, last name only, as are all of the faculty.

What we students had heard was that he once worked with Einstein, doing some mathematics. Maybe it was untrue. I have not been able to confirm or refute it at this distance and late date. I know he was a wonderful teacher.

Few would question, however, the genius of George Gaylord Simpson (1902-1984), whom I met my senior year in geology at the University of Wyoming. There was no doubt in my mind or in all who knew him how penetrating and creative he was.

At Wyoming, I was considering becoming a vertebrate paleontologist, taking Paul McGrew's senior-level course in the subject. I was measuring and studying the scute pattern of an unusual Oligocene turtle. McGrew soon told me that I must also take comparative anatomy, a difficult flunk-out course for pre-meds for which I had none of the prerequisites. Dr. S.H. Knight, the department chairman, used his persuasiveness and great



power in the university to get me enrolled. Once in, I wasn't inclined to dissect a cat, a calico, but my lab partner, a pre-nursing major, was and she pulled me through. For the course I earned a C, a grade seldom experienced by anyone this century.

Simpson's coming to Wyoming was a big deal. He was the most important paleontologist in the world, the leading evolutionary theorist. He was the authority on fossil horses—his book *Horses* would appear in 1951—which was McGrew's principal area of research. Paul had prepared me for his coming by guiding me through the extensive material on Equidae at Wyoming.

Going early, I got a seat in the front row for Simpson's talk, an intelligent discourse on evolution with examples. Bespectacled, balding but with a two-inch goatee, he was tiny behind the podium. He summoned Charles Darwin, his idol, into it, and talked about horses and mammals in South America. He dwelled on his adventures in Patagonia, mentioning his popular book *Attending Marvels*, which I had read. He wrote better than he spoke: so I thought. I was too nervous and self-conscious to ask any questions or to join the discussion afterward.

Paul asked me and several others to his house for dinner with Simpson. I regained some of my wits and was able to talk a bit. Responding to a student, Simpson said his first paper had been suppressed. Later on, I learned from Leó Laporte's book, *George Gaylord Simpson, Paleontologist and Evolutionist*, that Childs Frick had squeezed him out, wanting to control all the fossils and geology of the Santa Fé beds in the San Juan Basin of New Mexico.

-Dane Picard



George Gaylord Simpson



Inflation circa 1942-2008

Bunnie and I were young college students at Denison University in Granville, Ohio, 1943-1945. In the summer, I was working as an ordinary seaman on the steamship Pioneer with Cleveland Cliff Lines. In the winter, I also worked at Fairport Machine Shop.

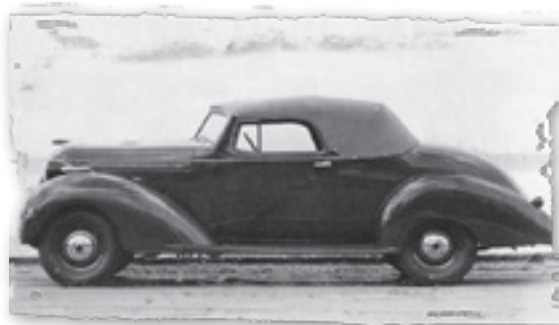
In early 1942, it was my decision to drop out of Miami University of Ohio as a sophomore and to work rather than borrow money to continue my education. A number of interesting jobs were undertaken such as painter, assistant electrician, and construction.

In the winter of 1942, it was my fortune to obtain a job as an electrician's helper at Fairport Machine Shop at the large wage of \$1.50/hour, overtime \$3.00/hour. That was big money in those days. During the winter of 1942, I boarded with my Aunt Eva Dann at 84 Luzzard Street, Painesville, Ohio, reporting to work rain, shine, or snow at 7:00 a.m. I remember very well trudging to work with metal lunch pail in hand to be picked up by a fellow worker for short trips to Fairport.

It was a relatively easy job, but rather risky. One morning on an icy gangplank, my supervisor, an electrician slipped and fell to the bottom of an iron ore freighter. He was killed. We didn't have protective federal regulations.

It was about this time that I felt it was necessary to obtain an automobile at a used car lot in Painesville, Ohio. I found a V-8 convertible coupe for \$42.50. What a prize! It leaked like a sieve, burned an amazing amount of oil. Gasoline mileage was not too bad. That coupe was used to court Ms. Bunnie. On rainy days, we had to put a tarpaulin over us to keep dry. The tires were used at 50 cents apiece. The oil, used nearly as much as gas, was drain oil obtained from friends at a local gas station.

The whole reason for this story: as I filled my tank this morning April 2, 2008, with gasoline, it was \$3.25/gallon. Headlines in the paper say gasoline will go to \$4/gallon. To fill my tank this morning was \$50. That



was more than I had paid for my first automobile.

The coupe lasted through my return to Denison University, where I sold it to Dr. Secour, my French professor, for the very same price at which I bought it. One day he came into a psychology class that I was attending, taking me across campus to fix the gearshift. It had come apart. Dr. Secour was a wonderful person and good friend, but he gave me a "B" for an average final grade of 89.5. I have often wondered if that old Ford Coupe was responsible and kept me from getting an "A."

- Phil LaMoreaux

Geologic Communicators

At the memorial service for the late Ronald K. DeFord, long-time graduate adviser of the Geology Department of The University of Texas at Austin, one of his colleagues said, "He had an enormous love both of the English language and of mathematics. And so he used English with precision and mathematics with eloquence."

In Oceans of Truth, H.H. Menard wrote of Robert S. Dietz, "Bob Dietz never wrote a boring sentence in his life."

Would that all of our literary efforts merit such praise!

- James Underwood, Jr.



I was 15 years old when I first viewed Yosemite Valley and was overwhelmingly awed by the spectacular result of glaciers carving hard granite. I am still awed with each visit!

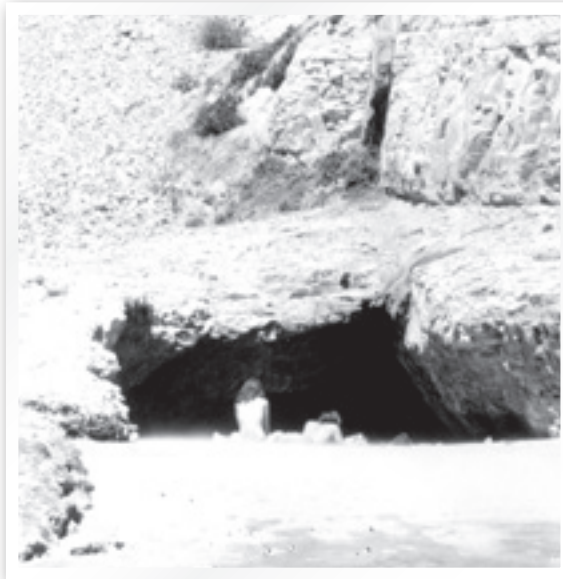
- Susan E. Tanges

Geology in the Raw?

Coastal field trips used to be so predictable. Oh every now and then someone would miscalculate a wave or slip off an algae covered rock, but nothing like the present affinity of nudists for geologically interesting beaches has occurred. In much the same manner as waves bare naked expanses of rock to the onslaught of the elements, scores of sunbathers are baring their naked expanses to much the same attack.

Imagine the sudden invasion of an eager group of 30 or 40 students delighted to be out of the confines of the classroom. Rushing out of their cars and cascading down the cliffs they are suddenly confronted by an abundance of outcrops and exposures very different from those they had been shown in lecture.

Some of my most memorable lectures (from the student's perspective) have been delivered under conditions such as these. Every gesture and phrase assumes unintended double meaning. The clastic dike at Panther Beach near Santa Cruz, California, especially stands out. For instance when I started to describe it as having been forcefully injected from below into yielding younger members under stress. And I'm afraid I lost it when I began talking about turbulent bed activity, plunging limbs, buff-colored surfaces, or perfect cleavage?



I have been pretty good at maintaining what I'd like to think is a detached sophisticated air, casually referring to what is most obvious to everyone around, while continuing my geology lecture seemingly oblivious to the distractions. This works reasonably well when the naked forms are at some distance, but as the nudists become increasingly curious and join the class, asking questions and becoming involved in the discussion, I find

it difficult to maintain the academic composure in which I traditionally take pride.

Only in my wildest fantasies do I march right up to an outcrop, oblivious to the bronzed forms draped all about, break off a rock specimen from the cliff with a well placed blow from my hammer, studiously analyze it with my hand lens, and deliver a stirring discourse on the significance of that spot, convincingly demonstrating to the class its integral role in the geologic evolution of the west coast of the United States. I then casually ask a lovely young goddess to move a few feet, as she is covering a major contact (to the wide-mouth wonderment and awe of my class). She gladly concurs, but doesn't move too far, so as not to miss the rest of my lecture.

But alas, this is mere fantasy and, until I can break out of the confines of my self-imposed academic morality, I must be content with pontificating from afar, never daring to approach too close, hand lens ready, to explore the intriguing details waiting.

- Ray Pestrong

Sitting on an offshore drilling rig I noticed evidence of the drill bit approaching a potential high pressure zone. Reported to the engineer in charge but he didn't believe in my evidence from the cuttings; stated he only had 200 feet to go, under time and under budget. He wasn't going to stop or circulate so close to TD. I radioed the office; Sunday, of course. Finally got my boss by radio-telephone. He asked if a chopper was on the rig. I said, "Yes". He said, "Get off, forget about microscope and gear right now".

As we circled the rig, pipe began shooting out of the hole. Luckily no fire.
- Norb Cygan



Travels with Dottie

Dottie Stout (Cypress College) led geology trips across the globe, and her China/Tibet trip in July of 1996 was exceptional. Dottie had a gift for finding local leaders and dissolving cultural barriers. Her leaders were from Chengdu Institute of Technology. Professor Lin Maobing, a survivor of the Cultural Revolution, was dignified even after pushing the trucks through deep mud. The energetic Professor He Dashun overcame obstacles that would have tried a saint. Professor Wang Wenbin was a caring guide whose brush with death from elevation sickness was terrifying. The trip circled north from Chengdu to Xining and Golmud, then south across Tibet to Lhasa, Xigaze, and Zhangmu. It was new territory for the guides as well as us. The adventures of just a couple days are representative of three weeks of making life-long memories.

Three hours north of Wenchuan, we were in a deep, V-shaped canyon carved into Proterozoic and Paleozoic quartzites of the Longmen Mountains when an active landslide blocked our progress. We watched with considerable concern while our leaders explored ahead as large rocks tumbled onto the road. Impassable conditions forced us back to Wenchuan and onto a detour that rose along the eastern flank of the Tibetan Plateau. By late afternoon we were spotting Tibetan homes with brightly decorated window frames and prayer flags. Our hotel in the logging town of Miyalou had never hosted Western tourists and the diners in the local restaurant thought we were real curiosities. But our most amazing sight was through the restaurant window-Lidia Lustig in Tibetan clothing with three beautiful women similarly attired. Lidia had already visited their home a half mile out of town, tried on a Tibetan gown, and arranged for us to visit their home. We were soon stumbling over rocks in the dark leading to a large house on the hillside above. Cattle rested inside the



first floor entrance. The second floor was one large room with a fireplace in the middle and a TV in one corner. Nine young women greeted us and entertained with dances, colorful costumes, and songs while yak-butter tea was served. The stars were brilliant as we returned to the hotel to rest before another long day.

We continued north to Qinghai Lake and west to Golmud where Chuntsen, our Tibetan guide, met the group. Everyone thought he was a government agent sent to watch us. Wrong! Chuntsen got us through the most difficult situations: terrible roads over three 17,000 foot passes, elevation sickness, military inspections, and he even moved an 18-wheeler that blocked the road. The truck driver didn't know how to back up. Chuntsen provided everything from 2-mica granite exposures to a private tour of the Potala which was closed after another crackdown by Han Chinese on Tibetan monks. Our side trip to Pang-La Pass to see Mt. Everest involved a tariff to enter a small village, loss of film for those using cameras at a police checkpoint, and spectacular views while the guides suffered elevation sickness.

We spun prayer wheels at the Jokhang before continuing through Xigaze and into the Himalayas. The depth of the gorges and unprotected precipices along the muddy road were stunning. Some travelers begged to walk while others refused to look. Two weeks later a landslide swept several vehicles over the cliff. After dinner in Zhangmu, Professor He warned that the final day would be difficult. The road would be worse than anything yet experienced. The next morning we bid farewell to our guides and one of the world's oldest civilizations from the back of a dump truck. Gasping from diesel exhaust, we slowly descended the muddy switchbacks through light rain to the raging Bhote Kosi River, walked over the Friendship Bridge, and entered a different world, one full of begging children — Nepal.

- Robert J. Stull



Be Inconspicuous – Keep a low Profile!

I was one of a legion of Wisconsin graduate students who in the late 1950's and early 60's, hopped about the world with newly developed geodetic gravity meters, tying in existing local gravity data to George Woollard's International Gravity Network. In January 1963, I went to Netherlands New Guinea (NNG, now Irian Jaya) to tie in several hundred thousand Shell Oil Company stations. At the time the situation on the ground in NNG was semi-dicey due to transition of the area from Dutch colonial rule to Indonesian administration, following a decades-long, Indonesian supported insurrection. Before departure, I was advised by the State Department to keep a low profile: "be inconspicuous; get in, get your readings, get out, and don't make waves".

On this day I found myself on the island of Biak where a new international airport and modern hotel had been constructed to accommodate travelers on KLM's weekly flights from Holland. After checking in I discovered that the plugs on my battery charger did not fit the receptacles in the hotel, so I walked into the nearby (ca. ½ mile) village to search for workable plugs. On the walk into town I was impressed by the number and variety of armed, uniformed men in evidence: Dutch military (outgoing), Indonesian military (incoming), Pakistani military (the peace-keeping arm of the United Nations Temporary Executive Authority (UNTEA)), and local Papuan militia and constabulary. In addition there was a USAF encampment at the airport in support of UNTEA.

On my trip into town I walked on the right side of the road, facing sparse oncoming vehicular traffic as well as a continuous stream of pedestrians. Returning to the hotel, in order to promote inconspicuousness, I decided to go with the flow of pedestrians on the left side of the road with my back to the motor traffic. Somewhere along the way I heard a motorcycle approaching behind me at high speed. As I



started to turn to look around, he slammed into my back at full throttle, vigorously sending me flying into the ditch. After picking myself up, I climbed up and out to discover a local (Papuan) lying unconscious on the blacktop, with his head in a spreading pool of blood, and his motorcycle on top of him with the motor still running. There was also a quickly growing crowd of local, multi-hued citizenry, and various armed, uniformed, military types of varying provenance, but no one who spoke English.

While I was trying without success to explain myself to the crowd in rudimentary pidgin, a military looking jeep showed up and loaded the motorcyclist up and took him away, and that is the last I ever saw or heard of him. Eventually a Papuan wearing a clerical collar showed up who spoke English. I told him my story, which he related to the crowd, including the police, and which, apparently was supported by eye witnesses, as I was eventually told that I was free to go. After limping back to the hotel, I discovered that my shorts were split in back from belt to crotch. Since no one wears underwear in New Guinea weather (because of prickly heat and jock itch), I fear that my adherence to the "be inconspicuous" guideline had been seriously, but inadvertently flawed, since all the time I was trying to explain what happened, I was "showing my bare arse to the whole bloomin' crowd."

I departed the next morning, and despite my inquiries, I never did learn what had happened to the motorcyclist after he was carried away, or why he bowled me over the way he did.

- Tom Laudon



Raccoons and Prisoners

Geology field camps provide memorable experiences. Marshall Maddock assumed leadership of the San Jose State College 1966 Summer Field Course and decided to take the group to the Carbona Quadrangle, north of Tracy and about 75 miles southeast of San Francisco. Having previously worked in the area, Marshall knew several ranchers and one agreed to let the camp use his depression-era cabin as a base station. Marshall and his assistant, Bill Cotton, decided that they would take a couple of students to set up camp shortly before camp was to begin. I was included. We went to the site, cleared the grass, built a three sided shower with a hose from a windmill tank (the first person in from the field got a hot shower, with water warmed in the hose by the sun), cleaned out the house, and built a large, tarp-shaded deck for the approximately 30 student cots. The faculty set up sleeping quarters in the single bedroom, the cook hired for the occasion set up food and cooking facilities in the kitchen, and the living room was fitted with benches and worktables for eating and drafting.

Among the events that stand out in my memory (in addition to the usual short sheeting and other pranks) were “the raccoon affair” and a visit to a local rancher to obtain permission to map on his property. Many pranks and the “raccoon affair” were focused on the deck, where students set up their cots in rows. At first, students kept potato chips and other food items under their cots, but it was soon discovered that critters were eating the food during quiet times (mid day or late at night). Raccoons were suspect.



The San Joaquin apricot crop came in while we were in camp and one of the students (who shall remain nameless), decided to take a lug box of apricots home to his parents. He purchased the box one afternoon, with the thought that on the weekend he would drive home and deliver it. In the mean time, he left the box in his car, with windows open so that the “cots” would not get too hot during the following day, while he was in the field. In the morning, he went to his car and was clearly heard uttering expletives.

We went down to car to find him distraught. The lug box sat empty on the front seat, except for the pits, all cleaned of their fruit and placed back in the box. Sticky raccoon prints were everywhere in the car.

Revenge was the order of the day. When we returned from the field that afternoon, a group decided to build a sort of simplified trap with some scrap wire fencing, two plywood sheets, and a stick with a string attached. The cylindrical, three-foot tall, 1.5 foot in diameter ring of wire, capped with a board and hinged to and resting on another board was propped up by the stick. Since my cot was at the edge of the deck, I was assigned to trigger the trap by pulling the string to remove the supporting stick. Chips were placed in the trap as bait and everyone “went to bed” at dusk. A raccoon came up from the creek, went to the trap, which I triggered, and 30 students ran screaming to surround it. The terrified raccoon ran three circles around the inside of the wire cage, stuck its head through one of the triangular holes, and began its escape. Thirty students scattered in all directions and the animal made its get-a-way.

One morning, we went in three carryalls to the home on a nearby ranch in order to get permission to map. Many of the students were wearing light denim blue shirts. Arriving in the barnyard, Marshall got out of the van and was met by the rancher. Mr. X’s ranch was on low rolling hills that lacked many obvious outcrops, but were decorated by an abundance of thistles.

“Are you here to get rid of the damned Russian thistles,” he asked. Then, before Marshall could respond, he glanced at the vans with blue-shirted students and asked, “What you got there, a bunch of %\$@# prisoners?” Marshall quickly responded that we were geologists. Mr. X retorted, “Who needs a %\$@# geologist.” Although he was disappointed, he let us wander the hills.

- Loren A. Raymond



A Very Hot, Dry Trek

The summer of 1949 Vince Anthony and I, both WW II vets and senior geology undergrads at Notre Dame, served as unpaid assistants to Dr. Raymond C. Gutschick as he continued his field studies of the Mississippian/Redwall FM in western northern Arizona. Ray Gutschick wasn't much older than Vince and I. He wasn't very tall, but very strong; his college sport was wrestling. He enjoyed impressing students by folding over a beer bottle cap between thumb and forefinger!

To continue having fun outdoors without someone shooting at us and maybe learning a little geology, we followed "Doc" and his wife and young daughters to our "base camp", the Museum of Northern Arizona, located on the flanks of the San Francisco Peaks just north of Flagstaff.

Most of our week-long jaunts in the field were spent re-visiting areas Doc had studied previously – often in the Chino Valley, Sycamore Canyon and the like. For example, Sycamore Canyon was then shown on maps as "wilderness area." It was hot and we camped under the stars every night of the season. At camp, I cooked; they did the rest. Mostly, the length of our forays was determined by how much food and water – especially water – we could carry in the "woody" Ford station wagon which was fitted with 6-ply tires to help shed the cactus spines.

In late July Doc decided he needed to visit an unexamined portion of the Redwall in the western Grand Canyon, specifically, an area mostly north of Peach Springs on the Hualapai Reservation. We stopped at the agent's office and told him we should return in a couple days or so. We loaded up on water. Peach Springs' water supply came from a tank car on a nearby rail road siding. I doubt that any human being had set foot anywhere in the area we were headed within human memory – it was bare and bone dry. We drove for miles cross-country and finally camped adjacent to a "jumping-off" place. That night I spent some time carefully adjusting my Brunton for the declination. We were using the available USGS maps – which turned out to be a heavily "interpretive" read – "imaginative".

We made some short traverses for a day or two. At dawn the next day, which was sure to be a scorcher, we set out on what was planned to be, based on the maps, an easterly traverse which would circle around and return us to camp.

We soon found that the rim was cut by many deep, narrow reentrants which entailed hiking much farther than planned. Reality sure didn't

match the map! We carried all the canteens we could handle. Our blue chambray shirts were soon white.

By late afternoon and after climbing down and up many enlarged joints, it became obvious that as field-tough as we were, we estimated we had traveled at least 20 miles – we were fast running out of energy.

As the sun sank, we stopped, piled another rock cairn, sat and rested. Vince, who was slowest, soon elected to head on westward to camp while a little light remained. Here, I point out that he had absolutely no natural sense of direction.

Shortly, I headed for camp; it was easy to find, it was less than a mile away. But, NO Vince! I pulled out my revolver which stayed in a holster in my vest and fired a couple shots. In a few minutes, Doc showed up at near-dark and promptly flopped. Ten minutes later, I fired a couple more shots. A little later Vince strolled in from the West! When he heard shots behind him, he knew what to do.

After a little more recovery and some grub, I heard Doc cussing; he'd left his aluminum notes' case on top of the rock cairn at the last stop, which indicated how exhausted this very tough guy really was! Next morning I walked back and retrieved it. As we were out of water, we headed back to Peach Springs.

The Indian agent had been in a tizzy when we didn't return on time and sent some teams of young Hualapai to find us. They, of course, came up empty-handed. I doubt that any of them had ever been very far outside of Peach Springs and didn't look very thoroughly in that hot and trackless, barren landscape.

I also suspect than no one else has followed our path over that terrain in the 60 years since.

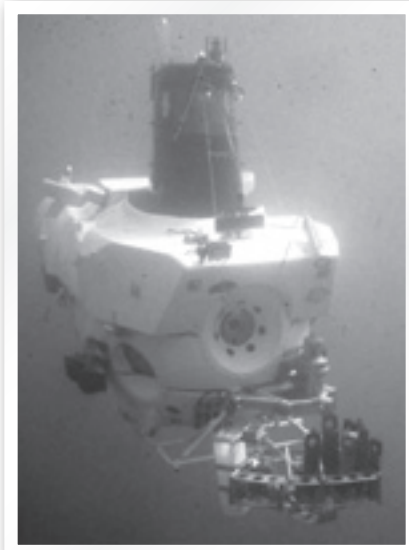
- Ray T. Throckmorton



Doc & I always left Vince above to haul us out.

A Window to the Past

It was 1971. I was in the Straits of Florida on the deep submersible Alvin as a guest of George Keller and Jack Kofoed on a NOAA-sponsored dive series to investigate an area of rough terrain off northern Little Bahama Bank. On the way down to the seafloor two thousand feet beneath us, I was already feeling cramped as I curled myself up into a fetal position in order to get close enough to peer out and down through the small viewing port. This is not, I thought, the wide-open spaces usually associated with land geology. The tropical blues of the surface waters of the Straits of Florida were rapidly darkening from deep blue to the blackness of night. When I activated the outside photoflash I was amazed by the myriad of bioluminescent responses that varied from specks to strings to globes and sheets. In an eyewink they were gone. The mid-water is every bit as exciting and curious as the seafloor.

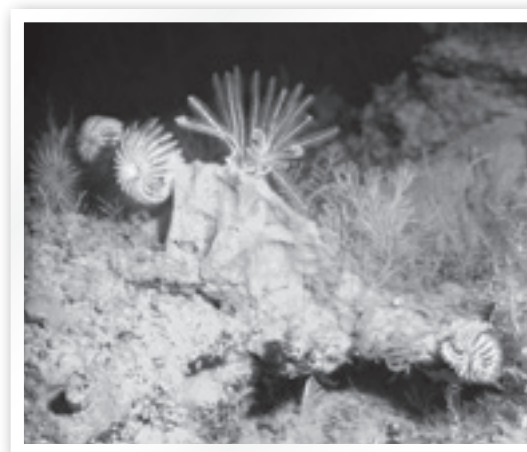


Submersible "Alvin"

The pilot reminded me that such behavior was using valuable battery power that we would soon need at the bottom. We settled gently on to a flat floor bathed by a slow but perceptible bottom current. Faint, current-parallel streaks of mobile planktonic ooze covered the flat, hard ground floor as light snow would on a parking lot. Here and there were occasional clusters of attached organisms in the form of fans and stringy stalks. In the dimness of distance, the steep side of an elongate, north-south rocky mound came into view. It was encrusted with a variety of attached organisms.

We went over to investigate by rising a little and settling down onto it. When the cloud of sediment cleared, I saw outside my viewing port a scene I will never forget. As a student at Brooklyn College where I learned my first geology, I remember the small aquarium-sized dioramas of seafloor life of various geologic periods on display at the Museum of Natural History in New York City. Here close enough to touch were clusters of stalked and unstalked crinoids, sponges, sea fans, and fishes with tapered

tails. The scene was tinted in shades of yellow, orange, tan, purple and white, the colors more vivid closer to the viewing port and fading to blue in the distance. Many crinoids cupped into the current like reversed parachutes and held on to the rocky bottom by small arms (cirri) arranged along their stalks. They, like the multi-armed starfish among them, were filtering the oncoming current for food



"My God, I'm in the Paleozoic!" A.C.N. "Alvin" dive on Lithoherm in Florida Straits

particles. There were also multicolored sponges of odd shapes and large yellow and lavender sea fans. In places there were dense bushes of deep-water, branching, hard corals. The whole scene was breathtaking. As it sunk into my consciousness, I was back at the museum. My handheld tape recorder heard me exclaim, "My God, I'm in the Paleozoic!"

It was a most vivid moment of my life in geology. Nor did it stop here; it went on, indeed, to the Paleozoic itself. James Wilson soon published, "Carbonate Facies in Geologic History." At the end of a chapter on the curious Walsortian mounds of the late Paleozoic Wilson mentioned our recent sightings of "lithoherms," (as I had dubbed the deep mounds) as possible modern analogs. This remark opened opportunities for me and my students and colleagues to visit and study many more such "mudmounds" on land and at sea. It sparked a sabbatical leave at the University of Edinburgh under the late Terry Scoffin, as well as travels to England, Belgium, France, Ireland, and lately Morocco, in order to study these controversial build-ups of fossils set in a fine-grained matrix of "mud". Further sampling and study of the modern lithoherms has convinced me that much of the fine matrix that commonly binds the mound rock is not so much imported mud but a kind of fine in situ calcareous cement.

So it appears that this surprise discovery, made on that random deep-water "Alvin" dive over thirty years ago at two thousand feet beneath the Gulf Stream, opened an intriguing window to the geologic past. A window that was in fact a viewing port.

- A. Conrad Neumann

K-rations and a Pig

In 1975, Keith Howard, Mel Beeson and I (all USGS geologists) had a fieldwork adventure on the island of Molokai, Hawaii, that none of us will ever forget. We were headquartered in Menlo Park, California, at that time. Mel was in the midst of studying the chemistry of the 1,600-foot-thick section of lava flows exposed along the foot trail that descends to Father Damien's well known leper colony on the Kalaupapa Peninsula of Molokai. I was mapping volcanic rocks here and there in California. Keith was plugged into the USGS program of Astrogeologic Studies. Somehow he convinced his money managers that one could learn a lot about the geology of Mars by studying the caldera of East Molokai Volcano. The three of us ... young, enthusiastic, and in search of adventure ... teamed up to do so.

A helicopter ferried us and our equipment into this very remote rainforest area. The pilot assured us that he would pick us up 3 weeks later. As our last glimpse of "civilization" for those coming weeks choppered out of sight, we made camp, filled with energy and grand expectations of improving the pioneering geologic mapping done in the 1940s by Harold Stearns and Gordon Macdonald.

We began in Wailau Valley, a deep north-flowing drainage carved into the east flank of the volcano. We quickly discovered that lush tropical vegetation hid virtually all bedrock. Desperate to put our geology picks to use, we shed our clothing and swam streams to the few rocks that peeked through greenery. By day 8 of nude fieldwork, we were very discouraged by the paucity of real rocks. And almost worse, by then we were completely bummed out by our victuals.

Keith had purchased a pallet of surplus military K-rations, as our sole source of nourishment. They were light weight, highly caloric and the price was right. But with only four different meals, we soon ate solely to stay alive. Adventuresome Keith tried snails from Wailau Stream and raw taro root. Ugggh! Smart Keith was a one-trial learner and went back to K-rations.



Hoping for better outcrops, we headed west into Pelekunu, a deep valley eroded across the caldera. Getting there was a two-day seemingly life-threatening adventure. What we had been told would be a well marked trail, definitely wasn't. Nonetheless we found Malihini Cave, the bedroom target for our first night. We slept outside in the rain though, rather than on a cave floor covered ankle-deep in goat poop. Next day we crested 3,000-foot-tall razor-back drainage-divide Kolo Ridge, and stumbled more than walked down to a USGS stream-gauging-station shack where we found a meal's worth of Spam.... Yummy!!!

Field traverses in Pelekunu Valley verified what we had discovered on the first day in Wailau. Most of the landscape was covered by ferns and grasses and bushes and trees. But along some stream banks we found outcrops of dike swarms and hydrothermally altered lava, presumably parts of the guts of the caldera. Other enticing outcrops stared down at us from inaccessible tall cliffs.

And of course at one of the planet's wettest places, it rained and rained and then rained some more. We entertained ourselves during down times by carving Hawaiian flutes from sections of bamboo and trying to make music. For variety, we gathered the pea-sized shiny off-white seeds (called Job's Tears) of a tall grass and strung them into attractive necklaces. Thirty-four years later, I still have my Job's Tear creations and am wearing



Flutists Duff (left) and Keith

one of those necklaces as I type these words. But with each passing Pelekunu day, we were getting sicker and sicker and sicker of K-rations.

In semi-desperation for dietary variety, Keith and I went on the bare-handed hunt for one of the many feral pigs that thrive in Hawaiian rainforests.

We caught one, about a thirty pounder. The 3 of us gathered, catch in hand, and salivated until we realized that we didn't have the heart to kill the little porker. The fact that piglet was crawling with lice was another deterrent to slaughter and feast. It was to be K-rations to the end, other than the fruit of a banana tree we found near camp.

February 25: Our escape helicopter arrived on schedule and deposited us at the Molokai Airport. A wiki wiki cab took us to a hotel in Kaunakakai, the island's main town. My wife Anne, who normally is terrified to even get near an airplane, had flown in from the mainland to greet me. I paused long enough to plant a cursory kiss. Then we all headed to the nearest café, where Keith, Mel and I overate.

Next morning, as Anne and I awoke in a warm embrace, my first words were, "I've been dreaming about an apple turnover." Later that morning, back at the café, Keith, Mel and I ate 2 full breakfasts each. To this day, Anne likes to teasingly remind me of how much more interested I was in food, than in her, during our Kaunakakai reunion.

- Wendell "Duff" Duffield



Keith (left), piglet, Duff



Mel and bananas

Jack Daniels was Not a Navajo

While working as an exploration geologist for the US Atomic Energy Commission (AEC) on the Navajo Indian Reservation during the uranium boom of the 1950s, I became aware that many of the mines were named after the individual that been issued a Navajo Tribal Mining Permit. These names included individuals such as Paul Shorty, King Tutt, Willie Waters, Juan Horse, and John John. In the Cameron, Arizona, area there was even a Jack Daniels mine. A local trader informed me these names were given to students in government boarding schools by teachers who could not pronounce their Navajo names. I wondered what kind of a teacher would name a student after a brand of whiskey.

In 1959, as the AEC uranium procurement was winding down, we were asked to prepare a dossier on all the active uranium mines and properties that contained economic ore reserves. Each dossier was to contain information on how the mine was discovered, mining methods, current ore reserves, and past production, etc. While compiling the file on the Jack Daniels No.1 mine, I learned the origin of the name. In the summer of 1955, prospectors driving north along US Highway 89, north of the bridge over the Little Colorado River, detected a radioactive anomaly on the highway right of way. An inspection of the site revealed highly radioactive cuttings at the base of a power line pole. Near the pole was a discarded bottle of Jack Daniels whiskey. The prospectors vowed if a mine was developed it would be named Jack Daniels. The company acquired a Navajo Tribal Drilling Permit and located a sizable ore body east of the highway right of way. A check with the Navajo Tribal Mining Department at Window Rock, Arizona, showed that Mining Permit No. 360 for the deposit was issued to Denetso and Mary Denetso on October 4, 1955. The mining rights to the permit were approved to the Marcy Exploration and Mining Company on November 15, 1955. When the ore was depleted in 1960, the 480 by 240 ft shallow open pit had produced 39,440 tons of ore averaging 0.22% uranium oxide, ranking it the largest ore producer in the Cameron area, according to the AEC records. I must admit Jack Daniels was a more interesting name than Denetso No.1 would have been for this significant mine.

- William L. Chenoweth



Solomon Islands

In 1960-61 I was a graduate field assistant on John Behrendt's airborne geophysical traverse in Marie Byrd Land, Antarctica. On my return trip home I visited the Solomon Islands and New Guinea to establish airport gravity bases for George Woollard's World Gravity Network. At Honiara I was welcomed as the first American scientist to visit the Solomon Islands following WWII. As a result of this visit, I returned two years later as director of the first comprehensive gravity survey of the Solomon and Bismarck Islands. In all 2,800+ gravity stations were established along the shores and on traverses on foot across all of the major islands.



Our *modus operandi* was to coast the islands in a small boat, MV Hygeia, and row ashore in the ship's dinghy at one-mile intervals for the shoreline readings. These landings were always exciting involving getting the shore party and the gravity meter over the side of the ship and into the dinghy; crossing the fringing reefs usually marked by breaking waves; and often landing on uninhabited pocket beaches amidst crashing surf from waves coming all the way from Australia or South America.

On one occasion crossing the reef, following waves swamped, and then capsized the dinghy dumping the entire party and the gravity meter into the sea about a quarter-mile offshore. Fortunately villagers onshore eventually spied the dilemma and paddled out in dugout canoes to offer help. The first to arrive were amazed at being directed by the Solomon Island geological assistants to first take the gravity meter to the beach, and then return for the geophysicists and others clinging to the keel of the upturned dinghy.



The traverse parties consisted of 1 to 3 geophysicists, 2 or more Solomon Islander geological assistants, and up to 20 Solomon Islander porters who transported the instruments and cargo (groceries, camping

equipment, gasoline generator and battery charger, clothing and personal gear, etc.) on their backs. The traverse routes followed foot paths over some of the most extreme jungle topography in the world.

One evening we anchored for the night off the small village of Tangarere on the Weather (SW) Coast of Guadalcanal. Tangarere, like most of the villages on that coast, had been destroyed by a tsunami several years previously. Most of the village, consisting of palm-leaf houses, had been rebuilt, as well as a new Catholic church.

The priests invited us (Perry Parks, Mo Bierig, John Brewer, Hugh May, and me) to have supper ashore with them. Following supper we were asked if we would like to hear the choir perform the mass. They had been rehearsing for more than a year in anticipation of the arrival of the bishop in a few months for consecration of the new church, but they had never before had an audience.

The setting was unforgettable. We, the guests of honor, were seated on the church steps facing the beach and the choir, and the villagers in a ring behind them. The ship was rocking offshore. Coral Sea combers were thundering on the beach and shaking the ground, and a million stars looked down so close you wanted to reach up and touch them.

The magnificent Melanesian voices, and the knowledge that we were the first people from beyond the village to hear them, created an event so moving that we were essentially speechless when it was over. We left knowing that we had been treated to an inspiring and truly unique experience, the recollections of which will remain with us for the rest of our lives.

- Tom Laudon



Father Jim and Morning Mass

The State of Kansas has a strict rule of no alcohol on state property and this restriction extends to state motor vehicles. To my knowledge this rule has always been observed by geologists with one exception.

James Skehan, S.J., a geologist from Boston College, had occasion to work in Kansas on a project, and as a visiting scientist was allowed to be transported to the field in a state vehicle. Father Jim had with him a small traveling case to hold his vestments for morning mass. Included in his sacraments usually was a small bottle of apricot brandy in a wine bottle that had been recycled from use in mass. In this situation, however, there were no repercussions or complaints about the transportation of alcohol on state property.

- Dan Merriam



Father Jim

A Field Trip to Be Remembered

One of my favorite field trips was down the Bright Angel Trail in the Grand Canyon. I wanted to collect some rock samples, so I got a collecting permit and booked a place on the daily trip by mule. With all my field gear and in winter garb I was slightly overweight so I got the biggest, strongest mule. When we got to a place on the trail where I wanted a sample, I would give my hammer to the guide and he would collect the specimen as I was not allowed to get off my mule. At the end of a beautiful field day, I had my samples and a most spectacular field trip.

- Dan Merriam



My Most Fantastic Day in the Field

June 12, 1988, I went to Viterbo, Italy, for the first time to study carbonate deposition in hot springs, with field assistant Paula Noble. We took a taxi toward the springs; en route we crossed a small ridge. I asked to stop. Lo and behold, it was a beautiful dike of aragonite formed by an ancient hot spring. Crawling over the top of it we saw a ruined Roman bathhouse, a complete surprise. Proceeding over a dirt track towards the spring, we saw a congeries of vehicles and people gathered around it. Turns out they were making a movie involving Italy's most voluptuous actress, Ornella Muti!

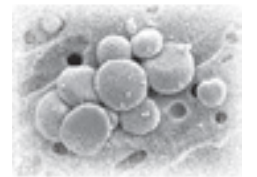
An Italian policeman, Roberto, told us she would appear in the afternoon and invited us to his villa about 25 miles away for lunch. There he gave us each a bottle of his own wine, sealed with concrete (!)-what American cop would do that to strangers? Back to the springs he took us, and shortly Ornella herself emerged from her trailer in a blue bathrobe. She went to the springs, got in and proceeded to disrobe-slowly. I circled closer and closer with my 1950 Argus snapping photos. She soon smeared herself all over with aragonite mud to become the world's most erotic known "coated grain". After she left, Paula and I sampled the springs-and in these samples were discovered the world's first geological nannobacteria.

We finished and began walking back to Viterbo-hot. We stopped at a local bar to get drinks. In the yard was a baby in a swing. Soon who came out but Ornella herself; it was her baby! I figured she had seen me skulking around with my camera while she was denuding herself, so I told her we were not tourists but geologists. Back in Viterbo we did a random walk to choose a restaurant, and came across one up a side street-turned out it was in the Guinness Book of Records for the most kinds of pasta served (over 300). What a remarkable day-it is always an adventure working in Italy.

- Robert L. Folk



Viterbo, Italy



A Geo-Tail

In the summer of 1976, my family and I traveled/camped through the north-central part of the US. We were camped in the Black Hills of South Dakota, and I took a couple of days to look at the pegmatites that I had read about. One of the days, I was driving along a dirt road someplace and noticed a pale dike (a nondescript pegmatite). I parked, put on my pack, and started tracing it—just to see where it went and if it changed. After about a kilometer I came to an overlook and spotted a mid-sized, abandoned quarry—well, let's see.



I walked into the quarry, and on the opposite wall was spodumene crystal at least 10 m long and 1 m in diameter. I'm a mineralogist. I was stunned. Without taking my eyes off of the crystal I felt around and found a rock to sit on. Without exaggeration, I spent 15 minutes just sitting and staring. I finally started to look at the rest of the quarry and realized I was sitting on a cleavage fragment of spodumene 2 ft thick. I surely had died and gone to a mineralogists' heaven.



By chance and by good luck I had wandered into the Etta mine.
- Wallace Kleck



When I was a junior at Colorado College my structure class was invited to visit the NORAD tunnel for a field trip. I was not allowed to go because "girls aren't allowed in mine tunnels". This was 1962.
- Nancy Lindsley-Griffin

The 200-Pound Gorilla in the Sinkhole

Currently, there is a somewhat-irritating ad running on cable television. The ad shows a husband and wife discussing their financial situation and then cuts to a gorilla who says "but don't listen to me, I'm just the 800-pound gorilla in the room." I suppose the gorilla is intended to be a metaphor representing the need for long-range financial planning, something that is obvious but often ignored. Some bloggers have criticized the ad as being a mixed metaphor and point out that creators of the ad should have used "the-elephant-in-the-room" metaphor if they were talking about something that people know but still choose to ignore. It doesn't matter. My story deals with neither elephants nor metaphors. However, one large gorilla is involved.

What I write about happened 25 years ago when a "200-pound gorilla" visited the 1984 Tri-State Geological Field Conference in north-central Iowa. One of the field trip stops was a karst region, north of Floyd, Iowa, where numerous well-developed sinkholes are present in farm fields and pastures. The sinkhole that I selected for a field stop was connected to an underground cave large enough to accommodate a few people, or one large gorilla.

I had arranged for a departmental colleague to enter the sinkhole and associated cave prior to the arrival of field-trip participants. As explanations and discussions took place around the periphery of the sinkhole, I heard excited comments coming from the gathered group: "Look, something is moving down there!", "It looks like a large animal of some kind!", "I see a hairy head and arm!", "Oh my gosh, it's a gorilla!"

The "gorilla" turned out to be a UNI geology professor, Kenneth J. De Nault, attired in a rental outfit from a local costume shop. The 200-pound primate added some surprise, excitement, and humor to the field conference. He even directed traffic at selected stops, much to the amusement of those passing by. Who says Midwest geology is dull?

- Wayne I. Anderson



USSR, in the winter of 1988, Chevron sent five of its most expendable earth scientists to SIBERIA.

We stopped off in Moscow in late January for a few days for meetings with Russian officials. We had a free weekend so decided to go touring. Our hotel sported a sign noting guided tours of the Kremlin. We got to the tour office in plenty of time for the nine o'clock tour.

The TOUR Staff was frantic. "Who are you? What are you doing walking around without an Intourist Guide?" We explained we were guests of the Russian Government and the Petroleum Ministry. They made a series of phone calls. "Oh, you can't go at nine we have no English speaking guides." Although we spoke to some while they phoned. "Come back at eleven o'clock."

We came back, were assigned a guide and found we had a husband and wife from Australia joining our group. They didn't dress Australian, and spoke with not much of an Aussie accent. Getting them separated we asked them individually where they lived in Australia. The wife answered out of hearing of the husband, "Melbourne"; the husband, "Sydney" We asked about the six o'clock swill, Fosters and a few other items. Very vague answers. Took pictures with no click of the camera. Then in the middle of the Kremlin they disappeared. Very unusual for tourists, even "Aussies".

Later in Siberia, we ask our suspected KGB agent about them. He never admitted he was KGB but since he didn't know the geologic time scale, he was highly suspect. He stated, "On Sunday morning, at the last minute perhaps the best agents might not be available." He thought I was the CIA agent in our group as I was always asking about the current changes in the USSR.

All February we spent in Western Siberia (never got above zero F.) visiting offices, attending talks, visiting installations of the Western Siberia Oil Concern in Tyumen region of "ZapSib". At one of the early



meetings, the big boss, an academician no less, told us that oil did not migrate but was generated and stayed in the sandstones of the "reservoir". A young geophysicist leaned over to me and whispered that he believed in vertical migration but wouldn't dare admit it.

The Soviets were not impressed with our success rate in finding oil. They stated they were successful in nine out of ten "exploration" wells. We found out that if the sandstone target was dry they drilled into the source rock below and completed in a shale. Naturally this production didn't last long. In the 1950's production officials were shot because their production didn't come up to predicted reserve figures, probably because of this procedure.

We toured a bit of the area with our five companions from Moscow. At a village craft shop staffed by "Babushka" ladies, we shopped but were besieged by these ladies asking to exchange US dollars for rubles at very favorable rates. Naturally we couldn't do this. Outside I asked our KGB fellow how these ladies could be so blatant about black market dealings when, "We had you, five Muscovites, there in plain hearing when someone might be KGB?" He came back with, "What are we going to do with them? They are in their eighties or older and ALREADY IN SIBERIA?"
- Norb Cygan



Being part of an NSF funded contingent sent to Mount Saint Helens, in late Spring of 1980, to document, develop and deliver the educational story of this most explosive of geological events in US's recorded history.
- Robert W. Ridky

A Surprise in the Reeds

In August of 2003 I joined Dr. John Bower, an anthropologist, in the excavation of a Middle Stone Age site in the valley of the Loiyangalani River in the Serengeti National Park, Tanzania. My task was to measure and describe the strata exposed in the walls of several exploratory pits and to place them into the context of the regional geology and then to determine the paleoenvironment recorded by the strata.

One morning after a week or so of detailed work at the exploratory pits, I decided to examine the exposures of strata along the banks of the Loiyangalani River which was located about a quarter mile from the pits. I walked casually through the tall grass stopping to photograph and describe an occasional mud-cracked floodplain swale. As I approached the bank of the Loiyangalani, I came upon a clump of tall reeds. There, suddenly about 10 feet in front of me lying on the bank in front of the reeds, was a lioness. I stopped in my tracks! The lioness turned her head and gazed at me and me at her. I stood motionless for at least a minute, then, gradually backed away keeping my eyes fixed on her and she kept hers on me. She did not move as I very slowly backed away.

I assume she had had an early morning meal and was too tired to be interested in me or maybe she thought that I was just too old and too tough to eat!!

- Carl F. Vondra



Climbing Trident Volcano in 1963 with Bob Dubis between eruptions, not knowing when the next eruption might be. The ground fumaroles were more than 400F.
- Peter L. Ward

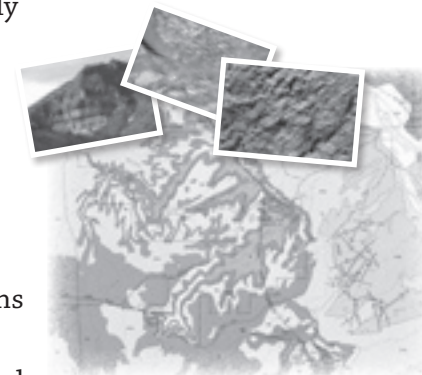
Mapping in Colorado

In 1949 I was newly employed by the Ground Water Branch of the USGS as a P-1 geologist. My first project was mapping the geology and hydrology of the South Platte River Basin from Kearney, Nebraska, to Greeley, Colorado. Through much of the area between Fort Morgan and Sterling, the White River formation crops out on the north side of the valley. Although I had many references at my disposal I was not certain that I was mapping the boundaries of the formation correctly. One of the reports that I had as a reference was by Dr. James Gilluly. The boundaries I had mapped were depicted in substantially different areas from those shown on Dr. Gilluly's map.

Because I was new to the area and lacking in self-confidence I sent a letter with accompanying maps, sections, and photographs to Dr. Gilluly requesting information on the location of any sections that I should exam, what the formation was that I was showing as White River, and any other information that he could give me that would help me correctly map the formation boundaries.

Very shortly I received a response from Dr. Gilluly which stated in the first sentence, "I see that you have uncovered the sins of my youth", and went on to say that he thought my mapping was correct. I have remembered the letter all these years and still think as I did at the time, what a gracious and honest letter.

- Richmond F. Brown



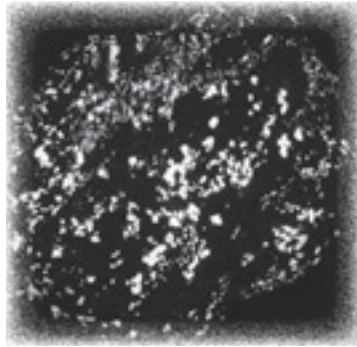
My earliest Geological experience was at age 7 visiting the petrified Garden at Saratoga Spring, N.Y. The polished Glacial Floor looked to be covered with cabbages of rock. Actually Stromatolites.
- Marin M. Cassidy



Geology is Beautiful

I suppose all geologists have experienced the beauty of geology at some time during their careers.

I mean, beyond just the beauty of the rocks themselves. Some of my most beautiful moments were during the time when I explored for tungsten for Union Carbide Corporation. One of the two principal tungsten-bearing minerals is scheelite - calcium tungstate - which fluoresces under short-wave ultraviolet light. The fluorescence is blue-white when the mineral is pure and yellowish when some molybdenum is in the mineral lattice. To a tungsten geologist, both colors are pretty, but the blue-white is beautiful. When the great geochemist Konrad Krauskopf visited our Pine Creek Mine, he remarked that the fluoresced scheelite overhead looked like the stars.



Scheelite under ultraviolet light

Darkness is required in order to see scheelite under UV light, so tungsten geologists did a lot of what we called “Night-lamping.” Seeing scheelite light up at night on an outcrop where, in daylight, you thought it might occur was always exciting and beautiful. One night, at one of our projects in Canada’s Northwest Territories, two of us had carefully made our way up a talus slope in the dark to an outcrop we wanted to night-lamp. Sure enough, the outcrop lit up with an impressive amount of scheelite. Then, I turned around, looked up, and there was a fantastic display of northern lights! Blue-white scheelite under a red and green aurora. Could it get any more beautiful than this?



Well, maybe. In Italy one night, some Italian students and I were night-lamping up a small stream, following detrital grains of scheelite in the stream bed. A few fireflies were blinking as we made our way up the

stream, but I took little notice of them. After a while the scheelite seemed to play out, suggesting that we had passed its source, so we decided to climb out of the narrow valley. When we reached the top, and looked back down toward the stream, below us was a river of light! The fireflies were so many, and so concentrated over the stream - that indeed was the way the little valley appeared to us - a sinuous stream of light glimmering in the darkness.



Again in the Northwest Territories, a fellow geologist and I were making a traverse along a ridge after having been dropped off by a helicopter. The treeless expanse of that part of the NWT is beautiful itself, even in the daytime, and without scheelite. This time, there were some trilobites to admire as well. A hard rain shower began, so we lay down on the frost-riven rock, and pulled a plastic tarp over us. Through a hole in the tarp, we saw a brilliant rainbow arching over the tundra. My partner commented, “I wonder what the poor folks are doing right now?”

Other times, I night-lamped scheelite on the walls of an alpine hut, near the border between Switzerland and Italy, and in stone fences surrounding Portuguese vineyards. One of the vineyards was distinguished by grapevine stakes that were quartz spindles extracted from axial crests and troughs in tightly folded schist. I’d never imagined that grapevines could be staked with a blineation. Beautiful and probably unique. I couldn’t resist taking a piece of a broken quartz stake, and I still have it

- John Trammell

A year in Australia as a Fulbright Scholar where I saw geological features very different from North America and had the opportunity to study a totally different mammalian fauna.
- Ernest L. Lundelius



Dr. Smoky Askew, attorney Perry Hubbard, and I, circa 1950, decided we had to have an airplane. Also, all three of us and Laura Askew began study for our licenses. Licenses granted and the Captain began to use the plane for short family trips and to visit district offices as a division hydrologist USGS. A number of exciting experiences evolved thereafter:



First on assignment USGS to Kotzebue, Alaska, to develop groundwater for DEW line stations – permafrost areas. All went well until the return flight when the co-pilot of Aleutian Airlines did not appear for the return flight. Pilot to the passengers, “Does anybody have a pilot’s license?” “LaMoreaux just obtained single engine license.” Pilot: “Come up and sit in the co-pilot position so we can fly to Nome.” When I did so, I learned that all instruments were nonfunctional which explained my qualifications for co-pilot. I received no flying time compensation.

Phoenix, Arizona – the Captain visited district office, Chief Herb Skibitzke. Herb had a small private plane and asked if I would like to fly over the Grand Canyon with him. “Yes indeed.” Upon return to the airport, the Captain landed Cessna halfway down the runway, brakes locked, plane skidded off into the grass next to runway. Tower, “Cessna are you having problems?” Skibitzke, “Hell no! We always land this way!”



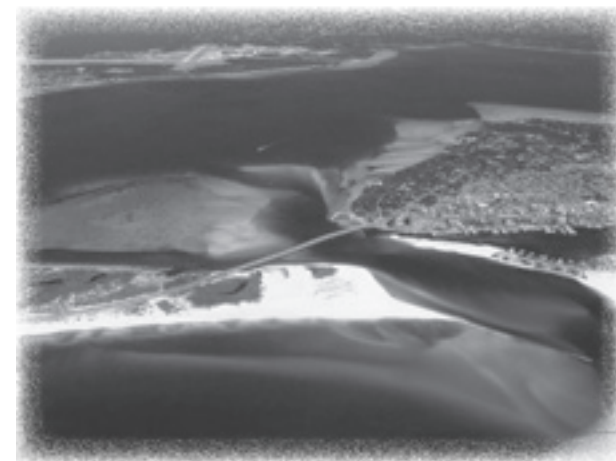
Many great trips followed. Some of the most entertaining ones were with my graduate classes in hydrogeology. Examples illustrated from the air, of correlation between geology and air photography, also changes in vegetation, soils, heat, topography, and other factors. One intriguing

example: I explained to the class we could determine a contact just by motion of plane. For example, flying from red soil of Eutaw, then over Demopolis white chalk. Heat reflection caused the plane to vibrate. Teaching graduate students by private plane would not be possible today.

I always wanted my children to learn to fly. Unfortunately, they would crawl into the back seat and the throbbing of the engine would have them asleep pronto!

On my final check before receiving my license, the planned travel was Mobile, Bay Minette, Pensacola, and Tuscaloosa. If successful, I would get my license. Many times my instructor would guide my pre-flight check and tell me, “You only made one serious mistake in flying the airplane.” On my cross-country, the plan was to land and refuel at Bay Minette Airport. Unfortunately it was unattended; locked fuel pumps. I decided there was enough gas to get to Pensacola. Little did I know.

Flying east of Bay Minette, the large main highways go over to Pensacola. The other more southeast route around the curve of the Gulf. I was watching instruments and visual flight signs – ignored my instruments, which kept pointing the wrong way and followed the wrong highway southeast away from Pensacola.



Some 30 minutes later with compass pointing north to Pensacola, I decided the instrument was right. I turned 90° back toward Pensacola as my gas gauge registered in the red. My prayer was, “Please God, get me in this time and I will keep my gas tank full in the future.” God answered my prayers and I flew the last few miles on empty. I never let my tank get low again.

- Phil LaMoreaux

Ridge and Valley

In the early 60's when I was a graduate student, I worked for Bear Creek Mining Company in Alaska, doing exploration work. One of the summers we worked in the Wrangell Mountains, operating out of the old mining camp of Nabesna.

The object of our interest was a potential copper porphyry deposit in the grandodiorite, etc., of a precipitous ridge east of the mine. The modus operandi each day was for me and my assistant, Dennis Eberl, to be dropped off by our little Bell piston-engined helicopter on top of the ridge in the morning. We would then map our way down the side of the ridge to the creek, 3000-4000 feet vertically below, where we would be picked up in late afternoon.

The rock was rotten because of mineralization and frost action. No sane mountaineer would have gone down those 30-40 degree slopes with any expectation of survival. But we did go: the money was good, the job needed to be done, and we were young, so semi-immortal. Even so, each day I wondered whether I would see the next.



The preferred approach, initially, was to go down the knife-edge ridges, thus keeping out of the obvious dangers of the couloirs. One day, a 50-foot section of ridge to which I was clinging gave way. Somehow, I managed to jump away and stay on the ridge, but the experience caused us to consider alternatives. So now it was down the couloirs, or valleys, which were interesting, being essentially shooting galleries. You could hear rocks and boulders booming and rattling away from wall to wall up above you as they made their way down. You then invoked Zeus and tried to present as small a target as possible. Against all odds, we survived, but not without almost getting incorporated in a wet-snow avalanche, thus becoming latter-day Ice Men.

Once down at the creek, we generally rejoiced, but one day the narrow valley socked in before the helicopter, which we heard circling above, could pick us up. A small opening in the clouds presented itself and we dove into the chopper, which immediately took off. Spending the night out there

would have been bad form. All was well, we thought, but then a mighty wind, a williwaw, rose out of nowhere and smote us fiercely. Before we knew it, we were over the glacier a couple of kilometers up valley, flying upside down. Now, flying upside down generally is viewed with some concern in helicopter circles; we viewed it with grave concern as, hanging from our harnesses, we watched the ice fly by below our heads. Fortunately, our crusty pilot, Joe, was one of the very best in the bush business. He rolled the craft upright without saying a word, but I did see that his knuckles were, literally, white.

- Ivo Lucchitta



The Alabama Project

Some years ago I was working on a project in Alabama where a rest stop was being planned adjacent to an existing Interstate Highway. During site investigation for the rest stop a room and pillar coal mine network was discovered based on drilling and geophysical studies. On-site evaluation of the mine workings was required before design of the facilities could be completed. Two of us engineering geologists accompanied by an Alabama mine inspector entered the shallow workings through an adit entrance. The mine was dry, with rotting timber supports and some roof fall down areas. No dangerous gases were indicated by the mine inspector's equipment.

The next day the two of us geologists returned for a final evaluation of the surface area. It had rained overnight and we forded a local creek in our pickup truck. I wore a suit and tie that day planning to fly home right after the site visit. On our return across the creek the truck bogged down in the soft sediment at its base. I had no choice but to remove my shirt, pants and shoes and push the truck out of the mud in my underclothes. After drying off and redressing, I was dropped off at the airport to return home from the field experience.

- Terry R. West



Getting there is Half the Fun

Almost in the middle of the Norwegian-Greenland Sea lies a 55 km-long, 373 km² nearly barren island called Jan Mayen. It is noted for its foul weather, abundant bird life, and Beerenberg, a 2277 m-high stratovolcano, the northernmost active volcano in the world. A vacation paradise it is not, but for geologists it is a wonderland of volcanism, glaciers, and earthquakes.

On September 18, 1970, a rift eruption commenced on the north flank of Beerenberg, producing a towering, ash-laden eruption cloud that was seen by trans-polar airline pilots, but not by 22 unaware personnel staffing the Norwegian-run weather and navigation station about 30 km from the eruption site. Once the staff learned of the eruption, they evacuated the island with considerable difficulty, not knowing the extent of the eruption or the dangers it could present. The staff returned a few weeks later once it was realized that the eruption was localized and far from the station. Beerenberg calmed down after several months but erupted again in 1985.

As a first step toward possible prediction of future eruptions, some scientists from the Norwegian Polar Institute and I traveled to Jan Mayen in the dead



Jan Mayen lies about 400 miles northeast of Iceland, 600 miles west of Norway.



Beerenberg, the northernmost active volcano in the world

of winter, 1973, to set up a couple of tiltmeters on Beerenberg. We flew from Oslo to Jan Mayen on a Royal Norwegian Air Force C-130, the Baldur, named for the Norse god of goodness and light. The plane was packed full. In addition to us human passengers, Baldur carried a full load of lumber in its cargo bay as well as sufficient fuel for the return trip, because Jan Mayen lacked refueling and maintenance facilities.

The landing strip on the island is over a mile long with a dogleg about two-thirds the way down its length. The runway is completely covered by snow and ice in winter; darkness prevails around the clock there in February at 71 degrees N latitude, so the runway boundaries were illuminated by blazing oil in scattered 50-gallon drums. To complete the challenging conditions, a 40-knot wind was blowing across the strip on the day we were to land.

The air force pilot made one...two...three....four attempts to land from south to north, but the crosswind made him pull up each time. Finally, he swung the plane around and attempted the north-to-south approach. He lined up Baldur at the top of the dogleg and pushed the heavily laden craft down in a powered descent. About 15 m above the runway, he let the aircraft drop with a deafening, shuddering crash. I thought Baldur would split asunder and spill us all—lumber, fuel, people—over the frozen runway. At best, I figured we'd be marooned on Jan Mayen for weeks until repairs could be made or another plane procured to fetch us. But instead, we simply taxied to the end of the runway and came to a controlled stop. Baldur stopped shuddering long before I did.

Several hours later over a beer with the pilot and glad to be alive, I commented about his rough landing with such a heavy load. With the cocky insouciance of all military pilots, he merely replied, "That's how it had to be done. The C-130 is a helluva bird. No problem with hard landings."
- Arthur G. Sylvester



Royal Norwegian Air Force C-130 on Jan Mayen

Cape Arago Caper

In August 1973, I worked with a USGS team on the southwestern Oregon coast. On this particular day I worked alone at Cape Arago. I had been warned about getting there early to catch a low tide, but being from Arizona (and also not prone to early rising) the significance of a low tide did not register with me at the time.

It was a beautiful day. I collected samples and photographed the sedimentary structures in the sandstone outcrops. Finally I packed my samples and my camera (a 1960s vintage Brownie), shouldered my pack basket and turned to go back to my truck. Only then did I discover that the sea-level ledge that I had walked on to get out to the point was now underwater.



I looked up, saw another ledge above me, and looked for a way to climb up to it. But the sandstone cliff was worn completely smooth. I couldn't find a single indentation to grab or stick my toe into. The cliff might as well have been a wall of glass.

A wave splashed over my boot. The tide was definitely coming in. I reached up and found my arms were long enough that I could just get my hands over the ledge above me. In chin-up fashion, I pulled myself up and over the ledge to safety. Only after I stood up did I remember that I had had ten pounds of rock samples in my pack.

When I got back to the truck, I found my arms and shoulders ached so much I could hardly steer the vehicle. After that, I never worked along any coast without a tide table.

- Gretchen Luepke Bynum

Truths of Nature

While recovering from the effects of a collapsed lung in 1953, Robert C. Reynolds and I were with a now defunct steel company looking for magnetic iron ore among the sphagnum moss swamps known as muskeg, second-growth forests, and lakes of Sudan Iron Formation in northern Minnesota. Until we got our "sea legs," falls were frequent because of tripping over stones and rotten log concealed by underbrush in the woods. Because of my poor condition resulting from the collapsed lung, the job was particularly exhausting.

The main enemies, however, were the bite of black flies, the sting of mosquitoes, and the sticky mud of the muskegs. The bite of the black flies would raise welts as broad as a dime. Every morning before we were to start our traverse, we would lather our faces, hands, and any other exposed parts with the popular mosquito repellent of the day called 6-12 which would keep these insects perhaps nine inches away because they didn't like the smell. Because of the magnetic ore, the usual magnetic compass could not be used, as it would point to the ore rather than magnetic North so we used a sun compass. One had to stand still at the sun compass to take a reading, and a cloud of mosquitoes would gather 'round generating quite a hum. We waited for perhaps a minute to let a good cloud of them develop, then quickly run about ten feet away, wheel around and zap them with a burst of DDT spray from an aerosol can which gave one a few moments of peace.

The first inevitable step into the cold, wet muck of the muskeg in the morning was always difficult, turning your dry, comfortable boot socks into a clammy, filthy mess. For each step, you had to pull your foot out of the resisting muck, perhaps knee high, making a slurping sound. It was particularly exhausting. There were compensations, of course, such as the beauty of the lakes, the sound of the breeze through the tree tops, the wild strawberries in the spring, blueberries in the summer, and raspberries in the autumn. It was there that I learned two truths of nature. One was that if it clouded over in this land where a magnetic compass was useless, you were lost. The other was that no matter how tall or short you are, spider webs are always built mouth-high.

- Bruce R. Doe



A Riot in the Streets

Sometimes remembering someone reminds me of an incident. Dan Textoris, University of North Carolina, was in Prague for the International Geological Congress in the sixties when the Russian army invaded the town to quiet the opposition.



I was in my Khartoum, Sudan, hotel one early evening a few days after rebels killed three Chevron contractors, a French geophysicist and shot up a Nile ferry killing a number of people. I was on the third floor but heard the noise of an approaching crowd. Very loud and with Indian-like noises I had only heard in cowboy movies. Very, very loud, and right under my room. I tried calling the front desk but got no answer. Not unusual even in the most peaceful times. I remembered what Dan Textoris told me about Prague during the Russian occupation at the International Congress. He was told to get down on the floor, put the mattress around him, and don't call attention to himself. Don't try to take pictures! He did peek over the sill to see what was up.



So I cautiously peeked over the sill to see a very large crowd filling all the streets, yelling and dancing around. I remembered the Dervishes! I laid on the floor, no mattress however. Eventually the crowd moved down the street. I tried the hotel desk. No answer. I stayed on the floor till dawn. No more crowd. I went downstairs, asked the desk, and was told I should not have expected any one to stay on duty the night of the Annual Kartoum-Omdurman Football (Soccer) Match!
- Norb Cygan



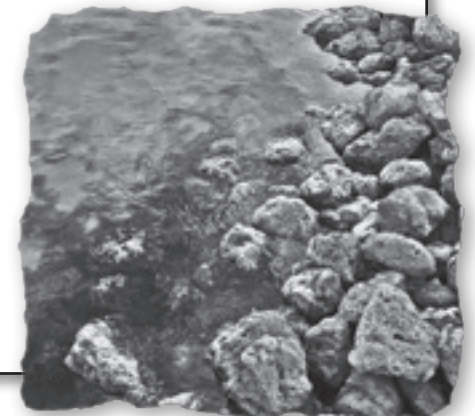
A Spectacular Air Flight

In the old days I use to pass my business card up to the pilot on commercial flights and ask a question usually about some geological feature or place we would be flying over. I usually, but not always, got a response and generally it was an invitation to ride in the cockpit. I used this technique to get to fly for an hour in the cockpit of the Concorde as well as many conventional aircraft. On one memorable flight from Quito, Ecuador, to Lima, Peru, I wanted to see and get some pictures of Cotopaxi, the highest active volcano in the world. The Banff pilot not only complied, but circled the mountain top and tipped the wing so we could look directly down into the vent! A thrill from more than one aspect.
- Dan Merriam



Cotopaxi - World's highest active volcano at 19,347 ft

*When I was an undergraduate student at Boston University, Professor C. Wroe Wolfe was leading a field trip to Hull, Massachusetts, on the margins of Nantasket Bay. Dr. Wolfe moved nimbly from one algae-covered volcanic rock to another. He cautioned his students not to try this as the rocks were very slippery and they might fall into the water. Within minutes, Dr. Wolfe fell into the water up to his knees. There was muffled laughter from his students. Professor Wolfe continued with the field trip like nothing had happened. Years later I heard him say that he did not remember a time when his students enjoyed themselves more on a field trip than the day that he fell into Nantasket Bay.
- Paul C. Lyons*



Back in 1945

Back in 1945, I accompanied Hollis Hedberg on a field trip in the northern foothills of the Venezuelan Andes.

On the way to visit one of Gulf's geologist camps, Hedberg decided to stop and take a look at the "Quebrada la Luna", the type locality of the "La Luna" formation. According to one of his classical papers this formation was the source of all the oil found in the rich Maracaibo Basin, but he had never seen the type locality. We camped and spent the night where the road crossed the "quebrada" (ravine) above the section. The next morning the truck was sent ahead to meet us at another crossing below the section, and off we went.

The ravine became a narrow gorge and as soon as we were out of the soft Colon shale, typical concretionary limestone beds of the La Luna began forming ledges and waterfalls. At the beginning the going was easy; the limestone ledges were thin and closely spaced so it was much like descending a staircase. Then the limestone beds began to increase in thickness so now the drops were 3 feet, 5 feet, 6 feet; still manageable. We did not realize that the walls of the ravine were getting close to vertical. The next drop was 8 feet to a ledge 100 feet, or so, wide. We jumped down and when we reached the edge of the ledge there was a sheer 300-foot drop. There was absolutely no way to climb down. The ravine had become a narrow deep canyon. We tried to go back and found out that we could not jump up the last 8-foot waterfall. We were trapped. The only escape route was to climb the very steep sides using the vegetation and roots as well as we could.

As Hollis was probing the strength of a root he jumped back saying that something had bit him. That's all we needed. I looked at him and saw a scorpion running around the rim of his hat as if it was a racetrack. I knocked the hat off. We started to climb. It was a nightmare; as you



grabbed a root the side of the hill would start sliding down, and you had to race and grab another root or branch in order to continue. I kept watching Hollis and he would say, "Now my arm is numb". I would say, "Keep going". I could not have carried him out of that slope. Finally after 20 minutes or so (it felt like hours), we reached a more reasonably sloping ground in an open field. By that time Hedberg's arm was limp and beginning to hurt but otherwise he was feeling OK. We could not see any puncture marks so we decided that it must have been the scorpion and not a snake. Now we had to walk for 3 or 4 hours around the mountain to rendezvous with the truck.

We camped there for the night to see what was happening with Hedberg's arm. The next morning it was better. The feeling and motion were back although it was still hurting. So he decided to continue the field trip.

- Georges Prado



In 1958 I was among a group of students being led by Bill Jenks, Department Head at Cincinnati, down a tributary of the Kentucky River. It got late and Jenks decided to get back to the cars cross-country. It was dark and we were still walking across farms. Jenks tried to check a topo sheet but everyone's matches were wet with perspiration. He had a cigarette going and chain-smoked so he could see the map by the glow of his cigarette. After about 4 hours he finally found a road. It took us all that time to travel a distance of about 1-1/2 miles, "as the crow flies".

- David A. Linehart

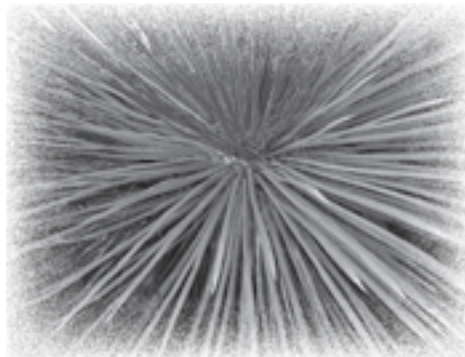


The Dodson-Yucca Story

In the early 1960's as an employee of Shell Development Company, I was assigned a field project dealing with the regional stratigraphy of the Buda Limestone in west Texas. I moved from Houston to Alpine where I had an office in the old Western Union Telegraph office. I needed to hire a field assistant to help with collecting samples while I measured and described sections. I had to rely on whatever talent I could find locally to fit the job description for a field assistant. Pickings were a little slim, but I did finally find Jesse, a dropout with very little education, who was washing cars at the time for a local car dealer.

On one occasion we had to drive to Van Horn, Texas, to measure a section in the Eagle Mountains. We parked the company jeep when the road disappeared and hiked a mile or so into the mountains. After a long hot day of measuring the section and collecting samples from each unit measured, we began the trek back to the Jeep with all the samples packed in burlap bags which we carried over our shoulders. It was beginning to get dark when the heavy load I was carrying broke through the bottom of the bag and fell to the ground. While I sat there pondering what to do, without a word Jesse simply went over to a large Yucca, cut out the heart of the plant and began to strip out long fibers with his teeth. In no time at all a he had woven a strong twine which kept the bag intact and allowed us to return to Alpine with all our samples. I learned that day that practical knowledge sometimes means more than "book learnin'" when doing field work.

- Ronald D. Perkins



A Scary Time during Geologic Investigations

Essentially the first ten years of my career began as a research geologist with the Geologic Division of the USGS. In 1960, I joined the geologic group of the State of Washington where I completed my career in geology. During my time with the State, I continued to maintain a close relationship with the USGS. From time-to-time I joined them largely in reconnaissance surveys in which we employed a helicopter.

One of the most exciting ventures I recall was during a quick examination of various bedrock outcrops along the north coast of Washington State, led by Parke D. Snively II. We consisted of three or four two-man crews that the chopper dispersed at various places along the coast to gather geologic data. Suddenly one afternoon the fog rolled in. It was not long before the pilot arrived to get us to safety before the fog got any worse. Our helicopter ride southward to the little Indian village of La Push was a frightening one indeed. In order to have any sense of direction we followed the coastline very closely. We

also knew that in this area numerous off-shore rock stacks were nearby. Thus, Holly Wagner, my partner, and I had our noses pressed against the Plexiglas windows looking out for stacks while the pilot eased us down the coast. Finally we reached the campgrounds just north of La Push where the pilot sat us down. I'm certain that he was as frightened as we were, because he just sat there at the controls. However, Holly and I wasted no time getting out on terra firma. Although our walk back to the car was several miles, we were not complaining!

- Weldon W. Rau



Little Johnnie of Kantishna

I first met Johnnie Busia in 1949 when I was serving as a field assistant to Bob Fellows of the USGS in McKinley (now Denali) National Park. “Little Johnnie” was the last living resident of the ghost town of Kantishna, just beyond Wonder Lake near the end of the park road. Kantishna had once been the center of a small but productive mining district, but all of the major gold operations were shut down at the beginning of WWII as non-essential industries. Since then “Little Johnnie” had lived in a small one room cabin that was reached via a rickety hand-operated cableway across Moose Creek from the end of the road. I remember that Johnnie’s cabin had the characteristic smell of most prospectors’ cabins of that era---a mixture of wood smoke, kerosene, sourdough bread, and sweat (the latter two being almost indistinguishable).

The story was that he became the last resident of Kantishna when his partner had died. Unfortunately, his partner had the ill grace to die in the fall after the ground was frozen, so Johnny did the only thing he could—he stored him in his meat cache. Apparently the deceased passed away with a considerable amount of cash on his person. The following spring, Johnnie hiked in to Nenana to report the death to the US Commissioner and turn in the cash—after carefully deducting rent for the use of the cache over the winter!

In his later years Johnnie became quite a popular tourist attraction for Park visitors, who got quite a thrill taking the cable ride to his doorstep. One day several of our USGS group was sitting in Johnnie’s cabin chewing the fat about prospecting, mining, grizzly bears, and other assorted Alaskan topics when a carload of



tourists showed up and made their way to his door. Johnnie greeted them cordially and invited them in for a drink. After they were comfortably seated, he brought out his best jelly jars and took down his last bottle of whiskey from the shelf. Alas it was only a quarter full, but he generously poured it around for the Cheechakos, down to the last amber drop. After an extended conversation about his life and hardships, the visitors reluctantly took their leave and headed back to civilization.

They departed and traversed the cableway, which was even more exciting going back because it was uphill in that direction. After they were safely across, Johnnie smiled slyly and explained that, “After they get back to Fairbanks, they’ll think of poor old Johnnie, feel guilty, and probably send out a case of whiskey”. Then he opened the trap door to his root cellar under the cabin floor to reveal shelf after shelf of unopened bottles of Scotch, bourbon, and who knew what else. The he grinned broadly and remarked, “Johnnie not so dumb!”

“Little Johnnie” died in 1957, just a few months after my last visit with him, but his name lives on as the name of the summit that stands just above the site of his old cabin, Busia Mountain on the Mount McKinley C-2 USGS quadrangle.

- Jack Reed

Driver ants covering camp in East Africa in the night of 1968, as well as Hyenas trying to get a grip on my arm while sleeping against the tent wall – exciting geomorphological mapping!
- Jack Shroder



A Jeep Excursion on the Mexican Railroad

During my field-mapping program in Coahuila, Mexico, I used a 1947 Army Jeep to negotiate the terrane. That summer (1961) the rainfall was unusually high, and most of the dirt roads between La Muralla Crossing on the Sierra de la Gavia and Paredon, Coahuila were washed out. I managed to get to Espinazo, Coahuila, on the Mexican railroad but the roads were impassable between Espinazo and Paredon. It is about 10 km from Espinazo to Paredon via the railroad.

I could have driven back to the Sierra and approached Paredon from the south side of Gavia, but this entailed a drive of about 50 km. When I arrived at Espinazo, I encountered a Mexican camp car stationed on a sidetrack



there. I met two Mexican workers who were living there, and who were responsible for maintaining the track. I told them about my predicament, and they suggested that I drive the Jeep between the rails to Paredon. Dusk was approaching, and I asked them if they knew the train schedule –after all, I did not want to become a casualty!

They assured me that they knew the schedule and would even sit on the front of the Jeep and light flares if necessary. So we started our journey. After bumping along for a couple of km we began to notice that the tie spacing was becoming irregular. In fact, on some of the trestles the spacing became wider than our tires! We had to stop the Jeep and build little bridges across the ties. Obviously, this slowed our progress. Finally, just as dusk fell, we arrived in Paredon. What a relief that was. My Mexican friends caught the next train north, and went back to the camp car that evening. The next week I was back in Saltillo, Coahuila, where several geologists from LSU (Louisiana State University) and I lived. We had to take the Jeep to a mechanic to get all the bolts and nuts tightened. I will never forget that Jeep!

- Paul R. Krutak



Striking Oil with a Geological Hammer

In 1979, I was a Professor of Geology at Tarrant County Junior College (now Tarrant County College) in Fort Worth, Texas. Each year I took my students to the Arbuckle Mountains in Oklahoma on a Field Trip. One of our stops was in the Criner Hills area. This is a highly faulted region off the Overbrook and Criner Anticlines. Another stop was made at the nearby Ordovician Age Viola and Bromide Quarries. Most of the Paleozoic rocks in the region are exposed in the Criner Hills area.

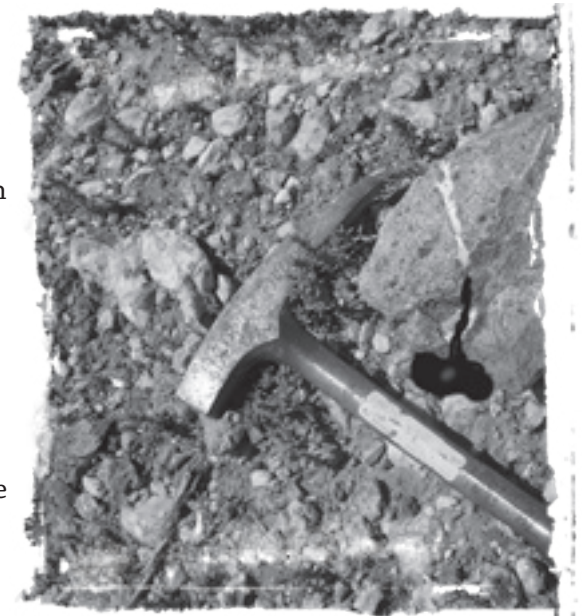


Arbuckle Mountains

I led the students over to a high vertical cliff of the Viola limestone. We discovered a thick two-inch vein of a white calcite filled fracture. I explained that we should get some samples to show its rhombohedral fracture cleavage. Using a pointed geological hammer, I cut into the vein of calcite. Some particles came out and several students helped me enlarge the vein. When we got about two inches deep into the vein, oil started seeping out of the vein. The deeper we cut the more the oil came out. We had actually struck oil, at depth of two inches, with a geological hammer.

It was very exciting. I still have many pieces of the calcite specimens, now filled with oil residue or asphalt. An oil field was adjacent to the quarry and shallow 600 ft. production is present in the area. We had simply opened a migrating oil seep that was blocked by the calcite vein and had allowed its exit to the surface.

- Billy R. Caldwell



A Real Geologist!

It was spring 1965, and I had just finished my BS in Geology at Syracuse University. A fellow student from Canada was looking for a crew of geologists to map in iron-rich metasedimentary rocks for IOC in Labrador and I put my name onto his list. Several days later, a Saturday as I recall, there was a knock at our front door and there was a telegram for me! A telegram in those days meant bad news of some kind. No one in our family had ever received a telegram. I signed and opened it. A summer job offer! Details to follow in a letter. Hot damn! A real job as a real geologist!



So in late May of 1965, I boarded my first airplane at the Syracuse airport and flew off to Montreal, Canada. After an overnight layover, an early morning flight got me to Sept Isles, Quebec, where there was a DC-3 leaving for Schefferville. No heat or pressurization, no stewardesses, no coffee. The seats were long boards, maybe 10 or 12 feet in length, that dropped down on chains to make the seats. And, no seat belts or reclining comforts. My fellow passengers were a few miners headed back to work. I probably was a pain to them as they endured the flight. Running from window to window, snapping pictures with my old manual 35 mm camera from a Kodak close-out sale, my excitement was evident.

Below, the ground still wore a deep mantle of snow. Low rolling hills with a few bare outcrops rose above it, scattered trees, and a river or two slowly breaking free of the restrictive ice cover of winter. One of the men on the flight told me that there were no roads anywhere, and that the only access was by plane. But there below me was a long sinuous roadway, still covered in snow but very obvious. It wound along on the surface, with a few “off ramps”, for miles. Finally, my geology kicked in. An esker! It was beautiful and I recognized it. All those classes hadn’t gone for naught!

The area was still snow covered with drifts up to ten feet high. Most of the outcrops in our map areas were clear, but I had to brush the snow away

at more than a few key outcrops. Spring quickly gave way to summer. The snow had mostly gone, and the area looked quite beautiful. Blue-green lakes, rolling landforms, stunning in their isolation and quiet. It truly was a wonderful place but I was soon to learn who were the real masters of this world, at least for the warm but thankfully short summer season.

Black flies!! For the next two and a half months, this was their country and I was part of their food supply. Breathing became multi-tasking and all-consuming. I learned to eat lunch by keeping the food wrapped tightly until the moment I slid it quickly into my mouth. At that, I’m sure that I consumed enough black flies to last a lifetime. This went on now day after day. At the worst point, I remember being so frustrated and angry that I quite firmly resolved to leave and started walking back to bush camp to catch the next transport back to bugless civilization. Something snapped in me though, and after some good heart-pumping walking, I turned back and resumed work. I like to think that some measure of responsibility and professionalism came through. In fact, I was really having the time of my life. All in all, it was a most wonderful experience, bugs notwithstanding, for a newly minted but now real geologist.

- Michael J. Walawender



Hiking to and standing on the Glarus (Glarner) thrust and realize the awesome power of plates tectonics, I become a structural geologist.

- Ben A. van der Pluijm



Geology Field Camp on WWI Battlefields

When we started our geology summer field mapping course in the Dolomites of northern Italy in 1996, we were warned about the danger presented by unexploded World War I bombs and artillery shells buried in the soil in our map areas. We duly notified our students each year and cautioned them to never touch or tamper with the objects whose locations should be reported to the authorities. It did not take too long for the students to start finding evidence of war from the field areas that were sites of fierce battles more than 80 years before. Most of these reminders were generally harmless and included objects such as pieces of rusty barb wire, shrapnel fragments, corroded empty ammo clips, and an occasional rifle cartridge. It was not obvious how dangerous these trinkets were until we removed the loose tip of one of the rifle cartridges and found dry powder that readily ignited with a flash.



During the fourth season of field camp, a pair of very excited students rushed up to me and breathlessly reported the discovery of a rusty bomb that was partly buried in the clayey soil beside one of the major hiking trails in their mapping area near Passo Rolle. I accompanied the students back to the location of the bomb to confirm their find and observed that sure enough, nearly 30 cm of a 12 cm diameter bomb was protruding from the soil covering the Triassic Werfen Formation.



As soon as we returned to our field station down the mountain in nearby San Martino di Castrozza, we reported the bomb to the head of the local forest service which administered the area. While we waited, the official called the carabinieri ("police") headquarters about the bomb and the potential hazard it presented to hikers. That evening all of us were satisfied that we had done our duty, and that hikers would be safe from the

danger posed by the unexploded bomb.

During the next few days as we continued to map in the area and pass the site of the bomb, little changed except for some yellow tape that had been strung up around the bomb to warn passers-by to stay away. Nearly a week after we finished mapping in the area and had returned to our home base in the town of Feltre, we learned that the nearly one meter-long bomb had been removed to a disposal site and exploded with a fearsome blast that could have caused great physical harm to hikers.

I was very proud of the mature behavior of our students as they had not touched the bomb or attempted to dig it out of its trail-side resting place. I continue to be thankful that these students and those who discovered other, equally dangerous bombs during the next three years were not blown up or in any other way injured while mapping geology in the Dolomites.

- Fred Webb

International Travel

At the end of the Fulbright to England in 1965, the family made a 4,000-mile camping trip to the continent in our new MG 1100 visiting 13 countries (France, Belgium, Holland, Luxembourg, Germany, Switzerland, Austria, Hungary, Italy, Vatican, Yugoslavia, Spain, and Portugal) in 30 days; visiting the low countries, crossing the Alps, then sampling the East, the Mediterranean, and crossing the Pyrenees. One of the most interesting events in the trip was after we crossed the border from Austria into Hungary we ended up in Russian army maneuvers in an extensive wooded area in western Hungary. There were tanks, armored cars, troop vehicles, and many, many Russian troops - my, my what to do? Our 5 kids were impressed and all leaned out the car windows and hollered and waved to the soldiers who smiled and waved back!

- Dan Merriam



Franchesca and the High Andes

I think this GSA memory will ring a bell with many of my geological explorer colleagues. I rode my trusty mule, Franchesca, in the high Andes, in the Atacama Desert often in those days.

Working for the Chile Exploration Company, a subsidiary of the Anaconda Company, out of Potrerillos and El Salvador, I searched for signs of copper and any other minerals of economic interest in the years 1957-1958 or so. Fresh from the cannon's haze in Korea, where I had served as a first lieutenant in the Third Combat Engineer Battalion of the 24th Infantry Division near Yangu, I was interviewed by Anaconda in New York, then sent to Chile, South America. My memory, however, is of a high cliff in the Andes, along a foot-wide path worn by centuries of sure-footed wild huanacos. The dusty



gravel trail began innocently enough in the long shadows of the early morning, from the desert to the mountain's foothills. It wound 'round the lower peaks and promontories, into gulches, ravines, and quebradas, but as it did, the trail steepened and grew narrower.



Not that skilled at "horsemanship," I decided to give Franchesca the reins. She headed upward confidently. By mid-day we were more than half way up the mountain, with drops of thousands of feet if one should tumble from the saddle. Now far less sure of myself, and growing suspect of Franchesca's skills, we headed toward a left turn on the cliff, and - Franchesca stumbled! Eyes wide, knuckles white, tightened knees knocking on the saddle; I clawed for Franchesca's neck, my heart now pounding in my throat. I could hardly breathe, just gulp a little. We rounded the left-turn and the distant mountain scene came into view, it was breathtaking,

though I now had no further breath to give - or take. My camera was on a leather strap around my shoulder, and the camera at my belt; my challenge was to get my hands four inches from the reins to the camera and capture that once in a lifetime scene. I looked down. It was at least two-thousand feet to the bottom. I looked at the scene. It was spectacular, one of nature's miracles. I could not look at the camera; it was much too far away. No way to get it, I held onto the reins, stared unblinking, and wide-eyed straight ahead. We rode; Franchesca paused, and pawed the cliffy gravel as though unsure of its security. It seemed like hours, then we arrived at a dry montane meadow.

The ride and scene were over. Franchesca had got us through. I never got that picture, though it is indelible in my memory - as is Franchesca's stumble, the narrow path, the potential fall into eternity, and the terror of that moment. Of course like you my geo-colleagues, I have more such memories, as in the cannon's haze, in the deep night of a deepest mine, on the snowfields of Antarctica, and landing in a rattling and antiquated bomber about to lose its landing gear. But Franchesca, and the cliff, top my fearful memories.

- John G. (Jack) Weihaupt

In China 1984, I walked every morning in the 100-acre garden of the foreigners' resident cottages. One morning behind me I heard a shout and turned to find a soldier looking about 13 years old frantically waving a rifle at me and shouting in Chinese. Never before had I seen any soldiers around so I gathered he wanted me to go back. I really wasn't fearful that he would deliberately shoot me but he was so excited I feared the gun might go off from his trembling. Later I deduced I had past his post and he was more terrified his sergeant would find out.

It turned out the Vice-President of North Korea was now in residence and they knew Americans were not especially friendly with that state. The night before they had moved out all the foreigners but me. Couldn't throw me out as I was a guest of the Government. There were more adventures before I was able to change residence.

- Norb Cygan

My First Summer of Field Work

In the summer of 1961 following my junior year at UCR (University of California, Riverside), I had the opportunity to work for the USGS as a field assistant on the “Boulder Batholith Project” out of Butte, Montana. The experience I gained would substitute for the “summer field geology” class at UCR. I look back with great respect and admiration to Monty Klepper and Harry Smedes who patiently endured my long slow learning period, and helped me begin the task of becoming a field geologist.

On my first morning of field work Monty introduces me to the batholith; a jeep tour through the forest. We look at numerous outcrops of plutonic rocks, deal with air photos and base maps...and at the third outcrop I manage to leave my rock hammer sitting on an old log. At the next outcrop...guess what? No hammer. Back we go, get the hammer, and return to the third outcrop. Things get worse. At this outcrop I plot our location on air photos in the stereo board, and then continue taking notes. I manage to leave the stereo board on the front fender of the jeep...and yes, it falls off of the jeep...and we run over it, destroying the stereo board.

Monty calmly takes it in stride. No reprimands, just a gentle reminder to keep track of the equipment. On day two Monty hands me a clipboard with a stack of air photos; and along with my hammer (now attached to me with a 10-foot piece of string that I attach only after Monty is out of sight). I head off for my first half day of mapping. Surprise, I don't lose a thing.

On day three my traverse will cross the continental divide east of Butte. I reach the continental divide by mid afternoon and will have to hustle to get to the valley floor to make our prearranged meeting time.

While sitting on a rock writing field notes I hear a shrill whine ending in a giant pop a few feet above my head. As I look up I see an eagle diving straight at me and opening its wings about 10 feet above my head. Whine...pop! I'm being attacked by two eagles - mom and pop. I wave my arms and yell, which doesn't help. They increase their activity and are getting closer. Obviously they are protecting a nest and I'm regarded as a threat. I grab my day pack and make a rapid



retreat down slope. It isn't till when I get to the valley floor and the waiting jeep – when I reach into my pack for the air photos – that I realize I left the photos sitting on the continental divide. Again, Monty takes it in stride and says that the next day's traverse would include a return to the “eagles nest” to pick up the photos; which I did despite dive-bombing eagles. I'm embarrassed and disappointed with my abysmal performance. Three days in the field - I've left the rock hammer behind, destroyed a stereo board, and left the air photos on the continental divide. I still don't understand why they didn't send me home.

Later, near the end of the summer, I work with Harry Smedes in the Butte Highlands. While walking back to the jeep at the end of a long day I stumble and fall on a jagged rock tearing a large messy gash in my left knee. I patch it up enough to stop the bleeding, get to jeep, and we return to camp. By the time we reach camp (in the middle of nowhere) it's dark – so we grab a beer and a bite to eat and crash. The next morning my knee is too stiff and sore to do field work.

We drive to Butte and go to the emergency room to get the wound cleaned and stitched up. In the ER I remove my pants and realize – hmmm...I've been out in the field for 6 days without a shower wearing the same clothes – I am really filthy. A group of cute nurses show up in the ER – I am the only person needing attention that morning. Harry assures me it is normal for the staff to show up for a case that doesn't consist of the two major types of cases they see – knife and gunshot wounds and syphilis. One of the nurses starts to clean around the wound. She washes away the tan (six days worth of dirt) revealing a fish belly white leg. Nice! Not only do I smell like a pig, I also look like one. The doctor walks in. He's a rather seedy looking old duffer who has obviously sewn up lots of drunks.

He looks at the wound and says; “I'm going to have to clean this out and it may hurt a bit. Do you want an anesthetic?” Cute nurses are present. It's time to be tough, so I say, “I don't need any anesthetic, just clean it up.” He pulls out a small scrub brush, puts soap on it, pulls the wound open and starts scrubbing directly in the wound. Sh@#! This really hurts. I last about 3 seconds and faint, fall backwards off of the table, hit my head on the floor, and knock myself out. I stay two days in the hospital for observation. A great way to end the summer.

- Gerald E. Weber, Sr.

In the Valley of Kings

Many whiles ago, the LaMoreaux family had trips to Luxor and Aswan. They were very interesting, rewarding and memorable experiences. The trips were by air, the most comfortable, a train, and felucca. The latter only for a short distance, though perhaps the most exciting of all because of the sailing experience in the ancient, triangular sail ship.



It was summer time and very hot in Luxor. It was possible to cook the proverbial egg on a rock in the sunshine, 115°. Probably the setting for the old saying, “mad dogs and Englishmen go out in the midday sun.”

Our trip to Aswan was made more interesting by the fact that an old student and friend, Hossni Mitwalli, the director of the High Dam, walked out of a conference with Russians, much to their consternation, and led Bunnie and me on a tour of the dam even through the inspection drainage tunnels at the bottom of the dam.

Probably one of the most exciting and interesting events of our trip to Aswan was when Hossni allowed us to inspect the drainage tunnel. Bunnie in a short, cotton white dress with yellow polka dots, walking along a wooden plank path, made it from one end to the other, past drill rigs, relief pipes, and workers in diaper-like outfits finishing the inspection galley. You can imagine the impact of a young blonde without a veil over her head. It was almost an earthquake impact. On top of that, anytime I wanted to take a photograph, Hossni would hold up his hands to the guard and permit same!

On the surface the Valley of the Kings at Luxor, but first a mention of the Luxor Hotel, frightfully old and traditionally British. Bedrooms large with high ceilings, tall headboard beds with mosquito netting all around; and Bunnie indulged the last gin and tonic in the house!!

One will never forget a visit to the Valley of the Kings, 64 tombs, but only about a dozen available to the public. Of greatest interest were

the modern discoveries by geophysicists using remote sensing, magnetometers, radar, and resistivity in search of more remnants of a very famous history. The area is one of the world's richest archeological sites; jewels, amulets, figurines, furniture, and sarcophages.

Hydrogeologist, Dick Parizek, and daughter, Katrina (good friends), are helping with recent archeological work. Just think of exploring tombs dating back to 1500 BC (3500 BP).

One of the prize specimens in our collection from travels is a finely carved limestone statue of the god, Thor, from King Tut's tomb; a gift to a German archaeologist working with Carter, passed on to us by his wife.

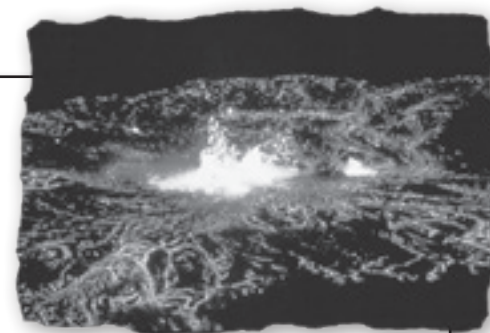
One has not lived until a ride in a felucca on the Nile or a visit to the Valley of the Kings.

- Phil LaMoreaux



Mesmerized by watching the 1969 Mauna Ulu crater filled to near overflowing with a lake of molten basalt, which was covered with a fragmented thin solid crust. This was the period when geology was beginning to accept the theory of global plate tectonics. One of those “out-of-the-blue” light bulbs clicked on when I suddenly realized that the mobile pieces of Mauna Ulu crust were bounded by miniature versions of spreading centers, transform faults, and subduction zones. Over the next few weeks, I captured movie and still photos of this action. These images accompanied by explanatory text, turned out to be an extremely popular teaching tool in university class rooms worldwide.

- Wendell “Duff” Duffield



Marble Canyon Days

In late 1949 USBR forces were directed to find a viable dam site in Marble Canyon on the Colorado River in Arizona. Marble Canyon is a 50-mile stretch of the river immediately upstream from the Grand Canyon National Park. Here the river has cut a canyon 2,500 to 4,000 feet deep. The nearest road was about 20 miles from the canyon rim. Our first look into the canyon made us wonder how we could ever get a core drill way, way down there.



Marble Canyon

The small USBR crew, mostly WWII vets, showed great ingenuity, courage, and stamina to provide a way down to the top of the Redwall limestone. There a camp was established 500 feet above the river. Then a steep highline from the canyon rim to the camp, 2000 feet below, was constructed. A second highline from the camp to the river at mile 32.8 was then built.

By summer 1950, a core drill was in operation. The field crew said that since all of the hard work was done, I could ride the highline and do some geological work. The initial trip was one to remember! The scenery was fantastic! Added interest was provided by a hang-up of the highline cage which threatened to dump Glen Lasson (my boss) and me. When we got to the bottom, he looked at me and said, "That's the first time I've ever left my fingerprints in hard steel."

In November 1950, I made one of several more trips to Marble Canyon. The field crew greeted me: "You came just in time. You can help us move the field camp to mile 42." I did. The repeated procedure was: load a boat, shoot a small rapid, line the boat through a medium rapid, unload, and reverse the procedure while trying to make the boat go upstream. The first three nights, we had no tents or heat. I had brought my summer sleeping bag expecting a comfortable heated tent.

The first night at mile 39 was cold and I stayed awake all night. About 2:00 AM the dead silence of the canyon was interrupted. High above us

came the sound of small pebbles falling from high on the canyon wall. Rattle, rattle-closer and closer and finally landing some 50 feet away from our talus pile camp site. I awoke a couple of others, but they didn't seem interested and went back to sleep.

Sometime later I lay shivering in my summer bedroll when a dreaded sound reached my ears. Probably from near the rim, some 3,500 feet above us, sizeable rocks were falling. You could hear them bouncing and breaking as they came nearer and nearer. I yelled at the others. In the last seconds before these rocks arrived, we made it into a small gully adjacent to our bedrolls. One of many rocks, the size of your head, landed between my bedroll and the adjacent bed. We were showered by fines but had no casualties.

I learned another lesson that night – say your prayers and don't camp on an active talus pile.

- Robert L. Wilson

Life after Death

R.C. Moore was the geologist on the Birdseye expedition down the Colorado River in the Grand Canyon in 1923 to determine the feasibility of dams for irrigation, flood control, and power development. While in the canyon there was a violent storm and some of the boats and equipment were swept downstream in the flood so it was assumed the party had drowned. Moore's demise was published in the local papers, but he lived to read his own obituary. It was one of his favorite stories.

- Dan Merriam



Choosing Geology

I did my undergraduate work in natural sciences, at the University of my Hometown, Erlangen (Bavaria). In the first year, I had to make a decision whether to focus on geology or on mineralogy, since there were 2 major professors in the geosciences building, each the head of his respective institute (geology and mineralogy) and one needed to know which tribe one was joining. Both fields appealed to me, geology for its broad diversity of subjects (origin of the Alps, evolution of ammonites, ore mining), mineralogy for its link to inorganic chemistry and physics (crystal structures, origin of clay minerals, elementary composition from x-ray studies).

There was a tradition to take the new geology and mineralogy students out to see the real world - soils and rocks of the Franconian Jurassic landscape, a few quarries, and refreshments in a village inn.

After a day in the field, (the beer tastes good!) students were encouraged to ask questions about the landscape and about anything underfoot. On picking up rocks and showing it to one or the other of our guides for instructions about type and composition, something very remarkable soon emerged. It greatly helped me in making my decision. When showing the rock to the professor of mineralogy, the answer would invariably involve the advice that one would have to make a thin section to identify the item properly. In contrast, the geology professor would whip out his loupe, squint hard at the rock piece, and rattle off its proper name and its composition in terms of minerals contained. He would then check that I too applied my hand lens to the piece, advise me to keep it for my collection, and instruct me in using the hammer to trim the piece to proper "hand" shape.

Needless to say, the second response



set the tone in terms of role model: I would want to sometime be able to tell what is what in the field, using a loupe, rather than waiting to get back to the lab and using a microscope. Thus, I chose geology.

What I had not considered is that the geology professor knew every rock in the region, because he had held his position for decades, and led innumerable field trips. The mineralogy professor had just recently moved into town.

The use or non-use of a microscope, obviously, was not an issue at all. In fact, I ended up spending a lot of time on a microscope, when laboring for my advanced degrees. Nevertheless, I am glad I chose the way I did.

- Wolf Berger

Lost in the Woods

My Ohio Wesleyan University stratigraphy class was on a weekend field trip to study facies changes in the Devonian limestone outcrops along strike from Delaware, Ohio, to Kelley's Island in Lake Erie. I arranged for the classic Ford Trimotor to take us to Kelley's and back. We were at an outcrop in the woods and running late for our pickup. With a Brunton compass we elected a route straight back to our airfield. Don Triplehorn out in front as usual called back to say there is a small plane landed in a meadow across our route. We held back as a pickup raced to the plane and soon men were unloading cases? Of whiskey we noted through our binoculars. "Whoops," I said to my class, "We had better go around as I believe that's Canadian whiskey being unloaded here before the plane gets to the Ohio shore to escape taxes. I don't think we should cross in front of them." Back through the woods, got lost, and had to take a ferry. Got back to OWU very late at night. Had an invite to speak with the Dean next day regarding geology field trips.

- Norb Cygan



A Lucky Meeting

During the early and mid 1980's, some friends and I spent a week or two each year hiking sections of the Appalachian Trail. Also, I was studying the rocks and drafting a geologic guide to the Appalachian Trail. When my closest hiking buddy became unable to backpack because of health and age problems, we developed a pleasant way to complete the Appalachian Trail. We went with our wives.



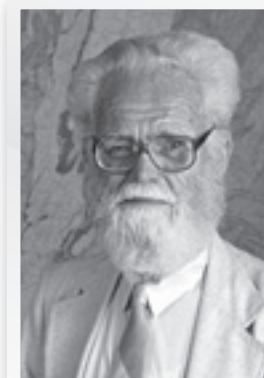
They let us out in the morning and shopped all day while we hiked. They met us in the evening and we went to a motel for the night. They liked this arrangement much better than our previous practice of leaving them at home for a week at a time and it was great fun for all. They shopped a strip 600 miles long and 50 miles wide from Maryland to Vermont.

One day, we met a white-haired old gentleman on the trail. The next afternoon, we were driving across Connecticut to find our meeting place for the next evening. (It was really bad if we didn't end up at the same place at the end of a day's hike. That only happened once.) We saw a white-haired old man walking beside the highway, we thought it was the man we had met earlier and stopped to offer him a ride. He said that he was a geologist rather than a trail hiker. I said that I liked geologists, too, and he got in to ride with us. It turned out he was doing field work in New York but lost the keys to his truck and was walking/hitch-hiking back home.

I had a new state geology map of Connecticut on my lap and was looking at the rock formations as we passed them. After a few minutes the gentleman said, "I think you'll find that I compiled that map." I said, "Who are you?" His answer, "John Rodgers." My wife, Charlotte, said I jumped and she thought I would hug him. He was certainly my top geologic hero from all I had heard about him and I had used his 1953 Geologic Map of East Tennessee for years as I lived there. We then had a lively discussion as I tried to find out as much as I could from him about Connecticut geology while we were together. After a few miles, our routes diverged and we let

him out and went our separate ways.

When I finished my draft a year later, and the Appalachian Trail Conference, now Conservancy, (ATC) was preparing to publish my work, we wanted a qualified geologist to review the draft and improve it, particularly since I was an amateur geologist with only about 10 credit hours in geology. The ATC asked several geologists if they would review the book. Some declined and some agreed but didn't have adequate breadth of knowledge. John Rodgers was perhaps the best qualified geologist in the world to review a book on the whole Appalachians and he agreed. He gave a wonderful review with many suggestions and corrections for my errors. I used a quote from Nathaniel Hawthorne and Dr. Rodgers even corrected some of Hawthorne's grammar. His review certainly gave the book credibility as well and ATC still sells it. When I started going to GSA meetings, I was amazed at the number of John Rodgers stories that were told and the admiration he received from all. I thought I would add this one more John Rodgers story.



John Rodgers 1914-2004

- V. Collins Chew

Crushed and completely discouraged when the abstract (my first ever!), based on my just-completed Ph.D. thesis, was rejected (GSA National Meeting of 1967) for "lack of broad significance." The word-for-word same abstract, submitted one year later for the GSA National Meeting, was accepted for its strong appeal. Whew!!! What a rocky start to my career. And what a confusing introduction to the process of peer review.

- Wendell "Duff" Duffield

Summer Field Camp

One of the benefits of having gotten married a couple of days before leaving for NMIMT's summer geology field camp in June 1956 (incidentally I am still married to the same lovely lady today!!) was the use of my new father-in-law's WWII vintage Dodge Power Wagon. This large, and by modern standards rather primitive, 4x4 started out life as a radio truck for the army. To enable it to carry the heavy WWII radios it was equipped with overload leaf springs which gave it the ride of a buckboard even when carrying many days worth of rock samples. On one memorable day I had a group of fellow geology students packed in the back of the truck (which had no rear seats) when we spied some pronghorn antelopes. With the "wisdom" of youth encouraging me, we sped off to catch a closer look. The antelopes' natural curiosity about the approaching noisy and dusty cloud held them motionless for a few seconds before they took off and left some bone-bruised and battered young geologists pounding over the clumps of grass in frustration as they watched the rapidly receding rumps disappear.

That same truck gave us another moment of excitement when my field partner and I were heading back to our tent accommodation on a rare rainy afternoon. Our course took us across a side hill of wet Permian shale which, in conjunction with the huge, nearly treadless tires tended to produce scary downhill sideward movement instead of the forward movement intended. A combination of gently turning the unassisted steering uphill, goosing the throttle slightly, and aiming for the bigger clumps of grass and smaller bushes which gave momentary traction allowed us safe passage to the flatter terrain on the way back.

Summer camp was an unforgettable experience with 13 other students (half from LSU) under the tutelage of the late Dr. Clay T. Smith and Dr. Charles Pitrat.

- Michael Bikerman



The Dodge Power Wagon



Lost Power

My assistant, Paul, and I were waiting for helicopter pickup from a drilling rig in the Gulf of Mexico. It was a Sunday. Our PHI chopper pilot arrived, spent some time talking to the RIG pusher, and came to tell us he was a newbie (a Sunday substitute) and assumed there would be aviation gas on the rig. "Not on my rigs," says the tough old pusher. "So," says our fly boy, "I don't think I can make it back diagonally over water to Freeport. We will fly straight to shore, hope to find a road and I'll radio for a fuel truck to meet us."

Off and up we go, near the beach, popping and other noises from the engine. We are going to have to windmill down but I've got to get us over the inter-coastal canal so the truck can meet us. Some fancy tilting and jerking around and we are over the canal.

I look down and two tugboat skippers are looking up from their helms seemingly trying to figure out what's going on with that chopper. Bam, clang they run into each other. Meanwhile in the chopper, Paul and I are told to take the crash position. We come down real hard on the sand but we have large pontoon floats on the J2 and a bounce or two and we are on the ground.

After a while the fuel truck pulls up, pumps in the gas, and we are ready get back in the air to go on to Freeport. My assistant, Paul, looks at me and asks if the truck is going back to the Freeport Base. We ascertain it is. Paul jumps out of the chopper, squeezes into the truck and shouts, "Wait for me!"
- Norb Cygan



A Hippy Ride in 1952

In May 1952, driving to Circle Cliffs dome in Utah from Grand Junction, Colorado, at the town of Green River I crossed the Green River, where I turned south off US 50 on to a poorly built, trail-like road (now a main paved highway to Capital Reef from I-70) through the desert along which some active sand dunes covered and blocked the road to Hanksville. From there, I drove west along the Fremont River in my Jeep heading for Teasdale to spend the night. A strange problem in the front end was noted, and I stopped several times to check it. Later, the Jeep suddenly veered sharply to the right onto the gravel shoulder. The right front wheel was jammed up into the fender - apparently a broken axle. Little traffic was expected in this remote area, but I waited and finally decided to camp; had a quick-fix dinner, cleaned up, and got my cot and sleeping bag ready for the night. With the sun setting in the quiet of the desert, all of a sudden the sound of a vehicle came from miles away.

I broke camp and was finished by the time an ancient 1930s' Dodge car drove up with steam jetting up out of the radiator. Looking into the car window, the smell of muskmelon and other vegetables struck me in the face as I looked at the young man with a dark beard, who yelled, "Got any water?" He got out. Standing in what appeared to be homemade clothes, he again wanted to know if I had water. I did, and we filled the radiator. He said he was going to Teasdale and offered me a ride. We left, and he talked about his hippy life of not working and owning nothing (the car was his sister's). He had driven up from the mouth of Red Canyon, where his hippy friends were camped on the Colorado River beach for swimming and growing vegetables.

Driving down White Canyon from Clay Hills, he had ferried across the Colorado River at Hite. Moving along, we came to the well-known Blue Hill through the Mancos Shale, and, with practically no brakes, we flew down the steep road fortunately making all of the sharp curves. Stopping



at the bottom at a creek, he refilled the radiator. We reached Teasdale late, and I was dropped off at Neal Henrick's house. He was working on a USGS uranium project in the Capital Reef. Early the next morning, I called the Grand Junction office, and I was told that our mechanic Bill would bring a new wheel assembly the next day.

I spent the day in the field with Neal examining the old Oyler uranium mine. The next morning Neal dropped me off at the Jeep, and finally Bill with a helper arrived. They got busy with the repairs, and we camped there the night. The new wheel assembly was installed by the afternoon. Not a single vehicle came by in all that time! I continued my trip driving up a dry wash into Circle Cliff dome, where I camped alone and the next day examined new uranium prospects during the first uranium boom in the 1950's.

- Warren I. Finch



Mistaken Identity

R.C. Moore, long-time Director of the Kansas Geological Survey and Chairman of the Department of Geology at the University of Kansas, was a committed field geologist. One summer day when the temperature was about 110 degrees F, Moore and a student were breaking rocks near the state mental hospital in Osawatomie, Kansas. A passerby saw them hammering in the heat, assumed they had escaped from the hospital and so called the authorities. The police soon arrived to take them into custody, but the two finally established their identities and were left to continue their work. The student told the story with glee much to Moore's chagrin. (A story related by Norman Newell)
- Dan Merriam



Mentors Who Were Pioneers in Geology

It was the summer of 1963 after my freshman year at Brown University. I spent 10 weeks mapping at Sachuest Point between the 2nd beach and 3rd beach in Newport, Rhode Island, for Tim Mutch, my advisor at Brown (who would have me searching for micrometeorites in Permian salt samples in his clean lab two summers later). At the end of October I led a New England Intercollegiate Geological Conference field trip to the area I mapped. Tim thought that I was ready to move up in the world a bit and should work the next summer for one of the pioneers of geology (although he was unaware that he would one day become a famous pioneer of lunar and Martian geology). That fall Tim made arrangements for me to work for Marshall Kay in Newfoundland for the next summer. My job was to be a field assistant for Kay's new graduate student Jim Helwig.



Jim and I drove to Newfoundland in an International 4-wheel drive Scout where we found that the Trans-Canada highway was mostly unpaved and our 4-wheel vehicle earned its keep. We started mapping in Sop's Arm, White Bay, in west central Newfoundland, and I did the usual stuff that a new field assistant does: I helped set up camp, took notes, helped measure sections, caught trout to eat, cooked breakfast and other meals, learned how to play chess from Jim. I had a wonderful time in the almost constant rain, especially trying to dry out our clothing and equipment. The tent we were using was transferred from Marshall Kay's field research sites in Nevada, and had not been treated with water repellent, so we often woke up nearly swimming in our "desert tent" after an evening of rain.

After a while Marshall Kay came to visit and asked Jim to meet him in Notre Dame Bay near New World Island, where Jim's doctoral research would eventually be centered. Marshall had been working with Hank Williams from Memorial University, Newfoundland, to develop an understanding of the accretionary history of the Island of Newfoundland (which Marshall and Hank would eventually know to be the result of global (plate) tectonics, which would ultimately replace geosynclinal theory

as geosynclines had replaced tectogenes). To help him in this endeavor Marshall invited a young structural geologist from Cambridge University, John Dewey, to visit.

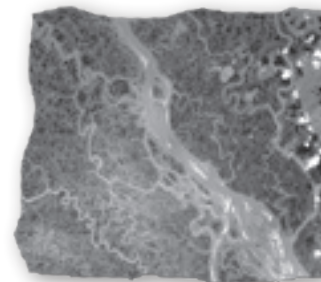
We were sailing around Notre Dame Bay, looking for the location that Jim would pick for his dissertation study area. Marshall and Jim eventually took off for New World Island by auto, and John and I were left to reconnoiter around Notre Dame Bay for several days. Realizing that I hadn't even had a structural geology course yet, I had only finished my sophomore year and was only 19 years old, John decided to teach me a semester of structural geology in four days and, by gosh, he did. When I returned to Brown that fall and took structural geology from Bill Chapple (assisted by graduate student Jim Head), we were all amazed at the knowledge of field geology that I was demonstrating (nothing like having a few heavy hitters showing you the ropes).



After graduating from Brown, I became Marshall Kay's graduate student and did my dissertation on 700 square miles of Notre Dame Bay centered on the Change Islands in Newfoundland.

At age 26 with Ph.D. in hand, I really had no idea of how fortunate I was to have had Tim Mutch, Bill Chapple, Jim Head, Jim Helwig, John Dewey, Hank Williams, and Marshall Kay as my mentors. You better believe that over the years I have come to realize what pioneers they were, and how really fortunate I was.

- Thomas E. Eastler



*Getting lost in the N.W. Territories,
my first day on-the-Job, June 16, 1957.
- James M. McLelland*

My Earliest Geologic Memories

My earliest geologic memories involve living in a straw-thatched and stone-walled house high in the Andes, near Lake Titicaca (southern Perú), where my father (originally and at heart a petroleum geologist) was mining for tin and gold. Once the straw roof caught fire and burned many valuable belongings.

Another time he drove two workers suspected of stealing tin ore to a jail in Puno. On the way over, our Model T Ford got stuck in a trench across the road. The workers helped to free the car and were then delivered to the police.

After buying food supplies we drove home, finding that the two workers had returned faster by foot and were asking to be hired again! Soon thereafter my father decided to search for placer gold in a jungle river east of the Andes. The trip to it was on muleback, and one evening we set up our camp beds and waited for the mules carrying our tent. Looking up at the majestic starry sky kindled my long-lasting interest in astronomy. At our destination the rats ran among the rafters and emerged from toilets, and a puma ate our chicken. The puma was shot, but escaped by jumping through the wire-mesh of the chicken coop, and was found days later when vultures circled over his carcass.

At the Escuela (later Universidad) de Ingeniería in Lima I chose to specialize in Mining Engineering and worked part-time for the Peruvian Geological Institute (measuring the amount of salt blown from the ocean into the coast, assisting the mining district studies of the US Geological Survey mission to Perú, and documenting the retreat of the Yanasinga glacier. After graduating I worked for Cerro de Pasco Corp., first in the Exploration Department located in Lima and later as Assistant Chief and Chief Geologist living in La Oroya (headquarters and smelter). Cerro scholarships and experience enabled me to obtain MA and Ph.D. degrees from Harvard University, where I taught from 1963 to 1995, with an emphasis on “ore finding”.

- Ulrich Petersen



Lake Titicaca

A Lasting Impression

In early September, 1983, I was camped with my packer, Lloyd Clark, at the Rock Island Lakes near the Continental Divide in the Beaverhead Mountains along the Montana-Idaho border, mapping for the US Geological Survey on the Dillon, Montana-Idaho 2 degree geologic map. We had ridden to the Upper Miner Lake to examine the Beaverhead Divide fault zone exposed on the cirque wall there, but about noon we listened to the wind moaning over the Continental Divide above us, and jointly decided that we needed to get out of camp before it snowed. We were back in camp by mid-afternoon and packed and in the saddle by dusk. It was snowing.

By about ten that night we had reached the Miner Lake trailhead and campground, in driving rain and snow and a night so black that the black mules were invisible except for their white manties, or pack covers. As we drifted through the campground, we passed two large mobile homes from Wisconsin, and these kind folks heard the horses and mules and rushed out into the cold and

snow to see this ghostly relic from Montana's past. And they invited us to come in and finish up their dinner and to help celebrate the wedding anniversary of one of the couples. I suggested that we might leave a lasting impression on their mobile home: an impression left behind by a wet and sweaty

geologist and packer; wood smoke; wet horses and mules; and wet canvas, leather, and saddle blankets, but they persisted.

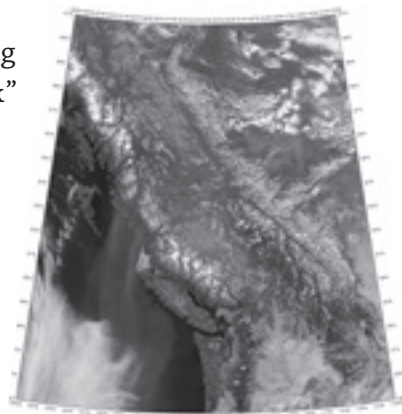
We ate up their roast beef, toasted the celebrating couple with their slivovitz, and in much better spirits unloaded the horses and mules, set up our tent, and were out of the rain and asleep by a little after midnight. The friendship with the Wisconsinans lasted for many years.

- Ed Ruppel



Thar She Blows

After a switch in careers from languages and political science to geology at age 26, I had only a few geology courses under my belt by the summer of 1958. Nevertheless Dick Hay hired me for a lucrative field assistantship because I had a pretty young wife and two baby girls. They would come along to keep Dick's wife and baby company at our camps. At first we camped at the vertebrate fossil digs of the legendary "amateur" paleontologist Lon Hancock at Clarno, Oregon, getting to know Lon only a couple of years before his death. Later we moved up into the Ochoco National Forest while we mapped volcanic ash in the John Day Basin. We enjoyed being around Fossil, Oregon, with its "Fossil Bank" and other establishments. Dick admitted to me that one of his chief goals in Oregon was to find the perfect amethystine geode. During that summer we also worked with Tom Thayer, who was mapping lava flows on the Columbia Plateau. Don Lindsley showed us the elegant Carnegie Geophysical Lab vehicle he had acquired to work on his Ph.D. project studying the paleomagnetism of some of the flows as well. That summer convinced me that geology was really what I wanted to devote my life to.



Back at Berkeley I was soon under the influence of Howell Williams and Mac McBirney, who tried to talk me into doing my Ph.D. work on volcanoes at Huehuetango in Guatemala. Wanting to stay closer to my young family, I opted for granite and metamorphic rocks in the Klamath Mountains instead. There I always knew my directions thanks to Shasta's magnificent cone looming in the east.

I had many chances to see more volcanic rocks over the following years but it wasn't until the summer of 1980 that I had a chance to experience active volcanism from close up. Bill Elbert, Barb Tewksbury, and I led a field school in Iceland that summer. After two weeks of seminars at Hamilton College, we flew off with a couple of dozen undergraduates to Reykjavik. We spent a month studying various volcanoes and glaciers. Krafla volcano was erupting on about a three-week cycle at the time, and we tried to time our visit there to see an eruption, if possible. We arrived

there on July 8th and looked at hot springs, mudpots, and lava flows from eruptions that had taken place only a couple of months earlier. Reports came in that Krafla was inflating and then deflating rapidly, signs of magma in movement underground. But alas, there was no eruption, and we had to move along.

On July 10th, when we stopped to picnic at Aldeyarfoss, a nearby waterfall, we looked back toward Krafla and saw an enormous eruption cloud blossoming on the horizon. We jumped into our bus and sped back. The Icelandic Civil Defense people had closed off the road ahead. When we pleaded that we were a group of professional geologists they allowed us to continue. The nearest we could get to an erupting fissure in our 4-wheel drive bus was a couple of miles. We hiked across the fields of recent lava flows inside the caldera, drawn by the impressive lava fountains ahead. We stopped to see several flows in which red-hot lava peeked through the black, congealed crust. It was already evening when we reached an active fissure. We were able to get within a couple of hundred feet of erupting lava on the upwind side. Lava fountains in the distance rose several hundred feet in the air.



Krafla Caldera

Another group of geologists led by Sigurdur Thorarinsson had reached one of the erupting fissures a little before we did. They had been attending the dedication ceremony for the thermal power station that had just opened not far from the eruption site. It seemed that every time they got ready to put this power station on line an eruption perversely caused further delays. However, the front page air photo in the Reykjavik morning paper showed our student group rather than Thorarinsson's professionals right beside the erupting fissure. The planes above were using us as a scale to illustrate the size of features on the ground. Likewise, we had been using the planes to guess the scale of the fire fountains. This event provided a fitting climax for our summer field school in Iceland and further stoked my still growing interest in volcanism.

- Bill Romey

So Who Needs a Brunton?

Back in the middle 1960s I remember when the famous Harvard structural geologist, Marland Billings, visited our field camp in west central Maine, which was established by the crystallographer-mineralogist, Caleb Wroe Wolfe. Dr. Billings was taken out to see the strata of the region and he made correlations with the New Hampshire stratigraphy which he had established.

At one outcrop where the strata were gently dipping, he took his hand without a Brunton in it, inclined it, and said the fold was plunging about 20 degrees. I was a field assistant at that time and like a studious student, I took out my Brunton and measured the plunge at about 18 degrees. So who needs a Brunton anyway!

- Paul C. Lyons



Fleeting Fame

On the 1967 AGI Field Excursion to Japan, we took the ferry from Hakodate on Hokkaido to Aomori on Honshu. About half way across the locals, especially children, started coming and asking for my autograph. I thought this was strange, but decided it had something to do with me being an American. I found out later that the Japanese leader of the field trip had told them that I was a famous movie star from the States! It was a very pleasant experience, but too short lived.

- Dan Merriam

Trilobites or Tribolites?

For many summers from 1956 to 1978 my field work was concentrated on Devonian biostratigraphy in SW Ontario and adjacent parts of Michigan and Ohio. Huge volumes of brachiopods and stromatoporoid sponges were collected from several large quarries, especially in the vicinities of Amherstburg and Ingersoll, Ontario. In each case it was necessary to obtain the permission of the quarry supervisor to enter the quarry and do the necessary collecting.

One morning one of the supervisors near Ingersoll told me that he was an amateur fossil collector and asked if I would be interested in examining some of his specimens. I told him that I would stop in at the end of the day to look them over. It was with great pride that he showed me his collection and mentioned that he was especially proud of several well-preserved TRIBOLITES (rare "finds" in any rocks)! I smiled but didn't correct his pronunciation and chuckled over it for several days afterward. I also shared the story with some of my paleobiology students to help them understand the importance of correct spelling and pronunciation of fossil names.

- Al Fagerstrom



The setting is an early morning 1969 walk with Don Swanson onto the previous night's lava flow from the Mauna Ulu vent of Kilauea Volcano. Following a few unsteady steps on this still hot surface, we realized that we were atop Pele's version of a waterbed. The rocky crust beneath our feet was merely a thin bladder-like cover over still-molten basalt. We quickly retreated!!

- Wendell "Duff" Duffield



The Our Lake Trek

In the summer of 1964, Dr. Ray Gutschick, University of Notre Dame, used NSF support to study the Devonian/Mississippian transition in western Montana. We were his field crew: Mike McLane, Tom Hanley, Pat Gleason (all UND), and Jim Sprinkle (MIT). In the middle of August on one of the hottest days of the year, we hiked from a road repair crew campsite at the end of the North Teton River Forest Service road into the Sawtooth Range in the Bob Marshall Wilderness Area west of Choteau, Montana. Carrying minimum equipment, we intended a rapid hike in and out, with one night on the outcrop.



The trail from the camp ended on a sharp Madison-equivalent ridge backed by a very steep dip slope that led down to a sag formed on the Morrison Formation. Game trails led us along the ridge, through a pass and down to the sag. Continuing across ridges and high saddles for the rest of the day, we eventually reached our goal: a high shale slope that we called the Our Lake site after a nearby cirque lake. As the sun set, we reconnoitered, ate dinner, and camped on the barren slope near the top of the ridge, lodging ourselves against small trees, and tying our sleeping bags to sticks to keep from sliding downhill.

Sleeping sporadically as a coyote barked nearby, we awoke early the next morning in wet sleeping bags and several inches of snow. After trying in vain to warm up and dry our sleeping bags in front of a scrub fire, we

hiked up to the snow-covered section. Cleaning it off, we cut a trench to fully expose the contact, measured it, and collected the disappointingly barren section which, it turns out, was missing the usual boundary beds. Freezing rain and snow started to fall again as we left the site making the ridge trails treacherous, forcing us to abandon the ridges for the valleys. Because low clouds, flurries, and rain hid the peaks and ridges, we gave up using terrain association in favor of a compass bearing to navigate back through the wet pine scrub and deadfall in the valleys. Realizing we would eventually have to climb we followed a roaring creek upstream to the first of several ridges each of which we crossed hoping it was the last.

Finally we found ourselves in the familiar sag of red, green, and purple mudstones of the Morrison Formation and knew we had but one final ridge to cross, the Madison ridge with its steep dip slope. Favoring a direct assault in the rapidly diminishing light, we pulled ourselves up the cold rock dip slope, finding the pass in a howling wind that drove biting sleet against our hands and faces.

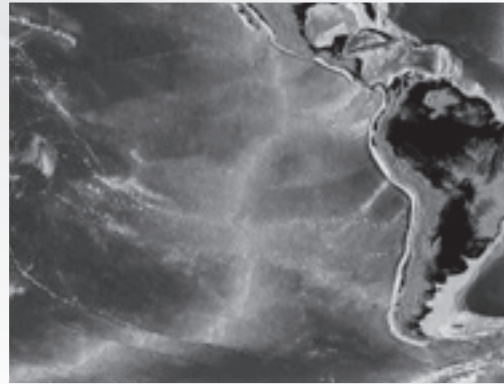
Jim remembers seeing Mike's hand, cut badly the night before on a can of corned beef and bandaged with a sample bag, reopen and drip blood on the white snow and rocks of the limestone ridge. When we finally staggered into the camp, the work crew asked us "Did you see any grizzlies?" "No," we replied. "Well," they said, "they saw you!" The workers were getting ready to send out a search party for us within the next half-hour had we not arrived. After changing into dry clothes in one of their warm tents, we piled into Ray's Chevy Carry-all and slowly drove in the rain back to Choteau. We spent the night in a hotel and the next day recuperated at the town laundromat drying our gear - a rare day off. "Wow," I thought, "I could make a living doing this?"
- Thomas B. Hanley



Witness to a Revolution

Smitten early by rocks and minerals, my geologic interests began in the days when the “fixists” ruled our thinking. Debates between the granitizationists and magmatists were typical of the many unsolved geologic problems of the moment. When I started graduate school at UCLA in 1959, it was fully entrenched in the “old tectonics”, but many there were beginning to struggle with the emerging ideas. Daniel Axlerod’s paleobiology “proved” the permanence of the Sierran barrier, Gordon McDonald’s look at heat flow “proved” the permanence of the ocean basins, and, of course, much of what we reviewed in the tectonics seminars were drawn from the existing pre-plate tectonic publications. Staff (including James Gilluly, John Crowell, David Griggs, and W.W. Rubey) was beginning to see the emerging paradigm shift, but the old ideas were hard to reject and I’ll forever cherish the thought that I rubbed elbows with such greats during these times. A constant stream of visiting scientists (T. Bullard, Robert Dietz, V. Vacquier, Ken Hsu, T.F.W. Barth, among too many to remember) challenged the old ideas, but they, too, were struggling with the emerging ideas of the time, and UCLA was one of the destinations of these many leading thinkers of the time.

My field of specialization (geochemistry) didn’t initially put me in the center of this new idea, and I view my role more as a close witness to the revolution that plate tectonics was about to bring to earth sciences, certainly not anywhere near its center. In a seminar with W.W. Rubey in 1961, my required term paper explored the meaning of the newly published heat-flow data from R.P. Von Herten. With the help of Ron Shreve, R.V. Malkus, and David Griggs, the paper was worked into a reasonable attempt to explain the sharpness of heat-flow gradients across the East Pacific Rise as a local, igneous process (shallow dikes). The paper eventually ended up in

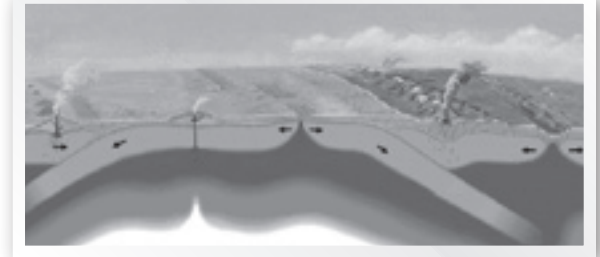


The East Pacific Rise

the hands of Teddy Bullard at Cambridge (courtesy of George Kennedy). A delightful exchange of correspondence with him revealed Bullard’s early thinking about convective heat transport in mantle. Alas, it lays today only a term paper in my library, never pursued to publication, but simply a reminder that I among most other students of geology at UCLA were beginning to waken to these new ideas. John Crowell, an early, ardent “fixist,” later became one of plate tectonics’ strongest advocates after seeing evidence linking the African, South American, Australian and Antarctic glaciated rocks. Gordon McDonald’s evidence for the refutation of plate tectonics based on heat flow is today strong evidence for plate tectonics. “The rocks don’t change, but the geology does,” certainly describes it well.

In my nearly 40 years teaching at Wisconsin, and following in retirement, I continue to marvel at the realization that I was one of those fortunate geologists to have a career spanning this revolutionary period in the earth sciences, and marvel at how much it’s simply taken for granted that plate tectonics is a fact of geologic life today. Faculty and TA’s teach new students these ideas as dogma, with little appreciation of the struggle that earth scientists faced in solving the problem, and hence little appreciation of the processes by which these ideas were sifted and winnowed to reach our state of knowledge today. Clearly the journey was more important than the destination, and the breakthrough thinking processes aren’t simply to be dismissed.

Ken Hsu, one of the leading intellectuals of this time, and who’s “Midas touch” reached many corners of the earth sciences, made a poignant admission that his Confucian respect for his elders throttled his thinking and, I think too modestly, kept him from seeing evidence before him with the new eyes needed to fully understand the meaning of his work on melanges. “Loyalty is a Confucian value, and vanity is a Confucian



Frenchman's Flat

vice”, were his words. Budding earth scientists stand on the shoulders of the giants who preceded them, and knowing how they got there is as important as what they see from where they are. I continue to marvel on what I’ve been privileged to see from the shoulders of those who surrounded us in those heady days at UCLA. I read Naomi Oreskes’ Plate Tectonics and find it amazing to read, not only for what the giants of plate tectonics learned, but, more importantly, how they made their discoveries, and how their respective institutions were a critical part of the process of these discoveries. It’s a model worth remembering by students, faculty, and their institutions today.

- Carl Bowser



Painting: Paysage avec Orion aveugle cherchant le soleil by Nicolas Poussin

In 1954 we were mapping West Mancos Creek in SW Colorado with students of the University of Illinois Field Camp. We rented horses from the Menafee ranch. As grad student assistant and old time cowboy I was going to show the three I had a lasso (lariat) on my saddle and had been taught how to use it by an old timer. I said, “Watch this!” to the students and throwed (cowboy talk) at a very old cow standing near. Missed by a mile and reeling in the rope my horse stepped into the loop. I pulled in the rope including the front right foot of a very surprised Menafee horse. She bucked and jumped and tried to get rid of the rope and me. I almost got my eight seconds but didn’t quite make it. Got a sore rump and a lot of laughs instead. Went back on foot.

- Norb Cygan



I was detailed to Frenchman’s Flat proving grounds in Nevada in 1952 to represent the Water Resources Division of the U.S. Geological Survey. When I arrived I knew only that I was to be under the general supervision of Arthur Piper who was to arrive shortly from our Menlo Park office. When I looked in the building that had been assigned to us I was surprised to find a large amount of equipment intended for sampling and analyzing water. Obviously there was no water in the immediate vicinity of Frenchman’s Flat.

When Dr. Piper arrived I learned that all of this equipment had been sent to the Aleutian Islands and subsequently reshipped to Nevada. The original site for the Buster Jangle atomic shots was to have been in the Aleutian Islands. Because of the large amount of water in that area the Division had selected Dr. Piper to go there to sample whatever hydrologic effects occurred as a result of the surface and underground nuclear blasts. When he arrived he examined the geology of the site and discussed it with those in charge of the project. He learned that the successful completion of the testing required a thickness of several hundred feet of unconsolidated material below the blast site.

As a result of his reconnaissance of the area Piper believed that there was only a thin cover of alluvium over bedrock. He told the project manager to take a bull-dozer and scrape down a few feet and he would uncover bedrock. The manager argued with him but finally called on a dozer operator to scrape the site. At a depth of only a few feet bedrock was exposed. As a result shiploads of equipment and personnel were transferred from the site ultimately to the Nevada Proving grounds. At Frenchman’s Flat we installed thermistors to establish a base for earth temperatures and started mapping the geology of the area. None of the water sampling equipment was ever used.

- Richmond Brown



Mapping the Sea Floor

In the early 1950's I had moved from working in the Sacramento Valley to Los Angeles to become the Area Exploration Geologist for Humble with special attention to the offshore portion of the Los Angeles and Ventura basins.

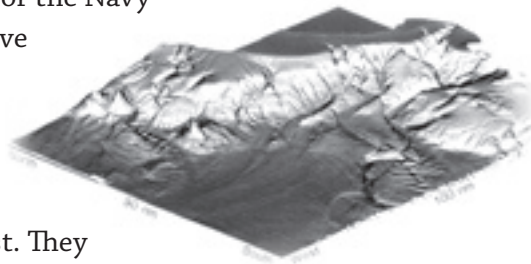
The industry had started marine seismic work off the Los Angeles and Ventura Basins where onshore oil fields had occasionally extended offshore from wells drilled from piers.

There were known oil seeps along the Ventura Basin, but the seismic work inside 200 feet of water were very, very poor. I had several fellow Stanford graduates who had done some of the first underwater geologic mapping in the Los Angeles basin using aqua lungs. I arranged for 3 or 4 of them to work for me along the Santa Barbara Coast where seismic results in shallow water were very poor and almost useless. We would go up on a Friday evening and work Saturday and Sunday. They would fly back to San Diego where they worked for the Navy Electronics Lab, while I would drive home to Pasadena where my wife and I lived.

During the weekends, they would swim South-North profiles perpendicular to the coast. They would collect samples from outcrops on the sea floor in water up to 200 feet in depth, measure the dip and strike of the beds, then place the samples in small sample bags, attach it to a balloon, inflate it with air from their aqua lung and release it to float to the surface. I would be following their bubbles in a motor boat, see the balloon when it surfaced, collect the sample, and note the location using a magnetic compass reading from 2 or 3 easily identifiable shore locations. This was relatively easy for me since I had been a Navigation Officer in the US Navy during WWII and had had extensive experience using a Brunton compass.

When I returned to the Los Angeles area, I would take the tagged and numbered samples to a paleontologist who would furnish me with age dates. This with the dip and strike information, the divers had collected would allow me to make a geologic map of the sea floor. These underwater geologic maps led Humble to discover several shallow water fields.

- Thomas D. Barrow



Where there's Ore there's Always Porphry

My career as a geologist began without my even recognizing it. During the years of WWII, I spent summers and partial falls working on an uncle's ranch near Eagle, Colorado. My work spanned the activities of growing and harvesting hay, grain, and foot crops and working with cattle and horses. The pay (\$1.00/day and keep) went to the purchase of bridles, spurs and the like. I was a young cowboy and had my sights set on such a life.

Much of my summer work was spent on the back of a horse. We spent a lot of time in the high country up Brush Creek moving cattle and horse, and fixing fences and tending to the matters of custodial work in the National Forest. Along the way, we often stopped for a mid-morning snack at Fulford, a ghost mining town at the foot of New York Mountain, where Bill, a miner, was working some lead and zinc claims. The occasion was one morning when we had stopped for coffee and some pan bread at Bill's camp that I did not understand. I picked up a rock, for some reason, probably because of its appearance and asked Bill what it was. He said, "Spince (he called me that), that's pawfree (porphyry)". I guess I must have asked for some clarification because he said (paraphrasing), "Well, Spince, where there's pawfree, there's always ore, but where there's ore, there's not always pawfree." I didn't have the vaguest idea of what he was talking about but it resulted in a great amount of laughter from the hands and my uncle.

A career followed that, like most folks, presented choices at many forks of the road and the ones I took have been immeasurably pleasant in a challenging profession involving travel, students, research, and classroom work. The memories of that morning have remained mostly buried but surface intermittently – I have not forgotten and I still wonder about it. It was not a driving force in selecting directions of my geological interests but that brief encounter with Bill was prescient. I have spent much of my career addressing that miner's riddle.

- Spencer R. Titley



Navajo Country

In the mid and late 60's, we at the USGS's Center for Astrogeology in Flagstaff, Arizona, were preparing for the Apollo manned missions to the Moon. Among the tasks were things that might seem obvious in retrospect, but in fact were not obvious at all at the time. For example: what tools should the astronauts use on the Moon, and how should the tools be used? What kind of geologic observations should be made? What samples should be collected? How should the astronauts relay geologic information meaningfully to the scientists in the geologic backroom here on Earth, who could not see what was being described? How should this information be recorded?

To work these things out, we ran many tests as well as many field exercises together with the astronauts. A favorite place for all this was the Hopi Buttes area in Arizona's Navajo Reservation, maybe because the place was deemed sufficiently lunar in aspect and geology.

One of the tests involved evaluating whether the Apollo missions should have TV cameras along. This may seem incredible now, but in fact there were powerful forces against the notion then, on the ground that the scientific return from the mission should be "data" not images.

To work all this out, we set up a trailer in which sat the geologists, linked to the outside world only by an audio link with the field person, whose activities could also be observed on a TV monitor.

On one occasion, the field man was Dick Jahns, my thesis adviser, mentor, and all-purpose hero. Dick was in the middle of the traverse, describing what he saw in his usual lucid and amusing way. Suddenly we saw him bend down and do something near his right foot which we could



not see. The flow of eloquent words was in no way interrupted, and the traverse eventually came to a successful conclusion.

When he got back to the trailer, we asked what the bending down was all about, and he allowed as to how he had stepped right next to a largish rattlesnake, which was not pleased. I don't remember now whether Dick killed the critter or, more likely, encouraged it to go elsewhere, but what was clear was that the very real and immediate danger was not enough to stop this great geologist in his tracks. How does the saying go? "Neither rain nor snow nor large rattlers will keep a geologist from the appointed rounds?"

- Ivo Lucchitta



A night-time trek over the ultramafic belt of the Santa Elena Peninsula of Costa Rica with Tony Dahlen to rescue McBirney's water starved crew. (1965)
- Eli A. Silver



In 1948 I was a member of a USGS field party mapping geology in the Kwetucik River Basin, Alaska, where we boated upstream as far as we could go, then backpacked traverse to make new geologic map of the area.
- Edmund G. Wermund

Sabarei

In mid-November of 1973 my two graduate students, my daughter (Carla, a high school senior), and I had completed a long field season in the remote badlands along the northeast coast of Lake Turkana in northernmost Kenya. We packed up our new Land Rover with our gear and headed out east on the track and then the road to Nairobi via the Sabarei military post on the border with Ethiopia. About ten miles from Sabarei in the middle of nowhere, our fan belt suddenly snapped. We thought that we had a spare but could not find one. So one of my students and I decided to walk to Sabarei to get help leaving Carla and the other student behind with the Land Rover.



After two hours of walking we reached the post and found much to our surprise, that the commander could speak some English. He immediately summoned a platoon of heavily armed soldiers and two 2 1/2 ton trucks and sent them out to rescue Carla, student, and Land Rover. Why was the commander so concerned?? He told me that there was a renegade

group of Borana tribesmen that had attacked the post a few days earlier and had killed several soldiers. Upon arrival back at the post, I spotted a Land Rover on blocks parked in one corner of the compound. It belonged to a French company that was under contract to survey the Kenyan-Ethiopian border. Upon the discovery of an in tact fan belt, it took about an hour of fast talking to convince the commander to let us exchange our broken fan belt for the good one. Having done so, we were on our way once again very relieved to be safe and sound.

- Carl F. Vondra



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