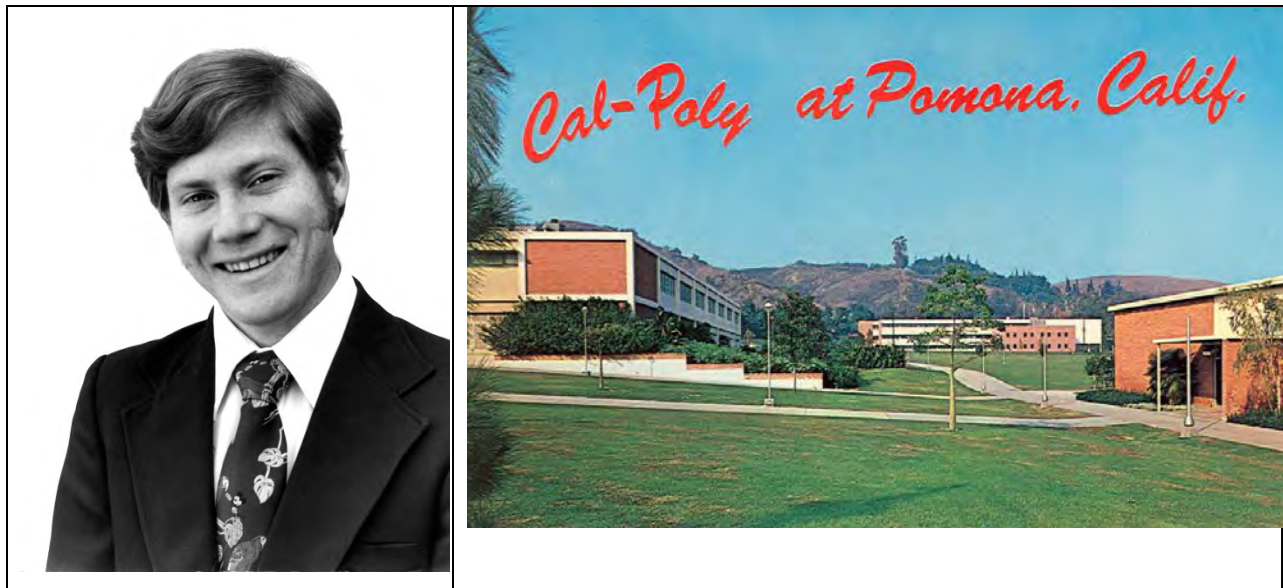


MEMORIES of the GEOLOGY PROGRAM at CAL POLY POMONA DURING its EARLY YEARS (1974-75-76)

By J. David Rogers, Ph.D., P.G., C.E.G., C.HG.



My senior picture (at left) and postcard from Cal Poly Pomona during the period I was enrolled, June 1974-June 1976.

Summer Field Geology (1974)

The 12 unit summer field geology course I took at Cal Poly during the summer of 1974 was the watershed experience of my collegiate years – it defined my persona, extolled my natural curiosity and abilities, and gave me a tremendous boost in confidence, from which I never looked back – performing, more or less, to my peak potential from thence until the completion of my doctorate degree, eight years later.

I had decided to major in geology after a outdoor vacation to Arizona and Utah in the summer of '73 with my buddy Steve Tetreault. About two weeks before graduation one of my geology teachers at MSAC, Kaz Pohopian, told me about an opening in a summer field geology course being taught at our "sister school" Cal Poly Pomona, which began the Monday June 17th after our MSAC graduation the previous Friday evening (Cal Poly was located just east of MSAC, sharing common boundaries).

The summer field geology course was taught by Prof. Larry Herber. It was either pretty daring or downright foolhardy for me to partake in such an activity having only taken two introductory geology courses and the two field trip classes. Summer Field Geology is normally intended for geology majors between their junior and senior years or after their senior year. It is the capstone undergraduate course for geology majors. I had intended to transfer to U.C. Riverside to major in geology, but changed my mind that summer because of the mentoring I received from Professor Larry Herber, who was a "teacher's teacher." I could also save a lot of money living at home and not having to drive 50 miles each way to school. Cal Poly was just nine miles from my home and my older brother Robert had attended between 1964-68, during the first half of the Vietnam War.

It was the first year that Cal Poly Pomona had offered their own Summer Field Geology course. In those days the school was running four 10 week quarters per year, with most people skipping the summer quarter. The field course was divided into 8 units of credit for Field Geology and another 4 units for a companion course in Field Methods, as one package deal (12 units credit). The course was taught by Lawrence J. Herber, who lived on Sapphire Drive in Rancho Cucamonga, about a mile below the mouth of Cucamonga Canyon. Herber had taught a similar course for the University of Nevada-Reno two years previous, but those students had been obliged to camp out in lower Cucamonga Canyon, a few miles above his home. Our class would be mapping an area slightly east of that examined by the earlier UNR class, in 1972.



Summer Field Geology students at Cal Poly Pomona in August 1974: Front row (left to right) Allen Snyder, Bob Archer, Dave Rogers, and Steve Carpenter. Back row (left to right) Prof. Larry Herber, Hank Brown, Kathy West, Scot Carney, and Rick Gorman.



Dr. Herber instructing us in how to make a stratigraphic section in Vasquez Canyon. I'm in the green ball cap, second from left, behind Allen Snyder.

The Cal Poly students were divided into two-person teams: Team 1 was Hank Brown ('73) and Kathy West (ng); Team 2 was Steve Carpenter ('75) and Bob Archer ('79); Team 3 was Scott Carney ('77) and Rich Gorman ('75); and Team 4 was Dave Rogers ('76) and Allen Snyder ('75). They needed an eighth student (me) so there would be four two-person teams, each assigned to a different sector of the eastern San Gabriel's front range. None of the other students had cared to pair up with Allen Snyder, so I was selected to be his partner, by default. What providence that worked out to be for me!

It turned out that Allen Snyder lived just two blocks from me in West Covina, having graduated from WCHS a year ahead of me, in 1971. Somewhat shy and retiring, I had never met him during high school. He had a slight speech impediment, but he was a very serious and hard-working student, never one to engage in frivolity. To give the reader an idea of his sheer brain power, I can attest that he had committed all the sine, cosine, and tangent values from standard trigonometry tables to memory! He usually worked out trigonometric calculations in his head, which was very handy while we were mapping. I actually pitied the other teams because I knew I was paired with the "resident genius," because no one else had cared to work with him. That was sure my lucky break because although he had some quirks, we complimented one another nicely and we got along just fine.

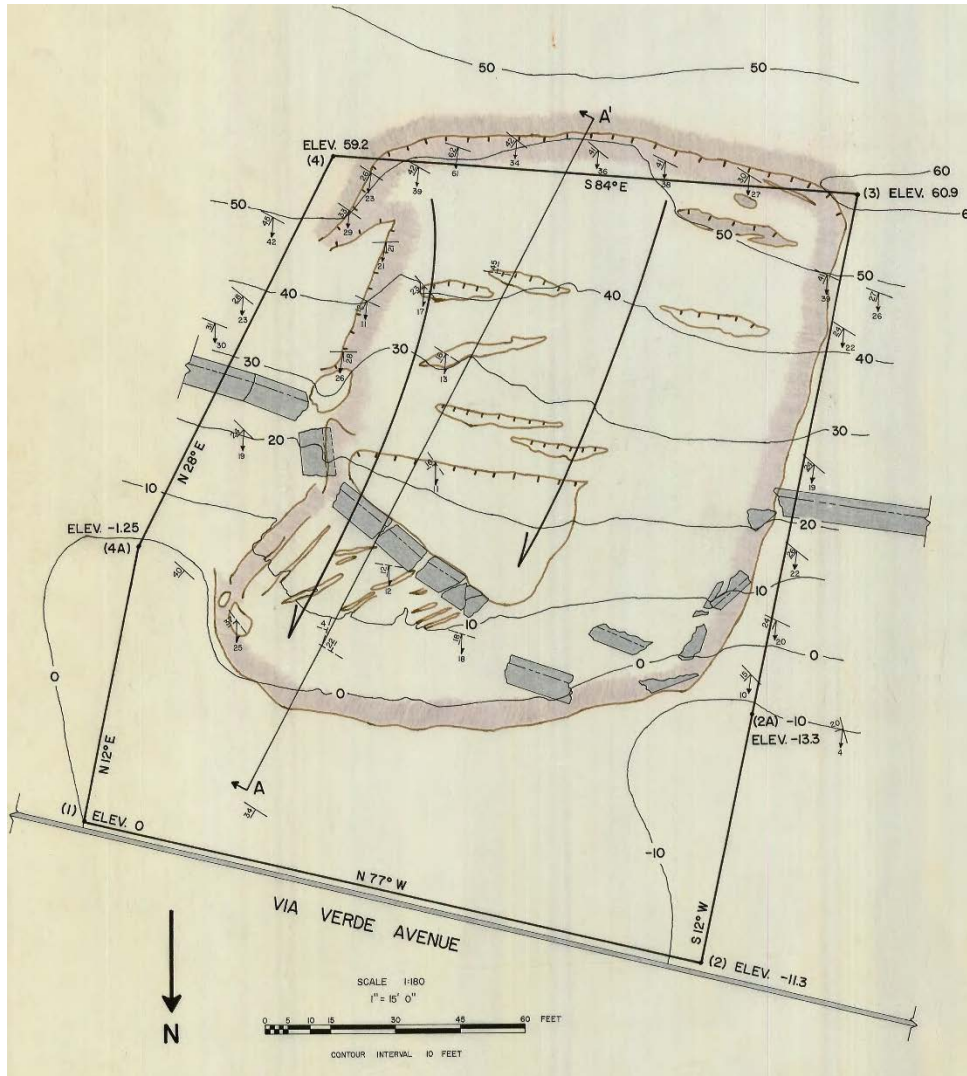
The Snyders lived on Thackery Street, about a block northwest of the intersection of Lark Ellen and Vine, which was only one block northwest of our house on Portner St.! Allen was an only child because his older sister had died of cancer as a teenager. His father was a consulting mechanical engineer who worked in the petroleum industry, advising clients on well extraction techniques, etc. Mr. Snyder offered some valuable advice to me on where I could purchase drafting supplies locally for the best price, at the *Stan Marr Motel* on North Garvey along the San Bernardino Freeway, near West Covina's border with Baldwin Park.

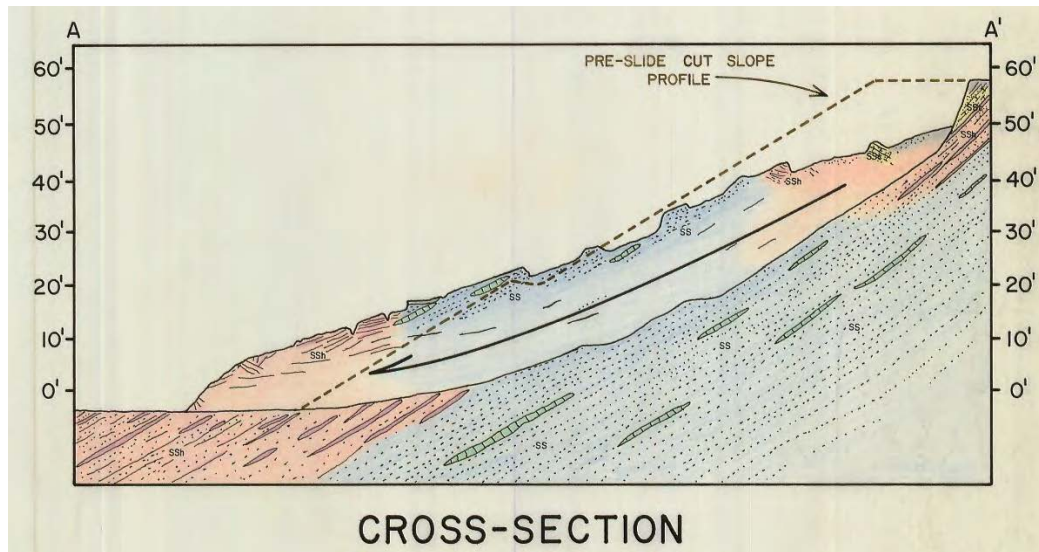


I would pick Allen up around 5:45 AM in my blue 1965 CJ-5 Jeep (shown at left), depending on where we were headed that day. We tried to begin work at 7 AM in the eastern San Gabriels, to beat the heat and the traffic on the eastbound San Bernardino Freeway (Interstate 10), which wasn't all that crowded in those days.

On Monday June 17th we mapped a cut slope failure in the Puente formation along Via Verde Avenue, over near Puddingstone Reservoir. We mapped the slide in assigned pairs, using Brunton Compasses and steel tapes.

I enjoyed this challenge, learning a lot. It was the first day I'd ever seen a Brunton Compass, but I had earned the surveying merit badge in scouts so understood the basic principles involved (without that prior training I would have been completely lost).



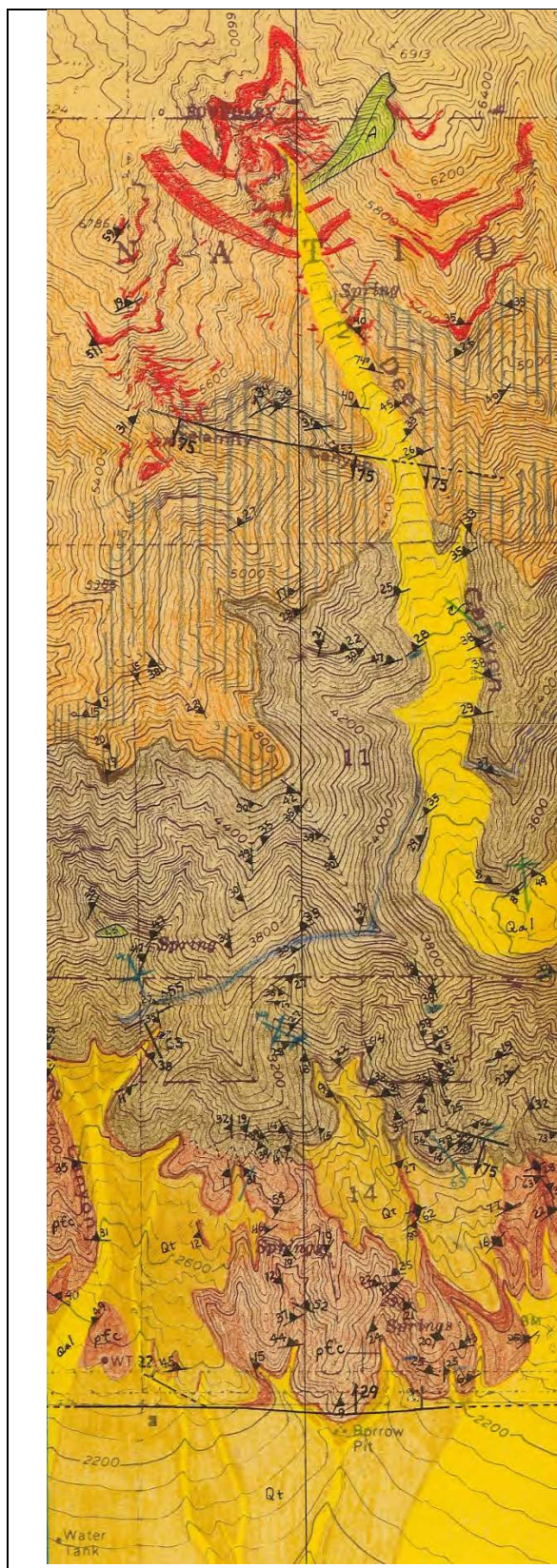


My cross section through the Via Verde Avenue Landslide, which we mapped as our first field methods project in mid-June 1974, near Puddingstone Reservoir

The next morning we convened at the uphill terminus of Archibald Avenue in what is now Rancho Cucamonga, at 7 AM sharp. This was about 35 miles from where we lived, so we were off by 6 AM. After convening, we headed for the mouth of Cucamonga Canyon, where Dr. Herber showed us examples of various types of structures we could expect to see and how to measure and record data of such structural features as faults, shears, joints, foliation, lineations, fold axes, and determining the plunge of fold axes. This was probably the biggest day of learning in my collegiate career because I hadn't been exposed to most of the information previously. So, I probably asked more pointed questions than anyone else. Allen helped me a great deal, though it took me most of the summer to understand the vague distinctions between features like foliation, lineation, and cleavage.

The map area assigned to me and Allen (Team 4) encompassed seven square miles (1-1.5 miles wide by 6 miles long). It was the area of greatest topographic relief, extending from the alluvial fan below Chaffey College (el. 1600 ft) to the top of Cucamonga Peak (el. 8,859 ft), making for almost 7300 feet of vertical elevation gain. Fortunately, there was a single 4WD forest service access road, which crossed Deer Creek near el. 4820. We were given a key to the gate, which was over in Cucamonga Canyon, and could drive my Jeep up on this road to access the higher elevations each morning. This would be our routine for the next four weeks, until July 13th.

Allen and I would try to pack in as much mapping as we could each day, occasionally remaining on the mountain till 7 or 8 PM (which made for a very long day). Most of the time we tried to leave between 6 and 6:30 PM, which still made for a 12 hour day in the field. After hiking across the mountain slopes all day, I would be famished when I arrived back in West Covina. On Wednesday nights I would take Janet to Shakey's Pizza Parlor for a late dinner, and actually devoured a large pepperoni pizza and one or two pitchers of ice tea! Each day I was out there mapping my lunch and snack bag seemed to get larger, until I was routinely carrying two sandwiches, lots of snacks, and three quarts of ice tea; one chilled (which I drank first); the next filled with ice tea and ice cubes (which I drank during the midday); and a third quart, which was completely frozen in the morning, which I drank in the late afternoon. So my poor mother was tasked each day with making three quarts of sun tea on the kitchen porch, always containing a few leaves of mint. This fluid was my lifeblood during the hot, dry dusty days working below Cucamonga Peak, a rugged and beautiful part of the San Gabriel Range.



The irony of the Eastern San Gabriels was how lonely they were, sitting but a few miles above a mass of humanity numbering in the millions of souls. One could gaze out over the coastal inversion layer and the toilsome smog, imagining they were in a distant land, gazing across the empty expanse of clouds blocking out the mass of humanity lying below.

At the beginning of each day Allen and I would discuss where we needed to go, to fill in the blank areas on our map. We consciously tried to map every drainage channel and every ridgeline, then attempt to connect the mapped contacts between these “map strips” with each other. We sometimes found ourselves in precarious positions, scrambling down over dry waterfalls or occasionally unaware of our exact location when the southern California summer inversion layer clouded us in. Allen brought an altimeter each day, which he would dutifully set when we departed the Jeep at some fixed position/elevation, taken off our enlarged USGS topo maps. That altimeter was a handy device to have along when we were mapping in the clouds! Some days we would ask Dr. Herber to shuttle us up onto the high road, after having parked my Jeep down at the base of the range. He would let us out up around the 5000 to 6000 ft elevation, and we would spend the day walking downhill, back towards my Jeep, mapping as we went. We did this about 4 or 5 times.

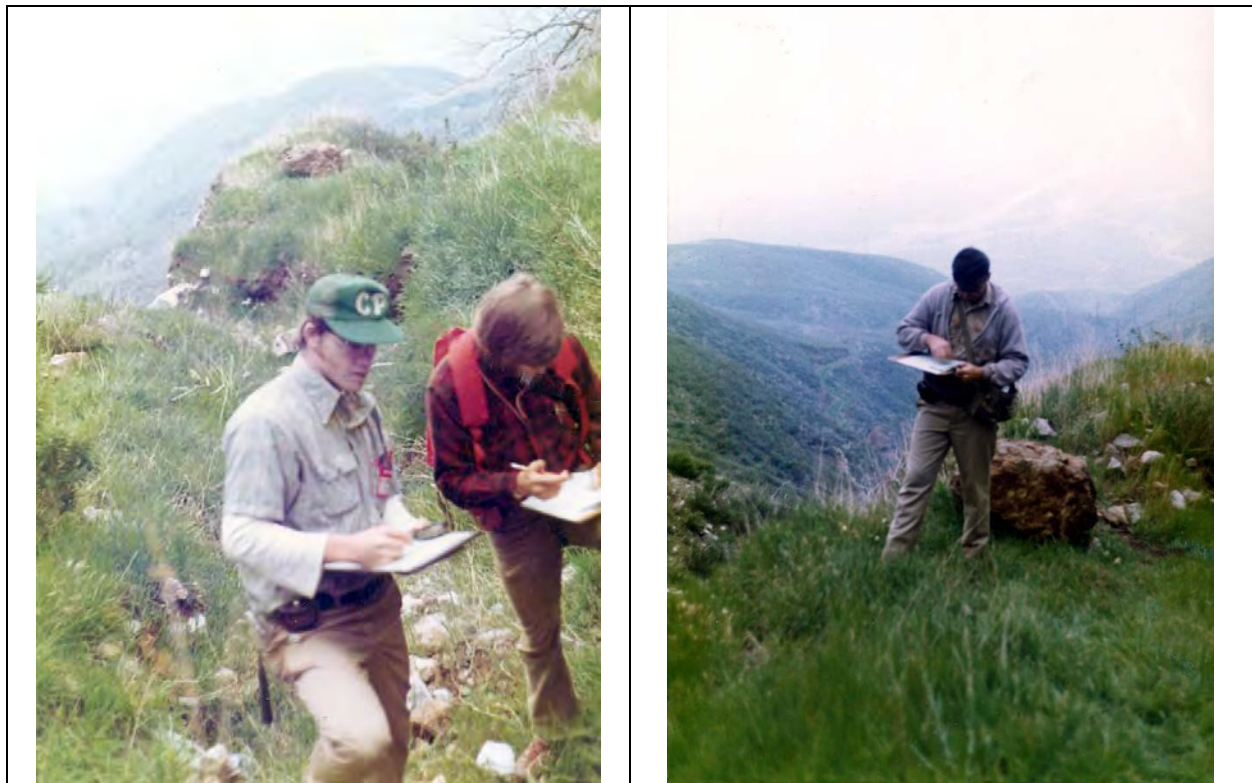
Dr. Herber chose the area because it was close to where he lived, right by the mountain front. But, ***he couldn't have picked a more interesting area to map in the entire United States.*** From the bottom of the range, we were exposed to: older and younger alluvium, old terrace deposits, a major thrust fault across the foot of the mountain front (the Cucamonga fault), low grade metamorphic rocks, including quartzites that formed prominent waterfalls, phyllite, slate, mica schist, pyroxene gneiss, a wonderful carbonate [marble] marker bed, then into progressively higher grade metamorphic rocks, including a range of diorite gneiss.

Left- My geologic map of our Cucamonga Peak study area, which encompassed 4 square miles

The graphic Deer Diorite (which didn't look real, sparkling white with huge black phenocrysts of hornblende), a thick belt of dark grey mylonite, a zone of xenoliths, then contact with five stages of plutonism, beginning with diorite and culminating with graphic injections of light colored tonalite (quartz monzonite), which permeated the upper elevations, around Cucamonga Peak. It was a veritable cornucopia of igneous and metamorphic rock types, all crammed into a very small area

Between mapping days in our assigned areas, we took some separate days to perform activities that were a part of our 4-unit Field Methods course. The first field assignment was using a Brunton hand transit and steel tape to map the landslide along Via Verde Avenue, near campus (mentioned previously). We did this on our first day of class, with the assignment being due on June 24th. We spent a lot of evenings and weekends working on our data in the rock laboratory on the second floor of the old science building on the Cal Poly campus. Professor Herber gave Steve Carpenter a door key so we could gain entry after hours.

The second field methods assignment was a three-day plane table mapping project in East Etiwanda Canyon on July 1st to 3rd. Our site was a 300 ft wide gravel filled wash, incised up to 100 feet in the surrounding alluvial fan, just below the mountain front. The site was selected by Professor Herber because it had graphic exposures of the Cucamonga fault cutting across both banks and the channels pristine discharge suddenly disappeared in the gravel bed along the projected trace of the fault! That made an impact on all of us (underlying geologic structure controlling the events topside). I operated the alidade on the plane table while Allen carried the stadia rod and chose the spots where elevation measurements were made. We established seven survey stations, the highest at an elevation of 2365 feet, about 100 feet above the channel bed. We had an 1800 ft traverse to tie into the nearest benchmark (an assumed elevation given to us by Prof. Herber).



Right - Professor Larry Herber doing reconnaissance field mapping in the eastern San Gabriel Mountains above his home in Alta Loma/Rancho Cucamonga. He had an enormous impact on my career. Left –

Myself and David Weaver mapping the abandoned Archcar Quarry in Deer Creek Canyon for Larry Herber's Igneous & Metamorphic Petrology course.



Plane table surveys were carried out using a portable table that was precisely leveled, an alidade with a compass and stadia crosshairs, and a stadia rod, like that shown here (LA CoDPW).

Allen and I didn't have any way to communicate with one another (like a walkie-talkie), we had to use hand signals to communicate. We were supposed to construct a topographic map of the study area and overlay the geology on this. The study area was along the major geologic contact formed by the Cucamonga fault, a prominent reverse fault that structurally controlled the mountain front. Since I was standing by the plane table all day I brought my transistor radio, but it seemed like all I could hear out there was Country and Western music, so that's what I listened to. I quickly fell in love with Johnny Cash's deep bass-baritone voice when I heard him sing "*Ghost Riders in the Sky*." It all added to the ambiance of feeling like I was working in some far-away exotic place.

We performed the field work on a Thursday and Friday, then plotted up all our data the following weekend. Since Allen and I lived near each other, this wasn't difficult and we soon had it all worked out. I fixed all the data points in the field, but had to calculate the relative elevation of each one using simple trigonometry. I don't think I applied the proper sight angle correction for the stadia measurements, but the map looked good. Allen had noted the geologic information for each point in his field notebook, so this information was overlain on the topo map I constructed and we sketched in the various contacts. I colored the map to create an authentic geologic map of the site and we were required to prepare two geologic cross sections through the site. Most of the drafting was accomplished over the July 4th holiday weekend and the entire project with typed write-up was due on July 14th.

Later that summer (beginning around July 22nd), we moved our mapping operations up to Vasquez Rocks County Park in the Soledad Basin and mapped in the Tick Canyon-Mint Canyon area. We stayed at a Los Angeles County campground at Vasquez Rocks Park (near Agua Dulce), camping in tents. Some of the teams shifted members, but Allen and I remained paired with one another. This time we all mapped the same three-square mile area. It was a great experience to map faulted volcanic and sedimentary strata, but very warm in late July and early August. We mapped the Miocene age Tick Canyon and Mint Canyon

formations and associated andesitic volcanics. We also constructed a stratigraphic section of the Mint Canyon formation in Vasquez Canyon to west, using a Jacobs Staff, as one of our Field methods assignments.



Dr. Herber walking through our camp at Vasquez Rocks just after dawn, as we were loading the school van to be taken out for the morning's mapping session. My Jeep and dining fly are at far left and Kathy Wilson's camper is behind it, at photo center.

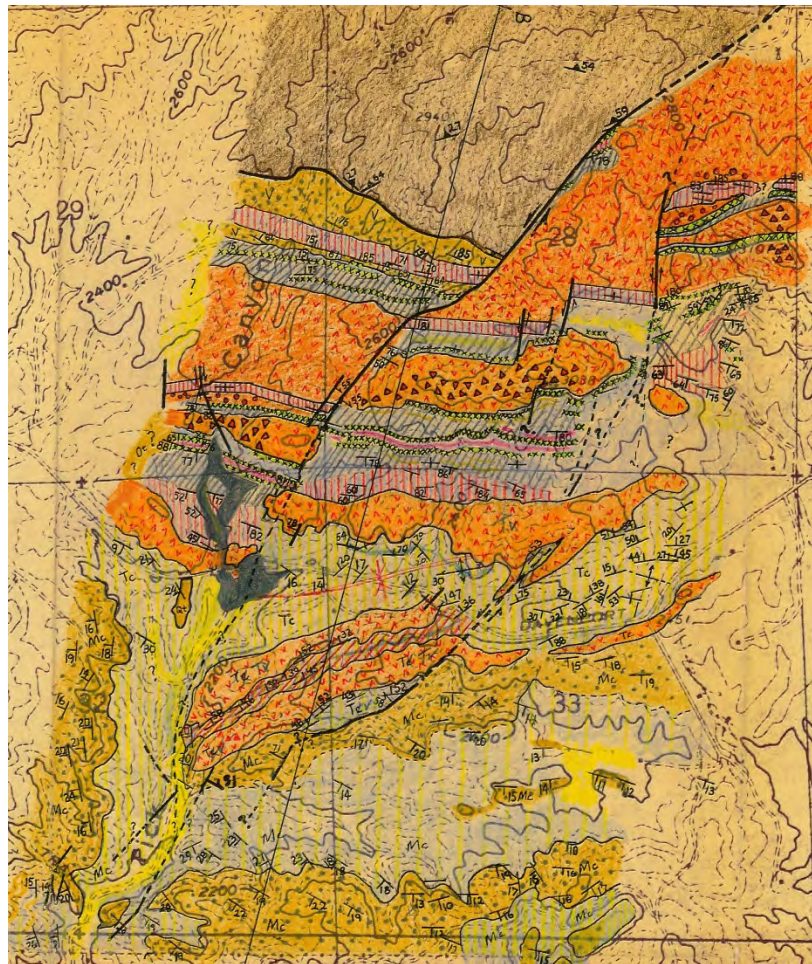
I set myself up with a canted dining fly, secured to the ground on the west side (see photo above), towards the setting sun and prevailing afternoon wind. Adjacent to this I placed the folding cot I had taken on the Colorado Plateau trip the previous summer, and erected my folding Sears camp table in the center, next to the 8-ft centerline pole of the dining fly. I suspended my Bluet butane backpacking lantern from this, so I fashioned a nice place to work on my maps each evening, inking in some 300 strikes and dips, faults, folds axes, and contacts, using a Rapidograph 000 pen with India Ink.

Our daily routine in the hot confines of Tick Canyon was to rise early and be ready for transit with all our field gear by 6:30 AM. We would then work till about 10:30 AM, before catching a ride back to camp, to wait out the heat of the noonday sun in the scant shade of camp. Around 4:30 PM we would return to the field and work till it got dark, around 8 PM. This time Allen and I worked separately, agreeing to meet at the end of each mapping session at some predetermined time and place. I think Allen was worried that I would copy his mapping or something, so I didn't argue with him. I felt confident that I could produce my own map. My biggest mistake was not carefully reading all of the reference material beforehand or during preparation of our final report. As a consequence, I missed a major synclinal structure lying beneath the area because I hadn't noted it on the margins of Gordon Oakeshott's geologic map of the area. Allen didn't miss it though.

One of the most vivid recollections I have was how great it felt to pause for a drink and a snack beneath the tiniest Juniper tree, so long as it offered a tiny bit of shade! The other memory that sticks with me was the wonderful taste of ice water at *Denny's* on Highway 14 on Wednesday evenings, when Dr. Herber went home. He would travel the 75 odd miles back home each Wednesday evening to be with his family, while all of us returned home on the weekends. Not having access to any ice the rest of the

week, believe me when I say that the ice water tasted pretty good! I remember drinking three glasses of water the first time we went. My field book notes that the chocolate shake cost me 85 cents plus tax and tip.

Another vivid memory is the Mojave diamondback rattlesnakes, which were colorful and enormous. They were up to 6 feet long with an iridescent emerald green skin with large brown diamonds on their upper surfaces. They seemed to abound in the soft twilight hours, after the sun dropped behind the hills. One afternoon we ran over one of these behemoths with the school's 12-passenger van on the path to pick up our last teams. When we returned a few minutes later, expecting to see a dead snake, there was no trace of it. I hadn't been around rattlesnakes much and saw more here than any time previously.



My geologic map of the Tick Canyon study area, which focused on mapping sedimentary and volcanoclastic sequences, as well as faults and folds.

Facing the biggest challenges of my academic career

The tuition to a state university in those days was more or less negligible. I paid \$48 for the 1974 summer quarter tuition and \$67 per quarter in the fall, winter and spring quarters. The other major expense was my parking permit, which hit me \$10 per quarter, or \$40 per year. My summer fees increased to \$52 for summer 1975 while the regular sessions increased to \$68 a quarter. Books, food, lodging and

transportation were the significant costs, not tuition. I managed to get tutoring jobs and research and teaching assistantships that paid modest sums to help make ends meet. I quit my WC Recreation and Park job in May 1974 so I could focus my afternoons on studying, because I enrolled in up to five 3-hour labs per week, always in the afternoons. I had finally entered the portal as a serious student, and I was determined to succeed.



View of the Cal Poly campus taken from Kellogg West facility shortly before I departed in June 1976. This shows the quad, campus library and Elephant Hill in the distance, an old volcanic vent we mapped in detail for my igneous and metamorphic petrology class.

I had a busy fall quarter at Cal Poly, taking five classes in the morning and reserving the afternoons for labs. Fortunately, Cal Poly was an agricultural and engineering school, so they offered 7 AM classes, for the brave at heart. I took high school classmate Steve Hipp with me in my '65 CJ-5 Jeep each morning, picking him up promptly at 5:40 AM. Robert had purchased a meal pass at Los Olivos Commons for me for the entire academic year. The idea was that this would make it easy for me to stay there on campus all day long and, thereby, focus on my studies. My mother had begun working for the County Library in downtown Los Angeles, so this made things easier on her as well (she didn't have to prepare any weekday meals for me). The food was delicious and the Commons staff allowed me to fill up my thermos with coffee each day and they made me a bag lunch to take with me whenever I asked (my classes were at the opposite end of campus, and so was my parking lot). That meal card and the good food I enjoyed at set hours had a HUGE impact on my academic success during that pivotal junior year of college.

This would be a watershed quarter for me, as I was taking a very heavy academic load. ***I knew in my heart that it would determine the remaining course of my life.*** I had just received an enormous boost by receiving the only two "A's" Professor Herber awarded for Summer Field Geology and Field Methods courses I had taken that summer, when I was the youngest and least experienced member of the class (he observed how diligent I was in taking the work seriously and carrying out everything we were asked to do, without complaint). I knew I had a tough road ahead of me, needing the core courses germane to any hard sciences or engineering major: three quarters of calculus, physics, and chemistry. These were the "demons" that I had to face down that year. I knew if I could get through those three quarters, I could graduate with a technical major in four years (by June 1976).

I signed up for Chemistry 1A at 7:00 AM, which I really enjoyed, earning a solid B grade. Then I had Calculus 1A, Physics 1A, Mineralogy 222, and Historical Geology (ESC 112) and Lab (ESC 152). I studied hard with Steve Hipp and his buddies Jerry Gould and Greg Guernsey, who both came from the Hacienda Heights area. This threesome really helped me get through the tough science courses. And I found that I actually enjoyed physics and chemistry. I was also taking my last semester of Field Geology 22 at MSAC, concurrently. I went on the week-long field trip in January 1975, but I didn't bother to write up a formal report because I was so busy with my Cal Poly studies. So, they gave me a "B" instead of an easy "A." That turned out to be a poignant mistake, because I missed graduating cum laude by one one-hundredth of a grade point in June 1976.

Geologic reconnaissance of Baja California (December 1974)

During the fall quarter of 1974 I began planning a geology excursion to Baja California, with an eye toward developing a field trip road guide for a geology field trip during President's Day vacation in mid-February. I was always planning some sort of trip during the rigors of school to give myself a goal and reward for the quarter's hard work. Everything was going smoothly until the day before we left, which happened to be Christmas! As usual, I had left many of the nitty gritty details until the last minute. While reading one of the Baja travel guides I had recently purchased I discovered that I would need notarized permission to operate a motor vehicle in Baja if it was not registered in my name! I was panicked (though need not have been, no body ever asked to see such a document any time I visited Baja). It was Christmas Day, where was I going to find a Notary Public? I had never needed anything notarized before. My father called his insurance man and former West Covina Mayor Ken Chappell to ask if his secretary could to come to their closed office and notarize an authorization for me to use my Jeep in Baja California, since Robert was the registered owner. She agreed to come in and we went down there and took care of the process, getting our notarized document.



My blue Jeep, Steve Carpenter and myself on the beach at our campsite south of San Felipe on the Gulf of California. We were shocked by the extent of the diurnal tides, which extended half a mile or more offshore.

At the crack of dawn on December 26th Cal Poly geology classmates Steve Carpenter, Bob Archer and I were headed off to Baja in my 1965 CJ-5 Jeep. I was never asked to show the notarized permission slip, but probably would have used it had I gotten into any sort of accident or trouble during the trip. We had heard all kinds of stories about Baja and the fact that it remained a pretty wild and desolate place. We affixed a second spare tire and rim to the back of my existing spare, on the tail swing gate (using extension bolts for duals on a pick-up). I also bolted two additional 5-gallon Jerry cans to the Jeep's sides (for a total of four, or 20 additional gallons). On subsequent trips I packed a case of STP gas treatment for each 5 gallons of fuel because the Mexican Pemex fuel was notorious for containing water and other impurities (which later proved true). We placed a low profile folding beach chair in the back of the Jeep for the third person, without any seat belt (it was actually pretty comfortable)!

Prior to leaving we had visited Professor Gordon Gastil at San Diego State University to discuss a new set of geologic maps he had supervised in northern half of Baja, which were published by GSA. He told us various places to visit, including a unique ring dike that sported cigar-size andalusite crystals. The purpose of our trip was to construct a Geology Field Trip Guide with accompanying mileage chart, for an anticipated Geology Club outing, scheduled for the President's Day holiday in mid-February.

We crossed the border at Mexicali and made our way to the Cerro Prieto Geothermal Power Plant in the Colorado River Delta (completed the previous year, in 1973). That was pretty neat. Then we crossed Salada Lake, an enormous playa that occasionally fills with water from the Colorado River. It was about 120 miles south of border to San Felipe, at the head of the Gulf of California. It was our goal to camp on the beach south of town. We found some coastal dunes a few miles south of town. We enjoyed outstanding weather. The next morning we were greeted by the sight of an enormous tidal flux: the ocean had withdrawn a good ½ mile out into the Gulf, leaving all the boats and one ship high and dry along the former shore of San Felipe. It was quite a sight, but also one you'd expect at the head of a long narrow gulf.

Then we turned west, but soon became lost trying to find the "new road" crossing Baja between the peninsula's two mountain ranges, the Sierra Juarez and the Sierra San Pedro Martirs. Unknown to us, the road shown on our maps had been destroyed by severe floods in early 1973. After nearly getting stuck in sand a few times we noticed a few vehicles moving about a mile north of our position, so we headed cross country in 4WD to investigate. Our suspicions proved correct when we encountered a newly graded "highway" (not paved), which was obviously in better condition than what we had been driving on. A few miles up the road we noticed a late model Toyota pick-up that appeared to be stuck on the old road, about ¾ of a mile south of us. We stopped to investigate with binoculars and soon ascertained that this individual was likely stuck in the soft sand we had been battling along that same path a few minutes earlier. We pulled off the new road and drove across the desert to him. It turned out to be an off-duty LAPD officer who had gotten stuck on the old road, just like we might have been. He was taking a weekend trip with a young fellow as part of the Big Brother program. We managed to pull him out of the sand and get him back onto the new highway. He was most grateful as he had been stuck for three-plus hours and it was beginning to get dark.

We traveled onto Valle de Trinidad, located in a scenic high mountain valley between the Sierra Juarez and Sierra San Pedro Martir mountain ranges. Along the way we were stopped by Mexican federal police, driving a new Ford Bronco from Liberty Ford in La Verne! Once we showed them the geologic maps we had they seemed satisfied that we were not breaking any laws. Firearms were strictly forbidden in Mexico, although I had carefully concealed my 22 Ruger carbine within the Jeep, just in case we ran into something we needed it for.

At Valle Trinidad we caught a paved road, Mexican Highway 16, which led directly to Ensenada, on the Pacific Coast of Baja. In Ensenada we camped on the beach on a rainy night, using a nylon tarp I had made which attached to the Jeep. There were groups of Mexicans burning tires in huge bonfires along the beach,

belching more black smoke than I had ever seen. Hussong's Cantina in Ensenada was the hot, swinging place of the 1970s in Baja. It was allegedly Baja's oldest bar (it opened in 1892) and where the Margarita drink was invented way back in October 1941. It drew college students by the thousands from California because the legal drinking age in Baja was only 18, instead of the usual 21 years. They passed out free bumper stickers, which were numerous as flies in southern California. Bob wanted to see the place, so off we went. No one asked me for any identification, as I must have appeared to be over 18. You could hardly squeeze your body in the place it was so crowded with Norte Americanos. Bob liked their Margaritas (made with Jose Cuervo Tequila), but I just ordered a beer.

That evening we drove my Jeep out onto the broad beach at Ensenada and just slept next to it (which we later learned was against the law). Fortunately for us, it was a rainy night, so no one shoed us away. I fashioned a nylon tarpaulin ground cloth into an ersatz lean-to using some elastic bungee cords pulled around either end of the Jeep. It was just what we needed to provide cover from the rain for the three of us and we bedded down around midnight, with our heads up under the Jeep. We didn't have much head room, but the cover kept all three of us dry in the face of a driving rain and mist coming off the Pacific. It was nothing fancy, but proved functional. That gave me the idea to build a custom fitted lean-to tarp the following year (fall of '75).

The next day we scouted out a return route through the foothills on Mexican Hwy 3, up to the mountain border town of Tecate. It was a scenic drive, with the geology similar to San Diego County, a few miles north, on the Southern California Batholith. The Jeep had some hiccups and sputtering because of condensation in the gas tank and/or the poor Mexican gas, especially when we were going uphill on the steeper grades (later I learned to add a can of STP Gas Treatment into every tank of Mexican gas I purchased). This was alarming because we didn't know if the Jeep was going to make it to the border. We routed ourselves through Tecate to avoid the traffic congestion associated with Tijuana. The border at Tecate was closed during the evening hours, but opened at 8 AM. In the remaining Baja trips we took this same route home each time, as it seemed less complicated and safer than navigating through Tijuana.

Geology Club Field Trip to Baja (Feb 15-17 1975)

The Cal Poly Geology Club sponsored a 4-day field trip to northern Baja California over President's weekend in February 15-17, 1975. 12 students from Cal Poly (including Steve Hipp) and Professors Herber and Tarman accompanied us on this field trip, as well as a contingent of geology students from Cypress Community College (connection was through So Cal Chapter of AIME).

We also took *Poly Post* staff writer Mike Folden with us, who gave us a nice write-up in the school paper after we returned. Instead of camping on the beach south of town we were obliged to stay at a pay campground on north side of San Felipe. This was so we'd have "designated bathrooms" for the female students. While passing Valle Trinidad we noted a traveling circus called "*Circus Francis*" and a baseball game in progress. After passing Valle Trinidad we turned off on some vague dirt roads and tried to find the cigar-sized andalusite crystals Prof. Gastil had told us about and shown us on his geologic map. We were in the correct area, but the base map did not show every road and there were no signs in Baja, so were obliged to continue westward, bound for the tourist enclave of Ensenada on the Pacific side. We rolled into Ensenada after dark and settled in at another pay campground on the north side of town, next to the beach. Here Bob Archer played bartender and proceeded to get many of the students drunk on Cuervo Gold tequila. One of the Cypress College students stumbled into my tent about 1 AM and heaved up all over the place. The next morning he couldn't recall having done anything like that. It was a real pain getting students up and going the next morning. I'll never forget Steve Mulqueen heaving his guts out the windows of our school van, leaving a trail of debris. The experience convinced me not to drink tequila and not to allow students to drink anything stiffer than beer on any field trips, if possible. It seemed completely counter-productive.



On the highway south of Indio we would always stop to view Travertine Point, shown here. This was named "Blake's Sea" for Professor William R. Blake, who in 1853 recognized the calcareous tufa deposited in a body of fresh water we now call Lake Cahuilla. At the time Blake was traveling with the Williamson Railroad Survey of the Army Topographical Engineers.



Exploring outcrops adjacent to the spectacular Laguna Salada mudflats in the Colorado River Delta. We had to get Class 2 licenses to drive the large 12 passenger vans that belonged to Cal Poly.



Students and professors discuss geology exposed in a highway cut in Baja California during February 1975 field trip. From left: Scott Carney, Don Tarman, Larry Herber, Bob Archer, and Gary Johnson.

Fascination with satellite imagery

Bob Archer worked at Bechtold Satellite Technology in City of Industry part time. I was very excited about this kind of work and managed to interview Ira C. Bechtold (1909-1984) in March 1975, to discuss ideas with him. He lived in La Habra and was about 65 years old. He had done a myriad of different things during his lifetime, with more wall certificates than I've seen before or since. We went back to talk to him about borates when I worked for U.S. Borax, 1.5 years later. Bechtold was one of the pioneers exploring the possibilities of what could be done with NASA remote sensing imagery, mostly using research grants. One of his articles was titled: "*Evidence of Fracturing of the Deep Basement from Nimbus, X-15, Apollo, ERTS-1 and Skylab Images*", for the International Basement Tectonics Association, Inc.'s first conference.

During the 1976 Spring Quarter I enrolled in seven courses totaling 23 units. An elective course I took was in the emerging field of remote sensing, taught by Crane S. Miller in the Geography Department (he later moved to the University of Redlands and co-authored *The Geography of Diversity*). He and I were both interested in remotely sensed imagery. Most of my material came from books published by NASA that I had purchased from the Federal bookstore in downtown Los Angeles, starting with hand-held Hasselblad photos shot by astronauts during the Apollo missions. I gave Prof. Miller all of the slides I shot from the images in those books, to help him launch his course.

I wanted to take Dr. Floyd Sabin's remote sensing course, which was offered at USC in the evenings each spring semester. He worked at Chevron Research Labs in La Habra. Unfortunately, that spring he was lured over to UCLA to teach a course there, so I missed getting to take that course. I did purchase a copy of

his book *Remote Sensing: Principles and Interpretation* when it appeared in 1978. This book was made possible by the fellowship offered to Sabins by UCLA which terminated his teaching the evening course at USC.



Jeeping in Baja was my favorite pastime during the eight quarter breaks I had while matriculating through Cal Poly Pomona.



The northeast-southwest trending streaks seen on the image above between Warm Springs and Wawheap Bays at Lake Powell were initially identified on color transparencies by Ira Bechtold as wind-caused surficial features, which is what scientists have since determined to be their origin.

Other geology students at Cal Poly

These are the Cal Poly classmates I recall: Steve Carpenter ('75), Rick Gorman ('75), Allen G. Synder ('75), Marie Imbsen (transferred to Sac State end of '74), Jim Hamilton (transferred to UC Riverside in Jan '75), Jim Snavely ('76), Gary Johnson ('76), Ed Kashak ('76), Randy Knight (ng), Dave Weaver ('77), Paul Purrington ('77), Harold Katzman ('77), Scott Carney ('77), Grace Teal ('77), Steve Mulqueen ('78), Jon Luksch ('78), K. Doug Cook ('78), Jill Smith (MS Education '88) married Rich Kirkham ('78), Leo Mercy ('78), Gary Wallace ('78), Bob Archer ('79), Barry Bauer ('79), Ken Simmons ('79), and Sammy Ross ('80).

Poly Vue 1975

During spring quarter break in late March 1975, Steve Carpenter, Don Tarman and I took an explosives handling course at a private explosives supplier's facility north of the Rialto Airport, on what used to be the Army's Rialto Ammunition Back-Up Storage Point during World War II. The area was covered with old concrete lined ammunition bunkers (storage igloos) and railway bunkers which the company used to store their explosives and caps. We were shown how to handle and construct ammonium nitrate-fuel oil (ANFO) charges, which we detonated using electric caps. The caps were fired by an electric charge from a hand-cranked detonation controller that was given to Cal Poly by United Geophysical, along with the seismic reflection unit. Most of the charges we made from 12 ounce aluminum soda pop cans and they packed quite a wallop!

I was elected President of the Geology Club during my junior (1974-75) and senior years (1975-76). The Geology Club won first place for academic displays at Poly Vue 1975 with a seismic exploration demonstration. This recognition was probably the zenith of my undergraduate career. We had to borrow large board from a museum in Fullerton. We blew off black powder charges in the orange grove across from Science Building. Professor Chuck Milner in Chemistry (an earth science graduate in 1968) showed us how we could do this, purchasing several cans of black powder from Chick's Sporting Goods in Covina and packing it into small aluminum film cans, then inserting the detonation wires and powering up the system shortly before detonation. We placed a safety lookout near the orange grove as well, to keep passersby at a safe distance. Of course, large and small kids loved the demonstrations...

During Poly Vue 75 someone affiliated with Chaffey Community College asked if we'd be willing to come out to a big celebration they were planning and perform the same demonstration for the their visitors. He enticed us with the possibility of being viewed on a KNBC newscast hosted by perky reporter named Kelly Lange (who went onto become the station's news anchor for years thereafter). KNBC had committed themselves to sponsoring a live telecast from a booth at the event. In May we asked for volunteers and Chaffey set us up for Sunday afternoon. Well, being that we would be demonstrating "explosives," they located us well east of the campus on the alluvial fan, next to a temporary corral set up for some 10th Cavalry Buffalo Soldier reenactors. We were so far from the main campus that we didn't attract any visitors. However, we were able to fashion the largest ANFO bombs to date, using 12 oz Coke cans. We got some pretty good blasts from those (see photo below), but no news coverage, interviews, or spectators.



Left - Prof. Don Tarman inserting blasting cap into 12 ounce can of ANFO at Chaffey College demonstration. Right image shows actual detonation from about a quarter-mile distance.

Geology Club Colorado Plateau Trip (June 11-22, 1975)

I was elected the new President of the Geology Club when Steve Carpenter graduated in June '75. Right after finals we had a group of about 17 that went on a long-planned field trip to the Colorado Plateau. Credits for ESC 400 or 200 were available to those students who wrote reports. As in the Baja field trip, Poly Post writer Mike Folden came along, this time bringing his twin 12 year old daughters, Michelle and Monique. Our faculty advisors were Bernie Lane and Don Tarman.

We had to obtain Class 2 driver's licenses to drive the two State vans on the trip, and to get those, one needed a special medical certificate, which required a medical examination. That costs quite a bit of money, so we made an appeal to the college administration supported by our faculty, asking if the medical exams and certificates could be issued by our own campus medical clinic. After some haggling and pointing out that we badly needed these to drive the vans for the field trip, campus administrator Hugh LaBounty gave his permission and myself and Bob Archer got the required licenses from the DMV office in Pomona.

On Friday of final exam week, we departed campus around noon in a pair of white 12 passenger vans, supported by Jim Snively driving his personal white panel van, carrying most of the camping supplies and food. Dave Weaver hooked all three vans together with CB radios so we could talk to one another, which helped keep us organized and together. Our first stop was an overlook of the head of Afton Canyon, where the Mojave River cut through the mountains out in the central Mojave Desert. The first day we made it to Boulder Beach Campground at Lake Mead and Jim Snively introduced us to taco salad, which was thrown together in a couple of minutes by the various components pre-packaged in zip-lok bags! It was quick and delicious and I have been consuming it ever since! When we arrived at Boulder Beach the summer heat was

stifling, but by 11 PM it was balmy and gorgeous, with a slight breeze. A group of us went swimming in the warm waters of Boulder Basin and it was most refreshing after a long day.

The next day we visited Hoover Dam and took the standard tour with a docent. Then we departed along the Lake Shore Road, northerly, around Las Vegas Bay, turning east on Highway 167 and driving east and then north towards Valley of Fire State Park, which is located north of Lake Mead. It is filled with beautiful exposures of red Aztec Sandstone, but the place was just too warm to enjoy much that time of year and everyone was relieved to move on, catching Interstate 15 near Glendale, NV.

My goal in all of this was to avoid the casinos and liquor that proliferated in Las Vegas, since we had such an unfortunate experience with alcohol consumption on the February trip to Baja a few months previous. We hadn't been on the highway more than 10 or 15 minutes when Bob Archer played a great practical joke on us. Bob had recently earned his private pilot's license so knew the proper radio protocol for pilotage. While we were climbing the grade onto Mormon Mesa east of the Muddy River a strange voice came onto the radio. It was the pilot of an aircraft who had lost his engine and he was telling the FAA controller something like: *"This is Cessna Nathan-six-seven-one-one-four, I have a Mayday, repeat Mayday, emergency. I have lost power on my engine and am attempting to perform a dead stick landing on a straight stretch of Interstate 15 between the Muddy and Virgin Rivers, in line with a string of three white vans!"* We were panicked, and everyone craned their necks to look out the windows above and behind us, to no avail. After we all wondered what happened to the powerless aircraft, Bob Archer told us we had all been the victims of a little practical joke. I'll have to admit he had all of us fooled!

A major highlight of this trip for me was getting to see the newly opened stretch of Interstate 15 through the Virgin River Gorge, in the extreme northwestern corner of Arizona, which had been under construction for the previous decade! It had an impressive series of pre-split cuts and bridges over the narrow gorge. I knew Mountain Man Jedidiah Smith had passed down this narrow twisting gorge on his pioneering trek to California in 1826, which I had read about (he avoided it the following year). We stopped at several turnouts to admire the geology and the newly-opened highway, which saved about 45 minutes off the old route into the western side of St. George. That evening we camped in Zion National Park.



Photo of me at the North Rim during the Cal Poly field trip in June 1975. I enjoyed collecting crinoids stem fossils in the Kaibab Limestone.

Then we were off to Coral Pink Sand Dunes State Park (where we burned smelly coal we had taken out of a road cut near Mt Carmel Junction). I tried to cut trench through dunes to expose cross beds but the sand was too dry. Then onto the North Rim Grand Canyon. The group camp ground at North Rim wasn't far from the actual rim and I'll never forget Paleontology Professor Bernie Lane walking out to see the Canyon for the very FIRST time! I took a picture of him.

Another of the highlights of this trip was the visiting the Navajo Power Plant being constructed at Page, AZ by Bechtel, which I set up. We were given a VIP tour of the plant, which was nearing completion at the time, and treated to a memorable lunch in their temporary dining hall. This visit really gave us a flavor of what it would be like to work in heavy construction, moving our families from place to place. I was disappointed to learn that the owner (Arizona Public Service) was not installing the sulfur dioxide scrubbers the plant had been intended to employ, because it would be burning "low sulfur" coal, coming from nearby Black Mesa, on the Navajo Reservation. Lime and limestone SO₂ scrubbers were the subject of my senior research thesis at Cal Poly, which I had just begun working on (this project was suggested by Prof. Gerry Henderson).

We also toured Glen Canyon Dam and Bryce Canyon National Park. At Bryce it was decided to cut the trip short, so we did not visit Capitol Reef, but turned around and came home a day or two early, as I recall. Upon our return I attended summer school, taking statics, my first engineering course, which I absolutely loved, despite the fact I only earned a "D" grade! I re-took the class the next semester and still only managed a "C," but was now determined more than ever, to become a geological engineer. I worked hard on my senior thesis project, regarding carbonate rocks of the western USA for flue gas desulfurization.

Sitting for the Graduate Record Exam (Oct 1975)

I took the GRE in Claremont on a Saturday in early Oct 1975. I needed that for gaining entry to graduate schools in geology, but not for the geotechnical engineering program at U.C. Berkeley. I did OK on the general 4-hr exam, but didn't do all that well on the geology specialty exam because I hadn't taken many of the core courses yet, and the emphasis was on these courses, not field geology. For example, I hadn't taken structural geology, geophysics, sedimentary petrology, paleontology or petroleum geology yet, and all of these were heavily represented on the exam. It seemed very unfair - being tested ahead of having taken the courses - but that's how it worked. As a consequence of my low geology score, I was not offered a teaching or research fellowship at USC, which is where I had planned to go. So, you might say I attended Berkeley *by default*.

My intent to attend graduate school at USC (Dec 1975)

Towards the end of the 1975 fall quarter I drove myself to Los Angeles for a meeting with Professor Richard O. Stone (1920-78), Chairman of the Department of Earth Sciences at the University of Southern California. This meeting was orchestrated by Gerry Henderson, who taught an evening course in economic geology at USC. Dick Stone was a geomorphologist, specializing in sand dune stabilization and the Mojave Desert. A life-long bachelor, he was close to former State Geologist Jim Slosson, who had lobbied USC to establish a separate degree program in engineering geology, which included courses in soil mechanics. Professor Stone and I really hit it off, as we enjoyed discussing many topics of mutual interest. I came away from the meeting convicted about attending USC the next fall and pursuing my master's degree in engineering geology.

I didn't worry about the cost of tuition or how I might pay the cost of attending a private institution (running about \$208 per course unit at that time; when I was paying \$64 per quarter for ALL my courses at Cal Poly). Dick sent me packing with all kinds of interesting materials, including a USC handbook, the

application package, etc. I even visited their student store and bought myself a nice USC T-shirt, in anticipation of my attending the school.

During the 1975 Christmas break I completed the application for graduate school at USC, certain that was where I would be going after my graduation from Cal Poly. I needed letters of recommendation, so one of the people I turned to was my great uncle Jess A. Bond, who had earned his Ph.D. from USC back in the 1930s, so he could supervise UCLA's Teacher Training Program. Uncle Jess wrote a glowing letter about my accomplishments and so forth to Professor Stone, who sent me a copy in January. I was confident that some sort of financial aid would result therefrom, but it was not to be.

In late March I received word from USC that I was accepted for graduate study, but without any means of financial support, such as a teaching or research assistantship. The cost of tuition and books was going to be about \$3000/semester, so that was the death of that dream. It was probably just as well, because Dick Stone succumbed to cancer not long thereafter, in July 1978, at age 58.

I later learned that the decision by USC was based solely on my GRE scores in geology, and I was unprepared for this sudden turn of events. The only other grad school I applied to was the geotechnical engineering program at Cal Berkeley, on the forceful recommendation of Hank Klehn, Principal Partner and Manager of Dames & Moore's Los Angeles office (he had attended grad school at Berkeley with Dick Goodman, my future mentor). Cal Poly Professor Gerry Henderson had worked for Dames & Moore in their Los Angeles office during a sabbatical in 1974-75. He set up a meeting with Hank at the D&M office on Glendon Avenue, a block south of the UCLA campus. Hank spent about an hour with me and explained the Berkeley program in geotechnical engineering, and his perspective on the differences between geological and geotechnical engineering. This was also the first time I heard about Dick Goodman. Hank felt the best move for me professionally would be to get as much engineering training as possible, so I could become cross-registered as a geologist and civil engineer. He also cautioned me about going on for a PhD and becoming too narrowly-focused.

Looking back, it was excellent professional advice from a real champion of the geotechnical engineering profession. I was not surprised to hear when Hank was named President, then CEO of Dames & Moore a few years later. He was succeeded in both positions by Art Darrow, who was Chief Engineering Geologist of the Los Angeles office at that time. Hank introduced me to Art and a Colorado School of Mines degreed geological engineer named Gary E. Melickian, who was cross registered as a geologist and civil engineer, during my tour of their office.

My Senior Project (1975-76)

I worked with Prof. Gerald V. Henderson on the use of lime and limestone for flue gas desulfurization project for my Senior Thesis at Cal Poly. That work was very successful. One of the best articles Henderson had passed along to me was written by Alexander Weir of Southern California Edison Company (SCE). Around December 1975 I suggested we go and visit him at SCE's main offices on Rosemead Blvd in South El Monte. A chemical engineer, Dr. Weir was key to understanding the processes involved in scrubbing sulfur dioxide and he favored using lime in lieu of crushed limestone because it was much more reactive, and, therefore, more chemically efficient (less tonnage required for each pound of sulfur dioxide scrubbed from flue gasses).

I gave a presentation on my senior thesis work in early February 1976 at the department colloquium. In mid-February I was able to give the talk at the monthly AIME So Cal Chapter meeting at the Taix [French] Restaurant (1911 Sunset Blvd) in Los Angeles, before the presentation I gave at the national convention. This was my first public lecture before a professional society meeting and I was just 21 years old.

AIME Meeting in Las Vegas (Feb 1976)

The Saturday preceding the convention I drove up to Las Vegas with Prof. Gerry Henderson (in his yellow Chevy Vega) to attend the 106th Annual Meeting of the American Institute of Mining, Metallurgical and Petroleum Engineers (AIME) in late-February 1976. We stayed at the Hilton, the largest hotel I had ever been to up to that time. It had three large wings, which came together at the middle, with 60 degrees of separation between each wing. That way everyone had a “view room.” The wintertime weather in Las Vegas was simply beautiful, clear and crisp, surrounded by stark folded sedimentary strata. I was excited to be so close to the Colorado Plateau, which in those days, was something akin to Nirvana for me. I really enjoyed my time there and in many ways, it was my “coming out party” in the transition from boy to man.

Gerry Henderson pointed out all kinds of new “experiences” to me, including expensive prostitutes. I couldn’t figure out how he “knew” what sort of work they engaged in, but understand now. There was one fellow dressed up like Liberace who sat in the lobby bar waiting to be mistaken for the Real McCoy each day. I remember looking around the gift stores for something to bring back for Janet, but was rebuffed by the steep prices. My boyhood friend Mark Hartfield had told me that “1000 dollars is like an ice cube in hell in Las Vegas.” That was about as apt a description as one could use to describe what I witnessed. They went out of their way to make sure that you didn’t take any spare cash home with you.

The following day (Sunday) we went on a convention-sponsored field trip tour of the Death Valley area, to see Tenneco’s new operations along upper Furnace Creek (little did I imagine that I would be living and working there a few months later!). On the way we stopped to see some other things, including Devil’s Hole, northeast of Death Valley Junction, off Hwy 127 (we came up Hwy 95 from Vegas). This was the home to the Desert Pupfish, a relic of the enormous Pleistocene lakes that used to occupy the area (Lake Manley was 700 feet deep and occupied Death Valley, fed by the Amargosa River). We saw Tenneco’s new handling facilities there near Stateline and the Boraxo Pit in upper Furnace Creek, near Ryan. They were getting set to excavate an underground borate mine in the same area.

My Cal Poly classmate Steve Carpenter had graduated in June ’75 and was working for US Borax. He and everyone else from U S Borax was on that trip, curious about what Tenneco was up to in the Death Valley area. Tenneco had acquired these properties a short time previously, following antitrust suits brought against US Borax because they had a monopoly on borates in the USA (they had purchased all their competitors many years previous). We may have visited the brine extraction operations at Trona on Searles Lake as well (I can’t remember if this stop was on this particular trip, but I believe that it was). The one vivid recollection I have of that trip was one of US Borax’s senior mining engineers, a Canadian fellow named Ken Reim. He was dressed in a sport coat (for a geology field trip) and carried his own brand of tea with him in the pockets of the coat. At every stop, he would find a way of getting hot water and brew himself a cup of tea before the rest of us had even gone to the restroom!

Prof. Henderson and I had submitted an abstract to the Society of Mining Engineers (SME) of AIME that summarized the results of my senior project entitled “*Location and Suitability of Carbonate Materials for Flue Gas Desulfurization.*” It focused on looking at likely sources of lime and limestone for SO₂ scrubbers for coal-fired steam-generating power plants in the western United States (CA, NV, NM, UT and CO). Quite a few thermal power plants were under construction at the time, including several that were to generate 3000 MW, making them the largest coal-fired generation plants in the USA.

On Tuesday evening a bunch of my classmates came up from Pomona to hear my talk the next morning. On Wednesday Morning February 25th, all of us students sought one of those \$1.50 breakfasts at one of the nearby casinos and while waiting in line, Harold Katzman hit the jackpot in one of the one armed bandits, using nickels! I gave my talk at the Las Vegas Convention Center about 11:00 AM that morning.

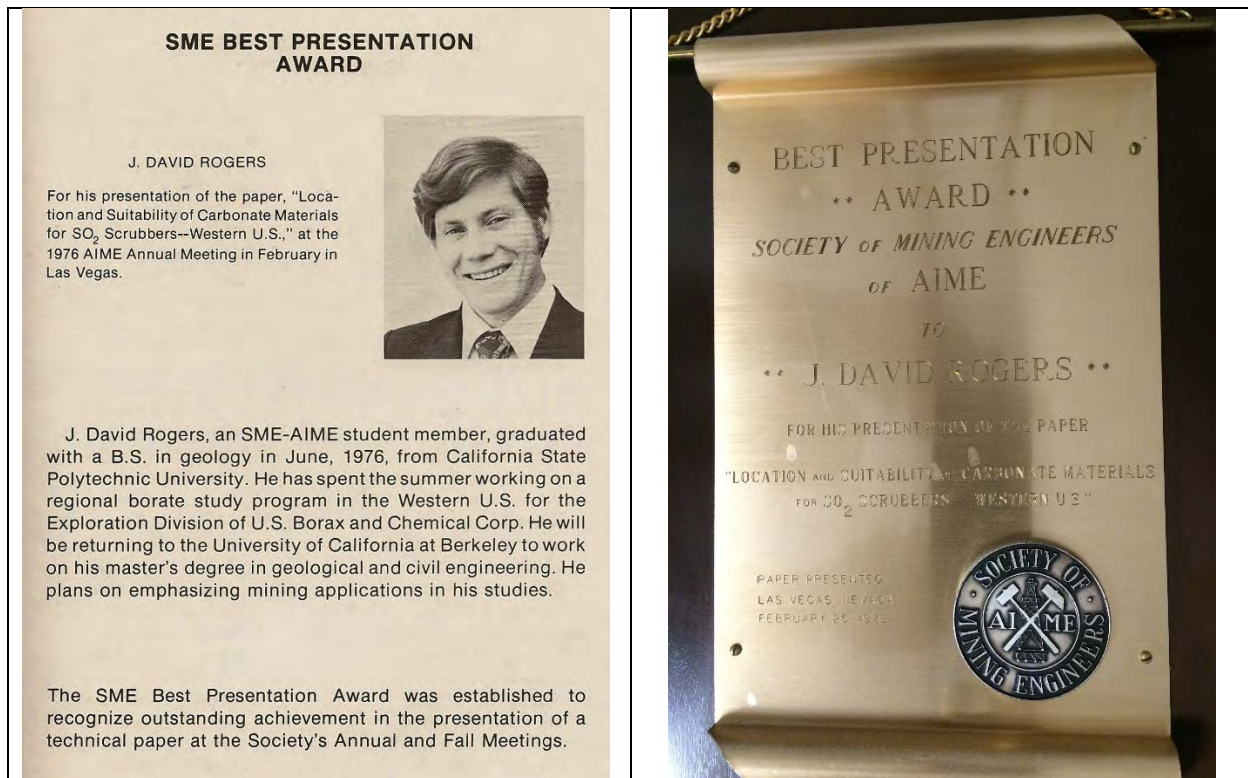


Left: That's me engaged in some last-minute preparations for my first professional society presentation.

Above - At Dravo Corporation's hospitality suite in the Hilton Hotel guests could don a miner's helmet for a Polaroid photo, which was then affixed to a pin-back button that we could wear proudly around the convention, shown here. I hit all the hospitality suites to graze on the free food.

I had heard about an award AIME gave for the best presentation at their conventions, so I worked hard to give a very polished, yet entertaining lecture. I made all of my own slides, using natural [sun] light, shooting my color figures through glass. My brother Brian helped me quite a bit with all the graphics. I was limited to 17-1/2 minutes for the formal presentation, leaving 2-1/2 minutes for questions. I timed it so it would go precisely as planned. Unfortunately, the arclight on the Carousel projector melted some of my precious slides (that was pretty common in those days). I was fortunate to have come out on top, getting the highest score of all the SME presentations.

Prof. Henderson wanted me to depart on Friday because his wife Florene was flying up to Las Vegas to spend the night with him, then they were driving up to St. George (about 120 miles distant) to visit her parents and family. This was a big surprise for me, so I quickly purchased a one way ticket on Western Airlines for about \$33 and flew to LAX on a Western Airlines Boeing 737 jet Friday evening, exultant about delivering my senior thesis lecture without a hitch. My brother Brian drove my parents to LAX to meet me (a considerable drive).



I was not informed of my winning the AIME Best Presentation Award until late May, about two weeks before graduation. Prof. Henderson maneuvered to have his name and picture alongside mine in all the Cal Poly press releases, which was something of a surprise, but OK by me. It made it look as though we were both being recognized for some sort of 'superior research.' At the year-end geology barbeque held at Prof Henderson's home in Hacienda Heights his wife Florene let it slip that Gerry was negotiating a contract with Flintkote regarding their limestone mine at Nelson, Arizona. I was familiar with this facility because I had studied all of the limestone mines in the western Colorado Plateau and Great Basin while compiling the database for my senior thesis. The Nelson Mine was located in the Redwall Limestone a few miles east of Peach Springs, AZ, off old US Hwy 66, close to the western Grand Canyon. At that time in my life I would have given *anything* to work there, but Gerry chose to keep this information to himself and never mentioned it to me! His wife assumed I would be working with him on the consultations, but I had already accepted a summer job with US Borax and was off to attend grad school at Berkeley at summer's end, so nothing ever came of it (little did I know that Gerry was auguring his life in to an premature ending, dying alone in his car at the Cal Poly parking lot on a Saturday morning in February 1981).

Visits to Cal State LA and the USGS

During my Spring Break in March 1976 I spent several days visiting prospective graduate programs, including USC and Cal State Los Angeles. I had been impressed by the presentations of Professor Marty Stout at the 1975 GSA Cordilleran Section meeting, so I made an appointment to visit him at his office at Cal State LA. I was able to board an RTD transit bus at the corner of North Hollenbeck and San Bernardino Road in Covina, about 100 feet from our apartment. That bus took me straight to the RTD commuter terminal in El Monte, where I transferred to an express bus that took me down the median of the San Bernardino Freeway, directly to the bus stop at Cal State LA. The entire trip took me 45 minutes and only cost me 50 cents.

I talked to Prof. Stout about the Blackhawk Landslide, and he described Ron Shreve's pioneering work on the Blackhawk Slide as part of his doctoral research at Caltech back in the late 1950s. Marty encouraged me to send off for a copy of Shreve's work, reproduced in GSA Special Paper 108 (1968). I ordered this paper and devoured it, and was delighted to actually spend some time with Ron Shreve in the summer of 1985, towards the end of his career at UCLA. For 20 years thereafter, I tried to get copies of some of Marty Stout's color photos of the spectacular reverse fault exposed in the head scarp of the Blackhawk Slide but never succeeded. Marty was a native of Hollywood, born in February 1934. He died in September 1994, after a 17 year off-and-on battle with cancer, which was difficult to watch, because he was so passionate about his work. I also knew his wife Dottie (1941-2001), who taught geology at Cypress Community College. She was very active in The Dibblee Foundation, who sponsored the Dibblee and Rogers Field trip at St. Francis Dam in May 1997. She died prematurely shortly thereafter, of brain cancer.

Marty tried to recruit me for the geology master's program at Cal State LA, telling me about the engineering geology degree they were trying to get approved by the CSUS Board of Regents. They didn't get that program approved until a few years later, in 1978. Had it been up and established, I might have been persuaded to go there for my master's degree. Cal State LA certainly had some famous geologists matriculate through their program, whom I later encountered, including: Dick Proctor ('54 Chief Geologist MWD), Bob Tepel ('60; Chief Geologist SCVWCD), Monty Hampton ('65; USGS research geologist), James Rodine ('68; famous doctoral dissertation at Stanford on debris flows), and Jim Shuttleworth ('69; LACoDPW).

After meeting with Marty Stout, I took another RTD bus into downtown Los Angeles to visit the USGS office in the expansive Federal Building. Here at their desk I was introduced to a living legend name Lucy E. Birdsall (1914-1990), who had charge of the USGS Public Inquiries Office. She was a mother hen to every budding geologist in Los Angeles over several generations. Among other things, she introduced me to Thomas W. Dibblee, Jr., the legendary USGS field geologist who mapped more than 500 quadrangles in California. Lucy was the kind of person who engaged her patrons in conversation and then informed us about all the publications and maps she thought we should be aware of, etc. Her enthusiasm for her work and the geology profession were certainly easily caught by those of us fortunate enough to have made her acquaintance.

Meeting with Dean Parker (March 1976)

The only meeting of any consequence I remember having with the Dean of the School of Science was between Winter and Spring Quarters 1976, when graduation was not far away. His name was Dr. Vincent E. Parker and I needed his personal permission and approval to sign up for 23 units during my last semester. The courses included Remote Sensing, Soil Mechanics-II; Strength of Materials-II; Engineering Geology, Invertebrate Paleontology, Petroleum Geology, and Senior Project. The schedule almost broke me, but I thought I could breeze through Engineering Geology, so really "just taking" 20 units. I had successfully completed 20 units during the fall 1975 quarter.

I showed up for my appointment with Dean Parker at the appointed time and he invited me, right on time. His questions seemed to be more casual than I expected and I was immediately drawn to a framed newspaper on his wall, heralding the surrender of the Germans in the First World War. The Dean seemed impressed that I noticed and proceeded to inform me that that newspaper was from the day of his birth; at which point I interjected "*the 11th hour, of the 11th day of the 11th month of the year of our Lord 1918*". He seemed delighted with my brief recitation of history. He then asked me why I thought I could complete 23 units of coursework and I informed him that I had successfully completed 20 during the fall and that this time around one of the courses (engineering geology) was a subject with which I was most familiar and I would be acting more or less in the role of teaching assistant to Prof. Henderson, who was my Senior Thesis Advisor and our department chair. This seemed adequate and he signed my forms, wishing me good luck.

It was then that I realized interviews aren't always concerned with the subject at hand, but with one party seeking to ascertain the character of the other, more than anything else. I didn't do nearly as well as I would have hoped that last semester, getting just three A's and 4 B grades, well below what I had hoped, and my cumulative Grade Point Average of 3.13 was two-hundredths of a grade point below what was required to graduate with honors (cum laude); a regret I shall bear for the balance of my life. I managed to accumulate 127 units that counted towards graduation in just four years, not counting the remedial math courses I had taken at MSAC. My geology profs had been liberal in allowing me to substitute many engineering courses for soil science and zoology courses, and exchange a number of geology courses for the engineering courses I took. If they hadn't been so accommodating I would have had to spend another year there as an undergraduate.

My interview at Berkeley (March 1976)

We decided to take a Rogers family trip to Berkeley for my mother's 55th birthday on March 25, 1976, while I was considering attending graduate school there. My father, mother, brother Brian, Janet and I all clambered aboard a PSA Boeing 727 jet and flew up to San Francisco. We took the Airporter Bus into downtown San Francisco and then boarded the new Bay Area Rapid Transit District (BART) commuter train and flew beneath the San Francisco Bay at 70 mph, coming up out of the tube in West Oakland. We split up at Lake Merritt Station and they headed to a special exhibit at the Oakland Museum, while I boarded a northbound Richmond BART train, and headed off for U.C. Berkeley. I had scheduled an appointment with my prospective major field advisor, Richard E. Goodman, in the middle of the day. The reason I picked him was that he was the designated head of the geological engineering program, and I figured I'd have an easier time studying rock mechanics than soil mechanics because of my geology background. I had no real idea whatsoever about what rock mechanics was, though Hank Klehn tried to convince me that I might be better suited for the soils side of things.

Berkeley in early 1976 was still steeped in the "glory" of its heyday in the national headlines as the nucleus of the student protest movement that had come to typify the vitriolic Vietnam War period. It was full of flowers, love symbols, hippies and girls wearing loose halter tops on warm sunny days. The distractions were innumerable. I remember was stopping at a vendor's cart that sold fried Chinese chicken rolls. I purchased two, and though they tasted OK going down, gave me some measure of indigestion later. My most vivid recollection was a street person dressed in shabby clothes bit wearing an old fashioned top hat urinating against a tree right on the public sidewalk. As I passed by he tipped his hat and said something like "*top of the day to you.*"

I managed to work my way uphill to the imposing concrete mass of Davis Hall, perched high on the in the Berkeley campus' northeastern corner, alongside the rest of the engineering school. Things may have been liberal and crazy down in Sproul Plaza, but they were definitely conservative up "on the hill." Most of the professors still wore white shorts and dark ties, though times and styles were rapidly shifting during this period. I found Dick Goodman's office in 476 Davis Hall, in the remaining wing of the old Materials Testing Laboratory (MTL), which had been built for Raymond E. Davis in the early 1930s, when Berkeley did all of the concrete testing for Hoover Dam. The south portion of the MTL had housed the massive 4-million pound testing machine made by the Baldwin Locomotive Works in 1931. It was removed to the Richmond Field Station to construct the high raise Davis Hall in the late 1960s (technically framed as an "addition" to the existing MTL).

Dick wasn't there when I arrived, and I was told by his secretary Mimi to have a seat and be patient. Five minutes later I heard a cheerful man whistling coming in the back door of the old Materials Research Lab, off of Hearst Avenue. Dick seemed young, full of vitality, and very friendly. I cannot recall the details of our

conversation but I did feel he was someone I could work with and his background was similar to mine in that his undergraduate degree was in geology, even though he taught in civil engineering.

After concluding my interview I rendezvoused with the rest of my family at the Oakland Museum and we had something to eat there together before boarding BART for the return voyage under the Bay for San Francisco and the airport. It was a memorable whirlwind day, the likes of which I had never experienced previously. I think my parents paid for the trip.

Serendipitous exposure to forensic engineering

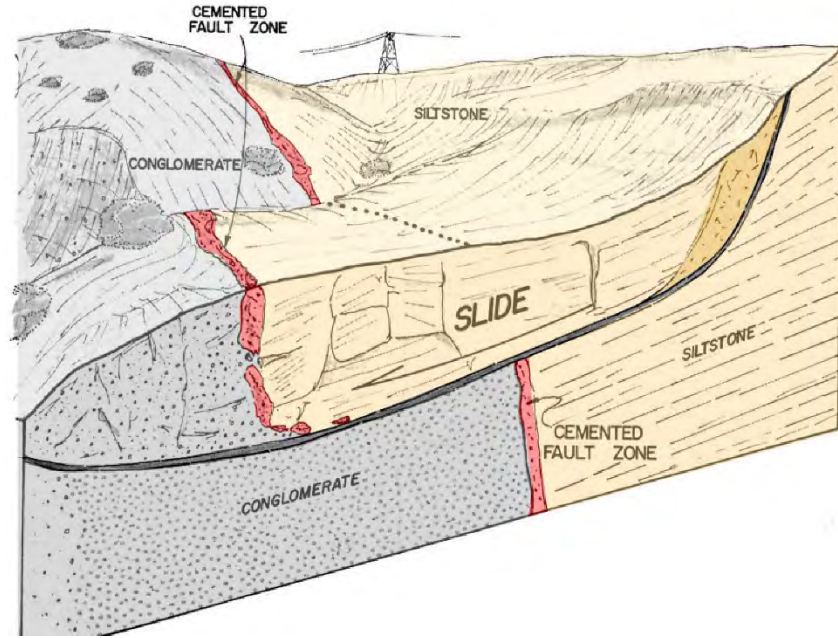
In the fall of 1975 I had signed up as a student member of the American Society of Civil Engineers through our chapter at Cal Poly. I began attending the meetings of the student chapter, which hosted some pretty interesting speakers. Sometime during the winter quarter they had a fellow come and speak about investigating civil engineering failures, which I found most fascinating. I don't recall his name or even his practice area, but I did decide that was the kind of stuff I would enjoy doing.

During the spring quarter '76 I asked Dr. E. Richard Mertz, my professor in Strength of Materials 1-2 and 3-4 courses. Dr. Mertz had worked in the aerospace industry for years prior to its collapse around 1970. He had described the fatigue cracking problem with the de Havilland Comet airliner to us, which related to the rectangular shape of the windows. He also described some of the resonant frequency problems with the Lockheed Electra jetprop airliner in the early 1960s. I found his anecdotes most intriguing.

During my second quarter of Strength of Materials I asked Dr. Mertz if I could do an extra credit project on the Dec 15, 1967 Silver Bridge collapse over the Ohio River at Point Pleasant, Ohio for our class. I had seen an article about this in one of Rob's Civil Engineering magazines (July 1971). These were delivered to our home in West Covina while Rob was in the Navy (1968-72). The Silver Bridge was a steel eyebar suspension bridge built in the late 1920s across the Ohio River upstream of Portsmouth, OH (which we had visited in the summer of '68). I used the CE magazine article and a few others I found at the college library and made slides of the pertinent figures, then delivered an interesting presentation to our class, which Professor Mertz seemed to enjoy. It was the first of countless forensic engineering lectures I would deliver over the balance of my lifetime.

Beach Leighton articles

In our coursework Larry Herber was always quick to demonstrate the practical applications of the geology subject matter we were studying. He worked part-time as an engineering geologist for Leighton & Associates (of Irvine) and Mills & Associates (of Ontario). One of the articles he assigned to us for reading and homework was a classic 42 page article by F. Beach Leighton titled *Landslides and Hillside Development*, which appeared in the volume titled *Engineering Geology in Southern California* edited by Lung and Proctor in 1966. Herber had five copies of this volume held on reserve at the Cal Poly campus library.



Drawings like this one by Whittier College Geology Professor F. Beach Leighton enticed me to become fascinated with engineering geology.

That article had an enormous impact on me because it was so vividly illustrated and the illustrations were a virtual textbook in engineering geology for hillside subdivisions. I was aware of slope failures in and around our community, the first being those along the extension of Azusa Avenue across the western Puente Hills in 1966. During college I stopped to investigate a small cut slope failure along eastern Cameron Avenue on the way to MSAC. The slippage appeared to be occurring along an inclined stratum of selenite gypsum. The first project Larry Herber assigned us for Field Methods course in June 1974 had been a Brunton Compass and steel tape mapping of a cut slope failure in the Puente formation along upper Via Verde Avenue, over near Puddingstone Reservoir. That cut slope was only a few years old and the slip-out was a block glide failure along inclined beds of selenite gypsum. Working on this slide then studying the Leighton article shaped my desire to become an engineering geologist, saving homeowners from certain disaster.

Geology Club and Poly Vue 1976 (April-May 1976)

I was not as popular as President of the Geology Club during my senior year. I was just too busy with too many things going on and a very a heavy academic load. I was oblivious to how I was being perceived until some notes were posted by club secretary Dave Weaver after one of our meetings that winter. He recorded for posterity what appeared to be my harried and self-centered conduct during our meeting. This was a real *wake-up call* for me, and my popularity with my fellow students seemed to wane during my last two quarters. I reacted a bit and chalked it up to "jealousy," because of my receiving recognition at the AIME meeting in Las Vegas and being accepted to grad school at Berkeley. That said, I now realize the perception was probably deserved. The following year Dave Weaver (BS '77) got his chance to be the club president and he resigned in protest over something the faculty did or said to him. He never associated with me after that, even though I wrote to him several times (I never formally apologized to him and rightly sought restoration). Although not a believer, he was a solid fellow, who always sought to do what was right.

Poly Vue '76 was held on Friday April 30 and Saturday May 1, 1976. The Geology Club prepared a similar venue to what had worked for us so successfully in 1975. This effort revolved around the outdoor demonstration of the seismic reflection rig we inherited from United Geophysical in Pasadena with the large

board explaining seismic reflection mapping borrowed from the museum in Fullerton. We ignited black powder charges in the avocado grove across from Science Building, filling Kodak 35 mm aluminum film canisters and setting them off with an electrical charge, every half hour. I can't remember what place we got this time, but we did OK. We had a nice large board with all the geology major's photos, taken in the field.

Going flying

My Cal Poly classmate Bob Archer (BA '79) got his private pilot's license in late 1975. He offered to take me up whenever I wanted to pay for the gas. We flew some reconnaissance missions in rented Cessna 172 Skyhawk II aircraft out of Brackett Field in January 1976, after the Whittier Hills EQ on New Year's Day. I took numerous photos of mountains and flew up around Mt Baldy, near the altitude limit of the 172 aircraft.

Later that spring Bob called one weekend and wanted to know if Janet and I wanted to go flying down to the beach. Bob had a date with him in the front seat while Janet and I took the back seat. We flew down to the beach on a late afternoon and buzzed the waves, 500 to 1000 feet offshore, where there was no official ceiling restriction. He also did some steep dives which caused things in our pockets to lift themselves out! All in all, it was a very memorable afternoon. I split the cost of gas with him, which is what he desired. Bob went onto become a river rafting guide down Cataract Canyon on the Colorado, below Moab. Then he went to work for Granite Construction Co. in northern CA. I never heard from him after the fall '76 SME meeting in Denver. Last I heard he owned Genesis Construction Co in Truckee, CA.



I was thrilled to be invited along for several rides in this rented Cessna 172 Skyhawk out of Brackett Field by my classmate Bob Archer. This January 1976 view shows fellow geology students Dave Weaver, Steve Mulqueen, and Jon Luksch (left to right).

Personalized Field Trip with Barney Lane (Spring 1976)

Professor Bernard O. Lane invited his students to come along on an optional field trip to his PhD thesis area in north central Nevada over a 4-day weekend. I ended up being the only student who volunteered to go. So he and I packed into his light blue pickup and drove through Las Vegas on I-15. We took Hwy 93 north east of Vegas passing through some colorful canyons of Caliente (where UPRR to SLC passes through) and camped along Highway 93 that evening, beneath some triangular faceted mountain fronts (see figure, below).

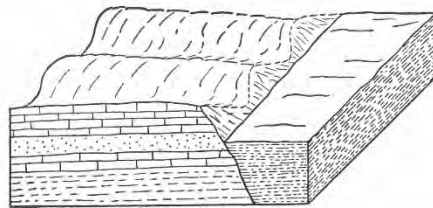
The next day we headed up to Dr. Lane's old field area from the late 1950s, when he was Ph.D. student in paleontology at USC. The second night we camped next to Illipah Creek Reservoir in the Moorman Ranch area along the west side of the Moorman Ridge. The reservoir was almost completely dry, in light of the severe drought that persisted through 1975-77. The reservoir is just south of US Hwy 50, about 35 miles west of Ely, Nevada. Bernie's field area was south of this, along the Moorman Ridge of the White Pine Range.

The Mokomoke Ridge and Mt Hamilton lay on the opposite side of the valley, which floored at over 8,000 ft. The ruins of Hamilton are located about 11 miles south of Hwy 50. The Mt Hamilton area was the scene of frenzied silver mining in the 1870s and 80s, giving birth to the forgotten settlements of Hamilton, Shermantown and Eberhart. Bernie told me what he knew of these and we visited what remained of the nearest ghost town, Hamilton. Hamilton erupted as a boomtown in 1868 with 25,000 people of all types migrating to the area after silver ore was discovered. It once boasted 101 saloons. Large-scale production ceased in 1887, but the town was not deserted completely until 1925. The silver ore was on top, but not below. People moved out almost at the same rate as they moved in back in 1868-70. By 1887 \$22 million worth of silver bullion had been shipped from the area. It now lies within the Humboldt National Forest.



U. S. Geol. Survey

FIG. 8-20. Triangular facets caused by erosion of fault scarp.



Triangular facets, as originally identified by the U.S. Geological Survey in the Basin & Range geomorphic province of the western United States.

According to Dr. Lane's old field notes, one of the canyons emanating from the west slope of Moorman Ridge contained silicified fossils in a grey limestone. We located the canyon in question and found a 50 pound chunk of limestone with silicified fossils and I volunteered to carry it out in my backpack, which I did, though with great difficulty. I managed to partially fit it into my backpack and successfully transported it back to Bernie's truck

We returned to Cal Poly via another route, through the lonely wastelands of central Nevada, along Highway 6, which I knew to approximate the route taken by Mountain man Jedediah Smith in May and June 1827, after making the first crossing of the Sierras, probably across what was later named Ebbetts Pass (from reading Dale Morgan's biography of Smith). He left his party of trappers on the lower Stanislaus River, taking two men seven horses and two mules in a frenzied attempt to re-unite with his new partners at the 1827 Rendezvous at Bear Lake, on the Utah-Wyoming border. Smith called this area the "Great Sandy Plain," and it looked as forlorn, isolated and hostile as one could imagine when Bernie Lane I drove across it. We encountered very few vehicles the entire distance to its junction with US Highway 95 in Tonopah, where we spent our third night.

From Tonopah we drove south on Hwy 95 to Las Vegas and back to Cal Poly on I-15. On the way home we stopped by the dry bed of Pleistocene Lake Mannix (described below, in summer exploits), just above Afton Canyon and collected some carbonate concretions. They were like little blue gray flying saucers, between 1-1/2 and 2 inches in diameter. During the return trip I had some problems with my ulcers and Dr. Lane talked to me about my problems at length. When I graduated he gave me an hour's consultation with his favorite psychologist up in Pasadena, a few blocks from my Grandmother's apartment. The interaction was positive and I got some good insights for how to manage my stress better and seek help up at Berkeley, which I did.

After we arrived Dr. Lane set up the big 50-pound chunk of limestone with a burette dripping 10% HCl solution onto it. As the days passed intricate silicified fossils began to emerge, as if by magic, from their entrapment of 300 million years. It was a startling sight to behold. He also set up a burette dripping on some of the carbonate concretions from Lake Mannix and each one of these contained the delicate silicified cast of a Pleistocene insect!

More Field Trips

Other memorable field trips included Elephant Hill area mapping volcanics with Larry Herber's Igneous & Metamorphic Petrology class. Another memorable mapping trip with Larry Herber included the Archcar Quarry in lower Deer Creek (just outside my summer field area); and a trip to the Jurupa Hills near Riverside to look at granitic rocks. Dr. Lane took us to Malaga Cove to collect forams and look at landslides of Palos Verdes Peninsula. Gerry Henderson told me about unusual deposits of aragonite and palygorskite from a remote area of the Chino Hills, north of where Pomona Fwy now cuts through the ridgeline (east of Hwy 57). I also collected some nice blocks of onyx which I gave to people doing lapidary work. The palygorskite was a rare type of clay which didn't appear to look or feel like any other kind of mineral I have ever encountered. It felt like white fibrous cardboard, very flexible and expansive.

During the '76 winter quarter Gerry and I went out to visit a large bedrock landslide he had worked on a few years previous for Dames & Moore (for LA Co DPW). It was a block glide that slid along the contact between a siltstone and sandstone unit in the Vasquez formation (?) along Vasquez Canyon Road, a short distance east of Bouquet Canyon Road, out NE of Santa Clarita in Canyon Country. We managed to find a spring sap tunnel in the toe of the slide, which dammed the local creek. We crawled back inside this opening and saw the landslide slip surface, which I excavated with a mattock so we could take 3.5-in diameter drive samples using 1" brass rings. I was supposed to run direct shear tests on these. Gerry had run cation absorption ratios and X-ray diffraction tests on the materials a few years previous, while teaching at Cal State LA with Perry Ehlig. During the Spring Quarter we returned to the site with Gerry's engineering geology class and made a plane table survey of the entire slide, with an eye toward preparing an article for publication describing the slide and our analyses. This became the subject of my first lecture for an ASCE gathering, the Inland Empire Geotechnical Group in Upland, to whom I lectured in May 1976.

Professor Don Tarman

Don Tarman and I arrived at Cal Poly about the same time: he began in January 1974 and I enrolled in June '74, about 6 months later. In those early years Don was a pretty intense guy, having just left the University of Arizona where he engaged in field and lab work at a remote, but geologically complicated corner of southern Arizona/northern Sonora. During his field studies he had purchased a yellow Chevy Blazer with a big V-8 engine to access the remote area. He drove the Blazer to work each day from his home in Claremont. Coming to Cal Poly must have been a something of a letdown after being in the high pressure confines of Arizona's top-notch geology program.



From the very outset, he told us his name was “Don” and that’s what we should call him, not “Dr. Tarman” or “Professor Tarman,” so that’s what we did. We were somewhat surprised when we soon discovered that both his kids called him “Don” instead of “Dad!” I always wondered if that was some sort of experiment, since his wife was a psychologist...

Don was always trim and fit and reminded us of actor Dean Jones, who had portrayed the mythical Terrance O’Toole on the television show “Ensign O’Toole” in the early-1960s. For lunch, he would often have a single can of chile-con-carne that he would heat over a Bunsen burner in the lab prep room, behind the office of Walter Hesse and Barney Lane! I always thought that looked pretty primitive, but Don said he’d gotten used to doing that while working out in his field area in the Arizona desert.

I was a student in the first Mineralogy course Don taught (ESC 222) during the fall quarter of '74. I asked Don if I could do an extra credit project and he kindly acquiesced. I had always wanted to purchase one of those flashy crystal growing sets at Toys R Us that allow the growing of alum crystals in a variety of colors, so that’s what I did. Looking back, he was pretty nice of him to indulge such activities and actually give me credit for it! Nobody at Berkeley would have allowed that!

In 1974-75 Don accepted responsibility for refurbishing an old 48 channel seismic reflection rig donated to Cal Poly by United Geophysical of Pasadena. We spent many afternoons and weekends working on that project together; including training and certification in explosives at an explosives company out in Rialto. We succeeded in learning how to detonate a significant energy source using an ammonium nitrate-fuel oil mixture packed into a 12-ounce aluminum soda can!

Don taught me the use of the term “selvage” while describing the results of his doctoral research at Arizona, an unusual technical term, which I have used ever since. I often get asked what it means.

Don served as a junior officer in the Navy during the Vietnam War. I vividly recall discussions with him about his experiences when I made one of my return visits to Cal Poly during graduate school. These

discussions figured prominently in my subsequent decision to enroll myself in Navy officer candidate training after completing my studies at Berkeley.

Don was also a pretty mature fellow for his age. During my last quarter at Cal Poly (Spring '76) I was a lab assistant for his physical geology class. I prepared field trip guides for trips down to the San Joaquin Hills/Dana Point area and led another all day trip to the Eastern San Gabriel Mountains, in my '74 Summer Field Geology area. We began with an overview of the low grade metamorphic rocks exposed at the base of the range, west of Chaffey College and viewed the Cucamonga fault where it crossed East Etiwanda Creek. Then we drove the students in vans up across the range on a fire road climbing the mountains to an elevation of about 5500 feet from a locked entry off Cucamonga Canyon. At our first stop overlooking Calamity Canyon I gave a mini lecture telling the students the range began with high grade metamorphic rocks at the bottom of the range (phyllites) and successively became lower and lower grade metamorphic rocks (schist, then gneiss) as we ascended the range. Don listened politely, but did not correct me in front of the students. After I was finished he took me aside and whispered something like "Isn't it just the opposite?" I didn't realize how great my mistake was till I got back and consulted my Summer Field Geology report. Ouch, I was completely wrong!! I have NEVER forgotten that incident. That was such a gracious and gentlemanly response to a student's mistake. He could have assassinated me in front of everyone, but he didn't. Instead, he exercised discretion, and in doing so, taught me a great lesson in teaching and mentoring, for which I have always been grateful.

Nevertheless, I got my comeuppance a few minutes later, when I was sort of bragging to the students that I had mapped a new fault in Calamity Canyon during my field work in '74, then telling them that I had named it after myself, trying to impress them. One of the fellows said to his buddy "*Yea, he called it asphalt!*" The entire class erupted with laughter and, well, I had to laugh as well, it was a great joke! I have been telling that one about myself ever since, much to the delight of my students.

Two of my most difficult assignments as an undergraduate were Don's structural geology and stratigraphy courses. In the structural class he did a good job of introducing us to most of the fundamental concepts, and a lot of the cutting edge stuff, such as Bob Berg's work on the Wind River Thrust and Ramsay's fold classification system. We also learned to manipulate stereoplots. This exposure proved vital to my graduate studies a few years later, when I was able to compete with others who attended more prestigious institutions.

In our stratigraphy class Don introduced us to electric logs, something I came to appreciate many years later. We were given the seemingly impossible assignment of trying to correlate a series of e-logs and gamma logs for two down deep wells across the Colorado Plateau. As I recall, these logs had been donated by American Stratigraphic Co. (Amstrat) of Denver. Each student was given a different set of logs and told to make an interpretation of the various units and lithology's they penetrated, and preparing a report summarizing our findings, complete with a fence diagram. Don told us we could use whatever references we wanted to unravel the geology illustrated by those logs, such as published maps or reports. I dived into the project with zeal, thinking I could out-research my peers and figure everything out. But, the territory covered by the logs was enormous, extending from Lake Mead all the way across the Colorado Plateau, over several hundred miles. It didn't take my long to acquire the names of the units at the collars of my wells, but I woefully underestimated how much the lithology changed between borings located 60 to 100 miles apart! The project turned into the biggest quagmire of my collegiate career, and I never did produce a credible work product. It gave me a healthy respect for those individuals who can accurately discern the electronic signatures of various rock types and their respective water chemistry from e-logs!

Another memorable experience was our strat class traveling to Cajon Pass one afternoon to measure inclined beds with or tapes and Jacob's staffs, so we could prepare our own stratigraphic sections of the units exposed in the cuts for the Santa Fe Railway, between Cajon Campground and Sullivan's Curve. We were to transport ourselves in personal vehicles. In giving the directions, Don had told us to exit Interstate 15 at the "Calabasas offramp." The actual name he meant was "Cleghorn", but none of us figured that out till we drove up and down the highway a few times searching for the Calabasas exit without luck! Everyone eventually got there, because they could see the rest of us congregating along the west side of the highway. The other memorable event of that afternoon was Harold Katzman losing his class ring from Chaffey High School. Harold was very undone about this, and despite an all-out search and a return the following day with a metal detector, the missing class ring was never found. Whenever I give someone erroneous directions, using similar sounding names, I always think of Don and that afternoon's events and it still cracks me a smile.



Year end party for the Geology Department at Gerry Henderson's home in Hacienda Heights, early June 1976. This view shows Professors Larry Herber, Don Tarman and Bernie Lane (Walter Hess is in brown suit bending over, behind Lucy Herber).

Finishing up at Cal Poly

I also worked with Prof. Henderson on researching a landslide out on Vasquez Canyon Rd, east of Bouquet Canyon Rd in Canyon Country which we explored several times and took samples of the slide plane all day one Saturday. I ended up giving a lecture on that subject at the Inland Empire meeting of ASCE and AEG in Upland during the spring of 1976. That was a good experience for me.

Graduation from Cal Poly (Sat June 12, 1976)

I went through Cal Poly in 8 consecutive quarters, and was voted the Outstanding Graduating Senior in Geological Science by my fellow students and faculty. I also received an Outstanding Senior in Geological Sciences Award from the Pacific Section of the Society of Economic Paleontologists and Mineralogists at a meeting in San Francisco that spring. I had been nominated for that by Prof. Henderson. During the time I was enrolled at Cal Poly I took every odd job I could get, while enrolled in 16 to 24 units per quarter. I

graduated with 127 units and a cumulative GPA of 3.092. During college I only repeated one course, that being Statics (ME 214), which was just about my favorite class.

All I can now recall from graduation was how tired I was when I completed everything. My diploma said June 11th, but I went through graduation ceremonies on Sat June 12th. Cal Poly was sufficiently small that we actually received our diplomas in their formal cases from the campus president when we walked across the dais during the ceremonies! For many years I had planned a career as a naval aviator. But, slight imperfections in my eyesight precluded my fulfilling this dream. So, here I was; I had worked so hard to achieve that single-purposed dream, and it was taken away from me by something I had no control over (my eyesight). I didn't have time to contemplate much, because I started work at my new job the following Monday.