

Badgers in the Aleutians

by John Fournelle

There is a growing tradition of Badgers doing geology in the Aleutians, starting with World War II and Ray Wilcox, Charles Bradley and Sheldon Judson. Bill Bryan came to UW right out of the Aleutians. Bob Black started his work on Umnak in 1962-3 while at UW. John Fournelle landed in the middle of Unimak Island in 1984 to work on Shishaldin volcano. In the '90s, Tina Dochat, Eric Carson, and Dave Mickelson studied the post-glacial geology in the Cold Bay area. And new Badger Brad Singer did his Ph.D. on Seguam Island and hopes to return.

The Aleutian volcanic island arc, one of the U.S.'s most remote archipelagos, received little attention from scientists and politicians until World War II. The landing of Japanese troops and bombing of U.S. forces there gave impetus to map the islands and adjacent ocean waters. Geologic interest peaked in June 1945 with the eruption of a volcano on eastern Umnak Island near the Ft. Glenn military base. Alaska's Commanding General Emmons had witnessed the 1912 Katmai eruption and immediately put in a call to the U.S. Geological Survey. A geologist, G.D. Robinson, was forthwith dispatched from Anchorage. Fortunately, ten days before, Signal Corps 2nd Lt. **Ray Wilcox** (UW BS '33, MA '37, Ph.D. '41) had been transferred to Ft. Glenn from Adak.

Ray's Ph.D. research, under 'Con' Emmons, had been on the mixing of rhyolite and basalt magmas at Yellowstone, and after graduation he worked for Jones and Laughlin in NY state iron ore exploration. He enlisted "with the draft breathing down" his neck. He chose the Signal Corps thinking that his background in mineralogy would qualify him to work on quartz crystals, used in radio transmitters; this did not come to pass. He arrived on Adak in January 1945, working with the Alaska Communications System, and in May he transferred to Umnak Island, a week and a half before the eruption within Okmok Caldera.

"I heard there was a USGS geologist in town to check it out. He was staying at the general's residence, and I called him up. He was about to give up getting into the caldera, which was socked



Lt. Ray Wilcox, Sgt. C.D. Clawson and G.D. Robinson prepare to descend into Okmok Caldera, June 1945. (From the article "Exploring Aleutian Volcanoes" by Robinson, which appeared in the October 1946 issue of National Geographic.) Photo by Col. G.A. Polk.

in by clouds. Together we decided to give it another try, and went up there, where it was a perfect day. We cased it, and Robinson went back to Anchorage to report to the commanding general, and they put me in charge of the volcano. I was to show visitors around—in addition to my other duties. Howell Williams came up from Mexico to check it out; I had known him before and we had a good time. Later on the head of USGS (Bill Wrather) and the chief of Alaska Branch (John Reed) came out. They had been in Anchorage and talking with the commanding general, who asked if they wanted to go out to see the volcano. I got acquainted with the Survey out there; this eventually led me, after the war, to work for the Survey. They wanted me to go back to Aleutians for the volcano program, but I begged off. They then offered me the job at Paricutin. Talk about luck...I don't know why I was assigned by the Army to the Aleutians in the first place, just a lucky break."

Ray and **Mary Marks** (BA '42) had met in the UW geology department, and were married in Madison in 1942. After the war, they moved to Mexico in September 1946 with their infant Peter. Ray spent two years at Paricutin as the "resident observer" at the observatory,

at the base of the volcano. He was responsible for monitoring the volcanic activity—seismicity, explosive and effusive activity, and sampling of tephra and lava. His petrologic examination (USGS Bulletin 965-C) is a classic study of variation in magma composition during an eruption. Ray was also called upon to provide expertise to authorities elsewhere in Central America when other volcanoes threatened. When his tour at



Mary and Ray Wilcox, Denver, October 1998

Paricutin was over, Carl Fries Jr. (BA '37, MA '39) took over the mission.

Ray would return to the Aleutians during the 1949 and '50 field seasons, as a member of the USGS's Volcano Investigations Unit. With the concern over Okmok and the strategic importance of the Aleutians, the War Department pushed for the USGS to start this program in late 1945. The first geologists were in the field during 1946 and '47, with bare bones logistical support from the military or Coast & Geodetic Survey. By 1949 the program had expanded its personnel and acquired the 80' halibut schooner *Eider*, mastered by experienced Alaskan fisherman Carl Vevelstad.

"Many of us would get to Seattle by late June and board the *Eider*, for the long trip across the Gulf of Alaska. It was a great adventure for those of us who'd never been on ship. The *Eider* had been on bottom several times before—its motto was *'Immer floats der Eider.'* In the Near Islands, Howard Powers was the chief. We got dropped off, four pairs, each with a geologist plus field assistant. Attu was biggest island. We would take two to five days to cover an area, then the ship would pick us

up. Weather was an important factor. The ship made it more flexible, tremendously more efficient than the previous way of getting on or off an island dependent upon the military's schedule."

During the summer of 1952, Ray conducted a reconnaissance of volcanic deposits in the Valley of Ten Thousand Smokes.

"We put in three days, by boat and foot, in June. It never got dark enough to sleep, so we just kept working. We returned to King Salmon hungry and tired. I'll never forget that meal."

The 1953 eruption of Mt. Spurr, west of Anchorage, brought Ray back again to active Aleutian volcanoes.

"It was just a light dusting of ash, pretty luggy stuff, some juvenile glass but cloudy. I conferred with civilian authorities and decided there needed to be a report for civilians on how to deal with eruptions like this. It resulted in a USGS Bulletin [1028-N] on the effects of volcanic ash eruptions in Alaska. It was used quite a bit later, including at the time of the Mt. St. Helens eruption. I got lots of flack from my Branch Chief Jim Gilluly, for the write up—as usual, I was behind in my other reports."

Ray's career in the USGS continued with 'applied volcanology,' tephrochronology, being applied to problems of stratigraphy in the Western U.S. Using his background in optical mineralogy, he developed the spindle stage and then the dark field masking technique to compare the minerals and glasses from different ash layers. He retired in 1984, and remains active as a Volunteer Scientist Emeritus.

Charles Bradley (BPh '35, MA '46, Ph.D. '50) graduated with a bachelors degree in geology during the Depression, and ended up running a commercial photographic business on State Street. When the winds of war began to blow strongly, he enlisted in the Army in 1941. His desire to go into the Army Mapping Service failed—he was "too old" at 28. He appeared headed to a dreary assignment, building boardwalks at Camp Grant, IL. Fate had him read a newspaper article about the army creating a unit able to live and fight in mountains and under winter conditions. Luckily it mentioned who was recruiting for it. Charlie loved camping and skiing, knew the organizer, and immediately began the surreptitious progress that soon found him transferred to the 87th Infantry Regiment (Reinforced) at Ft. Lewis, WA.

For the next couple of years, he was involved in testing

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Living Next Door to Parícutin Volcano

Mary Marks Wilcox (BA '42)

"I had loved to write in high school so I started in journalism at UW. The one journalism course I took was the worst class I ever had. I was required to take science, which I wasn't interested in, so took physical geography with Loyal Durand and loved it. I switched my major to geography and took a couple classes which showed me I didn't like the geography, but the physical part, the rocks etc., so by 2nd year I was majoring in geology. I loved it.

"The first year in general geology we had a field trip, which was fun. A high point was the mapping course where Ray and I got acquainted (we had probably known each other before). We were mapping at Devils Lake; near the end of the week, I was having trouble with my alidade. Ray, a grad student, was there substituting for Freddy Thwaites (the professor) who had gotten chicken pox from his three little boys. Ray gave me quite a bit of special help. [Ray: "I didn't think it was special."]

"Con Emmons taught mineralogy. He would come in and address the class, 'fellows'. That bothered me, I wasn't a fellow. So I made up my mind to show him, and I got the highest grade on the first exam. He stopped calling us 'fellows' after that.

"There was only one other female geology major, Donna Danke. I loved hard rock, but Twenhofel told me 'there's no place for women there,' and coerced me into doing my senior thesis on the Brachiopedia of Maquoketa Shale—which was interesting enough, and I had my own little office. I didn't tell anyone but I had made up my mind to go into hard rock geology in grad school. Then the war came along and I got married.

"We moved to Mexico in 1946. We lived 3 miles from the volcano. I'll never forget the first day there. We arrived late in the day from Mexico City, and the next morning everyone had left to go up to volcano. I was left with Peter (2 1/2 years old) alone in that strange place, no one else there except people down below in a horse camp (I couldn't speak Spanish yet), and volcano was booming and the earth was shaking. I wasn't sure what was going to happen. But I got used to the volcano quickly and I loved camping, which is what our life really was.

"We lived in the observatory which had asbestos board walls and roof, and no running water, no electricity. Two other families lived there with us. To get water, once a week we went to Uruapan, and brought it back in drums. We had to boil everything. There was no refrigeration; meat from the market would last a couple of days. We got a *filete*, would hang it in a cage with mosquito netting; by the 2nd or 3rd day it would be covered with hideous looking stuff—you would cut this off and cook what was left. In the rainy season, we collected water off the roof in a rain barrel—the ash would settle to bottom. Our teeth turned sort of black, but cleared up after we left. [Ray: "It was from fluorine coating the ash."]

"After 9 months, we went into Mexico City to have our baby there—there was no medical care at volcano. Ray was in Nicaragua the day Anne was born. We stayed in Mexico City until she was two months old, then went back out, not to observatory but to Uruapan. Ray would come in on weekends. We were there a year or so more, then Ray had to go into Mexico City to finish up, and we all went there.

"Pete learned to speak Spanish very well there. After we got back to the U.S., he refused to speak Spanish. 'Here people don't speak Spanish,' he said. We tried to keep it going at the dinner table, but he wouldn't cooperate. He took Spanish in high school; his teacher was from Michoacan and was amazed that Pete spoke Spanish with a Michoacan accent. When he graduated from high school in the '60s, he went all by himself down to Mexico. It was a bit traumatic for us.

"Living in Mexico was a great thing for us, living in a completely different culture. Coming back here was real culture shock; in a sense, we've never gotten over it."

Mary continued her studies and received a Masters degree from the Iliff School of Theology in 1968. She works in research, education and writing on social concerns and theological issues.

techniques and equipment: skis, snowshoes, tents, stoves, sleeping bags, clothing, much of it on the slopes of Mt. Rainier. Crossing crevasses, learning how to deal with avalanche threats, traveling under white-out conditions. In fall '42, he traveled to Ft. Benning for officer training and commissioning and then was assigned to the Winter Training Group, at Camp Hale in Colorado, as a trainer. That winter he was back in Wisconsin, "winterizing" the Second Infantry Division, at Ft. McCoy.

June of 1944 found him aboard a ship out of Seattle headed north for "Armageddon," which would turn out to be Dutch Harbor, Unalaska. He would be an essential part of the soon-to-be-born North Pacific Combat School, that would train the troops that would "carry the war" back to Japan via the Kurile Islands— Islands that are virtually identical to the Aleutians. In August of '44 the NPCCS shifted to Adak, 600 miles further out the chain; Adak would be the secret base for the offensive to drive the Japanese off the western Aleutian islands of Attu and Kiska.

Charlie has written a riveting account of his experiences in the Aleutian Islands during WWII, *Aleutian Echoes* (1994, University of Alaska Press.

ISBN 0-912006-75-7 paper, -74-9 cloth; order from your local bookstore or call the publisher at 1-888-252-6657), from which the following is excerpted (pp 229-232). It is profusely illustrated with gorgeous color photographs and water color drawings (such as the one on the cover, above).

"It was a pleasant spring day when our gang took the six-mile hike from Shagak Camp to Adak Base for a weekend in civilization. As we crossed the low pass, I was keeping an eye out for the blooming of our earliest spring flower, the narcissus anemone, and admiring the rare view of Great Sitkin volcano with its vapor plume trailing off to the southeast—toward home. Maybe I was thinking of home, too. The last thing I could have anticipated for this particular time and place was an

event that would change the course of the rest of my life.

"Coming toward us up the trail from [Adak] town was a man carrying a knapsack and walking with a brisk springy stride. He was medium sized and looked well adapted to the outdoors. Since it was rare that we ever saw any non-NPCS person on that trail, I stopped to get acquainted. He stuck his hand

out and said, 'I'm Bob Sharp and I'm looking for the NPCCS.'

" 'You're looking at the NPCCS marching right by you at this very instant,' I said. 'What can we do for you.'

" 'In town they told me you lived out this way, so, well, it was a good day for a hike.'

"He was on a mission for the 10th Air Corps to examine Adak's emergency foods for downed pilots and had been told that we had done quite a lot with that subject....I stayed behind to help our visitor. To tell the truth, Adak town held no real charm for me....

"My flower sketch book was in my pack so we went over to a big boulder, sat down and discussed what we had tested as edible plants, roots, and berries. It was the wrong time of year to see much on the ground, but Mr. Sharp seemed to know his plants very well. As far as I was concerned, except for the berries, which were delicious, most of the edible plants required a pretty severe emergency to make them edible.

" 'How about sea food?' I asked. 'You don't even need an emergency for that.' So we talked about mussels, the real backbone of sea food opportunity. We talked about crabs, shrimp, and salmon. I was a little reluctant to mention the giant clams because our only source, Shagak's tidal flat, was beginning to reveal signs of too many hungry mountain trainees....



“As we got up to continue the hike, he pointed to the lone boulder we had been sitting on. ‘What do you make of that?’

“I answered, ‘Glacier, I suppose, but I can’t decide whether it came off Mt. Moffet to the north or that mountain range to the south.’

“ ‘Is there evidence of glaciers to the south?’

“ ‘Yes, and I think it was separate from the Moffet glacier because there are striations in a couple of high passes to the south that suggest a fairly thick ice sheet over there flowing this way.’

“ ‘You’ve had some geology,’ Bob suggested. I told him I had a bachelor’s degree in geology from the University of Wisconsin, Madison. ‘Do you keep a notebook?’ I took my notebook from my shirt pocket. Bob looked it over, then passed it back. ‘You’ve got enough here to make the basis of a paper. I suggest you write it up when all this military distraction is over. Very little Aleutian geology is known at this time.’

“Pangs! I had gotten my degree ten years before. I loved geology but graduated at the tail end of the Great Depression which produced no geological employment for me. I drifted into commercial photography. That, too, was interesting. I enjoyed the surprise of each new assignment, the challenge, and the fact that each assignment came finally to an end. Finished! A sense of accomplishment, and on to the next. All that was fine, up to the day I saw a large billboard carrying the result of my biggest and best job, out there for all the passing motorists to see. It gave me a wrench in the middle. I loath billboards. When the draft came my way I sold off the whole photographic outfit. Mixed feelings, of course, but commercial photography had lost its charm. Geology! How could I return ten years late?

“Nevertheless, when the war was over, I went back to the University of Wisconsin Geology Library and started my paper on the geology of Adak. One of my former professors, R.C. ‘Con’ Emmons, came by, recognized me and asked, ‘What are you doing here?’

“After looking over the paper he said, ‘Why don’t you come back to geology? You might be able to use this for your master’s thesis.’ My return to geology was under way.

“Bob Sharp was and is a well-known geologist and teacher. *Life* magazine later listed him as one of the ten best teachers in the U.S. Home base was California

Tech. He did try one of the giant clams of Shagak Bay but I believe he cooked it instead of having it on the half shell. Cautious scientist. Although I have not seen Bob again, we have been in fairly close contact ever since that day on Adak.”



Charlie and Nina Leopold Bradley, Baraboo WI, Oct '98

Charlie did write up his notes from Adak—and they became his Master’s thesis, and were published in the *Journal of Geology* in 1948. He continued and received his Ph.D. in 1950. He joined the faculty of Montana State University, continuing onward in teaching, research and administration. He retired in 1970, and lives in Baraboo with his wife Nina Leopold Bradley (BA Geography, '41). He helps manage the Leopold Memorial Preserve.

Sheldon Judson (Ph.D. Harvard; UW faculty 1948-56) served in the U.S. Navy in WWII, and arrived in the Aleutians in 1943. Based on both ground investigation and photo interpretation, he published an article in *Journal of Geology* in 1946 on the postglacial geology of Adak Island. He joined the UW Geology faculty in 1948 and remained until 1956, when he joined the faculty at Princeton University.

“I was commissioned into the Naval Reserve as an ensign in World War II and assigned to photographic

interpretation training as were a number of other geologists. After training I was assigned to Hawaii and from there to Adak. There I was attached to a photo interpretation unit, a part of the intelligence group for the North Pacific Command. I was land based.

“I arrived on Adak just after we reoccupied Kiska [August 1943]. The area was very quiet thereafter. A few photos of Kamchatka and the Kuriles, and a rehashing of photos versus ground truth for Kiska. We had jeep transport available, but chiefly foot was the method of transport for those of us who wanted to look at geology. I thought that my observations might produce a paper, and in fact wrote the first draft of it on Adak. I wasn’t aware that Bradley and Wilcox had been stationed on Adak until after the war.”

Bill Bryan (MA ‘56, Ph.D. ‘59) came to UW as a grad student in 1954, following a summer as field assistant on Unalaska.

“I did hope to use the Aleutian rock data for my Ph.D. work which I began after the field season ended. Ray Wilcox helped me dig through the USGS system for a way to get access to the samples, but for various reasons it did not turn out to be workable. Too many problems with others having priority, manuscripts in progress but not yet in print, etc. So Ray put me in touch with a group at Scripps that was looking for help with a volcanic project in the Revillagigedo Islands,



Tina Dochat (Ph.D. 1997), Dave Michelson and Jim Jordan (UW Geography Ph.D. student) pause for a break in field work east of Frosty Volcano near Cold Bay, in July 1996. Eric Carson (M.S. 1998) began work on the tephrochronology there the following year. UW Anthropologists (Herb Maschner, PI) have also been working in this area for several years.

Mexico. At the time we all thought this was an extension of the trans-Mexican volcanic belt, with island arc affinities. It turned out to be nothing of the sort. This is how I ended up spending most of the rest of my life doing work on oceanic islands and deep-sea volcanism.

“My one field season on Unalaska Island began a long-term relationship with USGS volcanologists such as Ray Wilcox, George Snyder, Gordon Macdonald and Howard Powers, who all offered much help and guidance over the years. It might be interesting to know how many other geological careers were influenced or guided by the experience of one or two field seasons in the Aleutians. It is the kind of mentoring that is supposed to be part of the USGS mission, but for which it often seems to receive little credit.”

“I finally got to see the ‘forbidden’ end of the Aleutian subduction system in 1989, when I was invited to visit the Koriyak Mtns. in the Russian far east. There were a lot of similarities to the older units on Unalaska Island, and of course all of this is interpreted as transported accretionary terrain. Perhaps much of the underpinnings of the Aleutians has a similar origin? It would have been fun to take the Russians there to see what they think about our stuff. Unfortunately funding both here and the USSR went sour shortly after this, so that did not happen.

“About three years ago I got tired of trying to stay alive on soft money and retired. I now build boats for amusement but have carried on some work on giant tsunami deposits in Hawaii, another long term interest initiated by a personal experience with an Aleutian-generated Tsunami.”

Support for travel expenses for the Wilcox interviews came from the Weeks Fund. This project has expanded beyond solely Badgers in the Aleutians. If you know of anyone involved in mapping, ocean surveys, geologic or geophysical studies in the Aleutians, please contact me.
—John Fournelle, johnf@geology.wisc.edu