Kevin was scheduled for routine childhood vaccinations in late fall and early winter. We did not want to risk having to make a trip to Livingston on snow-covered Park roads, if auto travel were even possible (the date of road closure always was uncertain, dependant on snowfall and plowing for some special project). Dr. Baskett, at Livingston, was always understanding about such difficulties, so he gave us syringes and vaccines so that we could give the injections on the designated dates (two injections were needed).

In late November, "Baby," the mule deer doe with the notch in one of her ears (probably a result of an accident or a fight) was frequenting our yard just as she had done the previous winter. This winter she was accompanied by two fawns (1-72). Pine martens were moving back into the attic. Although a Coleman oil stove had been delivered to our quarters in October, to replace the living room wood heating stove (we would have preferred to have kept the wood stove), the new stove had not been installed by 1 December and the road had snowed closed. On 3 December, the Maintenance Division decided it must install the stove and this required sending a plow all the way from Mammoth to Old Faithful. The "installers" and 2,500 gallons of fuel oil arrived to fill the storage tank that had been installed outside the quarters in the fall. The wood range in the kitchen remained and we were glad to have it.

We saw our first northern flying squirrel (*Glaucomys sabrinus*) on the bird feeder by our kitchen window on 19 December. There were at least 17 mule deer in our immediate area and on 22 December, we had 13 mule deer in our yard; six were bucks with antlers.

Christmas brought some unusual "decorations" to our family. Pat wrote to her mother (on 25 December): "Mary T. and Kevin both were decorated for Christmas. T. had bells on her shoes and Kevin had red spots [measles]. He felt pretty well today though. Fortunately he hasn’t been nearly as sick as T. was with hers."

An elk reduction program in the Firehole River Drainage never did materialize even though the road was plowed for that purpose well into the fall. The Bombardier snowcoaches from West Yellowstone were given authorization to operate trips to Old Faithful again in the 1958–59 winter. Harold Young became the sole owner; previous co-owner William Nicholls was no longer connected with the business. The West Yellowstone snowcoaches made their first trip on 27 December, the day that the road from Old Faithful to Madison Junction snowed closed with no further plan for plowing. We had made arrangements to store our Rambler in the Yellowstone Park Company repair garage at Old Faithful; that was much better than leaving it in an open parking lot by the Geyser, as we had done the first winter.

An Army surplus "Weasel" (oversnow machine) was assigned to Old Faithful for our use this winter (we had been better off without one). The NPS had a number of these vehicles at Mammoth; they were used primarily in elk reduction or bison reduction activities. A Weasel had a cab within a canvas-covered frame that could not be heated. With its two tank-like tracks, it was a rough ride. Weasels had a reputation for "throwing" a track (the track coming off the drive and guide wheels) and it was a monumental job to get a track back on, especially in deep snow and frigid temperatures. Therefore, Bob and I made sparing use of the machine.
On New Year’s eve, we received a phone call from Luis Gastellum, who had become YNP’s Assistant Superintendent the previous June. This was a simple “Happy New Year” call that became a routine from him to each field ranger each year. Luis had little experience in natural resource management, but he was a great communicator and seemed to be a kind and thoughtful person.

On 5 January, Bob Perkins and I conducted a winter waterfowl count along the Firehole River from Old Faithful to seven miles north, by Weasel and skis; we tallied: 167 common goldeneye (*Bucephala clangula*), Barrow’s goldeneye (*Bucephala islandica*), 87 mallard (*Anas platyrhynchos*), 87 Barrow’s goldeneye (*Bucephala islandica*), 87 common merganser (*Mergus merganser*), 40 bufflehead (*Bucephala albeola*), 6 American wigeon (*Anas americana*), 3 green-winged teal (*Anas crecca*), and 69 Canada geese (*Branta canadensis*), a total of 430 ducks and geese. On 12 January, I took Pat and Mary T. to Biscuit Basin in the Weasel. It was a sunny day and we had a great time taking pictures (I-73). Pat noted that Morning Glory Pool had algae way down into the throat of its orifice, indicating that the water temperature was considerably cooler than it had been for many years. George Marler told us that such deep algal growth in Morning Glory had not been reported since 1938.

On 13 January, Pat recorded:

"We have more Buffalo than ever; the last sizeable herd in Hayden Valley retreated over Mary Mountain [to the headwaters of Nez Perce Creek, a tributary of the Firehole River] when they [the NPS] tried to reduce the herd last weekend. We now have 350+ head."

We kept hearing the rumor that the range condition in Hayden Valley was poor. On 16 January, Bob and I skied to Fairy Falls (in the Lower Basin). The Falls had delicate ice columns throughout (I-74). We saw 170 bison on the trip.

The two rangers at Old Faithful could not both be gone overnight, so on 20–21 January, Ranger Bob Perkins and Concessioner Winterkeeper Jim Keithley made a 3-day patrol to Shoshone Geyser Basin. I took Bob and Jim to the Shoshone Trail Head at Lone Star Geyser, in the Weasel. Bob’s wife, Mary Lou, took care of Mary T. and Kevin so that Pat could make the Weasel trip with me. On the way back to Old Faithful from Lone Star, I pulled Pat, on her skis, hanging onto a rope (skijoring) behind the Weasel. I made arrangements for Jim Valder, a ranger from Mammoth, to join me on a Shoshone trip later in the winter. I wished that Pat could go; she would have loved it so.

I spent a great deal of time that winter perusing the old record books (station logs), reports, and memoranda in the ranger station files. It seemed like an essential way to get some background history of the area. Nowadays, prior events and previous management problems seem to be disregarded—it’s always more fun to reinvent the wheel. "Institutional memory" does not exist, except in the archives, which seem to be accessed rarely by managers. One interesting finding in an old record was reference to the "planting" of 35 bison in the Firehole Drainage in 1938, and a comment that there were no bison in the Firehole basin prior to that year. I was unsure about the accuracy of the statement, but there was no elaboration in the record.
I-72. Mule deer fawns in our yard at Old Faithful Residence 161, January 1959.
I-73. Mary Teresa on the NPS Weasel, at Morning Glory Pool Parking area, 12 January 1959.
By late January, there was mounting pressure from Headquarters to reduce bison in the Firehole Drainage (by shooting). An aerial count had tallied 250. Superintendent Garrison decided against the direct reduction because it would have required plowing the road from Mammoth and probably also West Yellowstone. Garrison saw this as providing too much ammunition to the Chambers of Commerce of the surrounding states, all of which were pressuring the Park (through Congress) to keep the roads open for tourist travel all winter. At the time, plowing the roads all winter seemed like a horrible idea to most of the Park staff, and certainly to Pat and me. Looking back on the issue, and considering the huge numbers of snowmachines using the Park in recent decades, perhaps year-round automobile traffic would have been the lesser of the evils. Snowmachines have fouled the winter air and destroyed winter's quiet to a degree that automobiles never would have reached. However, plowed roads would have created "troughs" through deep snow and this would have resulted in a big problem with large mammals choosing a plowed road as the easiest route in their movements.

As an alternative to direct reduction (shooting) of bison, Headquarters decided that Bob and I should join other rangers from West Yellowstone and Mammoth in trying to haze ("chase") at least 90 bison out of the Nez Perce area (Firehole side), over Mary Mountain to the Hayden Valley side, east of Mary Mountain. Chief Naturalist Condon was concerned about bison trampling the algae-filled runoff channels from geysers and hot springs. He wanted 100 "chased" out and 100 shot. Bob and I participated in this chasing fiasco on 6, 8, and 9 January, overnighting in the Nez Perce Patrol Cabin. We were supposed to use the Weasel to get behind a herd and then force them where we wanted them to go (Mary Mountain). Wild-ranging Bison usually go wherever they want to go, not where any human has decided they should go. They did not want to go to Mary Mountain! They scattered and ran every which way in small groups. Our failure was duly noted by Headquarters.

During January 1959, the West Yellowstone snowcoaches made 19 trips carrying 120 passengers to Old Faithful. This compared to 11 trips with 80 passengers in January 1958. On 27 January, we felt an earthquake; it was recorded on seismographs at Butte and Hungry Horse, Montana. In early February, Bob Perkins, Pat, and I took the Weasel to Biscuit Basin, then skied to Mystic Falls. We got into very steep terrain and poor traction trying to reach the Falls via the Summit Lake Trail, so we dropped into the valley bottom and skied that route to the Falls. Pat recorded that this was her first "real" ski trip, 4 miles behind the Weasel and 5 miles cross-country. It was turning into a good winter for Pat because Mary Lou Perkins was willing to babysit Mary T. and Kevin fairly often. Later in February, Pat and I skijored behind the Weasel, driven by Bob, to the south end of the Midway Basin. The "ghost trees" (laden with heavy accumulations of rime) at the Rabbit Creek crossing always were spectacular. Pat wrote: "The ghost trees by the pools ... were beautiful (it was minus 20° F the night before). We also saw a number of bison and elk." By mid-January there were only 20 inches of snow on the Old Faithful snowstake. Minimum temperature for the month was minus 30° F.

On 9 February, an orphaned bison calf wandered onto the warm, bare ground between our quarters and Old Faithful Geyser. It was clearly on the way to starvation and we simply couldn't deal with watching it slowly die (the children could see it from our bedroom and living room windows), so Bob and I hauled a bale of hay over from the barn and placed it near the calf (which we called "Maverick"). The calf, a female, seemed to gain
strength and wandered away, returning occasionally. We stopped putting out hay and she was not seen again after several weeks. On 11 February, there were 17 inches of snowfall in two days, bringing the stake reading to 45 inches. Bob and I skied to the Lower Basin and saw 200 bison and 25 elk on 13 February.

The feared event with the Weasel occurred in the campground on 19 February. I was driving through deep, untracked snow and one of the tank-like tracks came off. It took Bob and me 1½ half days to get it back on. To begin with, we had to dig down through the 4 feet of snow and fully expose all of the area adjacent to the track (I-75). We did not consider it a fun project and thereafter we used more caution when turning the Weasel in deep powdery snow.

The gasoline generator was erratic and undependable throughout the winter. It had no governor, so when the washer was in use we had to turn lights off and on to keep it running evenly as the washer changed cycles. On 24 February, it backfired and caught the generator shed on fire. Fire extinguishers quelled the blaze. The generator would not start after that episode so we sent it out to West Yellowstone at the next opportunity. On 7 March, Bob Perkins and I drove the Weasel to West Yellowstone to pick up a replacement generator that had been delivered from Mammoth. The replacement had a governor and operated well during the remainder of March. Pat and Mary Lou appreciated the luxury.

During 25–27 February, ranger Jim Valder (from Mammoth) and I made a ski patrol to Shoshone Geyser Basin. That trip was always exciting; snow depth on Grant's Pass (on the Continental Divide) was 80 inches. We shoveled 66 inches of compact snow off the roof of the patrol cabin (I-76). The ghost trees in the Basin were especially attractive on that trip.

Kevin was involved in what could have resulted in serious injury. There were several pine martens living in our attic again. Unbeknownst to Pat and me, one night a marten chewed through the wallboard in the fireplace ceiling and entered the house. At dawn, we heard some squeals from Kevin (not of the particularly alarming type): I went in immediately and there was a marten in Kevin's crib. As I approached, it hopped out and we worked it out the front door. It had not harmed Kevin in any way that we could discern.

By the end of February, Bob Perkins and I had completed the task of removing snow from the roofs of 54 government buildings. Bob was sent out of Old Faithful on 1 March, for a few days of snow removal from the roofs at Bechler. On 2 March, Bob's wife, Mary Lou, experienced a severe gall bladder attack. I took her to West Yellowstone in the Weasel, then by car to the hospital in Ashton, Idaho. She was able to obtain medication that calmed the attack. With the doctor's advice that she pursue the problem in more depth as soon as the road was plowed, we were able to head back to Old Faithful the same day.

Bob Perkins and I walked to the Rabbit Creek thermal area in March. It was one of our favorite hot spring areas. It contained a number of springs unlike any elsewhere in the Park (I-77). On our trip we saw a live bison that apparently had stepped into a hot spring. The flesh was peeling off one lower leg and the bone was exposed. The thermal area was only a mile from the road, but that was far enough to keep most humans from venturing to it. In those days the Rabbit Creek dump was operating in summers, so the numerous grizzlies in the vicinity also discouraged most people from making the hike.

The Perkins were good neighbors and companions and we were fortunate to share an Old Faithful winter with them (I-78).
Ranger Bob Perkins in the Old Faithful Campground, preparing to struggle with reinstallation of a thrown track on the Weasel. Snow on the side of the disabled track first had to be shoveled to bare ground, 17 February 1959.
1-77. Ranger Bob Perkins points to “pancake-like” floaters in one of the Upper Rabbit Creek hot springs, March 1959.
1-78. The Old Faithful Ranger families, winter 1958–59.

L-R: Adults, Riley and Pat McClelland; Mary Lou and Bob Perkins; Children, Kevin and Mary Teresa McClelland; Jim Perkins (photo by winterkeeper Jim Keithley).
In early March, I received an inquiry of availability for a park naturalist position at Dinosaur National Monument. On 13 March, I replied that I was not interested. On 23 March, we heard that Len Berg, who had been our District Ranger at West Yellowstone for the winter, was being moved to Mammoth. His replacement was to be Elt Davis. Elt was well-known in the NPS because of a near-fatal encounter he had with a young boy who had stolen a car. Elt was manning an entrance station in GTNP when the stolen car drove up. The driver shot Elt in the chest and he lost one lung as a result.

Four snowplanes carrying eight passengers arrived at Old Faithful on 5 March and stayed only briefly. They had come from Jackson, Wyoming, via the South Entrance. Snowcoaches from West Yellowstone terminated operation to Old Faithful in the middle of March. Their totals for the 1958–59 winter were 51 trips with 526 passengers. It is shocking to compare these totals with the number of trips authorized by the NPS (as of 17 Nov 2008) for the 2008–2009 winter travel season: 78 snowcoaches and 720 private snowmachines PER DAY in YNP!

During March, Bob and I made local ski trips to Mallard Lake and Divide Lookout. On 6 March, we found river otter (Lontra canadensis) tracks along Iron Creek, south of Black Sand Basin. The first mountain bluebirds (Sialia currucoides) were observed on 23 March. Other birds recorded during March included: common redpoll, snow bunting, Clark’s nutcracker (Nucifraga columbiana), American dipper (Cinclus mexicanus), killdeer (Charadrius vociferus), common snipe (Gallinago gallinago), horned lark (Eremophila alpestris), ruffed grouse (Bonasa umbellus), and mountain chickadee.

By late March we were hearing rumors that we would not be going to Bechler after all. In mid-April Chief Ranger Brown announced several summer assignments. It was surprising for him to do so before spring ranger conference, so we still wondered how firm the decisions really were. We were told that we would move to Snake River for the summer and would then move to Moran, Wyoming, for the following winter. The Perkins were to remain at Old Faithful for the summer and Del Peterson also would be stationed at Old Faithful. The Old Faithful Sub-District Ranger would be Lee Robinson. Chief Naturalist Dave Condon was to leave YNP on 29 May to become Superintendent of Great Smoky Mountains National Park.

We saw the first grizzly bear tracks on 2 April. Giantess Geyser awakened all of us at 3:00 A.M. on 15 April when it went into a powerful steam phase that literally shook the house. We all went outside to listen to and feel the rumbling and roaring. The snowplows arrived 16 April 1959, unusually late in the spring. The maintenance division was trying to save money and allow the road to melt out as much as possible. We were eternally grateful for the added three to four weeks beyond usual road plowing time.
Final summer assignments were presented by Chief Ranger Brown at the spring ranger conference, 4–8 May (1-79). Our assignment to Snake River remained unchanged. Moves within the Park were traumatic because they had to be done by the ranger, with help from whomever he could muster. The Park provided a horse truck for hauling furniture. Moves were especially difficult for Pat and with each additional child they were harder. I'm sure she felt like she was always making new curtains and adapting to a new place in which to live. She was never a complainer though; she always took stressful events, including moves, in stride. There can't have been a harder-working, more pleasant, and even-tempered woman in the world.

The Arts and Crafts Hobby Show for Park employees was held on 6 and 7 May, in Mammoth Recreation Hall. There were several categories and entries were judged as to the top three in each category (See *Yellowstone Weekly News* of 14 May 1959). Bob Perkins and I submitted 35 mm color slides. The slide judge was Yellowstone’s grand old man of photography, Jack Ellis Haynes. Jack Haynes awarded “Grand Award, all Slide Classes” to Riley McClelland for a slide of Old Faithful and Grand Geysers erupting simultaneously in winter (1-80). Bob Perkins won second for a shot of an icicle tree at Old faithful. Byrne Packard won third for a shot of Crooked Creek in Oregon.
(Courtesy NPS, YNP)

L-R

**Back row:** Merrill (Dave) Beal, Assistant Chief Park Naturalist; Duane Graff, Park Ranger; Lee Robinson, Sub-District Ranger; Lloyd Hoener, Park Ranger; Jim Valder, Park Ranger; Harry Reynolds, District Ranger; Jack Hughes, Park Ranger; Riley McClelland, Park Ranger; Lennart Berg, District Ranger; and Jack Williams, Big Hole Battlefield.

**Middle row:** Dale Nuss, Sub-District Ranger; Bert McLaren, Park Ranger; Tom Milligan, Sub-District Ranger; Bob Burns, Park Ranger; Byrne Packard, Sub-District Ranger; William S. (Scotty) Chapman, Assistant Chief Ranger; Joe Fraser, Park Ranger; Del Peterson, Park Ranger; Les Gunzel, Sub-District Ranger; Art Hayes, Park Ranger; Bob Perkins, Park Ranger; Bob Howe, Biologist; Joe Way, District Ranger; "T" Hewitt, Assistant Park Naturalist.

**Front row:** Bob Vicklund, Park Ranger; Clyde A. (Al) Maxey, Sub-District Ranger; Frank Sylvester, Assistant Chief Ranger; Luis Gastellum, Assistant Superintendent; David de Lancey Condon, Chief Park Naturalist; Elt Davis, District Ranger.
1-80. Old Faithful and Grand Geysers in simultaneous eruption, 4 January 1959, with the temperature at minus 27° F. The photo won the “Grand Award” in all 35 mm slide classes, at the Arts and Crafts Show in Mammoth Hot Springs, 6–7 May 1959. Photographer Jack Ellis Haynes (“Mr. Yellowstone”) judged the entries.
CHAPTER 14. A New Assignment, the Snake River (South Entrance) (summer 1959)

We moved to Snake River on 29 May 1959. Al Maxey was the Sub-District Ranger for whom I would work. Park housing at Snake River was a two-story duplex, a few hundred feet from the south entrance road and the Snake River. Each ranger family had half of both levels in the house, divided into north and south units (I-81). We were in the north half and Maxeys in the south. There was a small office that served as the ranger station, in the front-middle of the building. The house was heated by a coal furnace in the common basement. The kitchens had wood ranges. Al, wife Barbara, and children, Cathy, Craig, Robin, and Kirk comprised a wonderful family. Al and Barbara were kind, helpful, and pleasant neighbors. Al was a patient supervisor who gave me plenty of independence.

My primary responsibility was the operation of the entrance station, which included keeping track of all the money from entrance fees and preparing remittance forms for the transfer of money to Headquarters. I had little time for any work-time activity other than the entrance operation. The senior seasonal ranger was Fred Felsch (wife Joan), an experienced and resourceful ranger. Fred and Joan were fine people; we enjoyed interesting philosophical conversations with them. A few years after our summer at Snake River, Fred and Joan experienced a tragedy—their young daughter died as a result of a fall from a horse. Other seasonals included Dean Barnes, Ed Johnson, Tom Oldham, Dick Sherman, Ronald Tew, Dave Warren (a native American Navajo), and Ray Fortuna (who never ironed his shirts or combed his hair).

In June, blooming scarlet gilia (*Gilia aggregata*) covered the field in front of our quarters. Our outings with the kids often were short hikes up the Snake River, in the Park. There was a location less than half a mile upriver where the kids could fish or play in the gravel and sand in relative safety. A cable car, moved by hand over hand on the cable, could be used to cross the river not far from our quarters.

It was a very tiring summer for Pat. She was pregnant (due in October) and in June, three of the Maxey children, Mary T., and I came down with the mumps. I was on sick leave for 12 days. Our bedrooms were on the second floor, and I was essentially bedridden for a week, so poor Pat did a lot of stairs climbing. The July Monthly Report for the Snake River Sub-District included the following:

> “The rangers on the Snake River Entrance were startled to discover a live flamingo in the trunk of a visitor’s car. The woman had placed it there because she thought it was illegal to transport wild animals through the park. If you work on an entrance station long enough you will not only meet all your old friends but will have seen just about everything.”

In early August, on a day-off trip to West Yellowstone, we had the privilege of meeting Max Bauer, former Chief Naturalist of YNP. He had been Chief during Pat’s father’s early years (1939-42) as a seasonal naturalist. He had written one of the early books on Yellowstone geysers. Sometime during the summer I met Dr. Margaret Altmann, an ethologist studying elk and moose (*Alces alces*) behavior near the southern boundary of YNP. Pat already knew her; she was a friend of Pat's folks, from the summers when Harry and Peg were at the Jackson Hole Biological Research Station. Margaret was a fascinating wildlife scientist, probably in her 50s at that time. Margaret believed that extrapolations
from laboratory studies of animals to the lives of free-ranging animals were full of potential for misinterpretation. She also abhorred mechanical means of getting to any study site, believing that there were too many risks of altering the behavior of the animals being studied. She did her traveling on horseback or foot.

Margaret moved back to the University of Colorado (Boulder) when she finished each summer's field work. She occasionally stopped to see us during our summer at Snake River and also at other Park stations in subsequent summers. Margaret’s research results from her studies conducted out of the Jackson Hole Biological Research Station, at Moran, were published in scientific journals (e.g., Altmann 1956, 1959, 1963).

On 17 August, my parents had been with us for a week, having come on the train from Denver to Idaho Falls, Ashton, and to West Yellowstone (where we had picked them up). On the afternoon of the 17th, a day off for me, we drove to West Yellowstone, to put them on the 7:30 P.M. train, for their return trip to Ashton and on to Denver. Prior to their train departure, we had dinner in the Union Pacific Depot dining room. Little did we know that within a few hours a major earthquake would damage the railroad tracks from West Yellowstone to Ashton and cause structural damage to the Depot. My parents would be on the last passenger train between West Yellowstone and Ashton, Idaho, that season. The route was reopened to passenger trains in 1960, but that was the final year for that service. We also had experienced the last meal to be served in the Depot that year.

After the train departed, Pat, the kids, and I headed back to Snake River, arriving about 9:15 P.M. We all were quickly sound asleep after the long day. At about 11:40 P.M., Pat and I were awakened abruptly by a violent shaking of the house. Our two children and the Maxeys’ four children did not wake up. Pat and I immediately went downstairs and outside where we met Al and Barbara Maxey. We discussed whether to get the children out of the house, but decided that was unnecessary. Pat and I had felt numerous minor temblors during our previous two years at Old Faithful, so we were not especially alarmed by this quake. However, this one clearly was much stronger than any other we had experienced. There was no apparent damage to the house, so we momentarily attached no special significance to the quake.

Within the hour, we received a phone call from the Lake District Office, informing us of extensive damage to roads on the west side of the Park and instructing that the South Entrance should be closed to incoming traffic immediately. I took the short walk over to the entrance and closed the inbound lane, then remained to contact any people that arrived or were exiting the Park. The first car was on its way out from Old Faithful. The driver was very anxious to get away from the area. He said that he and his family (wife and two children) had been in the Old Faithful Inn for the night (they all were still in pajamas). The earthquake had shaken the building violently and there was some damage. They were frightened. They sped off south, toward GTNP. A number of other cars exited, all with very nervous people who had been staying at Old Faithful. It was apparent that the quake was much more significant than we had suspected from the moderate shaking we experienced at Snake River.

The road from Old Faithful to West Thumb (Craig Pass) was soon closed by the Old Faithful rangers and that ended the exodus until the following morning, when all park entrances except West were reopened. We felt frequent aftershocks throughout the rest of the night. At first light on the 18th, we found that our water supply and the Snake River
were muddy. The waters of Glade, Polecats, and Crawfish Creeks took on a milky color that remained during the fall. The following excerpt from Fischer (1960) describes the earthquake in broader terms:

“At 11:37 P.M. M.S.T. a sudden displacement of rock occurred along a fault at a depth of ten miles beneath the earth’s surface at 44° 50' N. Latitude and 111° 05' W. Longitude. Shortly following this displacement these events occurred in rapid succession: An estimated 43.4 million cubic yards of rock slid as a unit into the Madison Canyon burying the road and river under several hundred feet of rubble for a distance of a mile, impounding the waters of the Madison River to create a second lake below Hebgen Dam. Hebgen Lake basin was tilted causing the south side to rise and the north side to depress resulting in oscillations of the lake surface that caused it to crest the dam four times and kept the surface in motion for a period of 11 hours. Within the park, rockslides buried many sections of the roads, buildings were damaged at Old Faithful and at Mammoth Hot Springs, and 298 geysers and hot springs erupted, 160 of which had no previous record of eruption. Nature was on a rampage and man’s faith in terra firma was suddenly put to the supreme test. As shock waves radiated out from the center of disturbance they were felt throughout an area of 500,000 square miles and recorded at seismograph stations around the world. This earthquake with a magnitude of 7.1 on the Richter Scale has been equaled or exceeded only 14 times within recorded history in the United States. It was, in fact, a major earthquake (7.1), along a fault 10 miles below the surface, near Hebgen Lake, northwest of West Yellowstone.”

The most significant human impacts were outside the Park, near Hebgen Lake. A Forest Service campground near the Madison River was buried; 28 people were killed by the slide. Most were buried and never found. The slide debris dam in the Madison River created Earthquake Lake, downstream from Hebgen Lake. The Hebgen fault scarp showed a vertical displacement of up to 20 feet (I-82).

All patrons in the Old Faithful Inn were evacuated and the Inn was closed for the remainder of the season. There were major rockfalls on the West Yellowstone–Madison Junction Road and north to Mammoth. The Administration Building and Mammoth Visitor Center (stone buildings), were temporarily abandoned because of cracked walls.

Superintendent Garrison set up a temporary office in a wall tent on the lawn outside the administration building. The Superintendent ordered the geyser basins closed to all public use because so many features were exhibiting erratic and unpredictable behavior. That meant that Pat and I couldn’t easily go to see what changes had taken place. However, Old Faithful Ranger Bob Perkins (with whom we had been stationed at Old Faithful the preceding summer and winter) and Park Hydrothermal Specialist George Marler both offered to take me on reconnaissance trips with them; I jumped at the opportunities. I joined Bob on a patrol to West Yellowstone. There were huge boulders on the road and substantial cracking and fissuring at places in the pavement. George took me to Earthquake Geyser, a new geyser that had literally "broken out" near Gentian Pool, in the Lower Basin (I-83). Earthquake remained a geyser for only a few weeks. Also, 45 hot springs that had never before been recorded as erupting, erupted during or shortly after the quake. Some hot springs (e.g., Gem Pool) drained. Some of the major geysers (e.g., Giantess and Morning)
erupted during or soon after the quake.

Sapphire Pool, in Biscuit Basin, became a major geyser. Prior to the earthquake Sapphire had only one known major eruption, occurring on 14 June 1955. George Marler (1973:29) suspected that it had been “soaped.” In many geysers and some hot springs at or above the boiling point, the addition of a small amount of soap can produce an eruption; this constitutes an act of vandalism and is illegal. Typical pre-earthquake behavior of Sapphire was characterized by violent boiling reaching a height of up to 6 feet, lasting for a few minutes, and occurring about every 15 minutes. During the quiescent intervals, an observer could gaze to a depth of more than 20 feet in the crystal-clear, sapphire blue water of the pool (I-84a,b). Marler (1973:29–31) described the effect of the 1959 earthquake:

“The big temblor of August 17, 1959 affected Sapphire Pool most dramatically. It and the group of springs to which it belongs were affected to a greater degree than any other area in the Upper Basin.” On the morning following the earthquake Sapphire was in a state of violent boiling. Water was surging up about 8 feet. Due to contained sediments it was of a brownish coloration. It soon became evident that all periodicity had ceased. It had developed into a steady geyser. The steady geyser activity continued until September 5. Sometime during the night of August 21, there was a major eruption, comparable in size to the 1955 eruption. By the morning of the 22nd the crater had again filled and was boiling steadily and in the same manner as prior to the night eruption of the 21st. On this date it was evident that a spectacular change had taken place. At approximately two hour intervals, Sapphire was having spectacular eruptions of titanic proportions [I-84c,d]. The eruptions would come suddenly and explosively. Following the eruption the water would ebb from 4 to 6 feet in the crater. With constant boiling and surging it would steadily rise. Upon reaching the base of the biscuits [siliceous sinter formations surrounding the pool] it would suddenly well, overflowing the crater. Then within 2 or 3 seconds the explosion would lift a huge mass of rocketing jets of water to heights which seemed to vary between 100 and 125 feet. Occasionally there would be a burst fully 150 feet in height. The eruptions were spectacular, not only due to their height, but for their lateral extension and the tremendous volume of water discharged during the initial burst. Many of the eruptions would be wider than they were high, the estimated width being near 250 feet. This was due to massive jets which arched away from the central mass of exploding water. Following the initial burst, which by competent hydrologists was estimated to discharge in the neighborhood of 50 tons of water, there would be anywhere from 1 to 5 later bursts, about 5 minutes apart.”
1-81. Snake River (South Entrance) permanent ranger duplex and ranger station (Building 211), built in 1941. A fire destroyed the previous residence in 1940. **Top:** Front (to the right) and south side. Ranger station office is in the middle entrance in front; **Bottom:** Back and north side (the left) of the residence, with the garage on the right. In summer 1959, Maxeys lived in the south unit and McClellands in the north (Courtesy NPS, YNP, YELL #s D-51.side and back).
1-82. Fault scarp with vertical displacement of 20 feet, resulting from the 1959 Hebgen Lake Earthquake (the observer is Katherine McClelland).
I-83. Earthquake Geyser reaching a height of 50 feet, late August 1959.
I-84a. Sapphire Pool pre-quake, in a quiescent period between eruptions. Note the biscuit-like geyserite formations for which Biscuit Basin was named.

I-84b. Typical eruption (4–6 feet) of Sapphire Pool prior to the 1959 Earthquake.
After the 1959 earthquake, Sapphire Pool became a major geyser with eruptions that often exceeded 100 feet in height and width. Bottom view shows Naturalist George Marler photographing an eruption.
I-84d. Major eruptions of Sapphire were powerful.
This impressive behavior at near two-hour intervals continued until 13 September; for the remainder of the fall of 1959, major eruptive periods of variable intensity occurred. Pat and I wanted very much to return to Old Faithful to participate in the “Emergency Interpretive Study of Earthquake Phenomena,” being organized to study the changes that the earthquake had wrought in the geyser basins. Superintendent Garrison was very edgy about the hazards within the geyser basins and we began to hear rumors that he might not allow anyone to be stationed at Old Faithful during the coming winter.

By late August, our seasonals at Snake River were leaving and I was stuck at the entrance station for 8 hours, 4 days each week. On 16 September, the Milligans came over for a visit. They had spent the summer at Bechler, where we had originally been assigned (on paper) until Otto changed his mind and sent us to Snake River. On 17 September, Tom and I made a horseback trip to Heart Lake and to the Mount Sheridan Lookout to pack out the belongings of Jim McKown, who was ending his summer tour as the lookout. We stayed at the Heart Lake Patrol Cabin the first night and I came down with the flu. I can still recall how awful I felt riding up to the lookout the next day. I thought that I’d surely fall off the horse from weakness. I had never been to the Sheridan Lookout before and the view was breathtaking. One can see the Tetons and much of Yellowstone Park. Perhaps it was a sufficiently powerful emotional high to affect me physiologically, because I began to feel better and strong enough to enjoy the rest of the trip.

The summer was rapidly passing and, as always, we did not know where we would be for the coming winter. The rumors included being snowed-in at the Snake River, moving to Moran, Wyoming (as the Maxeys would do), or possibly getting to go back to Old Faithful (which seemed a remote possibility). I contacted Old Faithful Sub-District Ranger Lee Robinson, West District Ranger Elt Davis, and Assistant Chief Ranger Frank Sylvester; they were receptive to the idea of reassigning me back to Old Faithful to study earthquake effects. The Bob Perkins family, with whom we had spent the previous winter, had remained at Old Faithful through the summer, but they preferred to not have another winter at Old Faithful. The chief stumbling block to our return to Old Faithful was once again Chief Ranger Otto Brown. He put his foot down and held to the position that rangers needed to be moved from station to station for varied experience. He had a point, but none of the other rangers had the same intense interest in the hydrothermal features. The numerous and profound changes resulting from the earthquake needed careful study. Our experience from the previous two winters provided a baseline with which to compare changes. That seemed persuasive to everyone except Otto. Then, the news came that Otto would be transferring to the superintendency of Crater Lake National Park on 1 October. I talked with Assistant Chief Sylvester as soon as I heard the news and he said lay low, keep your mouth shut, and after Otto is gone I'll assign you to Old Faithful for the winter.

Our third child was due in early October. We vacillated on whether to plan on going south 57 miles to the hospital in Jackson, Wyoming, or north 147 miles to Livingston. We were familiar with the Livingston Hospital, but not the Jackson Hospital, but the trip north would be a much more difficult drive, especially if the roads were icy. We decided on Livingston, but kept the Jackson route as an option if the roads north were too bad. Pat went into labor on the evening of the 9 October, after a day long snowstorm (5 inches of wet, heavy snow). The roads were very icy and snow covered (they had not been plowed), but I thought that they would be passable, so we headed north, dropped Mary T. and Kevin with
the Perkins, at Old Faithful, and went on to Livingston. We made it and Jane Anne, our second beautiful daughter, was born at 12:08 P.M. on 10 October. Again, I was not allowed in the delivery room because of hospital policy at the time and had to listen and watch as best I could from just outside the door. To exclude the father seemed grossly unfair. Dr. L. M. Baskett was the attending physician; he was a fine and caring doctor. While Pat was in the Hospital she made out the order list for winter groceries, assuming that we would indeed get to spend another snowed-in winter at Old Faithful. Pat's mother (Peg) arrived in Livingston via train before Pat was released from the hospital and Peg returned to Snake River with us to help care for the children. On 15 October, a couple of weeks after Otto's departure, our fondest wish was confirmed; we would be sent back to Old Faithful for another winter, moving date 26 October!

Old Faithful Ranger Bob Perkins had been assigned to the Ranger Office, in Mammoth, for the winter. We learned that our neighbors for our third snowed-in winter would be Del and Barbara Peterson and their daughter Susan. They had been at Old Faithful through the summer, along with Bob Perkins and Lee Robinson. Del was a ranger at Old Faithful in summer 1956 (before he was married), when I was a seasonal naturalist. However, we did not become well acquainted with him. We hoped that they would be at least compatible with our interests. By late October we had our winter grocery order arranged through a market in Jackson, Wyoming. The Maxey family had moved to Moran in early September, but Al came up to Snake River on most days to work in the subdistrict. Our move kept being postponed from the original 26 October date. It was rescheduled for 15 November and then at the last minute delayed another 5 days (awfully hard on Pat, trying to plan with three children).

On 29 October 1959, Pat wrote:

“Riley and Bob are picking up our case goods in Jackson tomorrow. We got a good deal—wholesale plus 6% (tax included) no freight. Petrsions didn’t go in with us but with Maxeys & Perkins it came to nearly $1,000; fortunately for us we did have someone to go with.”
Orders from headquarters kept delaying our move, from week to week and then day to day. Finally, on 24 November 1959 it happened; we moved back home to Old Faithful for our third winter. I would be working for Sub-District Ranger Lee Robinson, who was stationed at Mammoth for the winter, and District Ranger Elt Davis, stationed at West Yellowstone. We moved back into Old Faithful Quarters 161B, with its magnificent view of Old Faithful Geyser and much of Geyser Hill. Some aspects of our living conditions were very different compared to the previous two winters. There was commercial electrical power. Transmission lines entering the Park had been completed during the previous summer. Having regular electrical power was a luxury with benefits and disadvantages; some of the rustic atmosphere was gone. We did have a gasoline generator available as a backup when the commercial power went out (the same undependable generator type that had given us fits the previous two winters). We had a new kitchen range that was an electric stove, but with a firebox for burning wood/coal when the power was off (the oven was only electric). Although it was nice not to have to deal with a generator most of the time, the power lines created an awful scar through Park terrain.

When the old Monarch wood stove in the kitchen had been taken out of 161B, at Old Faithful, before our move, we arranged to have it hauled to Snake River (where we were stationed at the time) and stored in the loft of the barn (otherwise it would have been taken to the Old Faithful dump). Our intention was to keep it, and move it to a place of our own some day. Within the next year Bert McLaren, who was working in the South District, gave it to a friend of his. We presume that he did not see our tag on it, or perhaps a squirrel had chewed it off. Loss of the stove, which Pat had cooked on for two years, was very disappointing to her. She did love to cook on wood ranges.

Del Peterson’s winter duty at Old Faithful was to carry out the usual ranger functions. Del never seemed to be much interested in anything, but at least he was friendly and pleasant. He was satisfied to stay indoors most of the time. My winter assignment was to conduct studies of the hydrothermal activity and compare it with pre-quake patterns. During the fall there had been several other people assigned to conduct geological studies of post-quake conditions at Old Faithful: seasonal naturalists Kent Higgins, Richard Frisbee, and Bill Germeraad. Some people were brought in from other areas: Alan Mebane, from Dinosaur National Monument, Utah (he later became YNP’s chief naturalist), and William Fischer, Professor of Geology from Colorado College, Colorado Springs, Colorado. All these people left by 20 December. On 16 December 1959, I had completed three years in “Career-Conditional” status, the required period before eligibility for conversion to “Career” status. On that date I received my Career status appointment, a day to celebrate!

On 17 December, I set up an automatic recording device to monitor the eruption times of Old Faithful Geyser. The device was similar to one used by Ranger Ruben Hart (1950) in the winter of 1949–50. We placed a metal weir (about 24 by 10 by 12 inches) in a carefully selected runoff channel (I-85). The weir funneled eruption water past a swinging gate that made an electric contact when runoff water opened the gate. A wire ran along the ground surface from the weir gate contact to a recorder placed in our kitchen. The wire was insulated with a thick covering the color of geyserite.

The recorder was a modified barograph with an ink pen arm that moved when the
electric circuit was activated by the gate contact. The chart, on a revolving drum operated by a six-volt battery had the appearance of a seismograph, with the only variation from a straight line occurring during eruptions. With every eruption, we heard the click, click, click, as the pen arm was set in motion by the surges of runoff water rapidly closing and releasing the contact gate. We have fond memories of the clicking in the middle of the night, alerting us that Old Faithful was in eruption. The primary maintenance problem involved a coyote that frequently chewed through the thickly insulated wire. Splicing was of course necessary to restore the operation.

In 1959, prior to the earthquake, Old Faithful’s average interval between eruptions had been 60.8 minutes. According to George Marler, this was the shortest average interval since records had been kept. Marler (1959:50–51) also wrote:

“During the day following the quake Old Faithful was performing in a manner that was suggestive of no adverse effects from the quake. However, its action was more erratic, alternating long and short intervals, indicating a possible increase in function. Old Faithful continued to be erratic for the rest of August, but there was an increase in the average time. The average continued to increase for the rest of the year.”

The October 1959 average (before we moved back to Old Faithful) was 66.8 minutes (based on visual observations of Old Faithful naturalists). This was the longest average interval recorded up to that time. Many post-earthquake changes in major geysers persisted up to the time we moved to Old Faithful; e.g., Grand, Fountain, Morning, and Splendid Geysers still were dormant. Sapphire Pool still was going through phases of major eruptive activity (well over 100 feet); at other times it returned to its pre-quake state of quiescence interrupted by periodic boiling to several feet in height. Following is an excerpt from my December 1959 Report on Geyser and Hot Spring Activity:

“Sapphire displayed some magnificent eruptions, particularly during the early part of the month. However, during the last two weeks of December, Sapphire had few plays of great magnitude. On 3 December, a human footprint and a bison print, both embedded in hard siliceous sinter, and both very recently uncovered by violent eruptions of Sapphire, were removed from a shelf of geyserite a short distance north of Sapphire (I-86). The specimens were removed by Park Naturalist Marler and Park Ranger McClelland and sent to the museum at Mammoth. Marler believes that the human print may have been made by a mocassin-covered foot of an Indian. Both the human and the bison prints must be very old; Sapphire’s eruptions had to remove at least six inches of dense sinter from above the prints before they became exposed. The prints must have been made in a bed of soft algae within a runoff channel from Sapphire Pool. Geyserite was then deposited within and over the algal bed. Eventually this all hardened into a distinct layer of geyserite within which the prints were preserved.”
1-85. Arrow points to the weir that sent an electrical signal to a recording device in our home (161B) when Old Faithful Geyser erupted.  
**L-R:** Kevin, Mary T., and Pat holding Jane.
Bison and human footprints in old honeycombed geyserite, exposed by violent eruptions of Sapphire Geyser in November/December 1959.
“Successive layers of geyserite were deposited over the prints until several inches of solid sinter covered them. The runoff pattern from Sapphire must have shifted after this scenario, because that overflow channel had not been active in George Marler’s memory. The violent rushing of eruption water into this old channel has eroded geyserite layers and exposed the tracks to sunlight once again, after what must have been many decades of entombment. There undoubtedly is a great story behind each of these tracks.”

We felt earth tremors on 2, 12, 13, and 14 December. The road snowed-in on 8 January. We had been told by headquarters that plowing would continue until 10 February; the sudden closure left us without some last minute groceries we had planned on obtaining. We certainly didn't mind that small inconvenience; we loved every minute of being snowed-in and the sooner it came and the longer it lasted the better we liked it. There were relatively few snowcoach trips to Old Faithful during this winter. The first one didn't come until 12 January, and we rarely saw a machine except on weekends (6 trips in January and 9 in February). There were so few trips because the Yellowstone Park Company decided that since it had exclusive rights to concessioner-provided transportation in the Park, it would not allow Harold Young to advertise his trips from West Yellowstone. Young would still be allowed to operate the trips, but without advertisement. The YP Company was not yet interested in starting its own oversnow travel operation, but they clearly wanted to preserve their prerogative and exclusive right for a later time.

Throughout January, we continued to feel aftershocks related to the August earthquake. I was able to get Pat and the kids (Mary T. and Kevin) out on some of my observation trips. For example, on 6 January we went around the Black Sand Basin Loop in the Weasel. At that time there were only 24 inches of snow on the snowstake. Even when she was confined to the house because of the kids, Pat was able to enjoy wildlife. She wrote: "This house is a grandstand seat." On 10 January 1960, Pat recorded as follows:

"... a coyote caught a pine marten just outside our kitchen window. But the marten was true to his courageous, vicious nature and escaped to safety in a tree after a few moments of struggle. He was on the bird feeding tray again the next morning with hardly a mark on him. One of 'my' very tame martens is back. It is so unafraid that I sometimes think it's going to jump into my lap and start purring . . .."

We saw a young bull moose behind the house (toward the Geyser) one snowy morning in mid-January. During the last week in January, we saw four otters in the Firehole River, below Beehive Geyser. In January, the "Animal Census Report" for YNP was released at Mammoth. Totals included: 7,200 elk (Northern Range); 500 elk (interior herds); and 79 trumpeter swans.

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learned that Assistant Chief Ranger Frank Sylvester soon would be transferring. This was a disappointment because he had been instrumental in our assignments to Old Faithful for our third winter.

The temperature fell to minus 32° F on 19 January and I spent the morning photographing Old Faithful’s gorgeous plume during an eruption (I-87). Sapphire Geyser was still exhibiting some spectacular major eruptions. My January Report on Geyser and Hot Spring Activity included the following description:

“Sapphire erupted a number of times each day until January 15. None of the eruptions observed during this period exceeded 100 feet in height. Sapphire played about 8:00 or 9:00 A.M. on the 15th. After this play, it had no major eruption until the 20th. It played at least once on the 20th, and then lapsed into a comparative dormancy again. From the 20th until sometime in the PM of the 30th, its activity would become quite vigorous and the water would be thrown up 8 or 10 feet. The unseen activity which was to take place on the night of the 30th must have been the mightiest display of power exhibited by Sapphire so far. The evidence found on the 31st told the story of an eruption (perhaps more than one) of colossal magnitude. Speculate if you will on what type of an eruption it would take to produce the following scene: a dozen large blocks of geyserite, with biscuit formations on them, had been torn away from Sapphire’s west rim (where the visitor foot bridge used to be) and moved up to ten feet from the crater’s edge. These were not merely chunks of loose sinter which had been thrown out; prior to the eruption they were solidly anchored parts of the pool’s enclosing rim. The weight of some of these blocks was more than 200 pounds. One large piece of geyserite was found 30 feet west of the pool. Its weight was roughly 250 pounds (I-88). Another piece, difficult for a person to budge, rested 60 feet southwest of the crater’s edge. More than a hundred (by actual count) smaller chunks of geyserite had been thrown out by Sapphire and were scattered at various distances, up to 60 feet from the crater. The huge discharge of water from the eruption(s) had melted snow far from the crater (up to 120 feet) and in this way left a definite mark around the crater, showing the great distance to which the water had rushed. Strangely enough, the great wall of water produced by this eruption reached to the greatest distance from Sapphire in north and south directions, whereas the blocks of sinter were moved almost entirely to the west and southwest. The eruption which produced all this would indeed have been a sight to see. When observed on the 31st, Sapphire was boiling violently and overflowing heavily. About every 8 to 20 minutes there was a short period of wild boiling and doming of the water to heights of 15 to 20 feet, but there were no major eruptions on the 31st. What may be in store in the months ahead?”
1-88. Sapphire Pool, in Biscuit Basin. **Top:** Pat McClelland with geyserite block hurled from the rim of Sapphire Pool (Geyser) by a post-earthquake violent eruption on the night of 30 January 1960. **Bottom:** Near-empty crater of Sapphire Geyser after an eruption. Notice the rim areas where the biscuit-like geyserite remain intact, and the vacant areas from which large blocks have been torn out by eruptions.
For the remainder of the winter I made the two-mile trip to Sapphire on a near daily basis and observed some powerful, impressive eruptions. Generally the sky was overcast and water vapor enveloped the water column during an eruption (I-89). Something unusual seemed to happen every week. On 11 February, a normally non-eruptive hot pool next to the paved parking lot at Riverside Geyser had at least two eruptions (not observed), eroding runoff channels through the parking lot. On 21 February, Giantess and Grand Geysers played for the first time since their eruptions concurrent with the earthquake.

On 11 February, I drove the Weasel to Madison Junctions to pick up Dr. Vincent J. Schaefer and Maynard Barrows who planned to spend a week at Old Faithful exploring the possibility of using the area as an outdoor laboratory for the study of atmospheric particles. They stayed in the old mess hall. Dr. Schaefer was from the Atmospheric Science Research Center (he became Director in 1966 and continued until 1974), at the State University of New York, at Albany. He was a pioneer in cloud seeding research. Dr. Schaefer was jovial, outgoing, and intellectually stimulating. Maynard Barrows was Park Forester, GTNP; he had been assigned to accompany Dr. Schaefer, but not because of any relevant expertise he possessed. Barrows was a pleasant old-line forester. Pat and I enjoyed having them around and we had them to our home for several meals. Dr. Schaefer (Vince) spent a few days determining whether water particles from the eruption plume of Old Faithful Geyser were electrically charged (I-90). He was excited about his findings and about the very low level of particulate pollution in the area (from the few snowcoaches in those days!). He left Old Faithful (18 February) with evident enthusiasm for developing a formal study opportunity for other research scientists.

As usual, much of February was occupied with removing the snow from government buildings (about 54). On 3 March, District Ranger Elt Davis came in from West Yellowstone to accompany me on a three-day ski trip to Shoshone Geyser Basin. We had an excellent trip (I-91). The geyser basin was spectacular as always. Elt had amazing endurance considering he had only one lung, the other having been removed after the shooting incident at GTNP years earlier. Elt was a great patrol companion. He went back to his regular duties at West Yellowstone as soon as we returned from Shoshone.

While I was on the Shoshone trip Pat had an interesting time with wildlife observations. She had been seeing four coyotes (Sweetie, Friend, Number 3, and Yellow Dog) near the house. A few days after I returned, one early morning I entered the kitchen and was startled to see Friend, a large male coyote that had been following Sweetie around, on our bird feeder peering in the kitchen window (I-92). We did not want that to become a habit, so we chased him away anytime we saw him getting that close to the house. As the first week of March ended, we began to hear the unwelcome rumor that the plows would probably arrive about 25 March. At the same time that Elt and I had been on the patrol to Shoshone, Rangers Harry Reynolds and Bert McLaren were on a ski patrol at the south boundary. The Yellowstone Weekly News for 3 March 1960 carried the following story:

"Harry was doing the cooking at Snake River Ranger Station and placed a can of Boston Brown Bread in the oven. Unfortunately, it slipped his mind and came out of the can and oven at a rate sufficient to cover the walls of three rooms rather evenly. Harry happened to be passing the stove when it went off and carries a bruise on his left leg. Fortunately he was not seriously hurt and several hours of scrubbing by both boys put the quarters back in shape."
1-89. A winter eruption of Sapphire Pool.
I-90. Dr. Vincent Schaefer measuring the electric field near Old Faithful Geyser, 14 February 1960.
1-91. **Top:** District Ranger Elt Davis on a ski patrol, Shoshone Geyser Basin Patrol Cabin, 4 March 1960. **Bottom:** Davis in the Shoshone Geyser Basin.
I-92. Coyote on our bird feeder, outside the kitchen window, Old Faithful Quarters 161B, February 1960. The outside mirror was positioned so that we could observe Old Faithful Geyser and Geyser Hill while seated at the kitchen table.
YNP Management Assistant Joe Joffe retired on 4 March, after nearly 38 years in YNP. When he started his Yellowstone career (1922), the NPS was only 6 yrs old; Horace Albright was YNP Superintendent, and Warren Harding was President of the U.S. On 10 March we received some terrible news by phone. Two of three rangers on a ski patrol had died in an accident crossing the Snake River. Following is the description of the incident, quoted from Anonymous (1960a:1):

Tragedy Strikes at Grand Teton

District Park Ranger Gale H. Wilcox and Assistant District Park Ranger John C. Fonda of Grand Teton National Park lost their lives on March 9 in one of the most tragic accidents in the history of the National Park Service.

Assistant Chief Park Ranger Stanley H. Spurgeon, Wilcox and Fonda were on a winter ski patrol in the northern end of the park, traveling on skis en route to the remote area of Survey Peak. This accident occurred as the three crossed the Snake River inlet to Jackson Lake.

All Three Break Through

Spurgeon and Wilcox had carefully negotiated the crossing, moving separately over the ice. Fonda was following when the surface collapsed, plunging him into the stream. Spurgeon and Wilcox went immediately to his aid, and reached him by extending a ski pole. The ice then gave way under Wilcox and Surgeon and their efforts were in vain.

Spurgeon was able to free Wilcox from his skis and get him to solid ice. In the meantime, Fonda had perished, either from exposure or from drowning. Spurgeon had lost his skis as had Wilcox, but Stan struggled through waste-deep snow to reach the Berry Creek Patrol Cabin about 3/4 of a mile away. There he improvised snowshoes from a pair of packboards, obtained a sleeping bag, and returned to Gale, only to find that he had died from exposure. [Spurgeon then returned to the cabin]. Rescue was accomplished on the following day when Stan was able to attract the attention of a party of snowplanes who were visiting the north end of the lake.

Both Were War Veterans

Wilcox was the district park ranger on the Jackson Lake District, with a record of nearly 25 years of Federal service, including more than 3 years with the U.S. Army in World War II. Born in Deadwood, South Dakota, he received his first federal appointment in May 1933 as a custodian with the Mt. Rushmore Memorial Commission. From 1946 to 1956 he served as a park ranger at Wind Cave, transferring to Grand Teton on May 22, 1955. He is survived by his wife, Louise, a son, a married daughter, and his parents.

Fonda was the assistant district park ranger in the Moose District and had been with the Service in seasonal and permanent assignments since 1950. His Federal service included Korean war service with the U.S. Army. He attended both Colorado and Montana State Universities, and the training center at Yosemite. Although not appointed to a permanent park ranger position until November 1959, John had been a leader of Grand Teton’s Mountain Rescue Team since 1954—a Team which received a Unit Citation for Meritorious Service from the Secretary of the Interior. He is survived by his wife Jean, an infant daughter, and his parents.
We also heard that when Spurgeon got to the cabin and somehow made entry, his hands were frozen and he had to thaw them before he could complete the plan to assist Wilcox. Fire fuel (paper and kindling) had been laid in the cabin stove and matches were stored in a glass jar. He was able to break the jar (frozen fingers could not unscrew the lid), retrieve a match, strike it clumsily and drop it into the stove. The fire caught and he was able to thaw his hands and body enough to complete his attempted rescue mission.

We knew Gale Wilcox, because during our previous summer, at Snake River. He had been our official contact person at GTNP. As Pat wrote at the time, it was almost as if family members had been lost because most people felt they were part of the traditional "Steve Mather's Family." Mather was the first director of the NPS and a kinship feeling permeated the ranks of the field employees, through many years. Much of that feeling waned in subsequent years as overcrowding grew in the parks, facility development increased, and endless reorganizations were implemented. The tragedy in GTNP led to the typical illogical overreaction from administrators. YNP Chief Ranger Nels Murdock immediately discouraged, if not prohibited, all ski patrols. No ranger was to go out skiing alone and any ski patrol in the future would have to be justified in detail and approved beforehand. As with most such nonsensical edicts, this one was unheeded and rapidly forgotten.

We received news that our good friends Bob and Mary Lou Perkins were going to transfer to Sequoia National Park, California. Meanwhile, we had a few more weeks of snowed-in experiences to revel in. On the night of 12 March, we heard a strange crash in the kitchen. Pat investigated and found a marten in the kitchen sink. It had already eaten half an apple cake that was on the kitchen table. It took an hour to work him out the kitchen door without causing a panic. We discovered that he had entered the house by pushing out some concrete chinking between the ceiling and the wall in the fireplace alcove. I boarded up the hole, but the martens kept pushing out more chinking until I had the entire ceiling-wall junction boarded over.

On 13 March, I was involved in an accident that could have been serious. Peterson and I were shoveling and wiring snow off the roofs of government buildings. We had pulled the Weasel alongside a building and I was climbing from the Weasel onto the roof. I slipped just as I put all my weight on the roof and quickly free-fell straight down in front of the Weasel. I nearly missed the Weasel, but my chin grazed the metal housing over the engine and my upper lip and nose hit full force as I passed downward. I came within a millimeter of catching my front upper teeth on the metal housing; it probably would have been a very disfiguring injury and might even have broken my neck. All I got out of it was a fat lip, bloody nose, and some sore muscles. After hearing about the ranger deaths in GTNP just a few days before, minor injuries were easily forgotten.

The final snowcoach trip from West Yellowstone arrived at Old Faithful on 20 March. During March there were 12 trips with 144 passengers. Two snowplane groups came to Old Faithful via South Entrance during March: 7 planes with 14 visitors on the 2nd and 2 planes with 6 visitors on the 20th. Then, to our usual dismay, the plows arrived on 21 March. Another winter adventure was over.
CHAPTER 16. A Surprise—We Don't Have to Move! (Summer 1960)

In early April we received an inquiry of availability from Alaska. It involved a split assignment of summers in Katmai National Monument and winters in Mt. McKinley National Park headquarters. We decided to take the job if it were actually offered. We received word that we had not been selected and as it turned out, we were relieved.

The annual ranger conference was held 25–28 April in Mammoth (I-93). As usual, at the conclusion of the conference summer assignments were announced. We learned that we would remain at Old Faithful during the summer of 1960. The Sub-District Ranger would again be Lee Robinson, who (with wife Ann, and children Larry and Jeannie) would be our neighbors in the duplex (Quarters 161). Lee was a wonderful person, always kind, considerate, and striving to do the right thing. Lee tried hard to avoid controversy, but when it occurred he backed his people.

During the winter I had written a couple of memoranda concerning geyser basin boardwalk routes in response to the "Boardwalk Committee’s" routes that had been staked out during fall 1959. The Committee, composed of headquarters staff people (as always), had, in my view, done a poor job of selecting routes based on resource protection and visitor safety criteria. My memoranda made Committee members mad (I had a propensity for writing critical, tactless memos). In April, Chief Naturalist Bob McIntyre came out to the basins from Mammoth, and did some revisions on the routes that had been staked out the previous fall; neither Lee nor I knew he had done this and his revisions were even less logical than the committee’s fall work. The Committee then made their final inspection trip and I was asked to accompany them. It was a confrontational session; they were on the defensive, rather than being open to discussion of the unique considerations necessary at each site. Pat recorded:

"Riley had a rough time with the Boardwalk Committee — they know nothing and care less about the thermal features."

Lee backed me up, but not in the forceful way that Les Gunzel always did. Needless to say, the Committee’s decisions prevailed.
(Courtesy NPS, YNP)

L-R

*Back row:* Tom Milligan, Jack Hughes, Bob Vicklund, Nick Reeves (plain clothes - BRC Foreman), Scotty Chapman, Al Maxey, Dale Nuss, Lloyd Hoener, Frank Mattson (plain clothes - Landscape Architect), Howard Kocher (plain clothes, bow tie - Vehicle Shop Foreman), Oscar Dick, Les Gunzel, Glen Bean (plain clothes, white sweater), Harry Reynolds (face nearly obscured by Bob Howe), Tom Hyde (plain clothes), Mary Shearer (plain clothes), George Marler, and Dave Pearson (plain clothes, cowboy hat, Head Wrangler).


*Front row:* "T" Hewitt (Assistant Park Naturalist), Jack Williams, Byrne Packard, Jim Valder, Nelson Murdock (Chief Park Ranger), Lemuel A. Garrison (Superintendent), Luis Gastellum (Assistant Superintendent), Robert McIntyre (Chief Park Naturalist), and Bob Burns.
We continued to document eruptions of Old Faithful Geyser on the automatic recording device in our quarters during April and May. The recorder functioned well during the winter and spring. The mean interval between 2,604 eruptions was 66.3 minutes (Table 1).

<table>
<thead>
<tr>
<th>Month</th>
<th>No. of intervals recorded</th>
<th>Mean interval between eruptions (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>December (started on the 18th)</td>
<td>255</td>
<td>67.4</td>
</tr>
<tr>
<td>January</td>
<td>607</td>
<td>66.7</td>
</tr>
<tr>
<td>February</td>
<td>607</td>
<td>66.5</td>
</tr>
<tr>
<td>March</td>
<td>437</td>
<td>65.7</td>
</tr>
<tr>
<td>April</td>
<td>228</td>
<td>65.7</td>
</tr>
<tr>
<td>May</td>
<td>470</td>
<td>65.8</td>
</tr>
<tr>
<td>Total intervals and mean for all intervals</td>
<td>2,604</td>
<td>66.3</td>
</tr>
</tbody>
</table>

Table 1. Data from the automatic recorder, Old Faithful Geyser eruptions, 1959–60.

The range of intervals was 35 to 98 minutes (the previous maximum reported was 93 minutes). Ten years earlier, Hart (1950) recorded 2,605 intervals between 30 November 1949 and 30 April 1950; the mean interval he reported was 63.3 minutes. Thus, the recorded mean interval increased by 3 minutes in that ten-year period.

The new organization, with District Manager Oscar Dick, District Ranger Elt Davis, and Sub-District Ranger Lee Robinson all living at Old Faithful, made the summer of 1960 more confusing and difficult than previous summers had been. There were just too many bureaucratic layers one had to go through to get permission to accomplish anything. The relative autonomy previously accorded area rangers was gone. There was no level of trust for the field people doing the day-to-day work. Issues that previously could have been quickly resolved within the simple ranger subdistrict arrangement became contentious, time consuming, and occasionally developed (unnecessarily) into major problems.

In the day-to-day ranger work at Old Faithful, we always were concerned about structure fires, especially at the Inn, which had the potential to be a fire trap for hundreds of people. Late one evening we got a real scare when a night clerk phoned that smoke was detected in the elevator shaft. We raced over with our two fire trucks, but found nothing. The old Canyon Hotel had been abandoned for visitor accommodations after the 1958 season, and been in the process of demolition since fall 1959. On the night of 8 August 1960, it burned to the ground. The cause of the fire was suspected to be from careless workers earlier that day. The hotel had been built during the winter of 1910-11 and was a counterpart of the
Old Faithful Inn. Both buildings were designed by architect Robert Reamer. Travel in 1960 continued to be down from the previous year. The Old Faithful Lodge Cabins were “full” on only three nights during July, the Campers Cabins on two nights, and the Inn on only one night.

The Old Faithful Monthly Report for June 1960 noted:
“At no time during this month have any of the lodging facilities been filled to capacity.”

On 7 July, I arranged to stand in (for one night) for the fire guard assigned to the Divide Hill Lookout, east of Old Faithful. It was a short hike of less than two miles and an elevation gain of 730 feet, a great chance to provide an adventure for all the family. Pat, and I, with Mary T., Kevin, and Jane, hiked in; Donna Germeread hiked in with us to help with the kids. After our arrival, Donna hiked back out. We climbed the metal stairs 70 feet to the lookout cab, which was supported by metal “posts.” The family slept overnight in the cab and it was very exciting for the kids. Pat recorded that we saw thundershowers at a distance, a full moon, a beautiful sunset, and a pretty sunrise. It was a wonderful experience for the family (1-94).

The July Monthly Report included the following:
“On the 9th, ranger personnel discovered that a large concrete block with a sign ‘Keep Off’ had been tossed into the Old Faithful Geyser orifice. In its next eruption, Old Faithful threw the block clear and it broke into several pieces.”
194. **Top:** Divide Hill Lookout, near Old Faithful (photo by Bob Perkins).
**Bottom:** Pat cooking dinner in the Divide Lookout, 7 July 1960.
Drs. John and Frank Craighead were conducting their well-known grizzly bear study in YNP at this time and Old Faithful rangers occasionally got involved. In the first week of July, a grizzly mother with three cubs was frequenting the campground every night and we really needed to remove them. On 8 July, John and Assistant 1 (A-1, who will remain unnamed) came over to try to capture the family. Lee Robinson and I helped in the nighttime effort. John successfully tranquilized the mother grizzly in the campground. He used a dart gun with a syringe loaded with sucostrin (the drug of choice in those days). After some confusion about the location where the grizzly had gone down, John hollered at Lee and me that he had found her. We rushed to the site and helped John and A-1 load the grizzly into a culvert trap. For the next several hours, John and A-1 unsuccessfully attempted to dart the cubs. The trap, with mother grizzly, was transported to the Lone Star Geyser road. The Craighead team decided to assume that the mother bear would go back to Old Faithful to reunite with the cubs after she had been equipped with a neck collar radio transmitter. This of course would have left us with the same problem we started with, i.e., the bear family in the campground! But the hope of the Craighead team was that the family would leave the area after all the trauma.

John Craighead departed, leaving A-1 to accomplish the placement of a radio transmitter collar on the mother bear the next morning. The mother grizzly was of course no longer under the effects of the drug and had to be re-drugged for the radio collar placement. She would then be allowed to recover from the tranquilizer and A-1 would track her movements, monitoring the radio signal. I watched A-1 inject the bear with a dose of sucostrin, while she was in the culvert trap. As soon as the drug took affect, we dragged her out of the trap and A-1 attached the collar (I-95). When he was done, he assured me that she was in the process of coming out from the effects of the drug, so I returned to Old Faithful while he prepared to track her. The cubs were still wandering around the Old Faithful area.

For the next few days, the poor cubs continued to be seen in the campground area and the mother did not return to reunite with them. We wondered if the mother had abandoned the cubs. Lee and I asked A-1 directly if he had observed the mother bear recover from the drug and leave the area. He assured us that he had. He said that he believed that she would soon find the cubs.

Lee and I became more and more skeptical of this information after two days. Mother grizzlies have a very strong affinity for their young offspring. On 11 July, A-1 admitted to me that the mother bear had never recovered from the drug. It had suffered a respiratory failure reaction after I left the scene. I respected the whole Craighead team and their work with the bears, but it was difficult to get beyond the overt lie that A-1 told us about this grizzly. It has always puzzled me why he felt it necessary to be dishonest about the incident. Otherwise, he had always impressed me as a highly skilled and effective researcher. Unanticipated drug effects are always a hazard when working on wildlife and I could have understood that result. However, I could not understand the outright lying. On 12 July, John Craighead returned to try again to capture the cubs, but the effort was unsuccessful. The Old Faithful Monthly Report at the end of July noted: “The three orphaned grizzly cubs are seen almost every night in the campground.” I have no record of what eventually happened to the poor cubs.

Effects from the 1959 earthquake continued to materialize during the summer of 1960 in the Firehole River as well as in the hot springs and geysers. Fischer wrote (1960:56):
“An analysis of temperature and discharge measurements on several hundred springs shows a post-earthquake temperature rise of about 6° Fahrenheit and an increased discharge of about ten percent.”

In July, some Firehole River temperatures exceeded the 78° maximum tolerance for most trout. The monthly report stated: “On the 18th and 19th numerous reports of dead fish in the lower Firehole River were received. Temperatures in the Firehole on the 20th were 78° at Biscuit Basin and 80° near Midway Geyser Basin.” The maximum, recorded was 83° F, one-half mile above the confluence with Nez Perce Creek. Rainfall (0.25 in) on 31 July began to lower River temperatures and by 15 August they were at or near average.

In July 1960, Ranger-Naturalist Bill Lewis and I hiked to Sylvan Springs, Monument Geyser Basin, and Secret Valley to observe changes wrought by the August 1959 Earthquake. Sylvan Springs are at the southwestern edge of Gibbon Meadows, south of Norris. I had visited Sylvan Springs in August 1957, with Ranger-Naturalist George Downing, after hearing about the beauty of Evening Primrose Spring (there was no trail to this hot spring group). In 1957 Evening Primrose was indeed a unique and photogenic hot spring (I-96). It was roughly circular, with a diameter of 20 feet. The central portion of the spring was full of lime-colored water. The outer two feet of the crater, under water, was a dazzling bright cadmium yellow (apparently elemental sulfur). The pool periodically overflowed and the runoff meanders were the same bright yellow color for twenty feet or more beyond the pool.

The Earthquake markedly changed Evening Primrose. When Bill Lewis and I observed the Pool in 1960, the water level was down two feet or more and there was little water showing in the crater. Much of the crater was still a beautiful yellow, but there was no indication of periodic overflow and the yellow of the previous runoff channels had disappeared (I-97). According to Bryan (1995:315): “... during 1972, Evening Primrose was invaded by Sulpholobus, an archeobacteria that metabolizes sulfur.” This apparently eliminated the previously beautiful yellow of Evening Primrose.

The most spectacular earthquake result Bill and I saw in the Sylvan Springs Group was the development of a violently agitated feature known as Dante’s Inferno Spring, named by Frisbee and Mebane in 1959. In 1960, it was perhaps 50 feet across, full of milky-blue water that was constantly surging and bubbling in the center. The rapidly growing hot spring had developed within a lodgepole pine forest stand and many trees had fallen into the spring. Continuous wave action was eroding the pool’s edges and expanding the diameter (I-98).

At Monument Geyser Basin, we found no major Earthquake-induced changes. We also visited Secret Valley, which lies about 8 miles south of Norris and one mile west of the Gibbon River; it was without trail access. We had heard of an unusual mud flow that had been triggered by the Earthquake and we were not disappointed. The large mudflow had occurred in the northwest corner of the valley. It had moved downslope with great force, creating large tangles of uprooted lodgepole pine (I-99). Some of the trees that remained standing had mud flow marks up to 12 feet above the ground (I-100). The substrate had behaved in the manner described by Kerr (1963), in which “quick clay” responds to a violent shaking by reacting as a liquid.
1-95. Mother grizzly captured in the Old Faithful Campground by the Craighead team. The bear has been tranquilized and is being equipped with a radio collar and ear tags on 9 July 1960. The bear did not recover from the dose of sucostryn and her three cubs were orphaned.
I-96. **Top**: Approaching Sylvan Springs from the northwest, in August 1957. Evening Primrose Spring is the beautiful prominent feature, with cadmium yellow runoff.

**Bottom**: Viewing up the Evening Primrose runoff channel to the Spring.
I-97. Evening Primrose Hot Spring. **Top:** in August 1957, two years before the Earthquake. **Bottom:** in August 1960, one year after the Earthquake.
1-98. Sylvan Springs Group, Dante’s Inferno Spring, a result of the 1959 Earthquake. Wave action was eroding the pool’s edges and expanding the diameter at the time of this photo, August 1960.
1-99. A large mudflow in the northwest corner of Secret Valley was triggered by the 1959 Earthquake. The mudflow moved downslope with great force, creating large tangles of uprooted lodgepole pines; photo from August 1960.
I-100. Ranger-Naturalist Bill Lewis observes the height to which the Secret Valley mudflow reached on a lodgepole pine in August 1959, photo from August 1960.
Forest fires were just about a sure bet every summer. Between 22 and 26 July 1960, I worked as a foreman on the Central Plateau Fire. It was 250 acres and the biggest fire on which I had worked. The 1960 fire season recorded the first use of chemical fire retardant in YNP. Bentonite was dropped from aircraft on the Miller Creek Fire. A Forest Service employee who witnessed the use was quoted as saying he believed that the drops were ineffective. On 13 August, I was dispatched along with Seasonal Ranger Jim Hughes and Fire Control Aid Jim Bolin to pack out smokejumper gear from the Summit Lake Fire. It was a small fire, two acres, and the smokejumpers had made short work of it. They were going to hike out, but needed to have their parachutes and tools packed out. There were no pack mules or pack saddles available at Old Faithful that day, so the Jims and I planned to take two horses to the site, then pack them using the riding saddles, and walk them back out. The fire was out, so the small burn was difficult to find. Before we left, we made arrangements for the smokejumper plane (a blue, two-engine plane, based out of West Yellowstone), to fly over the site at the approximate time we were expected to be in the vicinity. If we could find an opening where the pilot could see us, he would fly low over us on a direct line to the burn. This worked perfectly and we found the jumpers ready to go.

The packing was difficult, using riding saddles and ropes. We got all the gear tied on, but suddenly one of the horses (Dave) bolted. As he ran off through the forest, a branch caught one of the chute bags, ripped it open, and the chute came billowing out. Our last view of the horse was of him galloping off dragging the partially deployed parachute behind him. We could not locate the horse, so we returned to Old Faithful with the one horse. It was a stupid mistake, and of course a great worry for the welfare of the horse. I phoned head wrangler Dave Pierson at Stevens Creek and he said that he would come out and look for the horse. Sub-District Ranger Lee Robinson was out of the area for several days and I needed to assume his duties as well as my own. On 16 August, Pierson and seasonal ranger Wilson came to Old Faithful and, on horseback, finally found the lost horse.

Forest fires in late fall were not common in YNP because of cold weather and precipitation, but on 29 September 1960 a smoldering fire was spotted on the Pitchstone Plateau by a pilot flying over the Park. Smokejumper supervisor Jim Manion (from West Yellowstone) and I were dispatched to find it. We departed Old Faithful at 5:50 A.M. on 30 September. No fire lookouts were manned so the only location we had was very vague, from the pilot's description. I remember the assignment vividly because we had very heavy packs loaded with firefighting gear, rations for several days, canteens of water, and the old-time huge and heavy (kapok) sleeping bags. Each of our packs weighed about 80 pounds. Additionally, we both carried a pulaski and a shovel. We staggered around in the dense lodgepole forest southeast of Old Faithful for a day, found several vistas from high spots, but saw no smoke. After a night out, we returned from the failed mission on 1 October. On that day Ranger Del Peterson was sent to Divide Hill Lookout (east of Old Faithful) and he located the fire five miles east of the location we had been given. Hoener and Simmons were dispatched and found it via the Pitchstone Plateau Trail. The assignment of trying to find and extinguish a smoldering fire in October illustrated the absurdity of the policy to "put them out at all costs, wherever and whenever."

By the middle of October, all visitor facilities at Old Faithful were closed. Once again we were one of four families at Old Faithful for the winter. We felt very privileged each time we saw an eruption of "the" Geyser. Every play was unique (I-101).
I-101. Old Faithful Geyser—each eruption was unique and every one was a thrill to watch.
In mid-August 1960, five “old timers” (ranger-naturalists) celebrated a cumulative total of 139 seasons of service in YNP: Herbert (Bud) Lystrup, Wayne (Rip) Replogle, Lowell Biddulph, George Marler, and Sam Beal. The event was permanently marked by a photograph of the five in front of an eruption of Old Faithful Geyser (see Parkinson 1956 and Biddulph 2013). Park Geologist George Marler was an excellent naturalist and cared deeply about the Park, especially the hydrothermal features. I had great respect for George, but for many years he had conducted “experiments,” manipulations to see if he could alter the behavior of a geyser or hot spring. These were nearly always clandestine occurrences. He did not inform the Protection Division rangers responsible for the area.

I found these manipulations upsetting because they were a violation of NPS written policy. The issue came to a head in summer 1960, when on a routine patrol, I discovered a dam at Bonita Pool, near Daisy Geyser. The main aspect that concerned me was that I had stumbled onto the existence of George’s “dam,” without being apprised that he was going to conduct the experiment. Initially, I had no way of knowing who had built the small dam (about 1 foot high and 6 feet long).

If George had discussed the Bonita experiment beforehand, with either Sub-District Ranger Lee Robinson or me, we may have been convinced of its legitimacy. Bonita Pool had been seriously degraded by the parking lot and roadway that surrounded it. The resulting erosion from the parking lot traffic (the parking area was unpaved and subject to erosion) had no doubt altered the Bonita Pool water level. Lee and I felt that we couldn’t be responsible for protecting the area’s thermal feature if we were in the dark about experiments being conducted by park personnel. Without strong justification for manipulation, natural features should not be tampered with. Our primary goal on this issue was to have a policy in place that would require pre-approval of experiments, and notification of the area rangers.

The last thing I wanted was to create a confrontation with George. It was in no way a personal attack, but a policy issue. But, because the policy decision had to be made by the District Manager Dick and Chief Park Naturalist McIntyre, memoranda from the opposing viewpoints were required (D-18). Neither Lee nor I were ever privy to memos submitted by George or his supporters. We later learned that George had additional plans; he wanted to seal off a steam vent near Earthquake Geyser to see if that would restore eruptive activity in the Geyser. That seemed especially incongruous with policy. The issue remained unresolved for many weeks.

Finally, the top-level administrators made a decision and supported George, approving the experimental dam at Bonita Pool. Lee and I would have accepted that resolution at the onset if it had been made before the dam was built and we had been informed. However, the multilayered decision-making process exacerbated what could have been resolved with far less contention. George, Bud, Sam, and Ted Parkinson were understandably very mad at me. Sam Beal considered the issue a personal attack on the Old Faithful naturalists. He wrote a memo to District Manager Dick, severely criticizing my actions. I did not find out about Beal’s memo until long after we had left YNP. After the decision, I discussed the matter with George and he tried to be amicable, but resentments remained.
TO: West District Manager
DATE: August 8, 1960
THROUGH: West District Ranger
FROM: Old Faithful Sub-District Ranger E. L. Robinson
and Park Ranger E. R. McClelland
SUBJECT: Research in the Geyser Basins

BASIC PREMISES

The natural beauty and undisturbed natural behavior of the thermal features are their greatest assets. Any research method which would in any way disturb the naturalness of the beauty or behavior of any feature, is not justified in Yellowstone National Park. If certain measurements cannot be obtained without altering a feature, then the measurements are not important enough to obtain. Nearly all measurements and records which are desired can be obtained by methods that would not alter the features being studied. However, it will take time and effort to perfect the methods that will be acceptable to the National Park. The extra time and effort required will certainly be worthwhile when it is realized that this will result in the necessary studies being completed and at the same time the features remaining in an undisturbed natural condition. The protection of the features themselves is our primary obligation. Research is extremely important—but always secondary to protection.

The job of any researcher in Yellowstone's geyser basins, should always be to observe the changes which nature initiates, never to attempt to bring about some change artificially.

The act establishing Yellowstone National Park in 1872, and the act establishing the National Park Service in 1916, clearly set forth the basic philosophy that our job is to preserve the thermal features in an unspoiled, undisturbed condition.

RECOMMENDED RESEARCH POLICY

1. The thermal features must be allowed to function in a completely natural, undisturbed, and unmodified manner.

2. The basic philosophy of the National Park Service limits research to only those studies that can be accomplished in a manner which will in no way alter (even temporarily) or disturb the natural behavior of the features.

3. Research which as a method requires such measures as (1) damming run-off channels or overflow basins, (2) lowering of water levels by any means (such as pumping, bucketing, shoveling, deepening of overflow channels, and other artificial modifications); (3) the introduction of any soap, acid, or any chemical into a pool or geyser, has no place in Yellowstone Park where we are bound by the dedicatory acts to preserve the thermal features in the natural state. All of these methods introduce an unnatural element into the behavior of any given thermal feature. This is completely contrary to the purpose of the National Park Service and of Yellowstone National Park. (4) Where it is deemed desirable to obtain water output measurements, temperatures, depths, etc., of hot springs, geysers, or other features, this shall be done only if these measurements can be obtained by a manner which will not require (1) altering any solid sinter deposits in order to change the course of flow of water, (2) walking in any algae or soft geyserite, (3) in any other way damaging to any extent any thermal feature.

D-18. Memorandum regarding research in the Geyser Basins (introduction omitted).
There are numerous examples of the very undesirable results which accrue from the lack of rigid guidelines for researchers in the Park. Following are a few examples:

1. Numerous footprints actually in Beauty Pool. These were made by a Naturalist who waded into the pool in rubber boots for the purpose of getting a temperature in the pool center. Is the record of the temperature of this pool in the center important enough that the beauty of the pool should be destroyed by the National Park Service for several years?

2. The run-off pattern from Spouter Geyser and the water level in Opalescent Pool are unnatural. They have been permanently altered because of sinter dams (which are now solid) built by Park personnel.

3. There is a permanent dam at Brilliant Pool, built by NPS personnel.

4. Bonita Pool is repeatedly dammed—for the purpose of making Daisy Geyser play more often.

There are numerous other occurrences of this same type.

This memo is in no way a criticism of any individual. It is a criticism of local policy (which has been contrary to the NPS policy) and a recommendation that strict guidelines be adopted so that the geyser basins can develop and behave as nature dictates and not as the whims and curiosities of researchers dictate.

Within the original Yellowstone Park Act are the following words, "regulations shall provide for the preservation, from injury or spoilation, of all timber, mineral deposits, natural curiosities, or wonders within said Park, and their retention in their natural condition." Altering thermal features in the name of research in no way conforms to the obligations given us by this Act.

Submitted by

Prepared by

E. L. Robinson
Sub-District Ranger
Old Faithful

B. R. McClelland
Park Ranger
Old Faithful

The damming of Bonita Pool to make Daisy Play is a violation of basic Park Service policy and it should be stopped. Elt Davis.