

Southwest Vacation

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In November 1961, after six consecutive years of fern exploration in Florida, I decided to visit the Southwest, concentrating on Arizona, with a brief visit to New Mexico.

Preliminary investigation of the possibilities of finding interesting ferns at this season of the year proved discouraging. A letter from Dr. Walter S. Phillips, Head of the Department of Botany, University of Arizona, had this to say:

"I have your letter regarding fern hunting in Arizona. This is a problem that is very difficult to answer. I am sure that if I went out with you for two weeks we might be able to locate some of the plants in which you are interested, but it would be a long and rather arduous trip which entails considerable walking through rough country and some cliff climbing.

"Ferns in Arizona are not nearly as easy to find as they are in your eastern area. There are several difficult things about this time of year for a trip like you are planning.

"If I were to advise you on coming out here to see ferns, I certainly would not recommend this time of year. After a wet summer, the last of August or the first of September is a good time, or better still after a wet spring. Even our desert ferns are hard to find most of the time, as they curl up and dry.

"One of the best guides that I know of is Leslie N. Goodding who lives in St. David, Arizona. He is a retired botanist and an excellent fern man. He loves to go on trips and I think would be glad to guide you. When he was in my office the other day, however, he said, 'This is not the time of year to see ferns!'"

On November 4th I flew to Phoenix, Arizona, and the next day telephoned Mr. Goodding that I would go to southern Arizona fern hunting if he considered it worth while. He said that if I wished to make a trip to Sycamore Canyon near the Mexican border, he would act as guide. Furthermore, he believed that the ferns would be in good condition following recent rains.

I boarded a south-bound bus, spent Sunday night in Tucson, and early Monday met Mr. Goodding at the University of Arizona. We used his car, and reached our destination before noon.

Sycamore Canyon lies only a few miles north of the border, its

southern reaches extending into Mexico. The Arizona section of the canyon is within the Coronado National Forest. I was impressed by the wild beauty of Sycamore Canyon with its colorful pinnacles of eroded rock. Mr. Goodding, a man in his early eighties, led me a merry chase up the steep gorges of side canyons and scrambled along rock walls wherever it was possible to obtain a foothold.

An ardent naturalist and conservationist, my companion had written two articles about this area (1946, 1961). During my visit he pointed out many rare plants, shrubs and trees, some of which grew almost exclusively in this canyon, such as the Alamo Lotus and the Goodding Ash.

As for the main object of my search, ferns of the Southwest, in a few brief hours we came upon more than a dozen species. With the single exception of the beautiful Venus'-hair Fern, *Adiantum capillus-veneris*, all were new to me. The *Adiantum* was seen to best advantage in a cave-like overhang along the trail, carpeting the entire roof and sides with its delicate growth.

Probably the most conspicuous and striking of all was the relatively rare *Phanerophlebia auriculata*, sometimes called the Trailing Fern, locally plentiful on cool damp cliffs. The genus *Cheilanthes* (Lip Fern) was represented by *C. wootonii*, *C. lendigera*, *C. lindheimeri*, and *C. eatonii* forma *castanea*. *Pellaea longimucronata*, the sharp-pointed cliff brake so common in the Southwest, was abundant. Less common was *Bommeria hispida*, with its generally triangular outline and pubescent lower surface. Only young sterile fronds were in evidence.

I was especially interested in trying to locate two rare and interesting species of *Asplenium*, *A. exiguum* and *A. palmeri*, both known from Sycamore Canyon. The former is one of the rarest ferns in the United States, found in but one other locality in Arizona and in no other state. It was described from specimens collected in the Himalaya Mountains, and also has been found in China and Mexico. Its curious geographical distribution remains unexplained. Although Mr. Goodding had originally discovered

A. exiguum in this locality, he was unable to relocate it during our visit. Exploring a side canyon, however, I was delighted to find *A. palmeri* in the rock crevices high up the cliffs. At first I thought this little plant was only the common *A. resiliens*, but closer inspection revealed the recurved fronds and proliferous tips that distinguish *A. palmeri*.

At the time of my visit Mr. Goodding was greatly concerned about the future of Sycamore Canyon. Overgrazing has resulted in heavy runoff during rainy periods, accompanied by soil erosion and damage to some of the rarest plants. Due to the efforts of Mr. Goodding and others, the Forest Service has recently declared Sycamore Canyon a scenic area. The objective of this classification is to maintain the canyon as nearly as possible in an undisturbed condition, but allowing use of the area. Approach roads, trails, picnic grounds and parking areas will be located so as not to disturb the natural environment, but at the same time provide for some public use. It is hoped that in the future Sycamore Canyon will be treated in many respects like one of our National Parks. Collection of plants, animals and minerals will be strictly prohibited.

Back in Tucson later that week I arranged to go on a fern expedition in the Santa Catalina Mountains with Dr. Walter S. Phillips. In a single day, comprising two separate trips, he showed me a surprising number of ferns typical of the Southwest. Snow already covered the upper slopes of Mt. Lemmon, closing the trail to the area where *Asplenium septentrionale* had been found, making search for this curiosity out of the question.

In the morning we concentrated our attention on a small canyon just north of Tucson in the foothills of the Santa Catalinas. Here the rather common gray-green *Cheilanthes lindheimeri* was found in the same neighborhood with the rarer and delicately graceful *C. wrightii*. It was especially interesting to see *Notholaena standleyi* and *Pityrogramma triangularis* growing side by side in this locality. Although to a layman these ferns may superficially resemble one another (the fronds of each showing a

white or yellow powdery effect on the under surface), the Gold Fern is more triangular in appearance and the *Notholaena* pentagonal or star-shaped. Here also two fern allies were seen growing together, carpeting the nearby rocks, *Selaginella rupincola* and *S. arizonica*. The entire area was filled with various species of cacti, and as I backed away from an interesting specimen to take a photograph, thereby making posterior contact with another prickly plant, Dr. Phillips gave me one of the primary rules of the desert: "Never back up without looking around first!"

After lunch we set forth on the second phase of our fern hunting expedition, a visit to the Molino Basin Area in the Santa Catalina Mountains. En route we skirted the Saguaro National Monument, famous for its forest of giant cactus *Carnegiea gigantea*, limited in distribution to southern Arizona, in northern Mexico, and a few plants in California.

At Molino Basin, in addition to ferns which I had seen previously elsewhere, *Notholaena* was well represented. It was an experience to find *N. aurea* (dull green above, with golden under-surface), *N. grayi*, and *N. sinuata*, frequently intertwined with a species of sharp-spined yucca. *Cheilanthes covillei* and mature fronds of *Bommeria hispida* were locally plentiful.

In Phoenix I rented a Comet "compact" which I drove some 1600 miles on an eleven-day trip via the Painted Desert, Petrified Forest, Grand Canyon, Bryce and Zion National Parks in southern Utah, to Las Vegas, Nevada. On this part of the trip my main objective was sightseeing, but some unusual botanical adventures still remained.

Having missed the opportunity to see *Asplenium septentrionale* near Tucson, I decided to search for this oddity along the Mogollon Rim southeast of White Oak Canyon where the rock spleenwort was reported to be locally plentiful. Early on November 10th, with not a cloud in the sky and relatively warm weather for that time of year, I left Cottonwood, Arizona, for the Rim Road. Beyond Camp Verde the going became difficult. With

a steep winding mountain road looming ahead, it was mid-afternoon before I reached my destination. At Long Valley I noticed the first evidence of snow, but at the approach to the Mogollon Rim Road I realized that the trip was probably a wild goose chase. Motorists were returning from the area with chains and pessimistic reports. "The road is impassable," they told me. "The snow is several feet deep!" Determined to botanize at least the nearest likely area, I drove eastward a short distance, skidding frequently en route, to Baker Butte at an elevation of over 8,000 feet. Leaving my car just off the highway, I climbed up a snow-covered road to the fire tower from which I obtained a fabulous view over the Tonto Basin and the surrounding lowlands. On the rocks nearby was the cliff brake, *Pellaea ternifolia*, var. *wrightiana*. Search for *Asplenium septentrionale* proving unsuccessful, I returned to the car and slithered back to Long Valley.

After a visit to the ghost town of Jerome, where copper fortunes were once made and lost, then on to Sedona with its colorful buttes and movie-like atmosphere, I drove northward up Oak Creek Canyon to Flagstaff. Immediately on arrival, Veterans Day, I called Chester Deaver of the Botany Department at Arizona State College, hoping to enlist his aid in discovering the extremely rare *Asplenium adiantum-nigrum*, a European species found in the United States only from northeastern Arizona, northeastern Colorado and southern Utah. It has been found in very limited occurrence on the south face of Elden Mountain, four miles northeast of Flagstaff. Mr. Deaver told me that he had never seen this rare fern on Mt. Elden, but would be glad to join me in a search for it the following afternoon.

Sunday morning dawned clear and cold. Planning an advance expedition on my own, I arose early and journeyed to the base of Mt. Elden, feeling confident of finding *A. adiantum-nigrum* after reading Dr. Wherry's account of its occurrence in this locality (1941).

Having arrived at the general area, I realized that it covered a

far greater area than I had bargained for. It was like looking for a needle in a haystack. Selecting the easternmost approach, I picked my way precariously up the mountainside. Halfway up the steep cliff, with the sun at my back, I detected a cave-like formation with dark shadowy floor. Since ferns frequently grow in such a locality, I ventured close to the cave's entrance, reaching up to touch the roof with the tips of my fingers. Suddenly a sixth sense made me freeze in my tracks. Immediately ahead I detected a sheer drop-off! Lying flat and peering over the edge of the abyss, I looked into an apparently bottomless chasm. My enthusiasm for an independent search ended abruptly!

That afternoon, with Mr. Deaver as guide, I again ventured up Mt. Elden. This time we chose the western side of the south face, threading our way laboriously up the steep rocky wall. *Cheilanthes feei* was in evidence on exposed ledges along the route. Near the summit we reached a moist shady cul-de-sac where high vertical cliffs prevented further progress. Here the presence of the Male Fern (*Dryopteris filix-mas*) and the Maidenhair Spleenwort (*Asplenium trichomanes*) indicated (according to Dr. Wherry's notes) that *Asplenium adiantum-nigrum* might be in the near vicinity. Since none was to be seen, however, and since we had reached an impasse, we reluctantly had to give up the search. Our visit to Elden Mountain was none too soon, as the region was blanketed with heavy snow the following day.

Journeying eastward, I visited the Petrified Forest and Painted Desert in a young blizzard, making the loop circuit and spending two nights at Winslow, Arizona, en route. Tuesday evening I reached the Grand Canyon and planned to make the descent to the bottom the following day.

Bright and early the next morning I was driven to Yaki Point, the beginning of the extremely steep but spectacular South Kaibab Trail. I was anxious to make this trip on foot, rather than by mule train, so that I would be free to botanize and take pictures independently en route. Some six hours, eight miles and

about one hundred color photos later, after crossing the suspension bridge, I reached Phantom Ranch on the north side of the Colorado River. Although the desert plants had been most intriguing, there had been little of pteridological interest along the trail.

After spending the night at the ranch, I left early the next morning on the steep eleven-mile climb back to the South Rim via the Bright Angel Trail. Near the intersection of the latter with the South Kaibab Trail I spotted a small patch of *Cheilanthes parryi* on a rocky ledge, one of the few ferns seen during my expedition into the Grand Canyon. Shortly before dark I reached the South Rim just after a severe snowstorm set in which lasted all night and into the next morning.

Several days later, after visiting Glen Canyon and Bryce Canyon National Park, I spent a few hours at Zion National Park in southern Utah. Although I realized that this was one of the places where *Asplenium adiantum-nigrum* had been found many years ago, I realized that my chances of locating it during a quick visit were practically nil. Dr. Wherry wrote (1941): "Then it [*A. Adiantum-nigrum*] was found in Zion Canyon, Utah; but on visiting that National Park in 1940 I was unable to find anyone who knew on which of the myriad cliffs it occurs."

I made the usual photographic tour of Zion Park, then followed the self-guiding nature trail to Canyon Overlook. At one point I left the main trail to explore an interesting side canyon. Looking up at the high cliffs above, I detected an evergreen fern that looked from a distance suspiciously like *Asplenium adiantum-nigrum*, but it was too far out of reach and an attempt to venture closer from above ended in frustration. Unable to erase the possibility from my mind, however, I stopped at headquarters before leaving and gave details of the location to the young naturalist on duty. Although just an off-chance that this fern might actually prove to be the extremely rare *A. adiantum-nigrum*, I suggested that a more thorough search might well be justified, and that in any event I would appreciate receiving a

specimen for identification.

Early in February 1962, after I had nearly forgotten the incident, I received a letter from Carl Jepson, Chief Park Naturalist. He explained that bad weather and numerous duties had prevented earlier search, but went on to say that he believed they had located the side canyon I mentioned. He continued, "Enclosed are some pieces of a frond knocked from a fern growing about twenty feet above the floor of the canyon at its head. According to the keys in Kearney and Peebles' Arizona Flora, this fern appears to be the one in question, i.e., *Asplenium adiantum-nigrum*. A brief search was made for more of this fern, but none was found. We hope that later investigations will establish its habitats and occurrence more accurately. We certainly do appreciate your bringing this fern to our attention, for it was one that we had not seen before. We would like very much for you to confirm the identification."

I lost no time showing the fragments, fully mature specimens, to C. V. Morton at the National Herbarium, Smithsonian Institution, who immediately agreed that the plant was indeed *Asplenium adiantum-nigrum*. He further said that judging by the size of the fragments the original plant must be unusually large for the United States, although it frequently attains luxuriant stature in Europe.

From Zion National Park I drove to Las Vegas, Nevada, where I turned in my car, then flew to Albuquerque, New Mexico, where I again rented an automobile. There was still one fern which I was anxious to see, but which so far had eluded me—*Asplenium septentrionale*, the curious little Forked Spleenwort which I had missed at Mt. Lemmon and Baker Butte in Arizona.

A study of herbarium specimens at the University of New Mexico at Albuquerque indicated that *A. septentrionale* had been found in the vicinity of Las Vegas, New Mexico. Informed that Dr. R. G. Lindeborg of New Mexico Highlands University in Las Vegas knew the location of this rarity, I called him long distance and arranged a field trip. The next morning I drove north

to Santa Fe and reached Las Vegas about noon.

Dr. Lindeborg and I set forth in the mid-afternoon, heading for a box canyon nine miles southwest of Las Vegas. The trip involved rather a long hike from the point where we left the car to our ultimate destination, an extensive area of flat rock outcrops containing occasional fissures. In one particular crevice, my guide informed me, grew a small patch of *Asplenium septentrionale*, but it could easily be overlooked since the other crevices were barren. We spent several hours searching to no avail, and as darkness approached Dr. Lindeborg had some doubts whether our quest would be successful. Soon afterwards, however, he called out that he had discovered the elusive ledge, and there in a crevice below the flat rock surface was a small but luxuriant growth of *A. septentrionale*. Not far distant *Cheilanthes eatonii* was fairly abundant. On the return trip to the car we encountered a driving sleet storm which stingingly pelted our faces. That evening I drove back to Albuquerque over treacherous roads.

After spending Thanksgiving with relatives on a ranch in Quemado, New Mexico, I returned to Albuquerque, turned in my rented car and flew back to Washington after a most enjoyable vacation in the Southwest, which included some memorable fern discoveries.

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