

1969

1969:

March Weekend camping trip to Anza-Borrego + Salton Sea. Kathy burnt

March 23-26 Fulbright Conference at U.C. Berkeley

April Weekend camping at Salton Sea with Speights.

June 4 → 8 Camping + Business Trip up Pacific Coast Highway, talk at Naval P.G. School in Monterey, San Francisco and home inland.

June 15 → 19 A.S.M.E. Conference in Evanston, Illinois (Chicago), with A.T. Whitney to Blair, Nebraska, then to Las Vegas.

July 3 Marineland.

July 26 → 27 Camping trip to Lake Elsinore, San Juan Capistrano Mission.

Aug 2 Small plane trip with A.T. Whitney, Mike Wilson and Kent Koester.

Aug Kathy broke her arm - Supracondylar fracture of the humerus falling down stairs in apartment block.

Sept 2 → 20 Camping trip in W. United States with Mustang. Lake Mead, Zion N.P., Grand Canyon N.P. (N. Rim), Lake Powell, Mesa Verde N.P., Arches N.M., Bryce Canyon N.P., Lake Isabella, Sequoia N.P.

Moved into 1915 Las Lunas St on evening of Sept. 20.

TRAVELS NOW AND THEN

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SALTON SEA 1969

Camping Trip to Salton Sea, California, 1969



Salton Sea, California



Salton Sea, California



Salton Sea, California



Salton Sea, California



Salton Sea, California

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*Last updated 7/30/99.
Christopher E. Brennen*

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CALIFORNIA COAST 1969

June 4-8, 1969

Driving the Coastal Highway, California, to visit the Naval Postgraduate School and give a lecture there.



Big Sur, California Coast



Big Sur, California Coast



Big Sur, California Coast



Point Lobos State Park



Point Lobos State Park



Monterey motel



Carmel beach



Monterey motel



Monterey park



Monterey park





San Francisco



Camping at McConnell State Park, San Joaquin valley



Fort Tejon State Park

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CAMPING 1969



SEPTEMBER 1969						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
SEPT. 5	1 LABOR DAY	2 LEAVE HOME CALICO GHOST TOWN N.E. BARSTOW, CALIF.	3 ECHO BAY, LAKE MEAD NEVADA	4 ZION NATL. PARK UTAH	5 ZION NATL. PARK UTAH	6 NORTH RIM GRAND CANYON NATL. PARK ARIZONA
7 WAHWEAP, LAKE POWELL, GLEN CANYON NATL. REC. AREA ARIZONA/UTAH	8 MESA VERDE NATL. PARK COLORADO	9 MESA VERDE NATL. PARK COLORADO	10 PINES NATL. MON. UTAH	11 BRYCE CANYON NATL. PARK UTAH	12 BRYCE CANYON NATL. PARK UTAH	13 ROSE HATHAWAY BOULDER BEACH, LAKE MEAD, NATL. REC. AREA NEVADA
14 BOULDER BEACH, LAKE MEAD NATL. REC. AREA NEVADA	15 LAKE ISABELLA CALIFORNIA	16 LAKE ISABELLA CALIFORNIA	17 SEQUOIA NATL. PARK CALIFORNIA	18 SEQUOIA NATL. PARK CALIFORNIA	19 SEQUOIA NATL. PARK CALIFORNIA	20 HOME
21	22 YOM KIPPUR	23	24	25	26	27
28	29	30				SEPTEMBER



Tuesday, 2nd Sept, 1969.

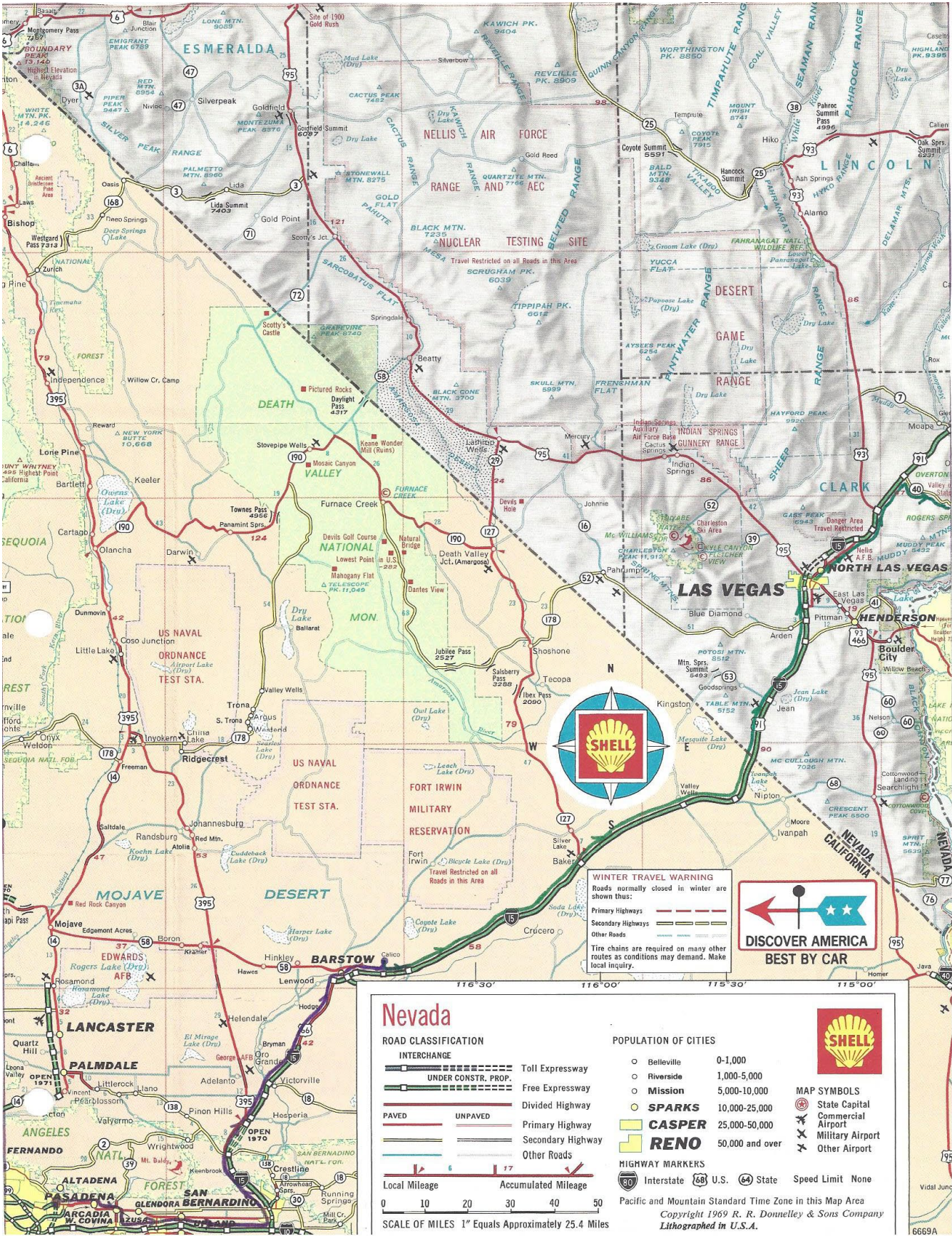
Packed the car up during the day but had to take Kathy to the doctor at 5.00 am. to have her arm X-rayed again and the cast removed (supra-condylar(?) fracture of right arm sustained 17 days previously in fall down stone steps at 830 N. El. Molino). We were vacating our flat at No. 7, 830 N. El. Molino so that also took time. Eventually having stored lots of our stuff at the lab and at Stratos + Wally Pascalis, we set off about 5.30 PM and drove straight up pass San Bernardino, up the Cajon Pass, through Barstow to Calico Ghost Town. Dark when we arrived - drove pegs into red gravel. But nice hot showers at the campground. Straight to Bed.

Wednesday, 3rd Sept 1969.

Left without seeing the Ghost Town but wanted to get through the Mohave Desert early in the day. Got to Las Vegas about 10.30 - drove down "The Strip" and stopped in the center for refreshments. Then we played a few one-armed bandits, and C. won 2 jackpots on nickel machines before we were ejected because kids were not permitted entry. But left with pockets loaded with nickels and did some shopping. Then we moved on up ~~to~~ Route 15 turning off to go down through the Valley of Fire (toward Lake Mead). Bright red rocks eroded into interesting shapes. Then, on to Echo Bay on the shores of Lake Mead - unfortunately a young site where the trees were not large enough to provide much shade from the blazing sun and 110° temperatures. But we lazed around drinking cans of soft drinks and swimming in the lake. Gusts of wind produced miniature tornadoes in the bay. Also our great black plastic sheet provided useful shade



Camping at Ghost Town



from the sun (made from massive rock cover). The kids played around the campsite with water, stones and empty Coke, TOP cans for a long time. Hard to sleep in the heat.

Thursday 4th Sept. 1969.

Packed up early and headed thru' Shivwits Indian (Paiute) Reservation (Dana very disappointed - not an Indian in sight) and St. George arriving in Zion Canyon National Park before noon. We found a pleasant shaded campsite right by the river or stream - the Virgin River - in the campground at the park and canyon entrance - guarded by the Watchman Mountain Peaks. Spent the rest of the morning and early afternoon enjoying the cool after the heat of the desert, bathing in the river and shooting the mini-rapids on Dana's red air-mattress - Dana thoroughly enjoyed that. Later in the afternoon we toured the visitor center and the lower part of the canyon with its vertical walls of red and white Navajo sandstone. (about 2000 ft high). We went as far as the Weeping rock to which we hiked along a short trail. Here spring water seeps through the porous vertical wall and lush vegetation abounds around and on the face which the water has eroded away to form half-caves. Then back down the Canyon past the Great White Throne + the Lament Hill, etc. to the camp.

In the evening the couple in the site nearby came and talked awhile over beer in front of a ~~small~~ large campfire. It was good to sleep in the cool.





Zion



Zion



Zion



Zion



Zion



Zion

Zion

NATIONAL PARK • UTAH

U.S. GOVERNMENT PRINTING OFFICE: 1969-347-053/58
REVISED 1969

ADMINISTRATION

Zion National Park is administered by the National Park Service, U.S. Department of the Interior. A superintendent, whose address is Springdale, UT 84767, is in immediate charge.

As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral, land, park, and recreational resources. Indian and Territorial affairs are other major concerns of America's "Department of Natural Resources." The Department works to assure the wisest choice in managing all our resources so each will make its full contribution to a better United States—now and in the future.

U. S. Department of the Interior



Nothing can exceed the wonderful beauty of Zion....In the nobility and beauty of the sculptures there is no comparison.... There is an eloquence to their forms which stirs the imagination with a singular power, and kindles in the mind a glowing response.

—Clarence E. Dutton, geologist, 1882

The park is open all year. From December to March, snow may fall intermittently, but usually lasts only a day or two on the canyon floor. Winter maximum temperatures average 60°; the minimum average is 15°.

May to October daytime temperatures may range from 85° to 105°; nighttime, from 65° to 70°.

WHAT TO SEE AND DO

The visitor center, your headquarters while in the park, is open from 8 a.m. to 5 p.m. from October through April; from May through September, the hours of operation are extended. Here, you can obtain information that will help you plan your visit, see exhibits on the natural history of the park, study a relief map of Zion Canyon, and learn about the park through orientation programs.

Naturalist program schedules are posted throughout the park.

Illustrated talks about the park are presented by park naturalists each evening in summer at Zion Lodge and at the campground amphitheaters.

Guided trips are conducted daily in summer over well-maintained trails; in spring and autumn, several times a week.

Drives. On a 12-mile round-trip drive through Zion Canyon, you can see the shapes of Zion: The Sentinel, Three Patriarchs, Mountain of the Sun, and Great White Throne.

Taylor Creek Road, in the Kolob Canyons section, is a paved 5.2-mile spur leading into the northeast corner of the park from Int. 15 near Kanarrville. This road is closed from late autumn to spring.

A secondary road from Utah 15 at the town of Virgin leads northward through private ranch country to the Lava Point Fire Lookout on the Kolob Terrace highlands and beyond. Steep, winding, and unimproved, it crosses the terrace and descends Right Hand Canyon to Utah 14 near Cedar City. This road should only be traveled in good weather.

Park roads were designed for your enjoyment of the superb scenery—not for speed. The maximum speed is 35 miles an hour. Keep to the right of the center stripe. Do not park on curves.

Your car's lights must be in good working order; they are essential in traveling through the mile-long tunnel.

Walks and hikes. The trails of Zion complement the park's striking views and are almost as famous.

All experienced hikers take such commonsense precautions as the following: Obtain detailed information from a park ranger on back-country trails before attempting to hike them. Seek the advice

of a park ranger before attempting the more difficult trails; tell him where you plan to go and when you plan to return. Do not hike alone. Stay on established trails; taking shortcuts may endanger yourself and others. Children under 16 years of age should be accompanied by a responsible adult on all trails within the park.

The most popular trail is a mile-long footpath from the road's end at the Temple of Sinawava, winding near the east wall of the canyon, past cliffs trickling with streams, to the beginning of The Narrows. On this walk you can see the Hanging Gardens of Zion, luxuriant verdure, and wildlife.

Self-guiding trips may be made throughout most of the year on the trails to Weeping Rock and to Canyon Overlook.

Other trails reach such places as the Emerald Pools and Hidden Canyon. West Rim Trail, leading to views of the Great West Canyon, and East Rim Trail, with its unequalled view of Zion Canyon, are more strenuous but well worth the effort.

In the Kolob Canyons section, you may hike along the streambed of Middle Fork to the great double-arch amphitheater. Here you see the finger canyons, whose sheer walls form box canyons 1,500 feet deep. The round-trip distance is 4 miles. Another trail leads down Timber Creek from Lee Pass. After turning east into La Verkin Creek, this trail divides: one segment passes through Hop Valley (12 miles one way), and the other continues into upper La Verkin Creek. Round-trip distance from Lee Pass to the Kolob Arch is 13 miles.

All persons who plan to make technical rock climbs are requested to register at park headquarters. Climbing alone is not recommended.

Please leave the animals, trees, wildflowers, rocks, and geological formations undisturbed so that other people, too, may enjoy them.

Wheeled devices are not allowed on park trails.

Horseback trips. Arrangements for guided horseback trips within the park may be made at Zion Lodge or Zion Inn. Schedules are posted throughout the park.

Fishing is allowed all year in the Virgin River below Zion Narrows, but it is marginal because of frequent flooding and seasonal fluctuations in water levels. A Utah fishing license is required.

The park is a sanctuary for wildlife; hunting or the use (or display) of firearms is not allowed.

Pets are prohibited on trails or in public buildings, and they must be kept under physical control at all times.







Leaving Zion



Camping at North Rim



Grand Canyon



Grand Canyon



Grand Canyon



Grand Canyon

Friday, 5th Sept

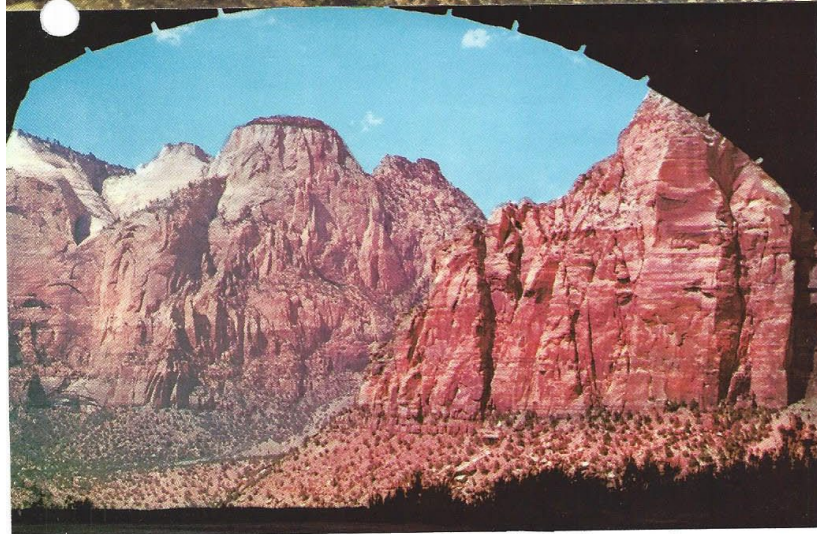
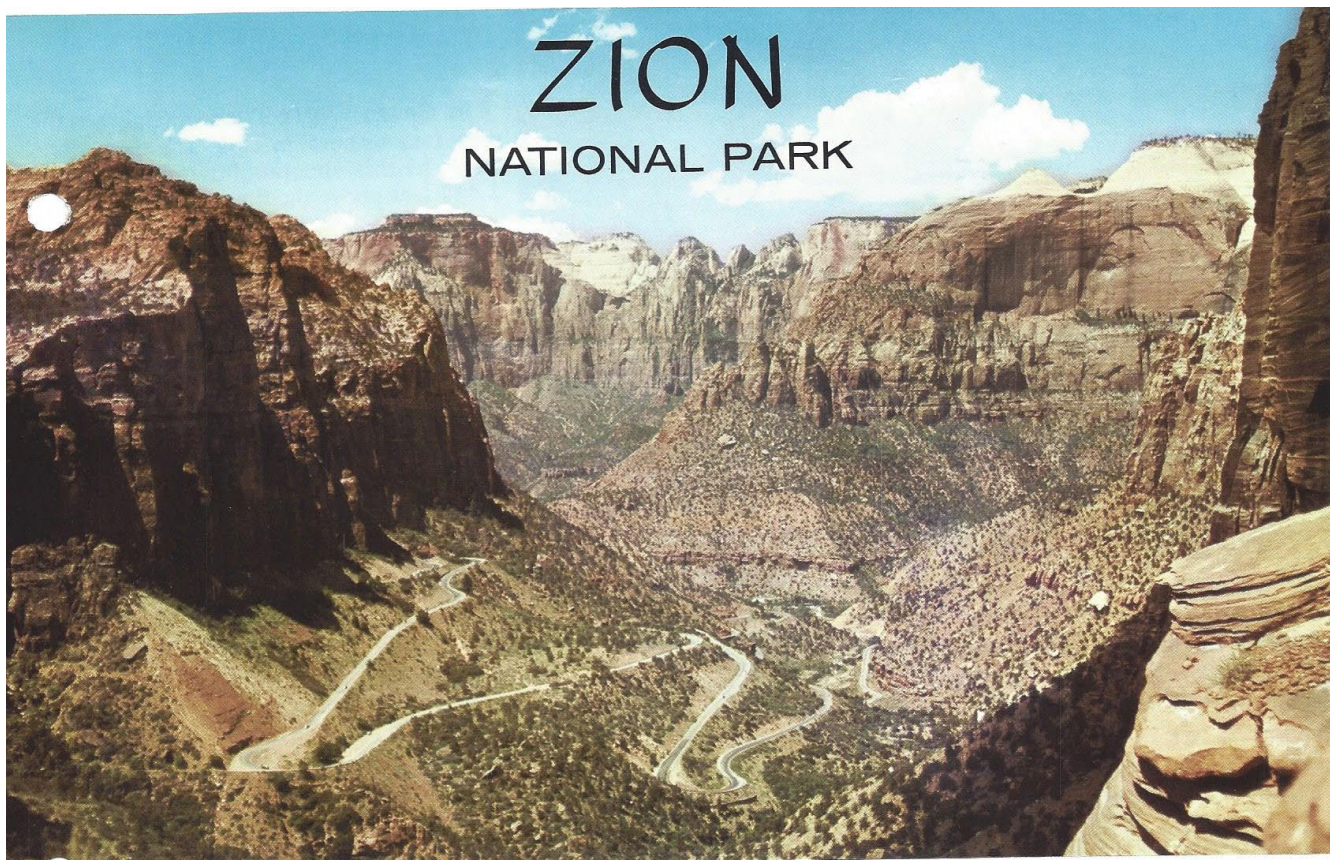
We spent the morning taking it very easy by the river at a point somewhat further upstream from the previous day where a tributary enters the stream by way of a little waterfall offering a beautifully cool natural shower and where there was an even better series of mini-rapids to shoot as well as a little sand for Kathy to play in. Dave and I enjoyed the ~~safe~~ ^{for the morning,} shooting the rapids - we were joined by the couple we met the previous evening and their little girl. D. also tried the rapids tho' found some difficulty in coming down forwards.

After lunch we took our second trip into the depths of the canyon, this time to the end of the road at an almost enclosed "theatre" called the Temple of Sinuava, an especially holy place for the indigenous Paiute Indians who rarely ventured into the awe-inspiring canyon and never remained until dark. At the Temple or rather $\frac{1}{2}$ mile past it the canyon narrows to a width of about 10 yards - almost wholly taken up by the Virgin River. Kathy being asleep, C. hiked to this point on his own and waded up the Virgin a bit further in my English Tuf shoes which never recovered from the experience. D. and the kids met me on the return and we drove back down the canyon with the sun fading below its walls.

That evening we talked at length with a group of English people who arrived at a nearby site. He was with the U.N. and told us of finding a bear in his trunk in Yellowstone in the middle of the night. A gain, lots of beer and a big fire.

ZION

NATIONAL PARK



THE ZION-MT. CARMEL Tunnel (below) started in 1927 and completed three years later, carries the road through the solid rock mountainside for more than a mile (5,607 feet). At various points along its length galleries overlook the powerful panorama of the canyon below (left).

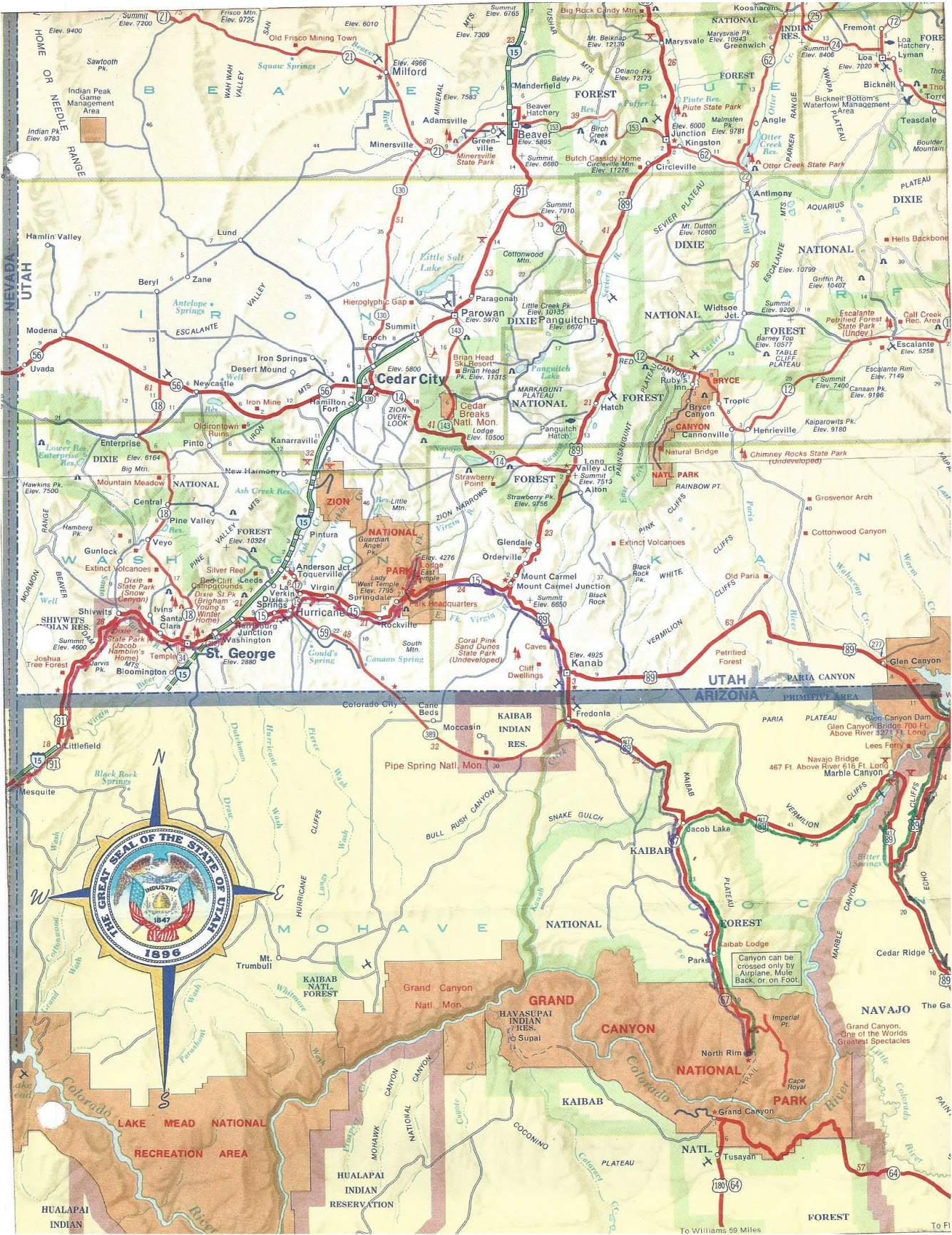
CLIFF-DWELLER RUINS perched like swallows' nests high above the floor of the canyon indicate that Zion was the home of a prehistoric people.

Discovered and explored in 1858 by Nephi Johnson, pioneer "Mormon" scout, Zion Canyon was settled soon afterward by early farmers and stock growers.

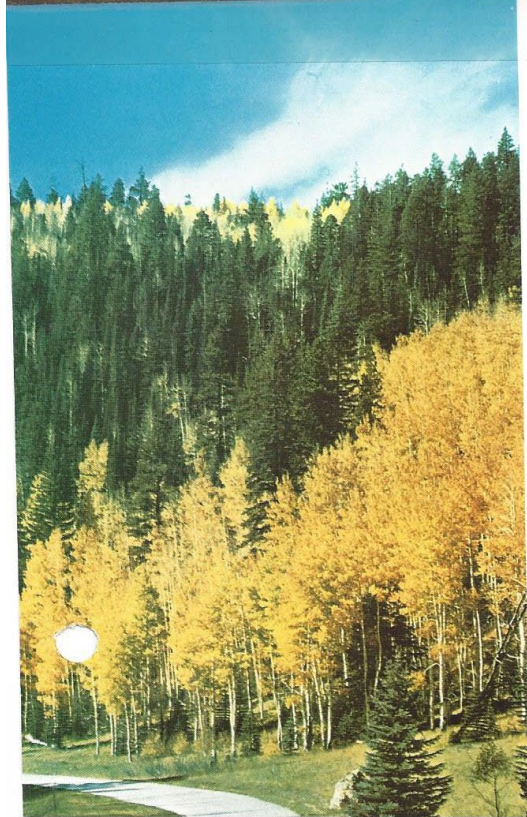
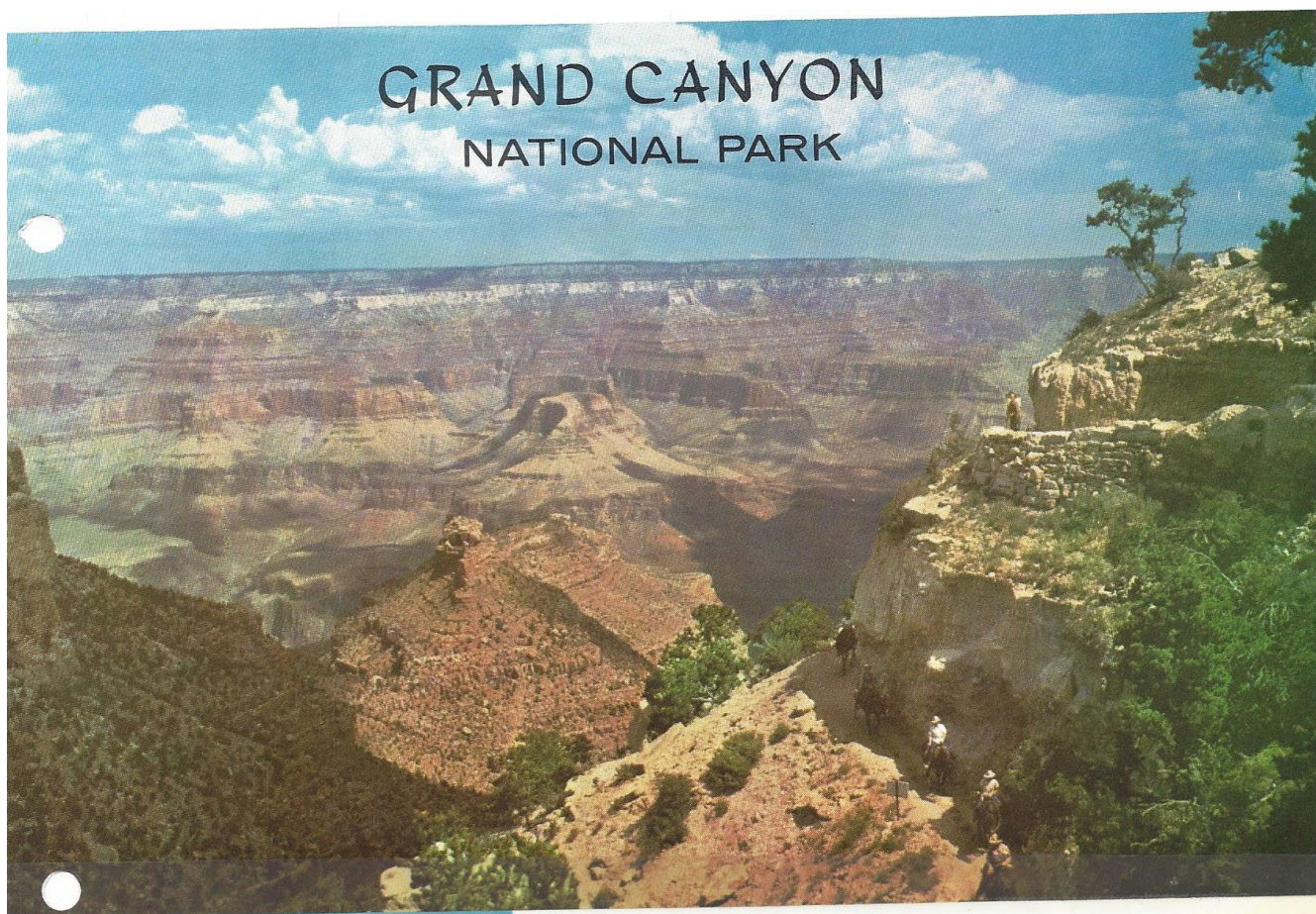


Saturday 6th Sept 1970

Tion had been extremely pleasant and we could have spent another day there. But early in the morning we packed and started out after having the plugs in the car changed. The main road runs through the canyon and we left via the Pine Creek fork of the canyon where the road branches up the near vertical wall by a series of tunnels - very spectacular finally reaching the top of the and emerging onto a ~~large~~ mesa of textured rock formations which persist for some time on the road to Mt. Camel Junction. There we went south through uninteresting country before entering the Kaibab forest where we stopped at Kaibab Lodge for lunch and bought some Indian trinkets in the pleasant lodge (the Kaibab Indian Res. is close by). A thunderstorm broke but cleared up fairly rapidly. Then we drove the last leg to the North Rim of the Grand Canyon thru' pleasant pine-wooded country of low hills and found a site in the large campground there (in the main campground which was relatively empty). Having established ourselves we visited the lodge which is built on the edge of the canyon and then walked out the Bright Angel Trail to Angel Point - along a narrow ridge with sheer cliff falling away on both sides - that and the awe-inspiring magnitude of the Canyon itself completely overwhelmed D. she was almost in tears - after reaching the Angel Point she retired rapidly to more solid ground. Then after a rest we set off along one of the trails alongside a branch of the canyon along which was supposed to be an Indian ruin. The girls stopped after $3\frac{1}{4}$ mi. and I went on to see whether it was worth going further - but I arrived at the campground - on the way back I inferred that a slight depression in the



ground must have been the ruin - we all then returned to the lodge and spent a while viewing the canyon and quenching our thirsts. Then we saw thunderstorms out over the canyon - the lightning was spectacular and the echoes were disconcerting. After supper we returned for a big fry dinner and set-up the silk sheet over the tent in case the storms should come over our way - but they didn't.

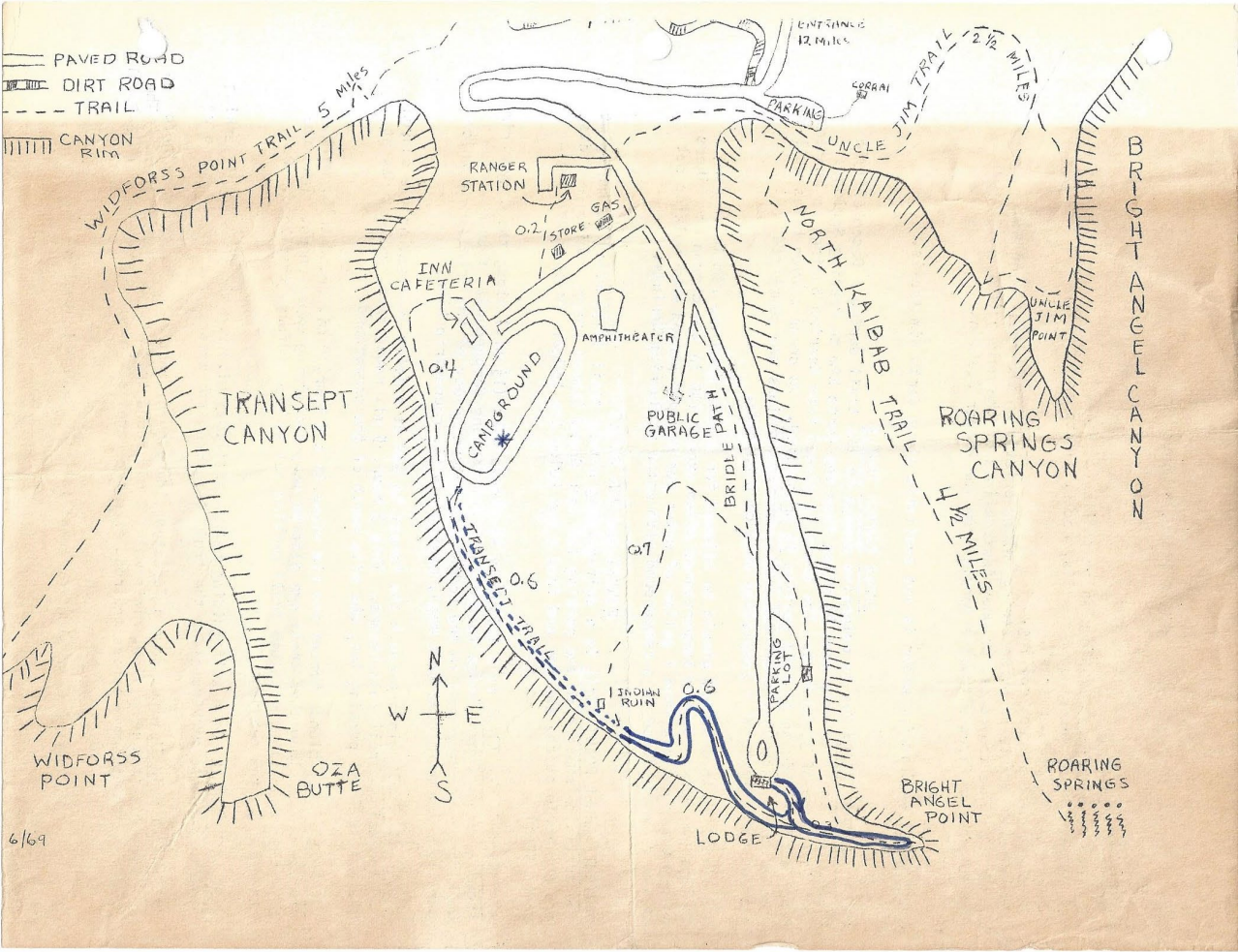


DENSE STANDS of spruce, fir and light-trunked aspens line the highway through Kaibab National Forest en route to the North Rim.

For those who come to see Grand Canyon, the abundant wild life is a delightful surprise. Especially popular are the rare white-tailed Kaibab squirrel (below) found nowhere else in the world, and the numerous deer.

VIEW FROM POINT IMPERIAL (right).





SUNDAY 7TH SEPT. 1969.

Packed midday left Grand Canyon early, retracing our steps through the wooded Kaibab National Forest finally turning left at Kaibab Lodge. The road wound down through a semi-wooded canyon finally emerging on a desert mesa into the Navajo Indian Reservation after crossing the Navajo Bridge over the Colorado River - 467ft high over a narrow gorge - the only interruption in the flat mesa. Had to go south then climb onto a higher mesa via Echo Cliffs, ~~then~~ ^{and so} north again going down off the higher mesa again ~~before~~ ^{*} just before leaving the reservation and entering Page. This town is new and was built with and to serve the new Glen Canyon Dam. The town was well set out - we passed down the road reserved for churches - about a dozen of them! Being Sunday morning it was quite busy. We then had lunch at a restaurant in Page. As we drove in to a service station to fill up with gas after lunch - an incredibly wrecked yellow Corvette (Sports car) had just been towed in. It had distinctive black stripes and we had noticed it on a number of occasions earlier in our journey (Tion etc). Apparently they had driven over a 60ft cliff in the * place mentioned above and miraculously survived.

We drove the couple of miles to Glen Canyon Dam, crossing another remarkable bridge over the Colorado just downstream of the Dam. Visited the Visitor Center and then took the self-guided tour round the Dam - starting by walking along the top - then taking the lifts downwards to the control center and further down to the generators. The waters of the dam (not quite up to the maximum yet) run over a hundred miles upstream ~~with~~ filling hundreds of side canyons - mostly of stark red Navajo sandstone but in places the white Camel formation above it remains - real desert all around but many of the canyons are lush now with the available water. The area around this part of Utah was one of the last in the U.S. to be



On the way to Page



Glen Canyon Dam



Lake Powell



Lake Powell

NOTICE

This folder was edited and printed in 1966. Since that time, several changes have taken place that are not reflected in the folder. The following sheet gives the current, correct information.

FACILITIES

WAHWEAP

Headquarters-Ranger Station, picnic area, launching ramp, swimming beach, and boat sanitary dump station. ~~Concessioner-operated~~ campground with trailer dump station, boat rentals, boat excursions, boating supplies and repairs, marina, restaurants, motels, trailer village with utility hookups and service stations. Concessioner: Canyon Tours, Inc., Box 1597, Page, Ariz. 86040. A fee is charged for campground use.

Carl Hayden Visitor Center, located at Glen Canyon Dam, is open daily. Self-guiding tours through the Dam and Powerplant begin here. National Park Service Guides are on duty to answer questions. Concession operated by the State of Arizona, Department of Visually Impaired.

BULLFROG BASIN

Ranger Station, launching ramp, picnic area, and boat sanitary dump station. Concessioner operated service station, camp supply store, marina and trailer village. Concessioner: Bullfrog Marina, Inc., 231 East 4th South, Salt Lake City, Utah 84111. A fee is charged for campground use.

LEES FERRY

Ranger station, launching ramp, and campground. Concessioner-operated boat rentals, boat tours, camp supply store, service station, lodging and restaurant. Concessioner: Lees Ferry, Inc., Box 2103, Marble Canyon, Ariz. 86036. A fee is charged for campground use.

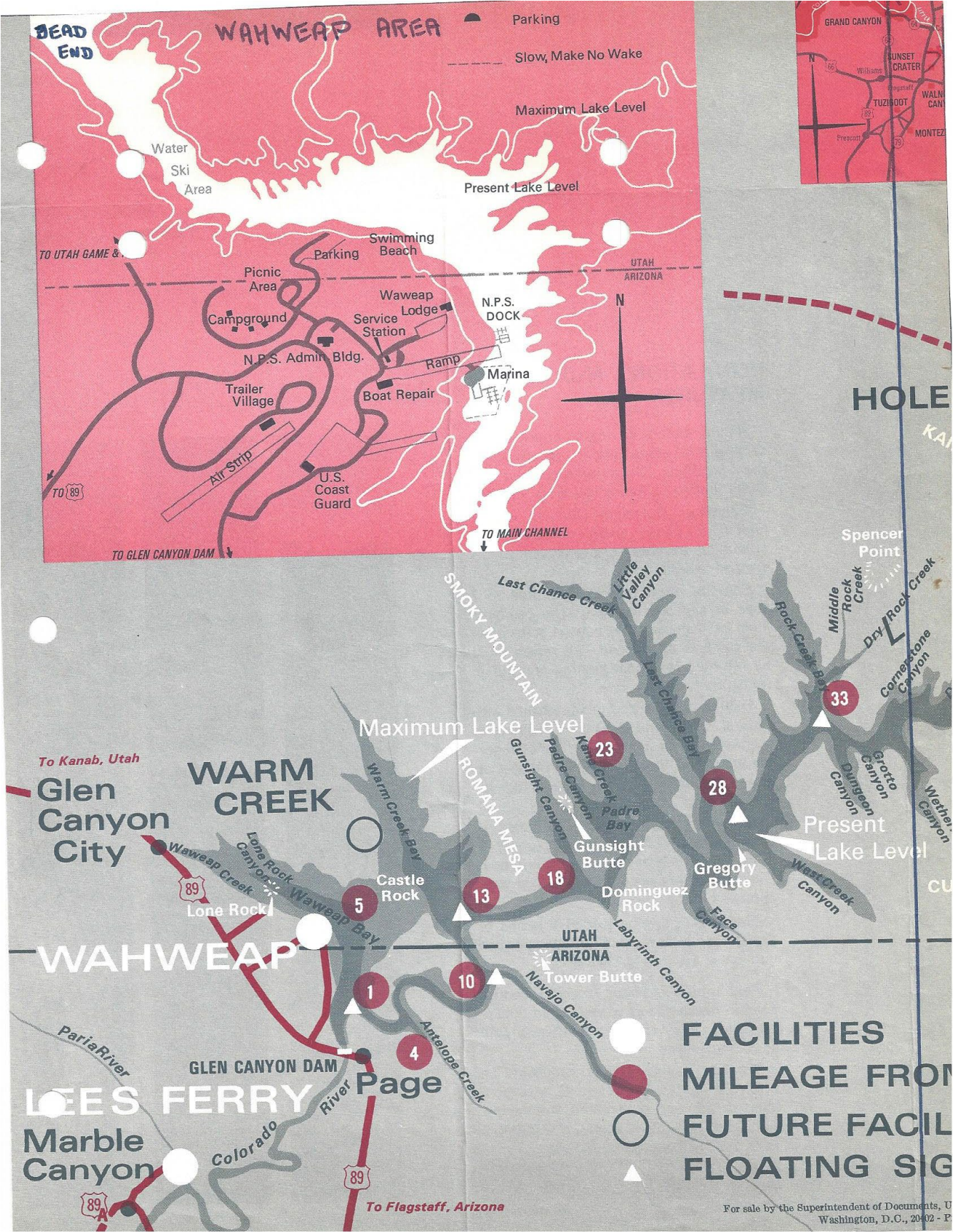
HALLS CROSSING - No change from information presently in folder.

HITE

Launching ramp, boat-fuel, boat rental, boat excursions, camp supply store, and primitive camping facilities. Drinking water is not available. Concessioner: Hite Marina, 4131 West 3860 South, Granger, Utah 84119.

RAINBOW BRIDGE FLOATING FACILITY

Ranger station, restrooms, emergency communications, boat sanitary dump station, and concessioner-operated boat-fuel service and camp supply store. No camping on the courtesy docks or floating facility. Concessioner: Canyon Tours, Inc., Box 1597, Page, Ariz. 86040.



penetrated - for years outlaws like Butch Cassidy + the Sundance Kid could retreat to this Canyonland country and remain in complete safety. We drove along the Lake Powell a few miles to Wahweap - one of the few access points to the Recreation area - where boating is very popular. We camped in a typical desert site at Wahweap - which had good shade and then spent the rest of the day swimming and sunning at a very clean little beach - the lake was clear too. It was not excessively hot thanks to scattered clouds. Finally we went down to the marina to browse around among the boats. Then to dinner and bed.

NATURAL HISTORY

The rock of the seemingly bare mountains and vertical cliffs is sedimentary. You can see examples of wind-deposited sediments in the brick-red Navajo Sandstone in the cliffs at Glen Canyon Dam, where the texture and slopes of one-time sand dunes are revealed. You can see examples of sea-deposited sedimentary rocks at Wahweap, where the red Carmel Formation overlays the Navajo Sandstone. Other formations contain fossils of marine animals that lived here millions of years ago.

The last uplift of this region began about 60 million years ago. As the uplift progressed, meandering streams of the ancient low-lying Colorado basin ran faster, cutting a labyrinth of canyons that you can explore today on the waters of Lake Powell.

Although inconspicuous, many plants grow in Glen Canyon's seemingly bare landscape. Some of the streaks on canyon walls are lichens. Throughout the area grow several species of cactus and the bayonet-tipped yuccas. In spring, wildflowers spread their brilliance upon mesas, over dunes, and along streambeds; another blossoming season may occur after summer rains.

Cottonwoods, willows, and tamarisks grow near streams, and Utah junipers and pinyons at higher elevations.

Most desert animals do their hunting and feeding at night; you may see some of them in the beam of your headlights. You will also see their tracks in the sand and in the wet soil at the lakeshore. The doglike tracks are made by coyotes and foxes. The small tracks are made by rats, mice, and lizards. The sharp-pointed hoof tracks are those of deer, and these you will usually see along the edges of the lake above Aztec Creek.

For countless centuries, beaver have lived along the Colorado River. With the formation of Lake Powell, these animals moved into the side canyons, where you can still see them.

The animals you see most frequently here are lizards, represented by about 14 species—all non-poisonous. The largest of these is the chuckwalla,

which feeds entirely on plants. There are snakes, of course, and occasionally a poisonous rattlesnake is found. Though you might hike in the area for a year and not see one, you should be watchful as you walk about, especially at night.

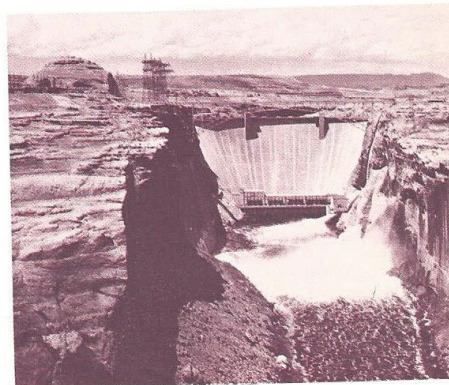
Few species of birds are expected to leave the area with the filling of Lake Powell, and different kinds may be attracted to the lake. In migration, dozens of species of waterfowl will continue to use the river as a flyway. And canyon wrens will still come from the shadowy depths of side canyons.

ADMINISTRATION

Glen Canyon National Recreation Area, established by the April 18, 1958, agreement with the Bureau of Reclamation, is administered by the National Park Service, U.S. Department of the Interior.

A superintendent, whose address is Box 100, Page, Ariz. 86040, is in immediate charge of the area.

THE DEPARTMENT OF THE INTERIOR—the principal natural resource agency—bears a responsibility to assure that our expendable resources are conserved, that our renewable resources are managed to produce optimum benefits, and that our resources contribute to the progress and well-being of the United States, now and in the future.



INDIANS AND EXPLORERS

The rough canyon country of the Colorado Plateau was home to Indians for more than 1,000 years. Basketmaker cultures in the early centuries of the Christian era were followed, beginning about A.D. 700, by Pueblo culture, which was distinguished in its later stages by cliff dwellings and other masonry structures. About 1200, for unknown reasons, these agricultural people left the Glen Canyon region.

The many small ruins found in this area represent small, usually temporary, outposts of Pueblo settlement. A large variety of stone and bone tools, basketry, pottery, and other artifacts have been found in authorized archeological excavations.

The first recorded description of the Glen Canyon area is found in the journal of Father Escalante, a Spanish Franciscan missionary. In July 1776, Father Escalante and Father Dominguez and their party set out from Santa Fe, N. Mex., to pioneer a route to California. In early October, after reaching the vicinity of present Millford, Utah, the padres decided to return to Santa Fe.

On October 26, the party reached the Colorado River at Lees Ferry, but there it was too deep and swift for a successful crossing. Laboriously they moved upstream, scouting for a ford. On the night of November 2, they camped on Wahweap Creek, a short distance north of the present Wahweap Campground. Four more days they struggled on, sustained by horsemeat and "toasted leaves of small cactus plants." On the morning of November 7, they chopped some steps in the sandstone wall of Padre Creek and safely led their pack stock to the edge of the Colorado. The crossing was wide but safe and by 5 o'clock all were over, "praising God our Lord and firing off a few muskets as a sign of great joy." The party arrived safely in Santa Fe on January 2, 1777. The place at which they crossed the Colorado became known as The Crossing of the Fathers.

Mormon exploration in this area began about 1857. Jacob Hamblin led several missionary trips to the Hopis, beginning in 1858. He used the Ute

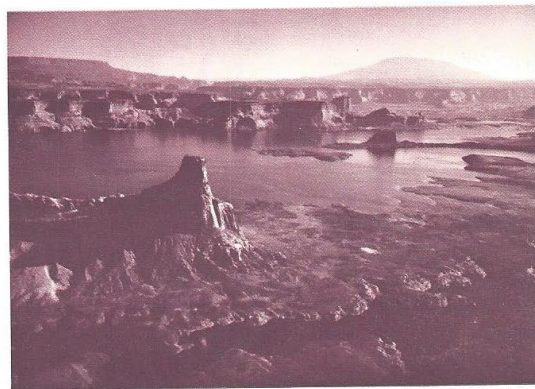
Crossing, just above the Crossing of the Fathers, in 1858 and 1859, but in 1860 he and his party ferried the Colorado at what later became known as Lees Ferry.

John D. Lee established a ranch at the crossing in 1871 and began ferrying travelers the next year. Until the high-arch Navajo Bridge was completed in 1929, the ferries continued to provide this vital link between Utah and Arizona.

The name "Glen Canyon" was given to a long stretch of the Colorado by John Wesley Powell, who led exploratory trips through the canyons in 1869 and in 1871. He mapped the area and named many of the features.

The Navajos, whose reservation joins Glen Canyon on the south, are newcomers compared with the Hopi and Rio Grande Pueblo peoples. They are believed to have arrived in the lower San Juan region about 100 years ago, coming in from the east, and they replaced or assimilated the Paiute Indians. The Navajos acquired some of the craft skills of the earlier Pueblo people, such as pottery and silverwork. More recently, they have become noted for their handsome and durable rugs and their distinctive paintings.

Plans are being made for a Navajo tourist development on Lake Powell at Padre Point. You can obtain more detailed information about the Navajos at their headquarters in Window Rock, Ariz.



MONDAY 8th Sept 1969

Packed up and retraced our steps as far as Bitter Springs in the Navajo Indian Reservation. Then we turned southward through desolate terrain - rock and desert - travelling this' only one small Indian settlement (the Indians wore cowboy jeans, hats, etc which was extremely confusing for Dana) before turning eastwards at The Gap. (where the land looks like the surface of the moon). Stopped in Tuba City - some city - one store, one gas station and sundry hovels. Saw and heard many Indians in the store - the older ones were especially pathetic. They live in absolute squalor - mud huts or "hogans" and the whole scene is quite depressing - the younger people seemed more aware and were the only ones who spoke sufficient English, at least, for me to understand. Incidentally all reservations in my experience ~~are~~ are littered with broken down junkie cars. Backyards of even the most humble residences seem to contain at least two such wrecks (the Wind River Indian Res. in Wyoming, relatively prosperous as I Res. go, was incredible from this point of view - everything from armoured cars to bulldozers).

Between Cow Springs and Kayenta the land improves taking on in places a greenish hue. Kayenta was the largest town we passed through and on the Reservation and was relatively more prosperous, clearly due to the presence of several small businesses. There we turned north on {163} and approached Monument Valley. Various buttes dotted the country side and we finally reached the turn-off to the Monument Valley Navajo Tribal Park. - four miles to the ~~museum~~ visitor center and main vistas. That four miles took us nearly $\frac{3}{4}$ of an hour. The road was laterally serrated with into a wavy surface of amplitude about 3 ins and wavelength 6 in. Only two speed ranges are possible on this kind of road either (i) Less than 5 mph or (ii) More than 25 mph. But the latter is only possible if you are prepared to install new shock absorbers and springs after the event. Eventually we got there and



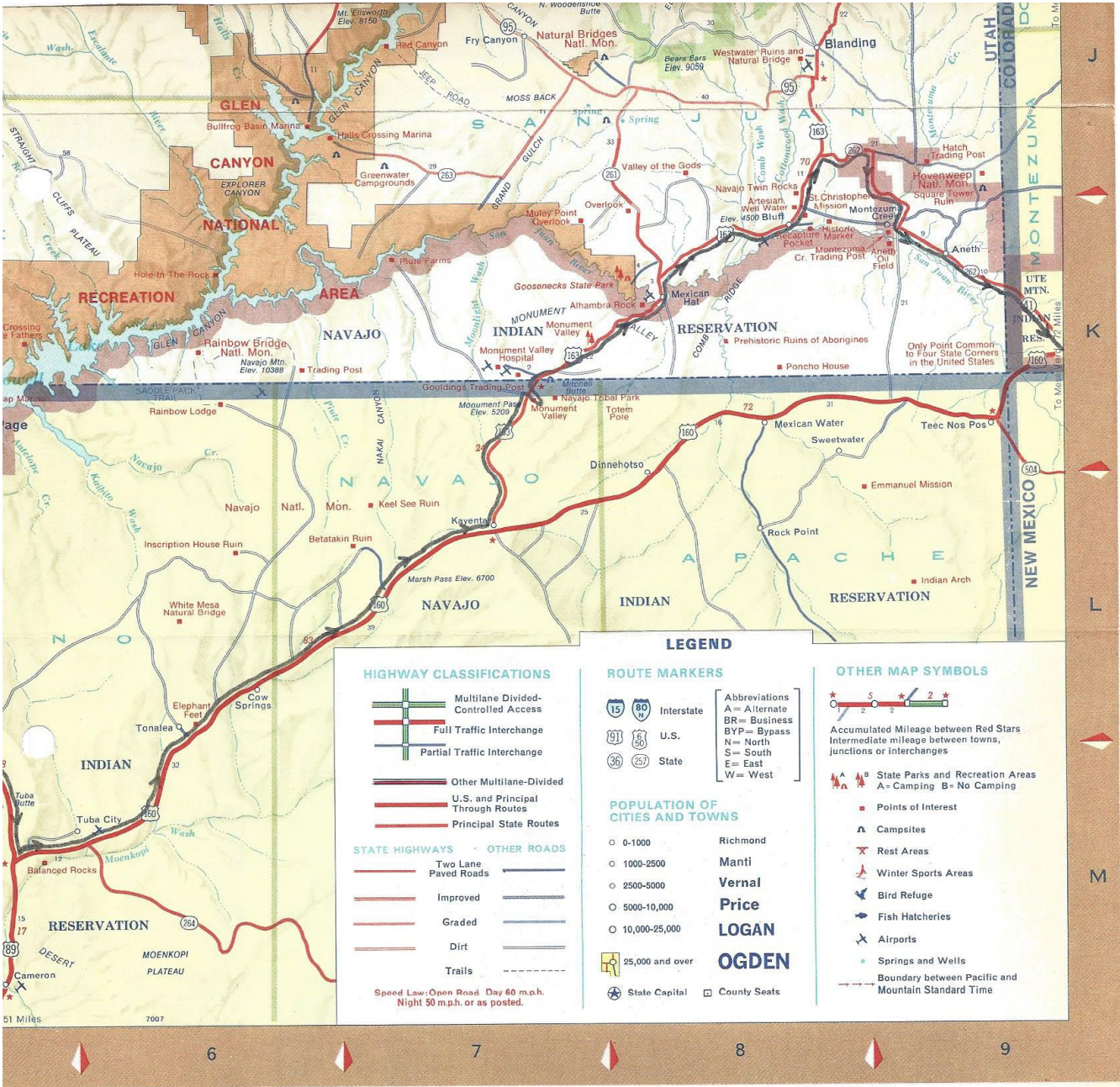
Monument Valley



Monument Valley



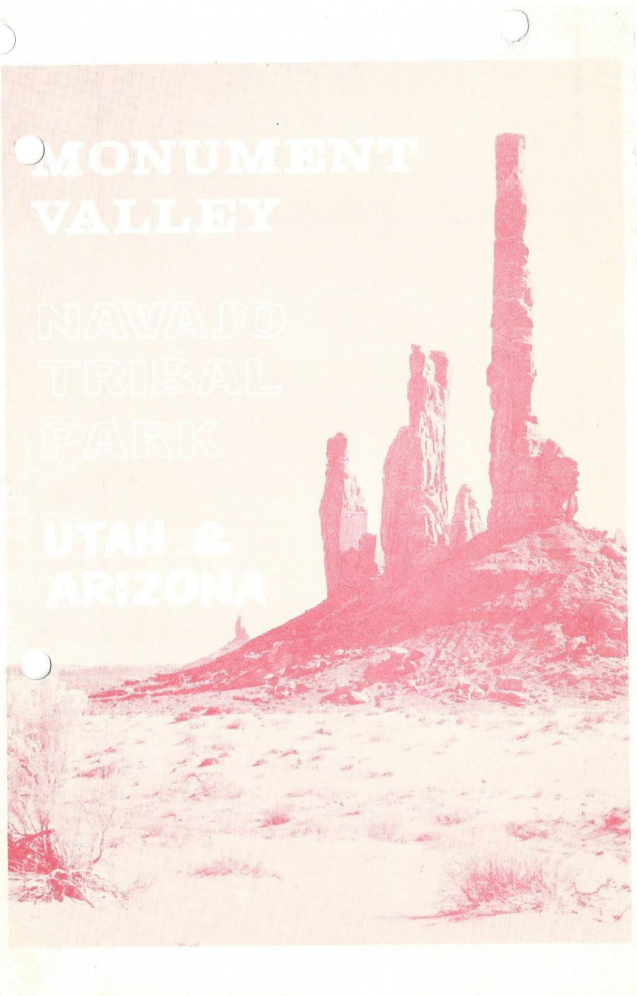
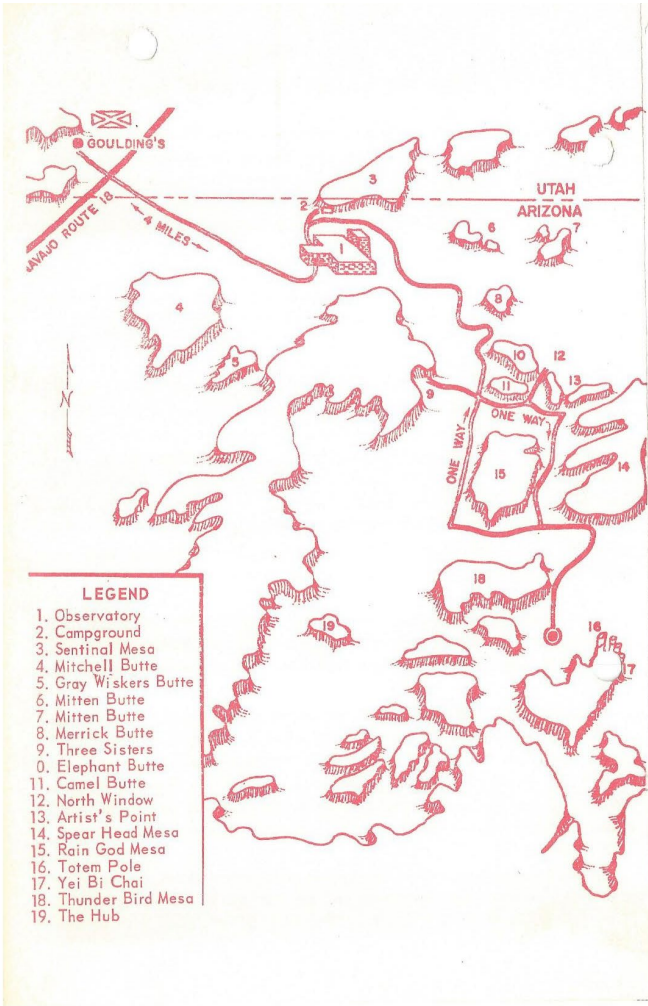
Monument Valley



STATE TREE
Blue Spruce

mileage between two points, refer to the numbers in opposite the number assigned to the other. For

den	34. Salina
ye, Arizona	35. Salt Lake City
gwich	36. Snowville
k City	37. Tooele
ce	38. Vernal
vo	39. Wendover



looked at the ^{vistas} ~~scenery~~ as well as at the main vistas - which would be quite nice if it was easy to get there - but otherwise something of a disappointment. The campsite proved to be a disaster with no vegetation, water or any other facilities - just red dust. Thank God it was only lunchtime and during that snack we braced ourselves and decided to push on the 180 odd miles to our next intended stop despite the fact that we had already driven quite far that day. However we were rather out of the way so the trip involved much small road driving - via Mexican Hat, Bluff, Montezuma Creek, Aztec - in Utah where the roads are poor in general - as soon as we crossed in Colorado the road improved drastically and we were all very tired but relieved to finally reach civilization at Cortez in Colorado. Reservations certainly are very depressing and this inevitably means a feeling of relief on departure. From Cortez it was but a short drive to Mesa Verde National Park, our destination. We found the campground (Morefield) some several miles inside the park in a ~~scraggy~~ bushy and lush green valley amongst steep hills - an immense campground. We found a spot easily, camped whilst dark thunderclouds loomed overhead but we escaped any rain. We drove to the campground center to find the most prolific array of services - hot showers especially caught our attention and after shopping and dinner at our camp we all piled into a hot shower feeding in quarters like there was no tomorrow. By the time we emerged it was dark and we all went to bed, enjoying the cool of the mountain evening - even the dampness - after the desert heat.



WHAT TO DO IN MESA VERDE NATIONAL PARK

Schedule effective Sept. 2, 1969 -- Subject to change without notice

1. ARCHEOLOGICAL MUSEUM: Open 8:00 A.M. to 6:00 P.M.
2. RUINS ROAD DRIVE: Open 8:00 A.M. to Sunset.
Two, 6-mile loops; entered at main crossroads 1/2 mile north of Museum. Ten excavated mesa-top ruins may be visited; cliff dwellings may be viewed from canyon rim overlooks. Exhibits at stops point out and explain features seen.

PLEASE REMEMBER

CLIFF DWELLINGS ARE ENTERED ONLY WITH RANGERS AS SCHEDULED BELOW

3. CLIFF DWELLING TRIPS: There are three of these.

SPRUCE TREE HOUSE: A self-guiding trip. Rangers are on duty in the ruin.

Visit this ruin anytime between 8:15 A.M. and 5:30 P.M.

Walking distance: 1/2 mile. Time: Allow 45 minutes to 1 hour

Directions: Take signed trail to the left as you leave entrance of Museum. Guide books available at the ruin.

CLIFF PALACE: Ranger-guided trips start at the VIEW POINT above the ruin at

9:00, 10:15, 11:30 A.M., & 12:00 Noon

and

1:15, 1:45, 2:30, 3:00, 3:45, 4:15 P. M.

Trips take 1 hour

Walking distance: 1/4 mile round trip

Take Ruins Road (see No. 2 above); follow Cliff Palace signs to parking area. Allow 10 minutes to drive from Museum.

BALCONY HOUSE: Ranger-guided trips start at the VIEW POINT sign in the Balcony House parking area at:

9:30, 10:45, A.M. and 1:30, 3:00 P.M.

Trips take 1 hour

Walking distance: 1/2 mile round trip

Take Ruins Road (see No. 2 above); follow Balcony House signs to parking area above ruin. Allow 20 minutes to drive out from Museum, or 10 minutes from Cliff Palace.

4. CAMPFIRE PROGRAMS: 8:00 P.M.

A one-hour program is held each evening in the Campfire Circle west of Museum and in the Campfire Circle in Morfield Campground. A short talk by a Ranger is sometimes followed by ceremonial dances of Navajo Indians who work in the Park. In case of rain, the program is cancelled.

PETS ARE NOT ALLOWED IN PUBLIC BUILDINGS, RUINS, OR ON TRAILS

TUESDAY 9TH SEPT 1969

Mesa Verde National Park contains the ruins of perhaps the most advanced prehistoric Indian culture in the North America outside of Mexico. The most visible and spectacular remains of this culture are the cliff-dwellings. The Indians originally lived on this high Colorado mesa (Mesa Verde) which takes up most of the area of the park. Perhaps for safety - or simply because their building techniques reached a sufficiently advanced state they built huge "apartment blocks" in large caves in the canyons below the mesa - or rather just ~~as~~ ⁱⁿ the cliffs which edge the mesa. These buildings they only occupied from c.1200 to c.1300 AD. ~~As~~ - they have remained in a state of remarkable preservation since then.

We arose rather late after sleeping in, breakfasted quickly and drove in the car up the climb to the mesa top (c.9000 ft $\frac{1}{2}$ above sea level). Ten miles or so ~~took up~~ and we arrived at the visitors center and museum which proved very interesting. Dana showed great interest especially in the human Indian remains - naturally mummified bodies found nearby - one of a teenage girl virtually intact but rather grotesque - the dioramas showing the various cultures culminating in the Great Pueblo Period also proved fascinating. There were three main cliff dwellings open for ranger guided tours. The first one, ~~the~~ Spruce Tree House, was only a short walk away and was self guided. This we did, exploring as far as we were allowed. ~~The floors and roofs in~~ The floors and roofs in many of the buildings, being made of wood, had of course rotted ~~away~~ away but all else remained. The Park Service had retrofitted one of the ~~rooms~~ (or ceremonial rooms) and we climbed down into this to explore it.

After this we decided to see Cliff Palace before lunch - we drove there taking the second of the mesa top loop drives. We were just in time for the 11.30 tour. The Ranger gathered everyone on the mesa top and we made our way down to the ruins via a Park Service installed steel staircase. He



Camping at Mesa Verde



Mesa Verde



Mesa Verde



Mesa Verde



Mesa Verde



Mesa Verde



Mesa Verde



Mesa Verde



Mesa Verde



Mesa Verde



Mesa Verde



Mesa Verde

HOW TO SEE THE PARK

To give you a glimpse into the lives of the prehistoric inhabitants, the Service maintains museums, roadside and trailside exhibits, self-guided trips, and (during peak of the summer season) campfire programs.

Entrance road features. There are five numbered stops along the entrance road. To avoid crossing traffic lanes you are urged to visit Stops 1 and 2 on your way into the park; Stops 3, 4, and 5 on your way out.

1. *Montezuma Valley Overlook.* Outstanding view of the valley and mountains to the north and west.

2. *Park Point,* halfway between the entrance and headquarters, affords superb views of the entire Four Corners region.

3. *Cedar Tree Tower,* a ceremonial structure, is one-half mile from the main road, just north of park headquarters.

4. *Far View House and Pipe Shrine House* are a short distance from the main road, 4 miles north of park headquarters. These two large mesa-top pueblos date between A.D. 1000 and 1200.

5. *Mancos Valley Overlook* is below Point Lookout, the towering promontory you see on entering the park. From here you can view the valley and mountains to the east and north.

Information and orientation. You are urged to go first to the Navajo Hill Visitor Center in summer or to the Chapin Mesa Museum, where attendants can assist you in planning your visit, and where exhibits show the arts, crafts, and physical remains of the ancient people, as well as the arts and crafts of Indians now living in the Four Corners region. The Chapin Mesa Museum is open from 8 a.m. to 7:30 p.m. in summer; from 8 a.m. to 5 p.m. the rest of the year. The Navajo Hill Visitor Center is open from 8 a.m. to 5 p.m. from mid-June to Labor Day only.

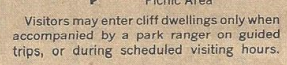
Ruins road drive. The two self-guiding loops of this road, totaling 12 miles, are open from 8 a.m. to sunset. Many cliff dwellings can be viewed from canyon-rim vantage points, and 10 excavated mesa-top ruins can be visited. Exhibits at the five stops explain the points of interest.

Ranger-guided ruins trips. In summer, park rangers conduct trips through some of the cliff dwellings. In winter (weather permitting), trips are conducted to Spruce Tree House only. Since the trip schedule may be changed, you should check at Navajo Hill or Chapin Mesa Museum information desks.

Campfire programs, conducted each evening from early June to September, deal with prehistoric and modern Indians of the Southwest, and the archeology, history, and natural history

Hiking. Two short trails are in the headquarters area. Permits must first be obtained from the chief park ranger's office in the museum and returned to the office on completion of a hike. Longer trails in the Morfield Canyon area do not require permits. Hiking is restricted because Mesa Verde's fragile, irreplaceable ruins must have maximum protection.

MESA
VERDE
NAT.
PARK



gave us a very interesting historical, sociological lecture ($\frac{1}{2}$ hour) and we then toured the ruins. Finally we exited along the approx. route used by the Indians for entry + exits, ladders having been installed in places. Then we went to lunch at a nearby cafeteria. Drove around the first loop drive visiting many of the older mesa top ruins including the major ruin of this type - Sun Temple. But perhaps the most amazing sight were the many, many smaller cliff dwellings lining the cliffs of the canyons below the mesa - some seemingly inaccessible. The Indians climbed up and down from the cliff dwellings using hand and footholds in the rocks which were mere depressions. In fact they also made many false hand + foothold trails to mislead intruders. They were positively neurotic about such intruders and took endless precautionary and protective measures though there is little evidence that anyone ever tried to invade their homes.

We then returned to the second loop and did it too, including viewed Square Tower House. Finally we arrived at the starting point for the third Ranger Tour - of Balcony House. A thunderstorm passed quickly over. The guide suggested that any young children and anyone who could not manage some strenuous climbing should stay behind. D. decided to stay behind with Kathy. Dana and I went along - first climbing down a long steel stairway to a cliff ledge about 150 ft below the rim of the mesa - then along the ledge about 300 yards arriving at the bottom of a 30 ft ladder which we climbed up and into Balcony House - I followed Dana closely. This was a smaller ruin but sufficiently different to be very interesting - named because of the \mathbb{B} lodenies on the buildings. Here the original entry and exit was through a tunnel created when a huge chunk of the cliff cracked off and shifted out slightly. The crack was completely filled except for a small tunnel (about $2\text{ ft} \times 2\frac{1}{2}\text{ ft}$) through which the Indians crawled and we left the ruin. Precautionary and protective traps were devised by the Indians to make sure any outsiders entering this tunnel met with an untimely and unpleasant end. After emerging

EARLY MAN IN NORTH AMERICA

DIORAMA No. 1

EARLY MAN IN

This diorama pictures a hunt such as may have taken place 10 or 12 thousand years ago in what is now north-eastern New Mexico. In 1926, 1927 and 1928, the bones of 30 bison of an extinct species were dug out of the bed of an arroyo near the little town of Folsom, New Mexico. Associated with the bison bones were 19 spear points of an unusual type. The place where the bones and spear points were found had once been a water hole or marsh and men probably killed the bison when they came to drink or to wallow. They skinned the animals, cut off what flesh they wanted and left the carcasses in the mud. Sometimes spear points were lost or were left in the bodies and these points, preserved with the bones, tell the story of the early hunts.

The unusual spear points are now called Folsom Points and the men who made and used them are often referred to as Folsom Men. Other spear points of distinctive types have also been found with the bones of extinct animals and it indicates that there were many different groups of early men in America.

Men began to drift into America at least 15,000 years ago. They came from the north, crossing from Asia to Alaska, then moved to the south. These early men were hunters and their spear points, knives, scrapers and other

stone tools have been found associated with the bones of elephants, mammoths, camels, horses and certain types of bison which have been extinct in America many thousands of years.

Little is known about these early inhabitants of North America. They lived by hunting and by gathering seeds, fruit and roots of wild plants. They had no permanent dwellings and moved about, following the game on which they lived. Pottery was unknown and their utensils and containers were made of animal skins. Cooking must have been done over the open fire although they may have been able to cook some foods by dropping hot stones into skin containers. Many primitive people have cooked in this manner.

Few human bones have been found, so little is known about the appearance or race of these early men. It can be presumed that they were ancestors of some of our present-day Indians.

The migrations of people from Asia to America which began thousands of years ago continued until only a few centuries ago. When the white man finally arrived, there were hundreds of tribes and many millions of Indians in the New World.

THE BASKETMAKERS

1-450 A.D.

DIORAMA No. 2

THE BASKETMAKERS

Pictured here is a cave occupied by early farming Indians whom we call the Basketmakers. Having no houses, they used the caves for shelter and since the caves were dry the remains of the people are often found in a remarkable state of preservation. These first farmers of the Mesa Verde region came into the area almost 2,000 years ago, bringing corn and squash with them.

The corn and squash were raised in small mesa-top fields and the people also hunted game animals and gathered wild plant foods. Corn was the most important food. It could be stored for the winter and when ground on the milling stones, the mano and metate, could be used in many ways. The area is excellent for dry farming as the rainfall averages 19 inches per year.

Pottery was unknown and baskets served as all-purpose containers. It is because of the beautifully woven baskets, bags, sandals and sashes that the people are called Basketmakers. Dogs were present and their hair was sometimes used in weaving.

In most of the area around the Mesa Verde, houses were not in use but in the Durango area the remains of crude, hogan-like structures have been found. Since most of the people did not have houses, caves were used for shelter and most of the remains of these people have been

found in caves where they have been protected from the elements. In the floors of the caves, small slab-lined pits were constructed for the storage of food. They were also used for burials.

The bow and arrow were not used by the Basketmakers. Instead, they used a weapon called the atlatl, a throwing stick with which they threw long arrow-like darts. The atlatl served to lengthen the arm and a quick overhand thrust imparted great force to the dart.

The Basketmaker cradle was woven of reeds and withes and a soft pillow was placed under the baby's head. As a result, the head developed normally and was not deformed.

Clothing was scanty. Small string aprons were worn by the women and loin cloths may have been used. Large blankets were woven from thin strips of fur and these as well as animal skins served as robes during the colder seasons. Jewelry made from stones, sea shells, bones and seeds was common. Turquoise came into use at this time.

The Basketmakers were highly intelligent, progressive people with great ability to develop new ideas and to borrow things from other people. Although they lived in a simple, rather primitive way, they laid the foundation for the great developments which were to follow.

THE MODIFIED BASKET- MAKER PERIOD.

DIORAMA No. 3

450-750 A.D.

THE MODIFIED BASKETMA

When Step House Cave, three miles west of the park museum, was excavated in 1926, the ruins of three Modified Basketmaker pithouses were found. They were built about 600 A.D.

This diorama shows Step House Cave at the time of its occupation. Two of the pithouses are shown, one complete, the other being constructed. The men are doing the heavier construction work while a woman applies adobe to the roof. Another woman is cooking, two are making pottery and still another is threshing beans. A father is showing his two small sons how to use the bow and arrow and coming through the trees are two men carrying a mountain sheep.

The people of this period were direct descendants of the Basketmakers shown in Diorama No. 2. Several new developments such as pithouses, pottery and the bow and arrow had appeared, and the way of life had changed. This change is indicated by the new name, Modified Basketmaker Period.

Pithouses, the idea borrowed from other people, came into general use early in the period. Some were built in the caves but now that they had good houses the people began to move to the mesa tops. By 700 A. D., most, per-

haps all, were living in small pithouse villages near their fields. The pithouses provided shelter and comfort during the colder seasons.

Pottery appeared early in the period and basketry became less important. The secret of pottery making was learned from people to the south and soon the women were making water jars, bowls, pitchers, ladles and cooking pots of good quality. Beans came into use, now that there were pots in which to cook them, and added an excellent protein food to the diet.

About 550 A. D., the bow and arrow, borrowed from other people, came into use. The bow was superior to the atlatl and made hunting and defense of the home easier. Stone axes and mauls and other tools of stone and bone appeared during this period. Turkeys were domesticated and they and the dogs were the only domesticated animals the Mesa Verde people ever had.

The Modified Basketmaker period saw development and progress. With houses, pottery and the bow and arrow, and the addition of beans to their diet, the people seemed to gain vigor and the population began to grow. By the end of the period, there were hundreds of pithouse villages in the Mesa Verde and a great area around it.

THE DEVELOPMENTAL PUEBLO PERIOD.

750-1100 A.D.

Diorama No. 4

THE DEVELOPMENTAL PUEBLO PERIOD

Pictured here is a typical Mesa Verde pueblo of about 850 A. D. The houses are joined together in a long curving row, facing south. In front are two underground ceremonial rooms, one complete, the other under construction. Around the village are the fields and in the head of a small draw at the left is a spring which provides water. The people are engaged in the activities of a September day: gathering the crops, drying food, building houses, carrying water, cooking, dressing hides, making pottery and, in some cases, doing nothing at all.

In the two preceding dioramas, the people were called Basketmakers. From this time on, they will be called Pueblos. Pueblo is a Spanish word meaning village. This period saw the beginning of true pueblo architecture so the new name, Pueblo Indians, is used.

During the preceding period, individual pithouses were built but near the end, the builders began to join the houses together in compact groups. Early in the Developmental Pueblo Period, individual pithouses, used as dwellings, disappeared. The houses became rectangular with vertical walls built of posts and adobe. The rooms were joined together, end-to-end, in long, curving rows. In front were one or more deep pitrooms which served as ceremonial rooms.

Later in the period, stone masonry appeared and houses were built of stones laid in adobe mortar. These villages usually contained from 4 to 15 rooms built in a single compact group. In front were one or more ceremonial rooms, now completely underground. These rooms, now called kivas, served as ceremonial rooms, clubrooms and workrooms and were used chiefly by the men.

About 750 A. D., the people began to use a wooden cradleboard and the baby's head rested on the hard board without a pillow. This caused the back of the skull to flatten and the head appeared much broader. From this time on, almost every head was noticeably deformed.

During the Developmental Pueblo Period, there was general improvement in everything except basketry which declined as pottery grew in favor. Pottery improved in quality, designs became more common and corrugated pottery appeared. Minor arts and crafts improved and cotton cloth appeared about 900 A. D. Evidently the cotton was imported from warmer regions to the south for it will not mature in the Mesa Verde.

From all appearances, this was a peaceful period, for the population grew rapidly and the people spread over a wide area. Hundreds of small farming villages dotted the Mesa Verde area.

THE GREAT PUEBLO PERIOD.

1100-1300 A.D.

Diorama No. 5

THE GREAT PUEBLO P

Spruce Tree House, shown in this diorama, is the best preserved large cliff dwelling in the Mesa Verde. It contains 8 kivas and well over 100 rooms and may have had as many as 200 inhabitants. The diorama shows it as it was when occupied during the thirteenth century.

The rooms, which were small, served as sleeping and storage rooms. Most of the activities of the people were carried on in the open courts and on the house roofs. Pictured here is a September afternoon and the people are busy with their many activities. Corn, beans and squash are being carried down from the mesa-top fields and spread on roofs to dry. Women are grinding corn, cooking, carrying water and caring for the babies. Some of the men are building a kiva roof and a new house is also being built. In the center of the village, old men sit in the sun and talk about bygone days when things were better.

The Great Pueblo Period of 1100 to 1300 A. D. was the climax of Pueblo development in the Mesa Verde. From 1100 to about 1200, the people lived on the mesa tops in well-built masonry pueblos. The plan of the villages, however, began to change. Kivas, which formerly had been outside the village proper, were now placed inside and were surrounded by houses. Tall, round towers, which

may have been lookout towers, became common. The villages also grew larger and were concentrated in the most favorable areas. All of this indicates a need for defense and it is probable that nomadic Indians were beginning to harass the Pueblo farmers.

About 1200 A. D., the Mesa Verde people began to move to the caves. Soon most, if not all, were living in cliff dwellings which were simply pueblos built in caves. This abrupt change evidently resulted from a need for defense against increasing enemy pressure.

During this last century, the people reached their highest level of development. Houses, pottery and all other arts and crafts except basketry were of the finest quality produced in the Mesa Verde. After thirteen centuries of steady development, the culture reached its peak.

In 1276 A. D., a drought began which lasted through 1299 A. D. Because of the drouth and probably, also, because of increasing enemy trouble, the people moved to the south. Some of our modern Pueblo Indians living in New Mexico and Arizona are their descendants. The Mesa Verde was never again occupied by farming Indians. After many silent, empty centuries, the cliff dwellings were discovered by the white man in 1874.

from the tunnel the Indians climbed a cliff face to the mesa top - we used two 25 ft ladders divided by a portion in which we traversed the cliff at a no-so-steep place using steps chipped in the rock. Most exciting. Late in the day then we returned reluctantly to the campground, ate, had another hot shower and slept.

Notes

Though most of the details of the park, Indian cultures, etc are contained in the adjacent literature some other facts spring to mind and I note them here - The ruins, which lay ~~silent~~ silent for nearly 6 centuries were discovered by coal cowboys exploring up into the canyons from the south in 1874. When the word spread many of the accessible remains were looted by freebooters before the ruins were finally protected. Many many of the best artifacts, especially, are therefore scattered about the world. The ruins themselves also suffered, though being covered by the ~~at~~ natural debris of 6 centuries protected a good deal. ~~The~~ When the ruins were finally and systematically excavated & only then did the general public become aware of the magnitude of the discovery and its significance.

The Indians who left Mesa Verde around 1300 and are thought to have rejoined their Pueblo cousins to the south ~~to~~ - probably the Hopi Indians since many of the artifacts found at Mesa Verde are related to modern or historic Hopi customs. "Kiva" is the Hopi name for the similar ceremonial rooms used, even today, by the Hopi. But neither before nor since have the architectural and structural skills of the Indians reached such a zenith. ~~The~~ In the desert to the south neither the opportunity nor the need for such ~~ex~~ stonemasonry (especially of such an exacting and essential nature) exist. All desert pueblos are built of adobe (mud) with few minor exceptions.

These people built no massive monuments to all-enclaving gods. They lived, not in absolute feudal bondage, as did their famous distant relatives to the south, the Incas. Indeed the many, one or two ~~room~~ dwellings bear witness to their tolerance of individuality. This was probably a fairly equalitarian society managed by tribal elders - pleasant and peaceful. Religion played an important but not dominating part in their lives which undoubtedly accounts for their respect of human life - no queues of hundreds marching to the symbolic heavens, there to have their hearts ripped out ~~as~~ as an appeasement to the gods - no massive monuments testifying to human misery - yet ~~as~~, by the same token, no drive to unravel the mysteries of the heavens or of communication which motivated the Mayans. No evidence points to any aggression against other peoples. Thus though they bequeathed to posterity perhaps something less sweeping than the Incas, Aztecs or Mayans we cannot help but wonder ~~what~~ which was the more civilized society.

WEDNESDAY 10TH SEPT 1969

Packed and left Mesa Verde somewhat reluctantly - undoubtedly this was one of the highlights of our trip. We drove via Cortez towards Monticello back in Utah. A group of mountains rises out of the desert behind Monticello and a thunderstorm shedding ~~at~~ rather spectacular lightning lay poised over these hills all the while we were approaching and leaving Monticello on the road northwards. Stocked up with provisions in Moab and arrived at the Arches National Monument, the entrance being just over the Colorado river. Back in the desert.

The Arches National Monument lies at the north end of a tract of country which is almost impenetrable. This region includes what has now become the Glen Canyon National Recreation Area and the Canyonlands National Park - Lake Powell which now fills the Glen Canyon was formed recently on completion of the Glen Canyon Dam - yet another hindrance to the progress of the mighty Colorado which over the megacenturies sculptured this desert landscape into a maze of tortuous canyons, cliffs and mini-mesas. During the earlier days of the West the pioneers had to take either south or north of this vast obstruction and stories are told of men attempting to cross it - one famous early case involved a number of Spanish fathers who just managed to find their way out and back to Santa Fe - another tells of a group of Mormon pioneers who struggled for weeks to drive their wagons through - indeed marks of that struggle can still be seen. Most notoriously of course it ~~contains the~~ provided ~~some~~ sanctuary for all kinds of outlaws - the names on the map testify to this - Folger's Roost on the W. side was one of the strongholds of Butch Cassidy, the Sundance Kid and the rest of the Wild Bunch.

Apart from the majestic Colorado the wind and violent



Arches National Park



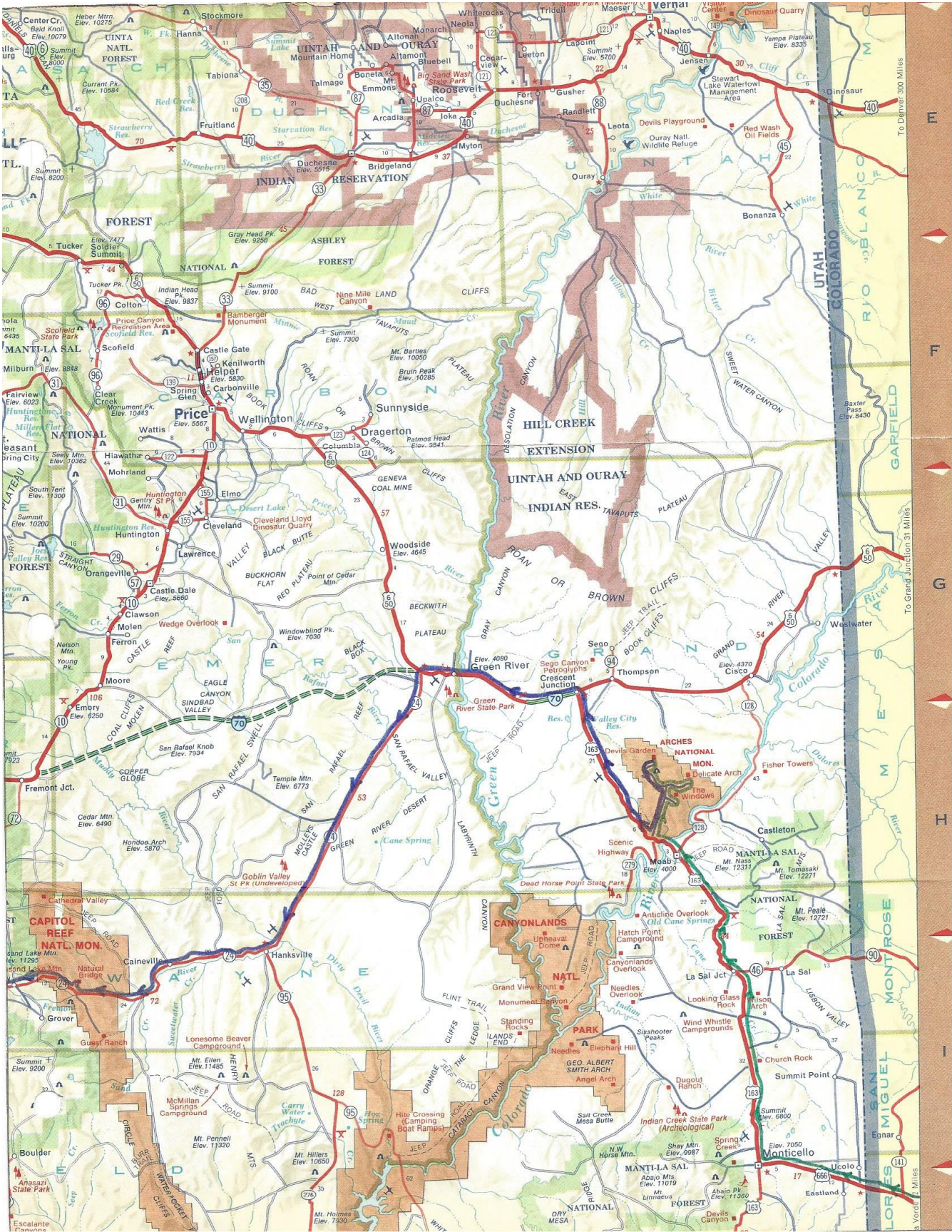
Arches National Park



Arches National Park



Camping at Arches National Park



desert storms also helped to sculpt the landscape. Many natural arches, natural bridges and other ~~of~~ weird rock forms dot the landscape. The Arches Nat. Mon. contains a concentration of these phenomena. Shortly after entering the "Cathedral Towers" present an interesting group of "monuments". Driving north we lunched near the balanced rock - viewed more arches on a side trip to the Windows section - and stopped a couple more times before reaching the end of the paved road at the campground in Devils Garden. We set up camp - with lots of choice we had a pretty site among the bushy scrub + juniper trees (?) - the sand would make comfortable sleeping. The Devils Garden surrounding the campground is a fairland of eroded ~~red~~ sandstone rocks. We all enjoyed exploring ~~rocks~~ in this maze - climbed up to Skyline Arch. Whilst D. and Kathy went back to start dinner, Dana and I continued exploring - at one point ~~to~~ we also got stuck only extricating ourselves by some rather hazardous climbing.

Before ~~Dinner~~ dinner we watched a jack-rabbit whilst gathering wood nearby - cooked (as usual now) with a real fire - almost handier when wood available. Later before the sun set I climbed onto one of the nearby rock-hills - the setting sun reflected spectacularly on the tortured red rocks - whilst in the opposite compass direction a violent thunderstorm shed its lightning on the mountains way, way across the plains - its discharge triggered other bolts in surrounding sympathetic storms.

After some hours of sleep one storm found its way over our camp and acted spectacularly for 20 mins (in terms of lightning, sheet rain) before moving on into the distance. On this occasion we had not taken the precaution of covering the tent ~~at~~ with our black plastic silk cover - but the tent proved itself waterproof even to such heavy rain.

Visit. You can get to most of the major scenic features of the monument on the road. But as in most National Parks and Monuments, the d much that is missed by motorists.

Lower. A paved entrance road leaves U.S. 160 at the monument 5 miles north of Moab, climbs the sandstone cliffs behind the , and passes first through the Courthouse Towers section. may want to take the easy 1-mile hike through Park Avenue, a for through towering red-rock walls topped by an orderly array of spires, which resembles the skyscrapers of a great city. e parking areas at each end of the trail, one member of your party und to pick up the hikers. There are exciting views of the La Sal ourthouse Canyon, and The Windows section from the parking adside turnouts.

Section. Within the east-central, and most readily accessible, part ent, a great mass of the Entrada Sandstone towers over the sur-in. In these walls the forces of nature have carved eight immense any smaller windows, passageways, coves, pinnacles, spires, and ss. Here are Double Arch, Parade of the Elephants, Cove of the and South Windows, Balanced Rock, and other erosional features. s 12 miles from the monument visitor center. A paved road o drive within easy walking distance of most of these features.

1. The scenic features of the monument are climaxed by the Delicate Arch, with its unsurpassed setting of cliffs and massive omes, and with the gorge of the Colorado River beyond and the peaks of the La Sal Mountains in the distance. A graded road leads miles of Delicate Arch; there is a foot trail the rest of the way.

ance is an intricate maze of narrow passageways and high sand- Not yet fully explored, it gets its name from its glow in the light of n.

n. The road ends in the Devils Garden section, 9 miles north of Ro From the end of this road near Skyline Arch, trails lead to Tur Arch, and Landscape Arch (1 mile), Double O Arch d many other arches found in this part of the monument. Arch, 291 feet long, is believed to be the longest natural-stone span Prehistoric Indians used part of the Landscape Arch area, perhaps mpground. They made arrow points and other stone implements s of chalcedony that litter the ground.

ffs. Another area which has not been adequately investigated be-lifficult terrain is Klondike Bluffs. The Klondike Bluffs parking s by dirt road from Skyline Arch. A 1-mile marked route leads king area to Tower Arch. Inquire about road conditions before his trip.

n Arches National Monument, established on April 12, 1929, and containing 53 administered by the National Park Service, U.S. Department of the Interior. adent of Canyonlands National Park, whose address is Moab, Utah 84532, is in e of the monument.

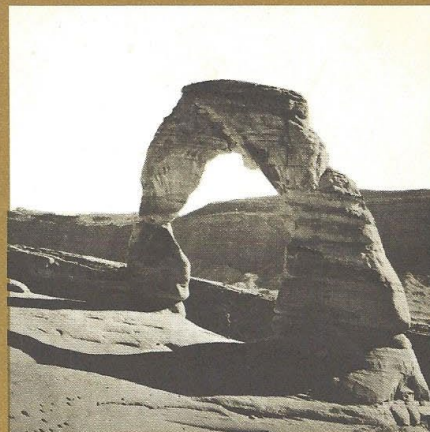
MENT OF THE INTERIOR—the Nation's principal natural resource agency—has on to assure that our resources are managed to produce optimum benefits, and that tribute to the progress and prosperity of the United States, now and in the future.

DEPARTMENT OF THE INTERIOR
National Park Service

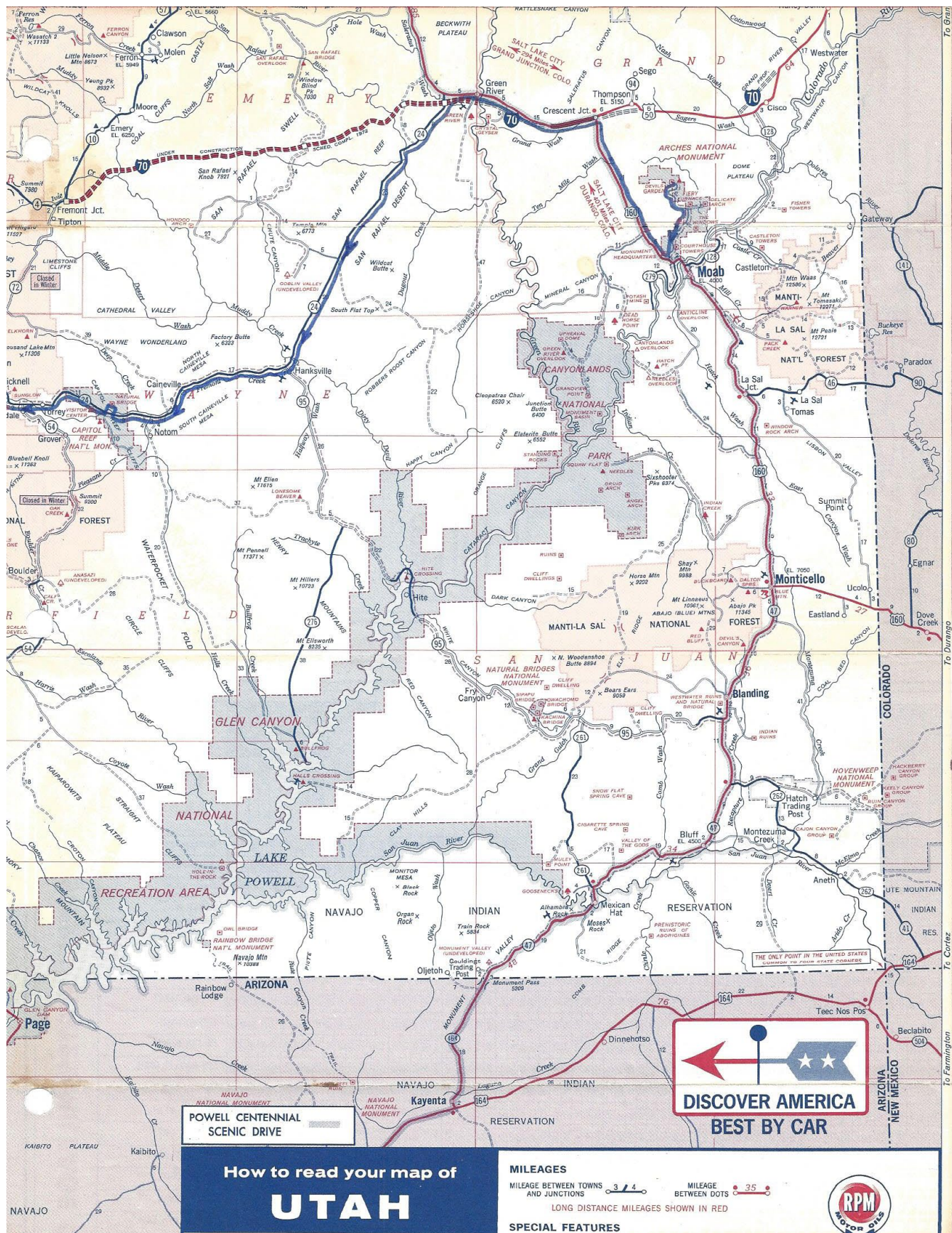


U.S. GOVERNMENT PRINTING OFFICE: 1969-346-120/200

Arches National Monument, Utah







Capitol Reef

NATIONAL MONUMENT • UTAH

Here a great buttressed sandstone cliff stretches 20 miles across the heart of a vast scenic region. Carved by water and wind into a fantastic array of towers, domes, and pinnacles, it rises imposingly above the desert floor.

The monument includes a section of the Waterpocket Fold, a great doubling up of the earth's crust. The western edge of this fold (of which Capitol Reef is a part) is exposed as a high cliff, or escarpment, of brilliantly colored rock layers. It extends from Thousand Lake Mountain south-eastward about 100 miles to the Colorado River. The fold was a barrier to the pioneer traveler; it could be crossed in only a few places on horseback. One of these passages, following the Fremont River, is now traversed by motorists on Utah 24.

The Fremont River and its tributaries, Sulphur and Pleasant Creeks, are the only perennial streams. Many of the water pockets (potholes in the floors of rocky gorges) retain runoff water for long periods. The vegetation is sparse and desertlike. Pinyons and junipers grow on the talus slopes, and cottonwoods along streams.

Midsummer daytime temperatures are in the 80° to 90° range, and the nights are normally cool. Spring and autumn are generally mild. From the latter part of December through January it is usually cold.

PREHISTORY AND HISTORY

Prehistoric Indians of the Fremont culture lived in open caves here but built small stone structures for corn storage. They raised corn on the flat ground near the streams. Smooth cliff walls are marked with many petroglyphs of unusual size and style, enduring figures pecked into the stone many centuries ago. Artifacts and relics are on display at the monument visitor center.

Because of its peculiar geographical isolation, the Fremont River drainage was the last section of Utah to be explored and settled. In January 1854, Col. John C. Fremont looked down on the area of the monument from Thousand Lake Mountain. Prof. A. H. Thompson, geographer with John Wesley Powell, made the first geographic and geologic reconnaissance of the area in 1875, applying many names still in use.

HOW TO REACH THE MONUMENT

Monument roads are open all year except for occasional short periods following heavy rain or snow.

Approaches to Capitol Reef are by way of Utah 24. The monument is 72 miles east of Richfield and Sigurd, which are on U.S. 89, and 90 miles west of the junction of U.S. 50-6 and Utah 24.

CAPITOL REEF

NATIONAL MONUMENT • UTAH

A very scenic approach is by Utah 54 through Escalante and Boulder and over Boulder Mountain, connecting with Utah 24 one mile east of Torrey. This graded road runs through impressive redrock country and forests of pine and aspen. It is usually free of snow from June 1 to November 15, but local inquiry should be made before attempting this route.

WHAT TO SEE AND DO

The visitor center presents exhibits and illustrated orientation programs.

All along the road through the monument you will see highly colored, eroded cliffs. Colors appear strongest in early morning and late afternoon.

If you travel from the west on Utah 24 you come to a viewpoint near Twin Rocks soon after passing the entrance marker. Two miles beyond, on the right, is the Motorman, and just beyond that is Chimney Rock, on the left. About 1 mile beyond Chimney Rock, a dirt road turns right. At its terminus, a short trail leads to the rim of striking Sulphur Creek Gorge.

If you enter from the east, you will travel 5.7 miles from the entrance to the visitor center along the narrow Fremont River Canyon. Parking areas offer opportunities for taking pictures and for following a trail that leads into Grand Wash and other trails that lead to Hickman Natural Bridge and Cohab Canyon.

The self-guiding trail to the bridge is an easy 1-mile hike. The bridge, carved from the rock by flowing water and blowing sand, is 72 feet high and has a 133-foot span.

From the visitor center a road leads southward to, and beyond, Capitol Gorge. Along this route are road spurs leading into Grand Wash and to Pleasant Creek. (The road beyond Pleasant Creek requires a jeep.)

Grand Wash is one of the finest attractions in the monument. From the end of the road in the canyon, you can hike less than a mile and find yourself in the narrows, where 1,000-foot walls are only 16 feet apart. The trail through the narrows ends at Utah 24 in the Fremont River Canyon; 200 yards from the end of the road is a 1½-mile trail to Cassidy Arch.

Capitol Gorge, until recently, was used as the only route through the reef. About 2½ miles into the gorge you will come upon a parking area from which trails lead to the top of the reef near the Golden Throne and down Capitol Gorge. On the north wall, a short distance beyond the parking area, you can see petroglyphs estimated to be 1,200 years old. These rock carvings are believed to have been made by Fremont Indians.

NTL OFFICE: 1968—347-047/13
REPRINT 1968

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THURSDAY 11TH SEPT 1969

It the morning the sun rapidly dried everything, though in the desert the dampness from the overnight storms is most refreshing. We packed and left early intending possibly to reach Bryce Canyon that day, though our first objective was Capitol Reef Nat. Monument. Partly due to the terrain, partly to the sparseness of populace the roads are small and few, though the first part of our ~~out~~ journey - north to Crescent Junction, W. to Green River was a well traveled road. The next part, south to Hanksville was almost frightening in its loneliness and desolation. West of Hanksville the greenery and population increases. We lunched ~~here~~ just W. of Caineville at a roadside picnic spot. From there it was but a few miles to Capitol Reef National Monument where the road wound down an attractive gorge surrounded by white mountains - the river was full and the valley green. Stopped at one spot by the river and I hiked up a $1\frac{1}{2}$ mile trail to the Hickman Natural Bridge - interesting holes in the white rocks. Then we drove to the visitor center where we learnt that the Monument contained a part of the Waterpocket fold - which is remarkable for a reason I cannot recall. We wanted to visit Capitol Gorge itself to the south but recent storm flooding had washed out the dirt road running south from the monument center which was disappointing. We looked at the campground but it was not sufficiently attractive to cause us to stop so early in the day so we determined to move on to Bryce Canyon. Two roads open to us - dirt through Escalante and the long way round - the latter however is far shorter in time and ~~is~~ in any case the dirt road was the same one washed out by the flash floods. The long route lay through fairly uninteresting grazing farm lands in the central valleys and gentle rolling hills of Utah. Storms threatened us on the way and one broke spectacularly over us between Otter Creek and Panguitch - Doorn found it impossible to keep sufficiently cool to drive in the lightning. - As we arrived in Bryce ~~Nat~~ Canyon National Park the sky cleared - we toured the Visitor Center and camped late at North Campground in eager anticipation of touring this incredible place the next day.



Bryce Canyon National Park



Bryce Canyon National Park



Bryce Canyon National Park



Bryce Canyon National Park



Bryce Canyon National Park Camping



Hoover Dam

Bryce Canyon

NATIONAL PARK • UTAH

Bryce 1st Fall

Prohibit the
carrying, throwing, or rolling of
stones or other materials.

Sunset (2)

Mule Deer 19

1 Paria View 20

Natural Bridge

Capitol Reef

Agua Canyon

Rainbow

ADMINISTRATION

Bryce Canyon National Park, containing 56 square miles, was established on September 15, 1928, and is administered by the National Park Service, U.S. Department of the Interior.

Park rangers enforce regulations and can help and advise you. Consult them if you are in any difficulty.

Park naturalists are here to help you understand the park. They welcome your observations and inquiries. The maintenance staff will also help and answer your questions.

A superintendent, whose address is Bryce Canyon National Park, Bryce Canyon, Utah 84717, is in immediate charge.

THE DEPARTMENT OF THE INTERIOR—the Nation's principal natural resource agency—has a special obligation to assure that our expendable resources are conserved, that our renewable resources are managed to produce optimum benefits, and that all resources contribute their full measure to the progress and prosperity of the United States, now and in the future.

U. S. Department of the Interior
National Park Service



Before you and below you, as you stand on the rim of the Paunsaugunt Plateau, lies a city of stone: cathedrals, spires, and windowed walls, structures of countless shapes and sizes delicately tinted in shades of pink and red and orange and softened further by grays and whites and creams—all sculptured by the never-lagging forces of erosion. These are the Pink Cliffs of Bryce Canyon.

HOW TO REACH THE PARK

In scenic southwestern Utah, Bryce Canyon National Park is centrally situated in relation to other nearby units of the National Park System: Zion National Park; Cedar Breaks, Capitol Reef, and Pipe Spring National Monuments; Glen Canyon National Recreation Area; and the North Rim of Grand Canyon National Park. Your trip to Bryce Canyon may well include stops at some or all of the other areas.

By automobile. The park is usually entered from U.S. 89. At Bryce Junction, 7 miles south of Panguitch, turn east on Utah 12. If you drive south from Salt Lake City on U.S. 89, consider turning off at Sigurd for the 72-mile side trip on Utah 24 to Capitol Reef National Monument. A 3-mile side trip from Cedar City on Utah 14, will take you to Cedar Breaks National Monument. Travelers from the southwest often leave U.S. 91 near St. George and follow Utah 17 and 15 through Zion National Park to U.S. 89.

By train. The Union Pacific Railway connects at Lund with buses of the Utah Parks Co., which operate from there to the park.

By bus. Main buslines operate from Salt Lake City and Los Angeles to Cedar City, where park passengers can transfer to Utah Parks Co. buses.

By air. Air service is available by Bonanza Airlines from Phoenix to Cedar City, connecting with Salt Lake City. Private planes may use Bryce Canyon Airport, 4 miles north of the park.

SEASONS

From April through October, days are warm and nights cool. There are occasional summer thunderstorms. It is cold on the plateau from November through March, although the days are often delightfully bright and crisp.

The park road is open in winter to Sunset Point, Inspiration Point, Bryce Point, and Paria View. From these you can see the Wall of Windows, Silent City, and many other formations under a mantle of snow.

ALTITUDE

You may not realize that you are on a plateau ranging from 8,000 to 9,000 feet in elevation, and you may notice a lack of energy and shortness of breath. You may also notice that your automobile lacks its usual power going uphill. These symptoms are normal, and are caused by insufficient oxygen.

To allow for this deficiency, take a more leisurely pace. Stop often to examine the things around

you. Eat more slowly than usual. Do not be so rushing down the hill an hour after eating, comfortable trip.

ACCOMMODATIONS

North Campground center; *Sunset Camp* and trailer facilities week to November 1 and fireplaces, are in Camping is limited to year. No reservations well to arrive early in

An *inn*, with a cafeteria *North Campground*. are available from ea The store sells film, selection of groceries available nearby.

The *lodge*, near the is open from about J tains a lobby, dining shop, and soda fou the lodge are in ca built of logs and n places; and standar commodating two f ture. For cabin rese Parks Co., Cedar Ci

Service station and open from May to Se and repair services

Transportation. Bus Lund and all-expens well as to Zion and G Cedar Breaks Natic National Forest, are Co. on regular sche September 5 and other times. Tours Canyon Lodge to R in summer.

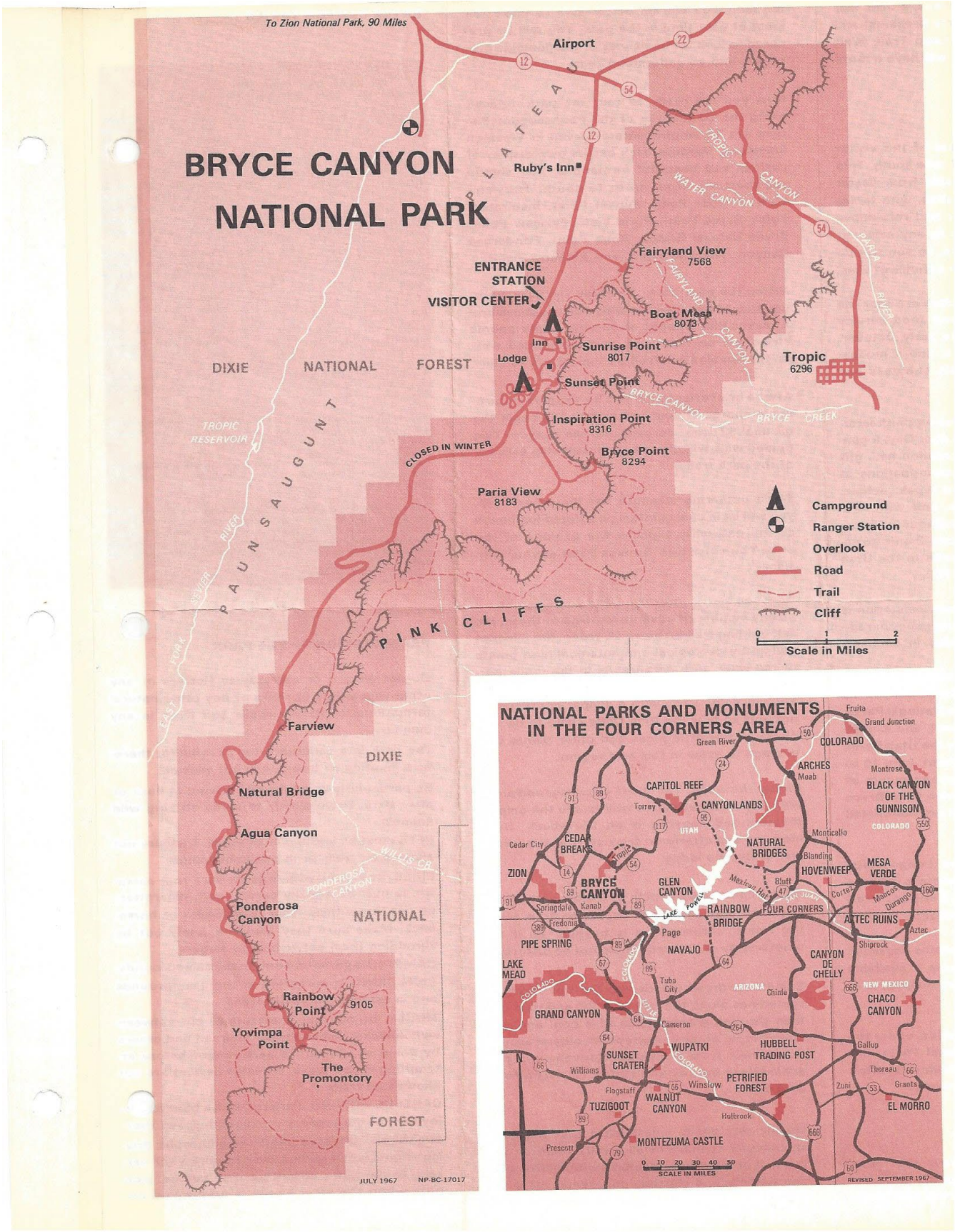
Communications. tains a post office; Canyon National 84717. Telephone

Medical service. Tl in the park, but a at the lodge in sum Panguitch (26 mile

Church services. P Christian Ministry held each Sunday ir day Saints service

HOW TO SEE THE

The *visitor center* After seeing the s and the exhibits d



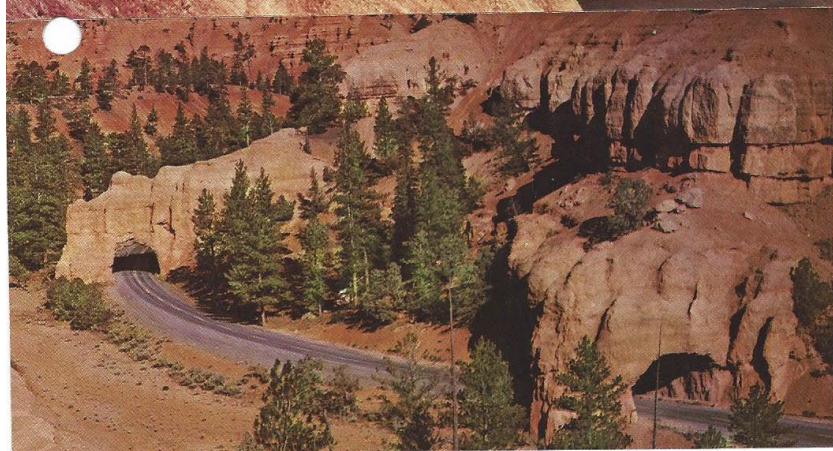
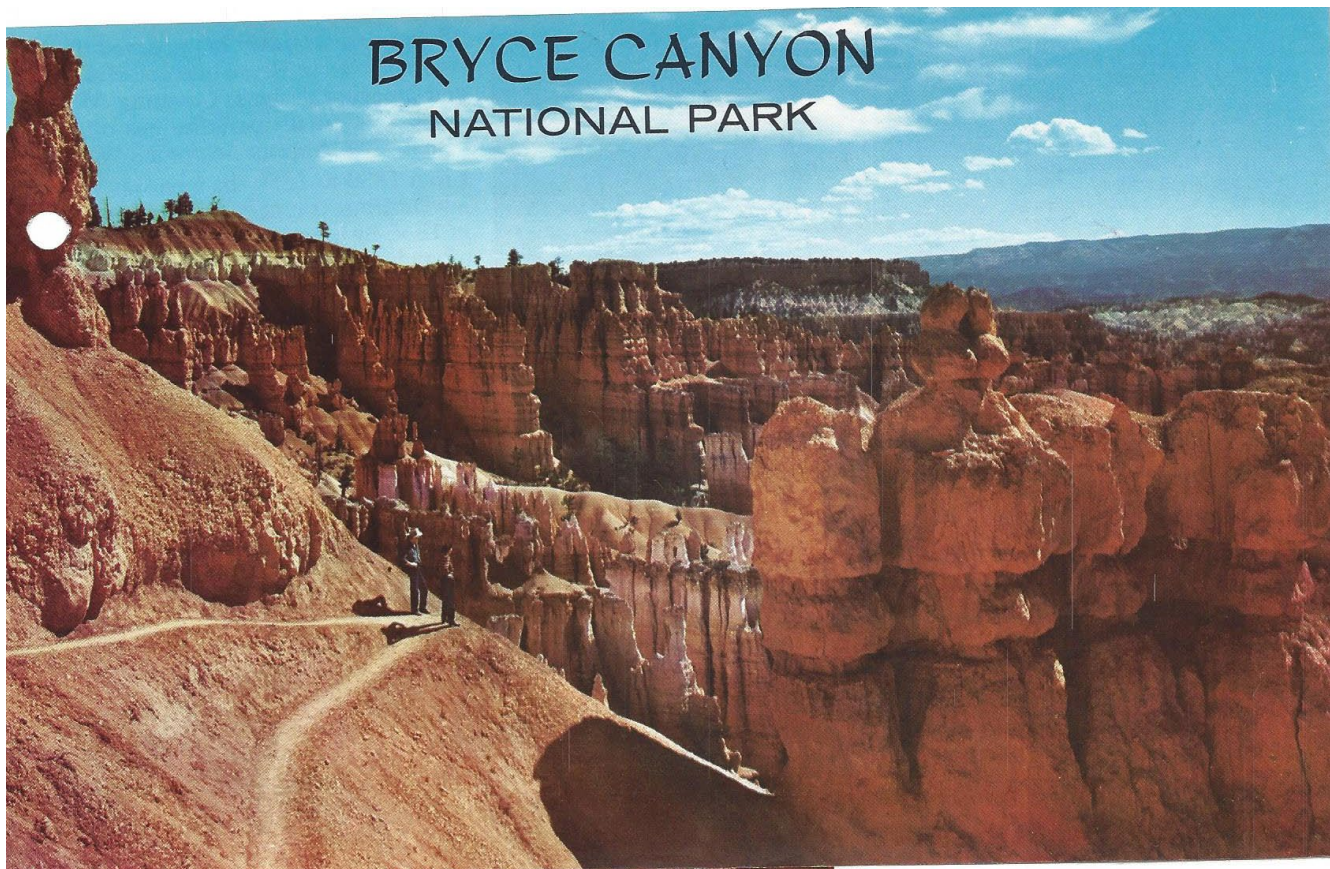
FRIDAY 12TH SEPT. 1969

Bryce Canyon National Park is approached and has its roads, campgrounds, etc. on a high flat mesa (c. 9000 ft). When one reaches the edge of this wooded mesa and looks down over the cliff edge a truly amazing sight greets one's eyes - centuries of erosion have sculptured the fragments from the retreating cliff edge into series of columns, spires and ridges - which though nominally pink and yellow do contain a whole spectrum of color (the geological layer is the Wasatch Pink Cliffs - quite recent geologically). Many of the columns resemble statues - of Queen Victoria, the Pope, etc. One part is called Silent City - another Fairland - indeed they seem so unreal that it is almost like a part of Disneyland. ~~Observation~~ Observation points are at regular intervals along the mesa edge - and numerous trails with natural bridges, tunnels, etc. go down into the formations, though the climbing ~~was~~ would be too much for the kids. We started at the northern-most view point - Fairland View and visited most of the vantage points - South to Pavia View before lunch, for which we returned to the campsite - seeing on the way a mule deer. Then in the afternoon we drove further south all the way to the end of the line at Rainbow Point where one gets a panoramic view northwards of the Canyon. Dana and Kathy unfortunately fell asleep on the return drive for we came across a large herd of mule deer grazing by the roadside.

It was about mid-afternoon so we decided to drive out to Ruby's Inn to shop and have a drink - as and while we did the rain came pouring down - and continued for some time - we stopped off in the visitors center on the way back - and by the time we got back to camp it had more or less passed over - however I could get little joy out of our rainsoaked mood so we cooked on the stove and went to bed fairly early. Unfortunately the door of the tent was originally slightly short and had shrunk even more so the rain had, for the first time, penetrated to the inside, partially wetting my sleeping bag - however we managed to dry things out fairly well. (After this trip I added a piece to make the door sufficiently long).

Partly because of the rain and partly because of the fact that we had ~~had~~ had a good look at Bryce we decided to move on next morning in search of the warm desert - we never could decide which we would rather have.

BRYCE CANYON NATIONAL PARK

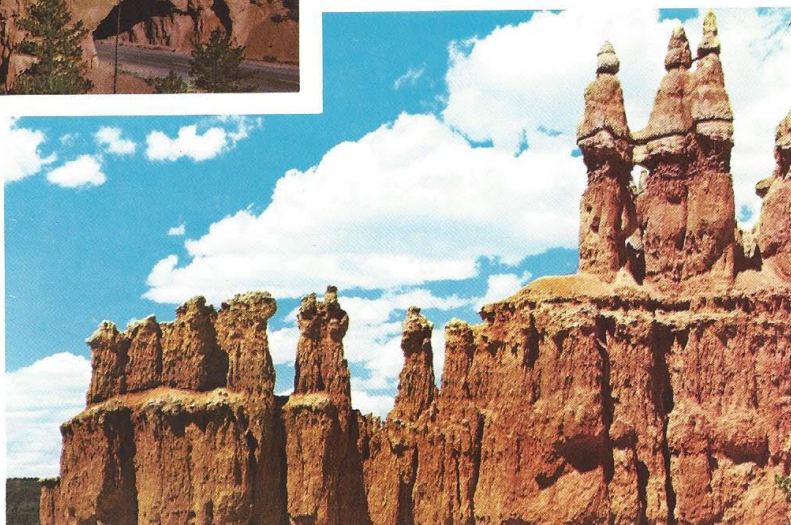


ENROUTE TO BRYCE the highway lies along the floor of Red Canyon—a brilliantly colored area which hints of the beauty to be found inside the park. Two spectacular tunnels (left) have been carved through the brightly tinted cliffs.

**NATURAL BRIDGE AT BRYCE (right).
"THREE WISE MEN" (below).**

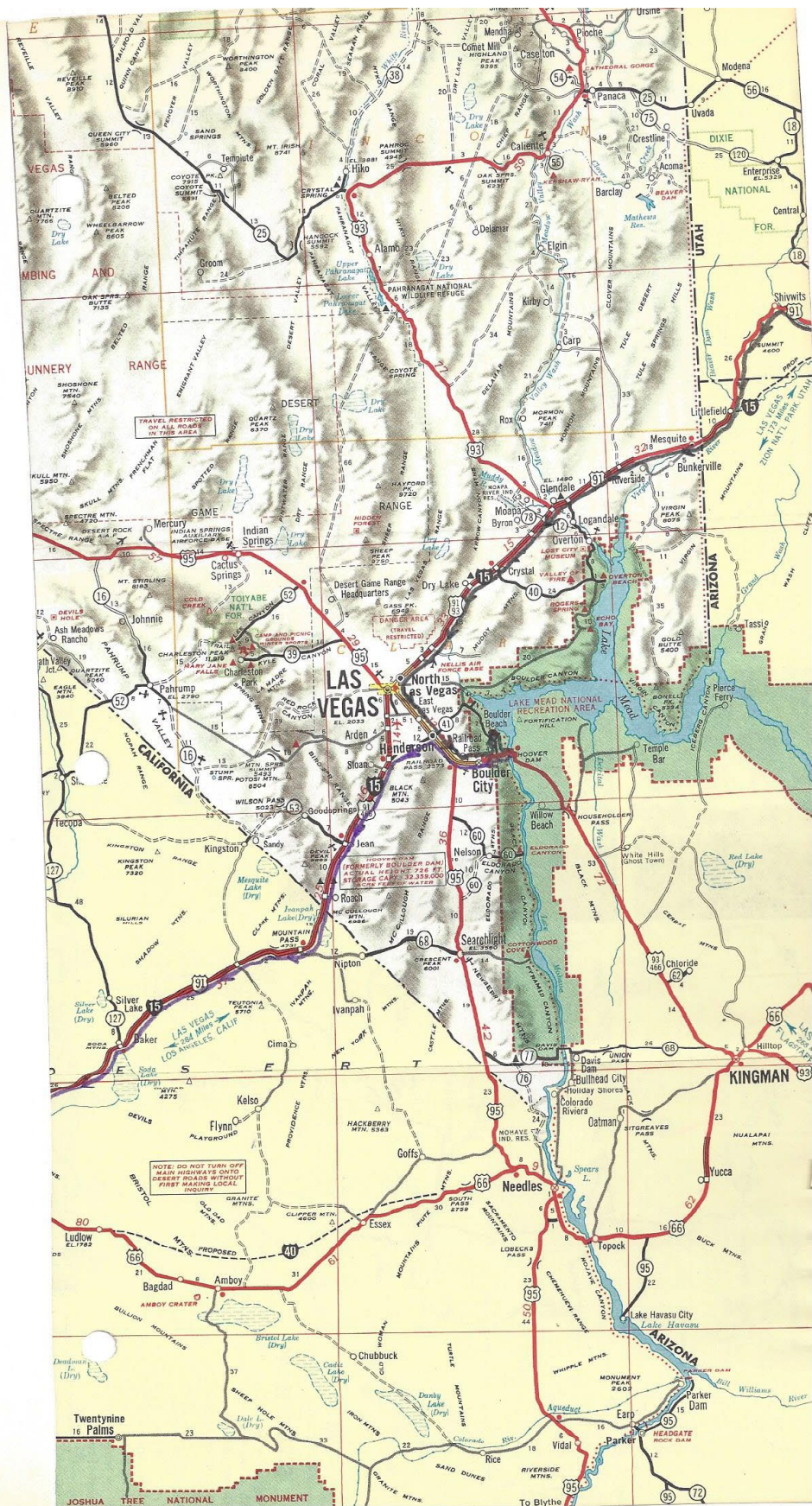
ASERIES OF GREAT horseshoe-shaped amphitheaters cut into the Pink Cliffs formation, Bryce Canyon is filled with myriads of fantastic figures decorated with all the colors of the spectrum.

Bryce Canyon was called by the Indians "red-rocks-standing-like-men-in-a-bowl-shaped-canyon" and for centuries this colorful land remained the undisturbed home of nomadic Utes and Paiutes, and the hunting grounds for the Navajos.



SATURDAY 13TH SEPT 1969

We had no definitive plan as to where we might spend the coming night. On leaving Bryce Canyon we returned to the valley through which Interstate 89 runs and turned south. At Long Valley Junction however we turned west and climbed through the mountains of Dixie National Forest - pretty fine wooded country with lava beds sprinkled here and there. We looked at Navajo Lake where we thought we might have stopped - ~~but~~ we also passed by Cedar Breaks National Monument with the thought that being ~~Bryce~~ similar to Bryce it might be uninteresting after the latter. Near the top of the pass we stopped to look down south on top of Zion Canyon and the Virgin River in the distance. Then we came down through a canyon to Cedar City and took the freeway to St. George where we had lunch. After lunch we kept going and travelled back thro' the Shivwits Indian Reservation. It began to rain as we reached the Summit of the 4600' pass - this increased to an incredible ferocity as we dropped down to the desert through the corner of Arizona. The lightning seemed to strike the ground very close to the car - on one frightening occasion we imagined we felt the impact. However it cleared quickly and we raced on to Las Vegas and without stopping drove out past Henderson and Boulder City - just before ~~the~~ after which we reached Boulder Beach Complex in the Lake Mead National Recreation area at Boulder Beach. We checked straight into the pleasantly shaded camp ~~site~~ ground where we found a nice site. It was rather unpleasantly windy but we drove to the beach to see it - the lake level was low since it was late summer and the weather cloudy - we then did our shopping - the kids played at the campsite and the day came to an end quietly.



Lake Mead

NATIONAL RECREATION AREA • ARIZONA • NEVADA

GOVERNMENT PRINTING OFFICE: 1968—346-116/148

ADMINISTRATION

Lake Mead National Recreation Area, established on October 13, 1936, is administered by the National Park Service, U.S. Department of the Interior. A superintendent, whose address is 601 Nevada Highway, Boulder City, Nev. 89005, is in immediate charge.

THE DEPARTMENT OF THE INTERIOR—the Nation's principal natural resource agency—has a special obligation to assure that our expendable resources are conserved, that renewable resources are managed to produce optimum benefits, and that all resources contribute to progress and prosperity of the United States, now and in the future.

U. S. Department of the Interior
National Park Service



Boundaries of this 3,000-square-mile recreation area enclose two large lakes, colorful deserts, deep canyons, and lofty plateaus. Lake Mead, 115 miles long, was created by the construction of Hoover Dam. Davis Dam backs up 67-mile-long Lake Mohave. Altitudes range from 517 to 6,990 feet.

The recreation area is open all year, with maximum visitor use in summer. Even during July and August, when daytime temperatures may rise above 110°, the heat is not oppressive because of low humidity. Nights are usually comfortable. From late September through early December and from early February through late May, the weather is delightful.

For protection against the brilliant desert sunshine, you should bring an effective hat and tinted glasses. In winter, temperatures are sometimes rather low, particularly in the mornings and evenings, so come prepared with warm clothing.

TRANSPORTATION TO THE AREA

Railroads serve Kingman and Las Vegas, and buses from these towns make regular runs to the recreation area.

The nearest commercial airport is at Las Vegas; airports accommodating private planes are at Boulder City and North Las Vegas. Additional landing strips are at Overton in Nevada and Temple Bar in Arizona. Mohave County Airport at Bullhead City, Ariz., serves Katherine. Write to the superintendent of the recreation area about landing amphibian planes on Lake Mead and Lake Mohave.

WHAT TO SEE AND DO

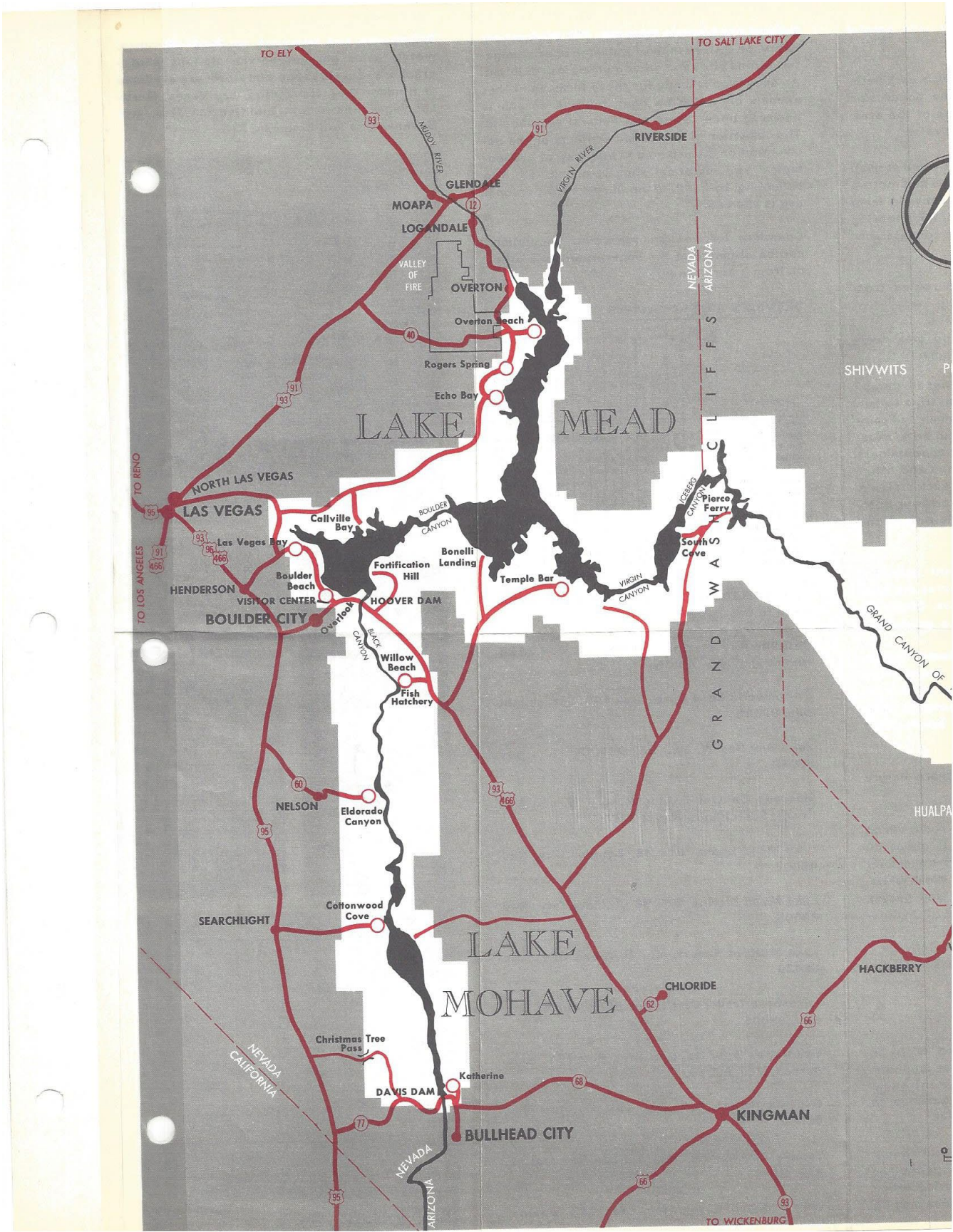
Park rangers and naturalists present evening illustrated programs at the Boulder Beach amphitheater in spring, summer, and autumn. Additional programs are presented during the year at Katherine, Temple Bar, Willow Beach, Echo Bay, and Cottonwood Cove developed centers. Subjects include recreational opportunities, history, geology, and biology of the area. Schedules are posted at campgrounds and ranger stations.

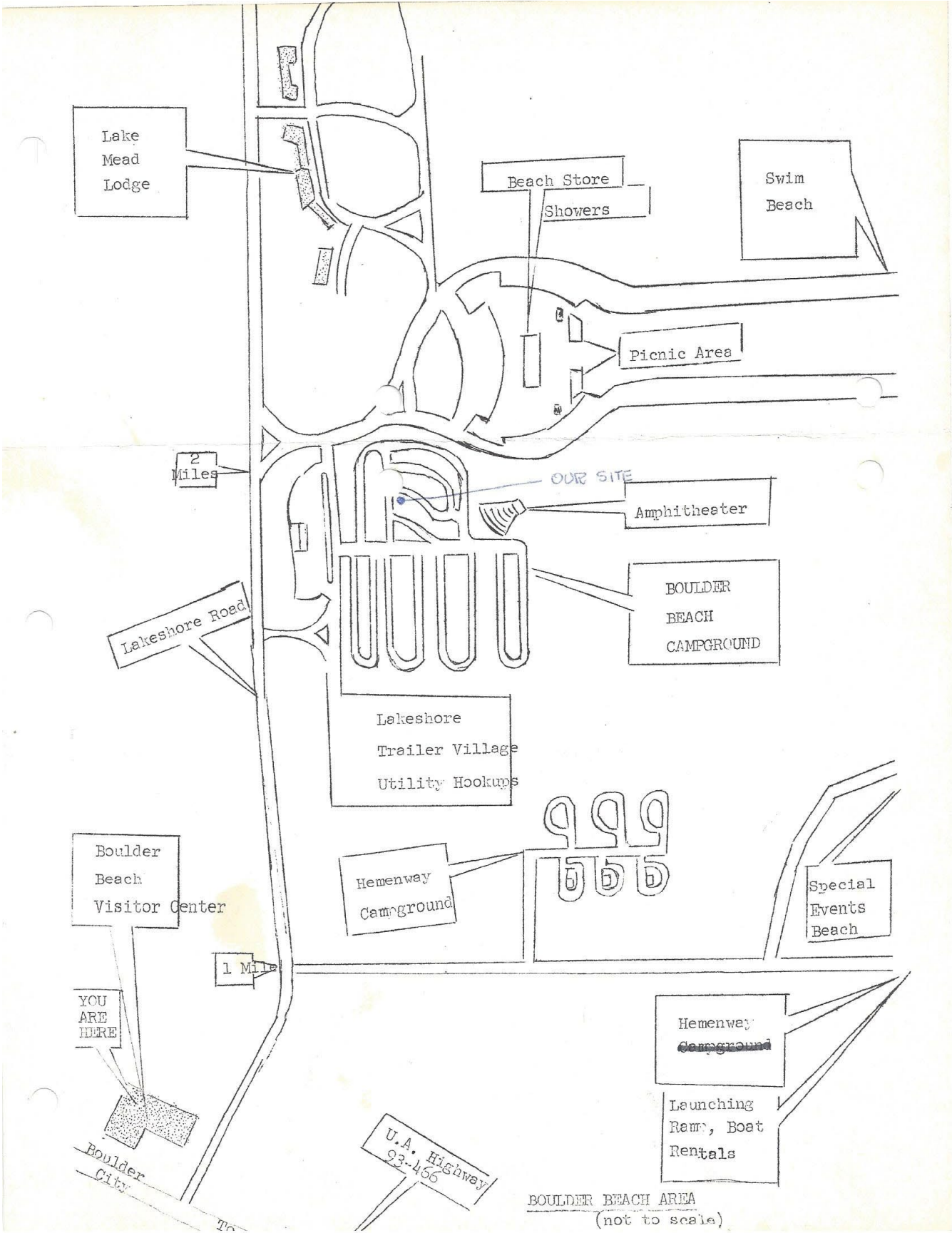
Many of the area's features are explained by exhibits at developed centers around the lakes.

The Mead-Mohave Association, a nonprofit organization, has sales outlets for publications and maps at Boulder Beach Visitor Center and ranger information stations.

Fishing. A Nevada or Arizona fishing license is required; to it must be affixed a stamp from the other State if you fish from a boat.

Swimming. Both lakes are ideal for swimming many months of the year, but waters of the upper section of Lake Mohave are extremely cold. Public swimming beaches, available in summer at Boulder Beach and Katherine, have diving floats and safety lines; lifeguards are on





SUNDAY 14TH SEPT 1969

This was to be a quiet day. The morning was sunny and we spent it sitting on the beach and bathing though earlier we took a short trip along the lake to San Veger Bay where we ~~for~~ strolled about the marina looking at the boats. After lunch we piled into the car and towed the Visitors Centre. Then along the main road a few miles to the Hoover Dam where we stopped to look over the dam. On the way back the kids wanted to stop to climb an old train at the side of the road. Again the day ended quietly.

MONDAY 15th SEPT 1969

We had decided to over into Central California for the remaining 5 days of our vacation and thus a longish drive was required today since we set our sights on Lake Isabella. Early we rose packed and spent the morning driving back through the Mojave, collecting some extra cash at Barstow and having lunch at the junction of (58) and (315) after the long morning. Off again N. on (315) through the desert finally climbing the Walker Pass (5250') on (178) where we passed through a 'forest' of Joshua Trees - those weird cactus-palms which appear in places in the Mojave. We almost ran out of gas but finally made it into Weldon in the green valley around Lake Isabella. Here there were many camp-sites to choose from - many actually deserted. We chose on the W. side at a place called Boulder Gulch - pleasant, but a little dirty. Then we drove back to the local store to shop and ended the day with a big fire utilizing the supply of driftwood and residual wood from other sites.



Lake Isabella



Lake Isabella



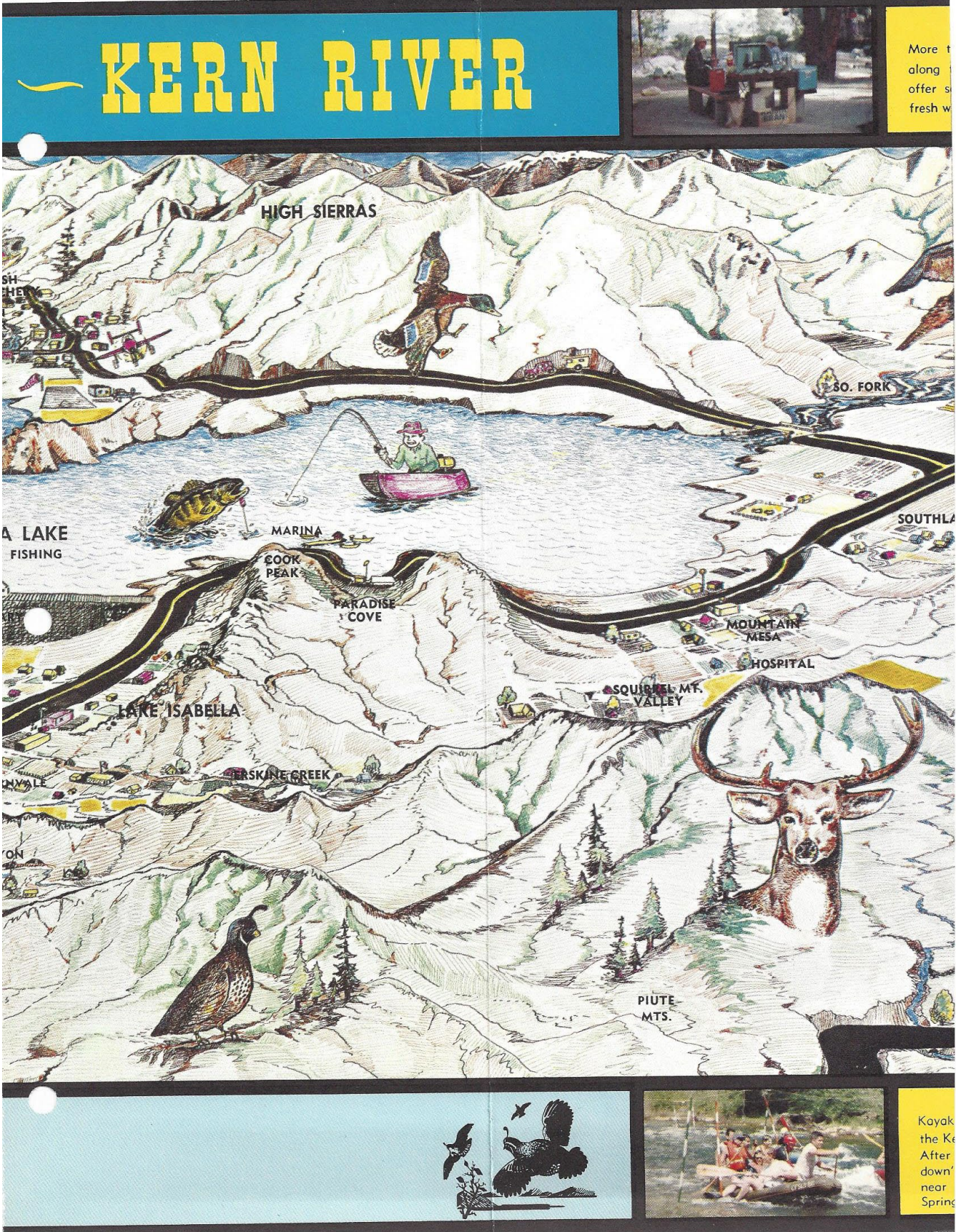
Lake Isabella



Lake Isabella







TUESDAY 16TH SEPT. 1969

A lazy day - spent most of the morning lying in the sun and swimming at French Gulch a mile or so from our camp-site. Took the car down on the sand at this little cove - all shore - very pleasant. Later in the day we toured around and visited the small resort of Kenmore on the lake. Ended the day with a big fire.

WEDNESDAY 17TH SEPT. 1969

We packed up as we had breakfast and soon left Lake Isabella travelling along a very windy and slow road over the mountains ~~and~~ and dropping down into the San Joaquin valley. Nice ranch country in the foothills on the way down - pleasant wooded rolling ranch land. Then a much faster trip ~~from~~ along route 65 north through Porterville and Lindsay. Climbing again along the road to Sequoia National Park. Stopped by the Warner Tominus Reservoir for lunch. Then a very winding road back and forth up the mountain into Sequoia N.P. Finally at the top in Giant Forest where the plugs needed changing. Found a pleasant campsite above and beside the river at Lodgepole. Spent the rest of the day pottering around, visiting the Visitors Center at the entrance to the campground, Shopped in Giant Forest and collected firewood for a ~~very~~ nice fire.

Sequoia and Kings Canyon

NATIONAL PARKS • CALIFORNIA

"WATCH YOUR CHILDREN"
Children of negligent parents
become injured or lost

* GOVERNMENT PRINTING OFFICE: 1969-347-048/20
REPRINT 1969

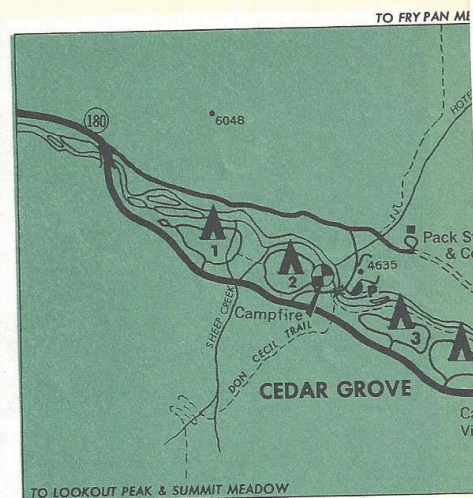
ADMINISTRATION

Sequoia and Kings Canyon National Parks are administered by the National Park Service, U.S. Department of the Interior.

The superintendent's headquarters are at Ash Mountain. His address is: Sequoia and Kings Canyon National Parks, Three Rivers, Calif. 93271.

THE DEPARTMENT OF THE INTERIOR—the Nation's principal natural resource agency—has a special obligation to assure that our expendable resources are conserved, that renewable resources are managed to produce optimum benefits, and that all resources contribute to the progress and prosperity of the United States, now and in the future.

U. S. Department of the Interior
National Park Service



WHAT TO SEE

The features of these parks are so numerous and so diverse you will have a wide choice of things to see. What you find will depend upon your interest, your mode of travel, and your time.

GIANT FOREST, SEQUOIA NATIONAL PARK. Some of the finest groups of giant sequoias can be seen at Giant Forest. Here, too, is the General Sherman Tree, largest and one of the oldest of living things. Its age is estimated at more than 3,000 years. Here also you can see Moro Rock, Crescent Meadow, Crystal Cave, and Takopah Valley. Short climbs to Moro Rock and Little Baldy open up superb views of valley, forest, and high mountain scenery. Tours through Crystal Cave are conducted daily, mid-June through Labor Day, from 9 a.m. until 3 p.m., ½-mile walk; wraps needed; entrance fee.

GRANT GROVE, KINGS CANYON NATIONAL PARK. Grant Grove is somewhat separated from the main body of the park. In it is the General Grant Tree, second in size only to the General Sherman Tree. Another notable giant, is the General Lee Tree, second largest in the grove. In striking contrast to these living survivors of antiquity is the weathered Centennial Stump, remnant of a tree cut in 1875 to provide an exhibit for the Philadelphia World's Fair. Big Stump Basin, where age-old trees were cut during the logging era, is nearby.

KINGS CANYON AND CEDAR GROVE. Kings Canyon is a steep-walled valley of the South Fork of the Kings River. Towering peaks rise to heights of 1 mile or more above the stream. Cedar Grove is the center of activity in Kings Canyon and a popular base for extensive trips into the high country. Zumwalt Meadow, Roaring River Falls, and Mist Falls are readily accessible.

THE HIGH COUNTRY. This is a vast region of unbroken wilderness, of mountains, canyon rivers, lakes, and meadows. Evolution Basin



Sequoia National Park



Sequoia National Park



Sequoia National Park



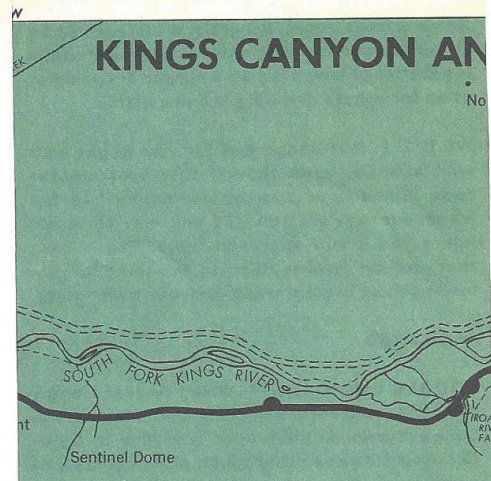
Sequoia National Park



Sequoia National Park



Sequoia National Park



Kern Canyon, Tehipite Valley, and Simpson Meadow are a few of the places where you can find the spectacular and unspoiled scene. Only by trail can you gain acquaintance with this rugged but friendly country. The Sierra crest, ranging in elevation from 11,000 feet to 14,495 feet at the summit of Mount Whitney, forms the eastern boundary of the parks. There are several hundred miles of trail; those in the higher elevations are generally open from late June through September.

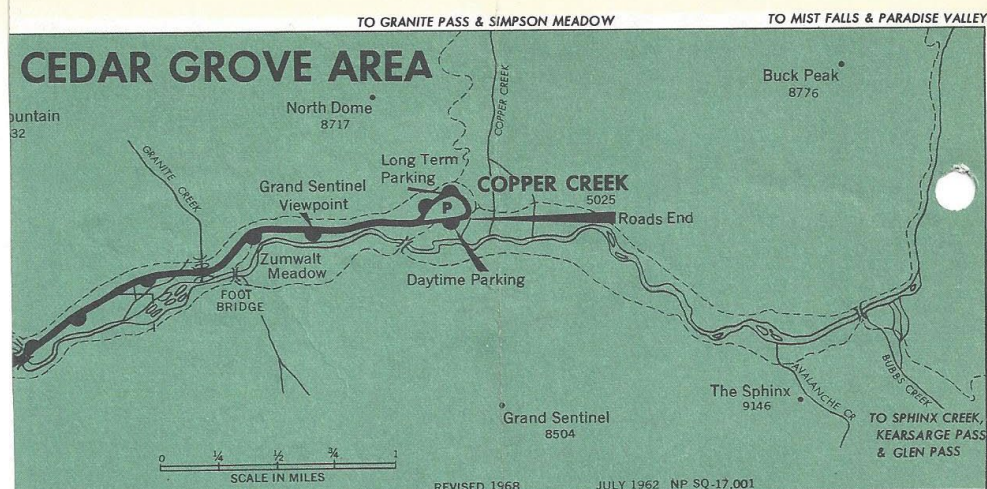
THINGS TO DO

SCENIC DRIVES. Generals Highway (open all year) is the main road that connects Sequoia and Kings Canyon. It winds through the sequoia belt and covers 46 miles (2 hours driving time) from the Ash Mountain Entrance to Grant Grove. Branching off from it are other roads that take you to other attractions or within short trail distances of them. From Grant Grove, you travel 30 miles on Calif. 180 through Sequoia National Forest and along the South Fork of the Kings River to Cedar Grove. The road then continues for 6 miles through the canyon to Copper Creek. Here you are beneath solid granite walls that tower thousands of feet above the canyon floor.

HIKING. Self-guiding nature trails are available at Giant Forest and Grant Grove. Numerous trails wind through the Giant Forest, Grant Grove, and Cedar Grove areas. More than 900 miles of trails invite you to visit the high country.

SADDLE HORSES. You can rent saddle horses at corrals near Giant Forest (at Wolverton), Grant Grove, or Cedar Grove; in Owens Valley, on the east side of the Sierra; and at many other places around the borders of the parks.

FISHING. You will find trout fishing in almost every lake and stream. Park waters contain brook, brown, rainbow, and golden trout. The most popular fishing spots are along the Kings River and the forks of the Kaweah River. You



can buy a California fishing license at the stores. Certain closures and special regulations are in effect from time to time, so check at a visitor center, at a bulletin board, or with a ranger before you fish.

NATURALIST SERVICES

The National Park Service provides many services in the parks to help you understand these areas and their special features. These include:

GUIDED TRIPS. Schedules for naturalist-conducted walks, through the big-tree areas and to important scenic points in summer, are posted on bulletin boards. Most walks are one-half day or less in duration.

CAMPFIRE PROGRAMS. Illustrated talks on various aspects of the two parks are given at evening campfire programs at Giant Forest, Grant Grove, Dorst, Lodgepole, and Cedar Grove in summer. Weekly programs are posted.

VISITOR CENTERS. Open daily at both Lodgepole and Grant Grove, these feature exhibits and information on the sequoias, park wildlife, geology, history, and Indians.

YOU NEED TO KNOW

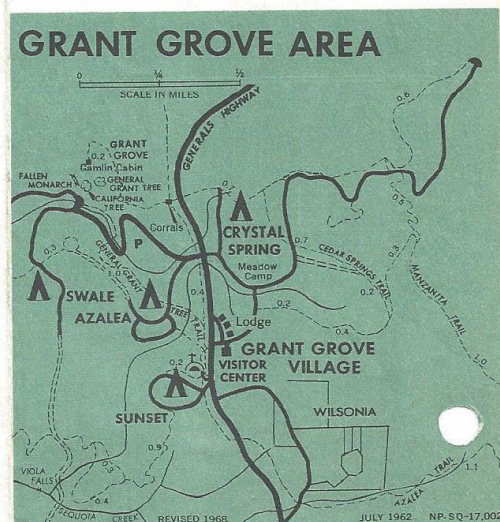
ABOUT YOURSELF AND FAMILY. Avoid overexertion. Accustom yourself gradually to strenuous hikes and to the higher elevation of the mountains. Stay on the trails. Avoid trips alone. Tell one of your party or a park ranger where you are going and when you expect to be back. Be sure that your children do not get lost.

YOUR CAR. Some mountain roads are crooked and steep—so always drive on your own side. Drive slowly and shift into second or low gear to control your speed. Continuous use of your brakes may cause them to overheat, possibly resulting in loss of control of your car. Wherever you drive, observe posted speed limits; practice the courtesies of the road.

YOUR CAMP. Camp only in a designated area. On trail trips, camp where others have camped before. Permits, required for trailside or back-country campfires, can be obtained at ranger stations. Build your campfire in the fireplace provided. Use refuse receptacles.

PETS. You may take your pets into the parks. However, for the protection of park wildlife, they must be kept under physical control at all times—caged, leashed, or confined in your car—and they may not be taken on park trails, to campfire programs, or into visitor centers, stores, and eating establishments.

FIRES AND SMOKING. Do not smoke while traveling along the trails. If you want to smoke, stop, clear the ground around you, smoke, put it out, and then move on. Break your match before throwing it away. Never leave a campfire unattended; always extinguish it with water. During the fire season, from about late June to October, smoking in moving cars is not permitted below 6,000 feet elevation.



[Back to table of contents](#)

Last updated 7/30/99.
Christopher E. Brennen

DIOCESE OF ARMAGH



ST. PATRICK'S CHURCH
DONAGHMORE

PARISH OF DONAGHMORE UPPER

Order of Service

for the

Dedication of Eagle Lectern
and other Gifts

by

His Grace The Most Reverend JAMES McCANN, Ph.D., D.D.
Archbishop of Armagh.

SUNDAY, 4th MAY, 1969 at 3.30 p.m.

LIST OF GIFTS

EAGLE LECTERN in memory of Edward William Cyril Grieve presented by his aunt Eileen Maud Brennen.

TWO SOLID SILVER CHALICES and FLAGON in memory of Bernard Macauley and Susan Dorothea Brennen presented by their daughter Eileen Maud.

TWO CHANCEL CHAIRS presented by Eileen Maud Brennen in memory of her brothers Alfred, Herbert, Cecil, Wilfred, Ernest and Mervyn Brennen.

CHANCEL CARPETING the gift of Parishioners.

RECOVERING of CUSHIONS in choir pews, material provided by Parishioners and all the work carried out by Mrs. Harold Fleming.

VESTRY TABLE presented by the Parishioners.

1969

January

~~Jan~~ with Mike + Maggie Lewis in New York. New Year 1968/69

Boston:

CAMPING TRIPS

March 1969

① Trip

1st Camping - Harbor Freeway - San Diego Freeway - Newport Beach - along Route ①
Lunch at San Clemente - ① to Oceanide → ⑦⑧ to Escandelo
- Ramona, Santa Ysabel into Anza-Borrego desert state park - cactus
and desert - turned south to Agua Caliente Hot Springs - camped at
(Vallecito?) Camp - coyotes in the night - all kinds of animal sounds
- unbelievable considering the darkness and complete lack of any
sign of life during the day. Sun Drove on ⑦⑧ this
desert (complete for most part) to ⑧⑥ then N. to Salton City
parked on beach - swim + sunned most of the day - Salton
Sea is 250ft below sea level - salty - shallow kids
loved to bathe in quiet lake, formed in 19 when Colorado
river ran away during attempt to build railroad - late
afternoon drove N. on ⑧⑥, N. on ⑧ Indio, N. on ③③ to
Palm Springs - edge of desert - mountains rising precipitously
behind - 4 levels of climate between floor land and snow
visible on the peaks - then home, N. ③③, N and W on
⑩ to San Bernardino and Pasadena.

March
Weekend

With John, Valerie + Timothy Speight April Weekend

② ↓ San Bernardino Freeway + ⑩ to Banning ③③ to Palm Springs (this)
Sand Storm - Snow capped peaks, visible above sand storm
- beautiful) ^{Sierra of Jacinto Mountains.}
Palm Springs to Salton City Campground on beach - tables

April
Weekend

10 yards from lake - swim, bathed all day - campfire (a little
in evening - same Sunday - late afternoon home via
N. on ⑧⑥, N+W on ⑩.

1969

③

JUNE 4TH 12 NOON - Ventura Freeway → Ventura {101} thro to Santa Barbara - lunch on beach - then {101} to San Luis Obispo, ① → San Simeon - camped for night at San Simeon, Hearst County Park. June 5th - N. on ① wild mountains coast begins just north of San Simeon. Visited Lopez Point Stopped numerous spots, Lopez Pt, nr. John Little State Park, Pfeiffer Big Sur State Park - then Point Lobos at Carmel - beautiful pine forested coast - lunch in quaint Carmel town - visited beach, then 17 mile drive around Monterey Peninsula - saw seals, etc. Then checked into Monterey Motor Lodge - evening we visited Fisherman's Wharf bathed in motel pool, and watched T.V. June 6th I went to the U.S. Naval Postgraduate School in Monterey, gave lecture stayed until 3.30 pm. whilst D. + kids walked around Monterey. Then we all went to Dennis the Menace park, bathed in motel pool, a very inventive child's playground and down to Cannery Row of Steinbeck fame, which is very much as we had pictured it - dilapidated corrugated iron warehouses (- numerous large tubes!) - only slight commercialisation - finally we drove out to the peninsula and had dinner by the sea. Then late bath in pool, watched T.V. bed. June 7th Up and away early N. on ①, 156 and {101} to San Francisco. Visited Fisherman's Wharf, rode on cable cars, visited Chinatown, and the Golden Gate Bridge. Car not misfiring somewhat / unable to locate trouble. Late afternoon left S.F. by Bay Bridge, travelling thro' Oakland and out on 50 to Tracy - tried to find the with zero success - the flat area was flooded in places due to recent rains in San Joaquin valley - eventually drove on on 99 to the Mc Connell State Park just north of Merced - very pretty wooded glade - camped for night. June 8th Drove home on route 99 (car found to need new plugs at Delano) stopped off at the Tejan pass to visit the rudimentary remains of an old U.S. Cavalry fort at FORT TEJON - drove home to Pasadena on 99

Dana swims length of pool in blue → dist.

Rugby Results

Southern California Rugby Union

Caltech 16, UC San Diego 3

Palo Alto 9, Long Beach 3

WANTED SALES MANAGER

Company on the GO has a need for one "Power" Sales Person to head small but aggressive R.E. Land Sales Team. If you have the leadership, fight & drive, call Mr. Harpor at . . .

783-3298



AIRMAIL

Inland Revenue
H.M. INSPECTOR OF TAXES
PUBLIC DEPARTMENTS (TWO)
Ty Glas Road, CARDIFF, CF4 5YA
Telephone: Cardiff 753271, ext. 104
H.M. Inspector in Charge: J. W. COLES

Your reference:

Please quote, please quote:

Please Quote in any
Future Correspondence:

Please attach this part
to your reply.

84/BRE/C3

JH

84/BRE/C3

JH

26th September, 1969.

Dr. C. Brennan.

Dear Sir,

With reference to your recent claim to repayment, you will remain provisionally resident, ordinarily resident in the United Kingdom, as the absence abroad may not include a complete Income Tax year. You are chargeable on overseas emoluments under Case III of Schedule E to the extent that these are received in the United Kingdom.

Double Taxation Relief will be due if charged both United Kingdom and overseas tax on the same income.

Your liability for 1968/69 cannot be reviewed until after the 5th April, 1970 when you should let me have details of your overseas emoluments received in the United Kingdom during the year 1968/69 and 1969/70. If however, you should return to the United Kingdom before the 6th April, 1970, the position will then be reviewed.

Yours faithfully,

J. J. R.
H.M. Inspector of Taxes

J.J.R.

CALIFORNIA INSTITUTE OF TECHNOLOGY

PASADENA, CALIFORNIA 91109

OFFICE OF THE PRESIDENT

November 3, 1969

Dr. Christopher Brennen
1915 Las Lunas Street
Pasadena, California 91107

Dear Dr. Brennen:

I am happy to inform you officially that the Board of Trustees, at its meeting on November 1, 1969, reappointed you Research Fellow in Engineering Science for one year, effective January 1, 1970, with an increase in salary to \$10,600 per annum. This action was taken upon the recommendation of the Division of Engineering and Applied Science and with the approval of the Provost and the President.

As you know, Fulbright grantees must obtain permission from their U. S. government sponsor to extend their stay in this country. We assume that you will be writing soon for this approval and for a further extension of your travel grant; we are sending a copy of this letter to the appropriate office in Washington, D. C.

For our records, will you kindly indicate your acceptance of this reappointment on the enclosed copy of this letter and return it to the Faculty Office.

Very truly yours,



Harold Brown
President

cc: Provost
F. H. Clauser
G. E. Haskins



MINISTRY OF TECHNOLOGY

Est. 4(a) 2.

Room 192A,

Shell Mex House, Strand, LONDON W.C.2

Telex: 22241 Telegrams: Mintec London Telex

Telephone: 01-836 1207, ext. 160.

Our reference: HF/B/2833/Est. 4(a) 2.

17 January, 1969.

Your reference:

Dear Mr. Brennen,

F.S.S.U.

I have to inform you that in accordance with your instructions, a payable order on H.M. Paymaster General for the sum of £485.14.6d. in respect of the net proceeds of policy No. L08478 surrendered on your behalf, has today been forwarded to the Manager Belfast Banking Company Ltd., Magherafelt, Co. Derry, Northern Ireland.

This amount relates to the net sum after the amount of £164.7.6d. has been deducted from the total proceeds.

Yours sincerely,

C. Brennen Esq.,
Engineering Science Dept.
California Institute of Technology,
Pasadena
California, 91109
U.S.A.

HOUSE RULES FOR TEMPO NORTH APARTMENTS

The following regulations must be observed in order for all tenants to get maximum enjoyment from residence at TEMPO NORTH. We feel if we could have full cooperation in keeping these rules in effect, it would result in better living and playing conditions for everyone.

1. All rents are due and payable on the FIRST DAY of each month to the Manager. A THIRTY (30) day written notice is required by owner before vacating the apartment. Parents will assume full responsibility for their own children, and any children left in their charge.
2. In consideration of others, tenants or their guests are not to make any disturbing noise at any time before 9:00 A.M. or after 10:30 P.M.
3. Waste baskets, milk bottles, brooms, mops and similar articles must be kept inside and out of view. Hang nothing on the railings of the building. Do not shake rugs from balconies.
4. LESSEE shall pay for broken, damaged or missing articles furnished by LESSOR and for damages caused by them, their guests or family, to the building, it's fixtures, furniture or equipment.
5. LESSOR will not be responsible for loss of property of LESSEE, their guests or families through theft or otherwise.
6. No guests will be allowe to park in the garages at any time. NO parking in drive-way of building.
7. Laundry must be removed from the washers and dryers promptly and no clothes or other material may be left in laundry room over night. We request that children not be permitted in laundry room and that we have cooperation in keeping the laundry room clean.
8. Children are not allowed to play on the stairs at any time or in the yard before 9:00 A.M. and shall return indoors by 8:00 P.M.
9. No food is permitted on the stairways or in the yard except under supervision at the picnic table.
10. We request that all children be instructed by their parents that sand shall not be taken outside the fenced area in the play yard.

Your cooperation is earnestly requested.

Thank you,

The Management.

A brief introduction to Theodore Yao-Tsu Wu

by Thomas Y. Hou*

Abstract. Professor Theodore Yaotsu Wu has a very distinguished career and is a true gentleman. He has lived a wonderful and very colorful life. In this article, I will give a brief introduction of Professor Wu, describing his early life in China, his graduate study and his professional development at Caltech. Many of the stories that I have adopted in this article are based on the oral history that was documented during a series of interviews conducted at Caltech in 2002.[†]

Early Life

Professor Theodore Yaotsu Wu was born on March 20, 1924 in a small village in Changzhou, Jiangsu Province, China. His grandfather was a well-known Chinese doctor who specialized in surgery. He not only treated many patients in his house, he would also go to the north side of the village on the odd days and the south side on the even days to treat patients free of charge. His father attended college and graduated with a degree in economics and finance. His mother graduated from high school and majored in literature. After graduation, his father served in the Department of Transportation of the government. He managed to acquire for the government quite a few of the railroads that were built by foreign enterprises. His father did a great job in nationalizing these railroads. The trade was regarded as fair and square to all involved.

Professor Wu left his hometown when he was 9 years old and moved to Beijing with his family as his father was helping to nationalize a railroad built by a French enterprise between Shijia-zhuang in Hebei Province and Taiyuan in Shanxi Province. The nationalization went very peacefully with excellent cooperation between the original and the new owners. Professor Wu and his family lived in a modern compound, a charming, all-walled-in town. This compound was built for the French people when they were building the railroad. It was very much like a French village. Some of the French people still lived there. Professor Wu made very good friendships with them. Then later on they gradually returned to France.

When the Sino-Japanese War broke out at the Marco Polo Bridge (Lugou Bridge) in 1937, Professor Wu had just finished his first year of junior high school in Beijing. He took the penultimate train and his father took the very last train leaving Beijing, and they returned to their hometown. In the following year, he went to Changsha to attend the well-known Mingde School that was founded by Dr. Yuan-Tan Hu (his father also attended this school). Here he received an excellent education. In the third year of his junior high school, his father decided to send him to a private school in Shanghai. But this did not last long. Soon Professor Wu and his fellow classmates (about 24 of them) decided to leave Shanghai for the wartime capital Chongqing in May 1942. They walked over 1,000 miles through the battlefields to reach Chongqing and endured many hardships along the way. In particular, when they traveled south to Fujian Province, many people suffered from the plague or malaria. Many years later, Professor Wu read a newspaper report about evidence of bacterial warfare carried out by the Japanese Army, with the

* Applied and Comput. Math., Caltech, Pasadena, CA 91125
E-mail: hou@cms.caltech.edu

[†] More details can be found at <http://oralhistories.library.caltech.edu/161/1/Wu-OHO.pdf>.

time and place coinciding with their personal experience.

By the time they got to Chongqing, it was already November of 1942. They were told that they would have to come back the next year since the universities had already been in session for two months. Professor Wu and his fellow classmates did not accept this decision. They requested that they be given the opportunity to take the hardest exam to prove that they could do it. With the blessing from the Ministry of Education, they took the exam and did extremely well. Impressed by their performance, they were admitted to different universities in the same year without any delay. Professor Wu was admitted to the Chaio-Tung University, which had moved to the wartime capital from Shanghai. At that time, because Professor Wu saw that all those bombers were Japanese, he decided to major in aeronautics, hoping to build more planes to defend his country.

Professor Wu studied in Chongqing for three and a half years until 1945 when Japan surrendered unconditionally. Then he moved back to Shanghai with the rest of the university. In Chongqing, he received a great education even under the Japanese bombing. He attributed this to all his teachers. Professor Wu graduated in 1946 and stayed on one year as a lecturer. He originally planned to stay and help rebuild China after the war. So he did not apply to study abroad. But then his father convinced him that he could be in a much better position to serve his country if he received a solid education abroad. At this time, he already missed the application deadline to apply to the major universities in the US. But one of his friends was at Iowa State University. They admitted students four times a year. So he went to Iowa State University (called Iowa State College at the time). He studied at Iowa State College for three quarters and got his master degree. In the following year, he was accepted by Caltech aeronautics for his Ph.D.

Graduate Study at Caltech

Professor Wu came to Caltech in 1949. There were very few Chinese students or professors at Caltech. Hsue-Shen Tsien (Xuesen Qian) and Yuan-Cheng (Bert) Fung were two professors at the time. Tsien was one of the two first Goddard Professors (the other one was given to Princeton). He was just recruited back to Caltech from MIT. One day, while eating lunch in the Greasy Spoon dining hall, all of a sudden, there was a distinguished professor sitting opposite to Professor Wu. After a few casual conversations, this professor asked him "Where are you from?", "Where is your family? Is your family all right?". Then he introduced himself "I am Robert Millikan" (our founding President). Professor Wu was so shocked and stood



Figure 1. A young Theodore Wu with his parents, boarding an airplane.



Figure 2. Late-night studying at Iowa State University, 1947 or 1948.

up to pay his respect. He was greatly moved that Millikan came to have lunch with him and had an interest to ask him these questions. Millikan said "Caltech is a small institute, and we are privileged enough to take the time to do these things". This was Professor Wu's first amazing experience at Caltech. He said that it was really very very nice and very touching. This showed the special and very unique culture of Caltech that was very different from that of other major universities.

In aeronautics, Professor Wu studied for his Ph.D. under the supervision of Paco A. Lagerstrom, a professor in Applied Mathematics. He shared an office with Julian Cole who was a very distinguished scholar and finished his PhD in aeronautics in 1949

under the supervision of Lagerstrom. Julian Cole is well known for his groundbreaking work in mathematical applications to aerodynamics and transonic flow, and in non-linear equations more generally. Professor Wu had benefited tremendously from interacting with him on a daily basis. He could observe in close distance the thinking process of Cole, how he made mistakes, how he spotted his mistakes and how he corrected his mistakes. He said that he learned a great deal from Cole and the research group led by Lagerstrom. And that group, later on, became the center of a new theoretical development called asymptotic method and perturbation theory.

Professor Wu was so happy to be part of this dynamic group that consisted of Julian Cole and Saul Kaplun and was full of energy and great ideas. They would bring up all sorts of exciting, challenging problems to solve. They worked late nights and would go out for a midnight snack and then come back again and work. The method developed by applying the so-called matched perturbation principle was widely used for a general class of problems in science and engineering afterwards. Many people followed up their work and used the method developed by his group in their own applications. Professor Wu said that this was like the sowing of a gem seed that could blossom and bear fruit in scientific gardens. Professor Wu got his Ph.D. in 1952 magna cum laude.

During his graduate student days, Professor Wu was fortunate to know Professor Tsien. Professor Tsien told Professor Wu that during the winter months Professor von Karman would be back in Pasadena. This gave them the opportunity to visit him at his house. Professor Wu learned that in the previous years von Karman and Tsien had held a few rounds of study sessions on water waves and hydrodynamics. So he was stimulated to look into this new field of hydrodynamics, and became quite interested. After reading some of the notes, he decided to change his field from aeronautics to hydrodynamics. After he got his Ph.D., Professor Tsien offered him a research fellow position at Caltech to work on hydrodynamics. Professor Wu studied the hydrofoils of finite span in which one takes the wing of an airplane and submerges it in the water to some depth, to lift the vehicle above the water surface. This was known to be a very difficult problem. Professor Wu took on this challenging problem and made a very concentrated study, which turned out to be a very interesting work. He later published his findings, with a note of gratitude to Tsien and von Karman for their encouragement and stimulation and for pointing out this new direction to him.

Research Career at Caltech as a Faculty Member

After three years as a research fellow, Professor Wu became an assistant professor in 1955 in the newly established engineering science department. This new department emphasized the interdisciplinary research with a strong theoretical flavor. They were not traditional engineers or traditional physicist/mathematicians. Professors Charles De Prima and Hsue-Shen Tsien were among the founding members of this department. In his academic career, Professor Wu has shown a broad and versatile interest in research, including flows of compressible, viscous and heat-conducting fluids; free-streamline theory of cavities, jets and wakes; water waves and free-surface flows, mechanics of fish swimming and bird/insect flight; wind and ocean-current energy, internal waves in the ocean, mathematics of nonlinear evolution equations, etc. During his early years at Caltech he has also contributed to the field of naval architecture and been involved in the International Towing Tank Conferences in the 1960s.

Of his many contributions, I would like to highlight his research contributions on studies of low-Reynolds-number hydrodynamics, microorganism locomotion and related biophysical phenomena. His interest in this field was inspired by the earlier work of G. I. Taylor. The first paper Professor Taylor wrote was on microorganisms. The second one was on larger animals, between macro and micro (Taylor called them elongated swimming animals). His work inspired many people to work on this field. Another influential figure in this field was Sir. James Lighthill, who later became secretary of the Royal Society for a number of years. He wrote a paper [Lighthill, M. J., "Note on the Swimming of Slender Fish," *Journal of Fluid Mechanics*, 9 (1960), pp. 305-317]. Professor Wu immediately became interested in his work and started to work on fish locomotion and bird flight. In the following year, Professor Wu published his first paper on this subject [Wu, T. Y., "Swimming of a Waving Plate," *Journal of Fluid Mechanics*, 10 (1961), pp. 321-344]. Then Professor Wu and Professor Lighthill started to interact. Professor Wu invited Professor Lighthill to visit Caltech, and Professor Lighthill arranged a visit of Professor Wu to Cambridge. They became quite close.

Then later on, without telling each other, they started to work on microorganisms again. Professor Wu worked on microorganisms called flagellated and ciliated microorganisms. He started first on the large animals and did the experiment in the hydrolab using the water tunnel. He actually put mechanical models as well as live specimens in there. His research group

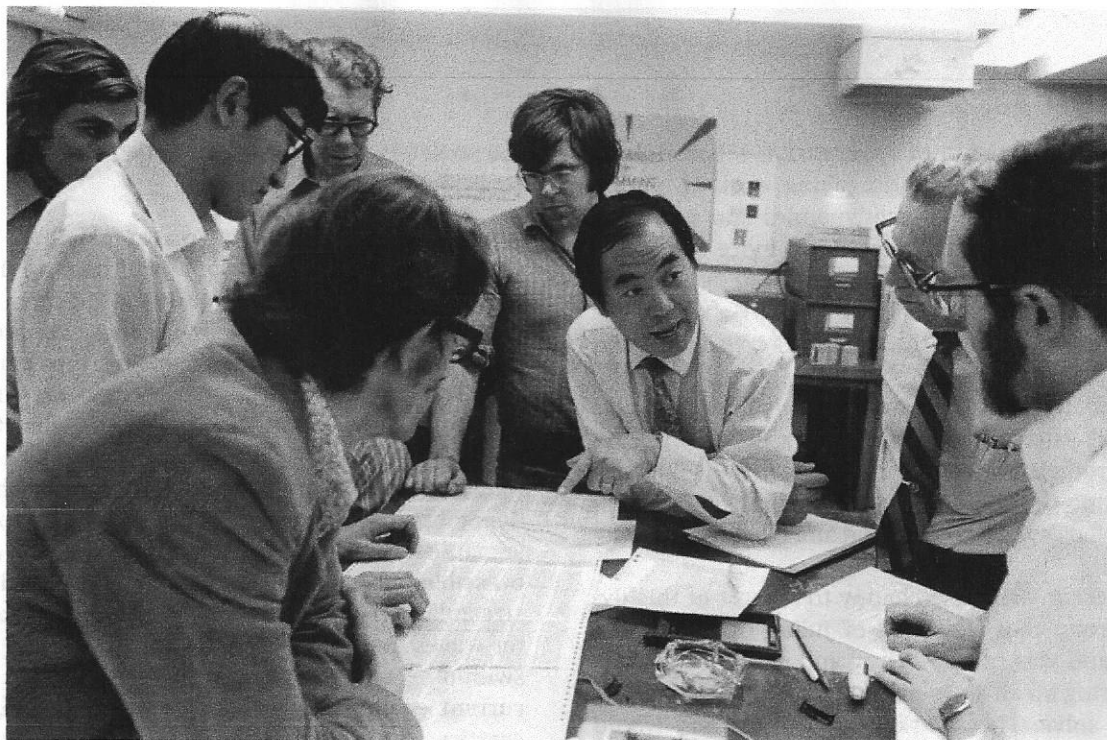


Figure 3. At Caltech in the early 1970s with his research group. Prof. Emeritus Christopher Brennen is at front left, and Prof. Howard Winet at front right. Photo courtesy of Floyd Clark.

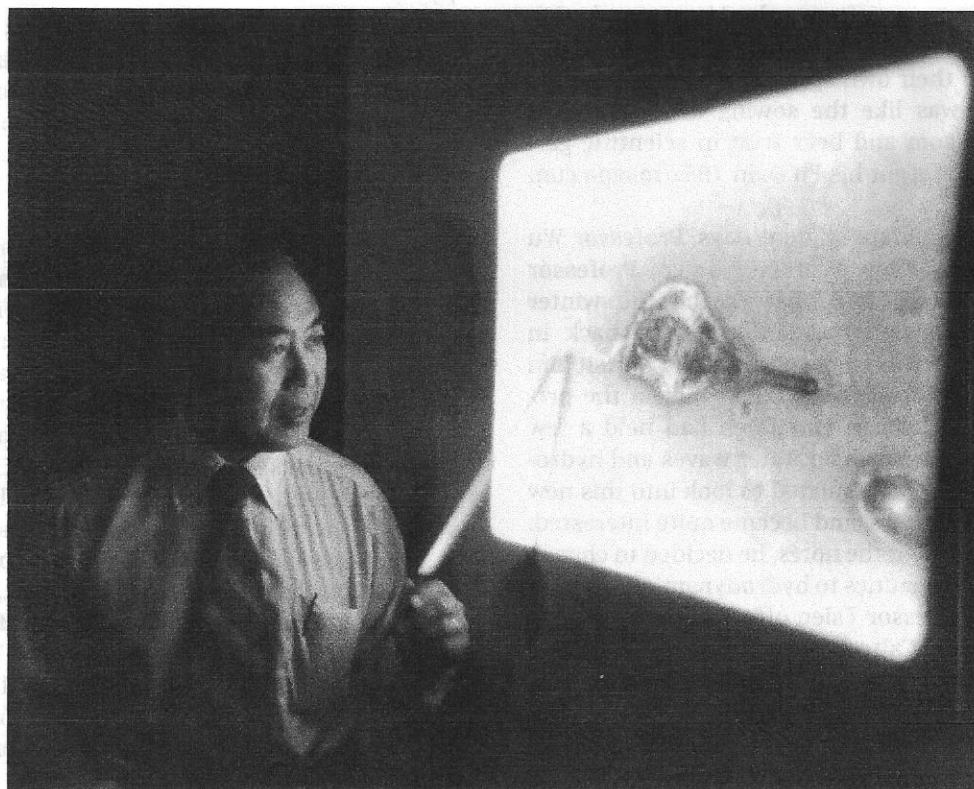


Figure 4. Giving a presentation in 1979.

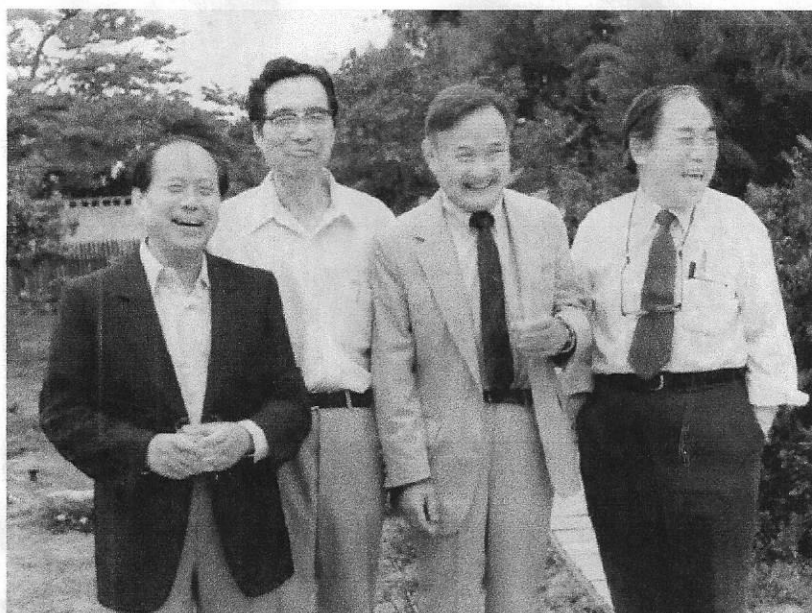


Figure 5. Laughing with good friends. From left to right: Zhemin Zheng (MS and PhD Caltech), Prof. Emeritus Bert Yuan-Cheng Fung (UCSD), Prof. Emeritus Chia-Shun Yih (Univ. of Michigan), and Theodore Wu.

would put them in there, but it was too small for the fish to go through – upstream and downstream. Then they would watch them, and recorded all the data they needed. Then, later on, when they started to move into the subject of flagellar and ciliary locomotion, Professor Wu had two physiologists join his group, biology graduates from UCLA, Howard Winet and Anthony T. W. Cheung. This line of research had generated a number of very important results and attracted a number of very talented students to this project.

In 1974, Professor Wu organized the first international conference on biofluidynamics at Caltech. The term “biofluidynamics” (not separated, not hyphenated, all one word) was coined by Lighthill. Lighthill and other biologists, their biology school and also zoology school, their professors also came. And people came from all over the world. The symposium was called Swimming and Flying in Nature, and was a great success.

This is a natural place to mention Professor Bert Yuan-Cheng Fung. He was a professor in aeronautics at Caltech at that time. He graduated from aeronautics *summa cum laude* at Caltech in 1948. He soon started to work in aeroelasticity-airplane wing vibrations. Then he became interested in biomechanics partly because his mother was ill and he wanted to help to find some ways of therapy. He and Professor Harold Wayland worked together. Soon it became clear that they needed to form a group. Unfortunately, Caltech could not provide the resources to form a big group. At this point, UC San Diego

approached Prof. Fung and made him an offer that he could not refuse. So he left Caltech to join UCSD, which was a big loss for Caltech. Professor Fung played a very important role in persuading the Whitaker Foundation to lend their strong support to bioengineering. This foundation is now sponsoring work in that field at about twenty universities. Professor Fung’s work on biomechanics has been tremendously important and influential. His students have now emerged as the leaders in this field. Prof. Fung has received many honors and awards for his outstanding contributions. He is a member of the US National Academy of Sciences, National Academy of Engineering, and Institute of Medicine, and a recipient of the National Medal of Science.

Life After Retirement

Professor Wu retired from Caltech in 1996. He has continued to be very active in his research and has devoted almost all his time to his book project in recent years. Since his retirement, Professor Wu has made important contributions on forced generation of nonlinear waves at resonance of soliton-bearing systems, three-dimensional vortex dynamics, and coastal oceanography. His new theoretical model for fully nonlinear dispersive waves in water of variable depth is ideal for investigating mitigation and control of such natural hazards as tsunami, storm surge, and hurricanes. The new idea and concept, based on devising means for active and passive control and mitigation of devastating waves and fluid

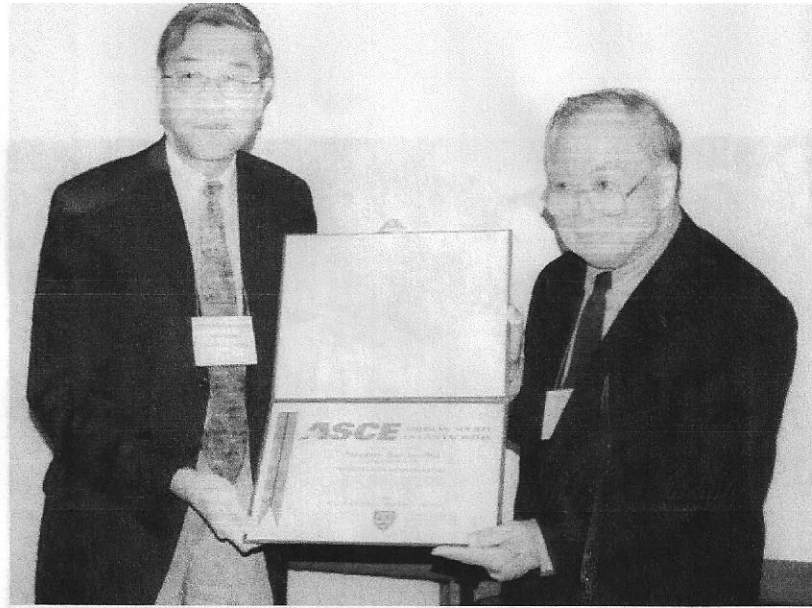


Figure 6. Prof. Allen T. Chwang presents an ASCE award to Prof. Wu at Vancouver, BC in 2004.

flows, may germinate growth of a new field. Revisiting bio-physics, he has developed a fully nonlinear lifting theory for modeling bird flying and fish swimming.

In September 26, 2014, Caltech organized a one-day symposium to celebrate Professor Wu's 90th birthday. Professor Christopher Brennen and myself were the main organizers with strong support from Professor Kaushik Bhattacharya (the Executive Officer of Mechanical and Civil Engineering at Caltech). Many distinguished scholars, his former students, collaborators and friends from all over the world came to Caltech to celebrate his life achievements. I made a passionate opening speech for the conference, which was very well received. Many people shared their personal stories about Professor Wu. The conference was a great success.

Professor Wu has been a great mentor and a strong supporter for many young scientists. A former Ph.D. student of Mechanical and Civil Engineering, Dr. Lisan Hwang, and his wife, Anne Hwang, made a very generous donation to establish a chair professorship and graduate student scholarship in honor of Professor Wu. Dr. Hwang said that when he was a Ph.D. student, Professor Wu and Mrs. Wu helped him and his wife in many ways. He remembered vividly that when he prepared his wedding with his wife, their parents could not come to the US to attend their wedding. It was Professor Wu who served as the "father" of the bride and walked her to Lisan during the wedding. This was an unforgettable moment in their life.

Professor Norden E. Huang was one of the keynote speakers for this symposium. Professor Huang is



Figure 7. Dr. Lisan and Anne Hwang, 1979.

well known for his outstanding contributions in fluid dynamics and adaptive data analysis, and is a member of US National Academy of Engineering, Academia Sinica, and a foreign member of Chinese Academy of Engineering. He developed his well-known Empirical Mode Decomposition Method (EMD) at Caltech from 1997 to 1999 at the invitation of Professor Wu. He said that he was extremely grateful to Professor Wu's support for his work on EMD. In fact, it was Professor Wu who coined the term Hilbert-Huang Transform for his EMD method.

I have personally benefited tremendously from his support throughout the years and have learned

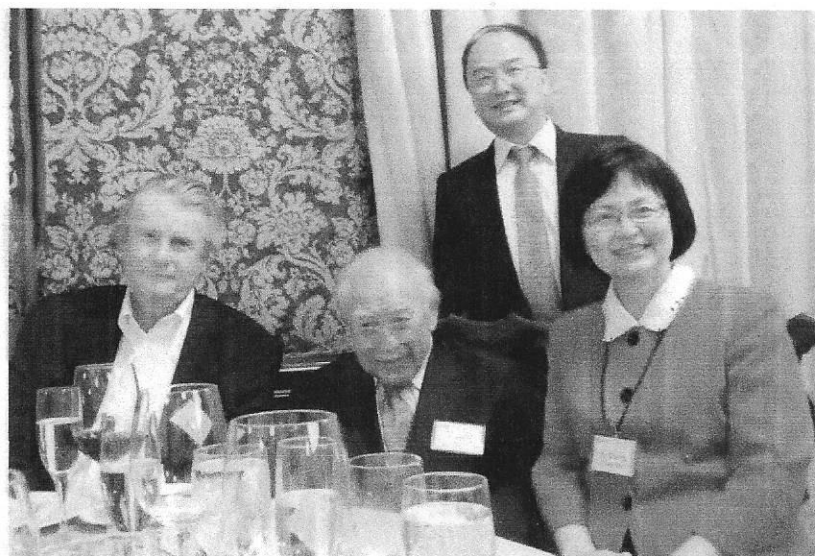


Figure 8. From left to right: Prof. Emeritus Christopher Brennen, Prof. Thomas Y. Hou, and his wife, Yu-Chung Chang-Hou.

a lot from him. He is not only a great scholar in science and engineering, he is also a great scholar in Chinese and Western cultures. And he knows many great stories about the history of Caltech. It has been extremely inspiring to listen to his fascinating stories about how Caltech transformed itself from an unknown vocational school into a world center of science and technology under the leadership of the three founders, George Hale, Arthur Noyes, and Robert Millikan. Over the years, our two families have established a very close relationship. In recent years, my research group has taken on the responsibility to provide computer related technical support for him as he continues to work on his book project. He has served as a great role model for many of us.

Honors and Awards

Professor Wu has received many honors and awards for his outstanding contributions. These include John Simon Guggenheim Fellow in 1964, Australian CSIRO and Universities Fellow in 1976, Japan JSPS Fellow in 1981, Fluid Mechanics Prize in 1993, and the von Karman Medal in 2004. He is also a member of the U.S. National Academy of Engineering (1982), a member of Academia Sinica (1984), an Honorary Fellow of Institute of Mechanics (1988), an American Physical Society Fellow (1993) and a Foreign Member of Chinese Academy of Sciences (2002).

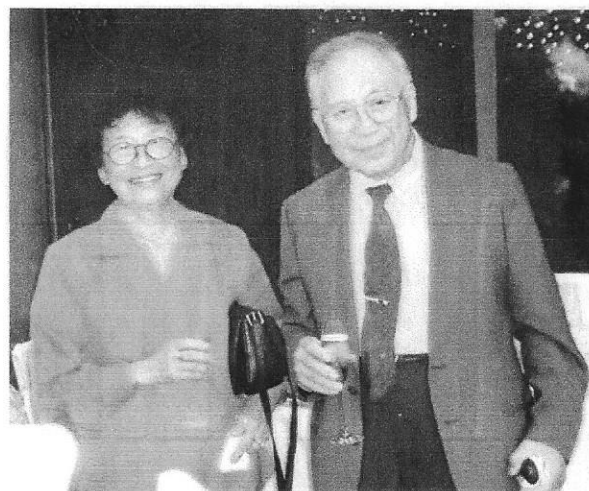


Figure 9. Theodore Wu and his wife, Chin Hua Wu.

In all, Professor Wu has authored or co-authored more than 150 papers published in archive journals and as book chapters. His contributions have been honored with lifetime achievement awards from the Chinese-American Faculty Association of Southern California in 1993, from the Chinese Engineers and Scientists Association of Southern California, and of the 2000 American Chiao Tung University Alumni Association.