

1970

1970:

March 21, 22 Weekend at Death Valley, California

June 27 → July 13 Camping trip in W. United States. Salt Lake City, Dinosaur N.M.,
Boulder Colorado, Rocky Mtn. N.P., Grand Teton N.P., Yellowstone, Craters of the Moon N.M.,
Lava Beds N.M., Lassen Volcanic N.P., Lake Tahoe and Yosemite N.P.

Sept. 15 → 19 2nd International Conference on Numerical Methods in Fluid Dynamics, U.C. Berkeley (papers)

TRAVELS NOW AND THEN

© Christopher Earls Brennan

DEATH VALLEY 1970

1970

Camping trip to Death Valley, Easter 1970

1970

DEATH VALLEY MARCH 21, 22 1970

MARCH 21.

Early start - drove straight up Golden State freeway - up Antelope Valley → Palmdale → Mojave. D. drove (over some bad back roads) to Trona (beside large salt lake where salt is mined). Had lunch in restaurant in Trona then on into Death Valley through Wildrose Station. Intended to visit Shoshone (Ghost Town) but massive gully cut the track just past signpost. Went straight on to Furnace Creek campground - unfortunately very dusty and all regular places taken as well as most of the best shade. However found a tree with some space under it and camped. Furnace Creek an oasis in the desert - big resort - camp too far on outskirts. Went to visitor center and then on short trip - Devil's Golf Course, fantastic mud + salt formations of height about 2 ft, miles of it. — Salt Pools, fuel layer of salt on mud, cracked — then on Artists drive in foothills of Funeral mountains - saw Artists Palette. Then into narrow Golden Canyon (ditto tracks). Finally up to Zabriskie Point in what was originally an ocean bed. Back to camp.

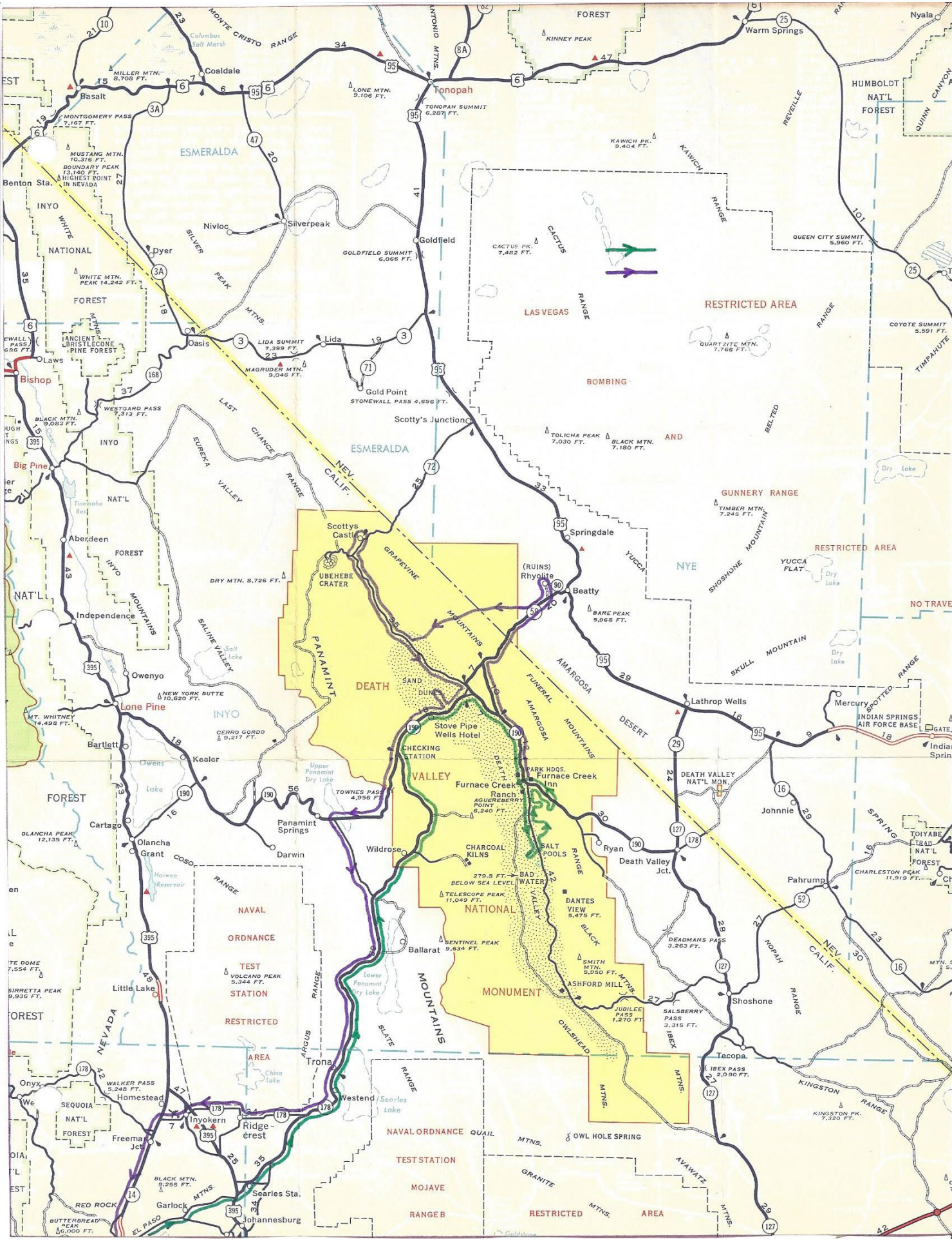
MARCH 22.

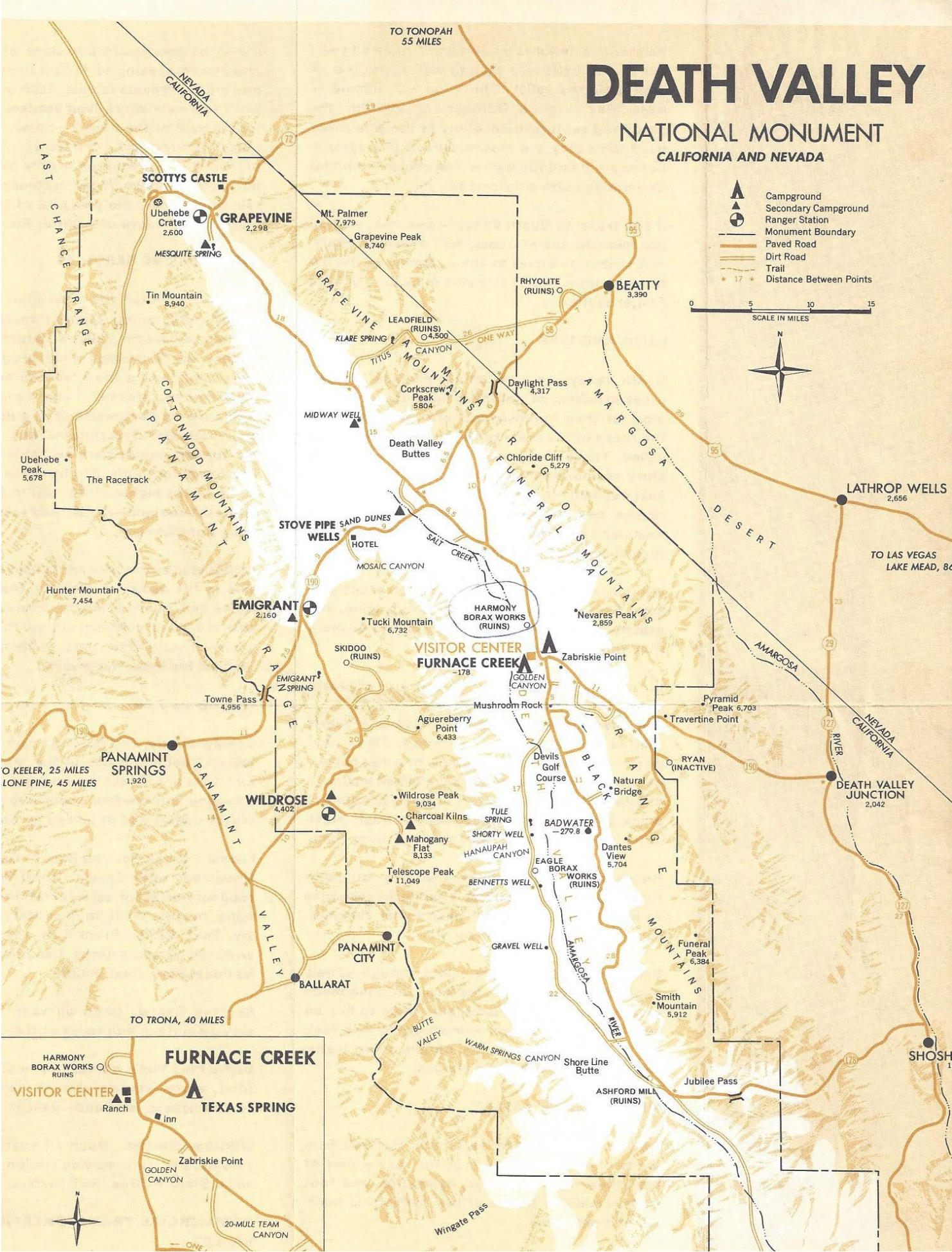
Up early, packed up and off. Visited the Harmony Borax works near Furnace Creek from where the 20-mule teams hauled the waggons of Borax out of the South end of the valley. Then drove out of E. side of Monument to Rhyolite - a ghost town - group of 6 or 7 ruined buildings. Population in 1907 was 12,000 - mining town. There Dana + Kathy wanted to climb through every building. Then embarked down Titus Canyon Road back into Monument. 26 miles of terrible

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

~~dead road~~ We had to begin with but once we got into the Capetown
 Mountains we thought we'd never get out - one way road - wild stone road (didn't
 even see any bighorn sheep - of which there are quite a few around there). Eventually
 got down into the lower altitudes to Leadfield - A mining ghost town
 founded on wild + misleading advertising. 300 people flocked there - in









SIGHTS AND SIDE TRIPS

There are two main centers of visitor activity in Death Valley: Furnace Creek, the principal point of interest and most convenient start for trips to the southern half, and the Stove Pipe Wells area, which is the most convenient start for trips to the northern half, including the valley, and the mountains on both east and west.

NORTH

Average driving time, plus visiting time, and round trip mileages are given from Stovepipe Wells Village. Miles for individual places of interest are also given on the map. Follow road signs and drive carefully.

Salt Creek. (22.4 miles round trip; 2 hours). A free-flowing stream having inch-long pupfish, descendents of a species that lived in the last great lake that filled the valley. Along the way you can see the *Devils Cornfield* (arrowweeds that look like cornstalks in a saltflat), and can take the turnoff to the *Sand Dunes* on the north side of the road.

Mosaic Canyon (5 miles round trip; 1/2 hour). Drive to the end of the road and take a walk to get an intimate experience of a small canyon with interesting rock patterns.

Wildrose Station. (58.8 miles round trip; 2 hours). Drive down Emigrant Valley with a choice of three side trips into the mountains. *Skidoo* (13.8 miles round trip; 2 hours from paved road) is the ruins of an old mining town. *Aguereberry Point* (13.8 miles round trip; 2 hours from paved road) affords a magnificent view of the valley and the east mountains. *Mahogany Flat* (15.6 miles round trip; 2 hours from paved road) takes you past the *Charcoal Kilns* up to Mahogany Flat Campground and the 7.6-mile trail to Telescope Peak, highest point in the national monument.

Titus Canyon (one way westward; 26 miles; 5 hours). You may want to take the short loop to the ruins of the old mining town of *Rhyolite*. Titus Canyon is an uphill drive through pale-colored hills to Red Pass, then down to Leadville ruins into and along the bottom of Titus Canyon, a spectacular example of erosion. This is a nar-

SOUTH

Average driving time, plus visiting time, and round trip mileages are given from Furnace Creek. Miles for individual places of interest are also given on the map. Follow road signs.

Dantes View. (52.4 miles round trip; 5 hours). A magnificent panorama of the valley a mile below and the Panamint mountains a mile above you, across the valley. Side trips to: *Zabriskie Point* (0.4 mile round trip; 1/4 hour) for colorful and dramatically eroded hills; *20-Mule Team Canyon* (one-way road; 2.7 miles; 1/4 hour) to travel one of the old freight routes into the valley; and *Ryan* (3 miles round trip; 1/2 hour) to see an old mining town.

Badwater Road to Ashford Junction. (88 miles round trip; 4 hours). *The Badwater Self-guiding Auto Tour* booklet describes this trip from the visitor center to *Badwater*, including side trips to *Golden Canyon*, *Artists Drive*, *Devils Golf Course*, and *Natural Bridge*. Badwater is the lowest point to which you can drive in the Western Hemisphere. Beyond it, the road rises gently to *Ashford Mill*, the ruins of an old gold mill, near the junction to Westside Valley Road.

Westside Valley Road. (88 miles round trip; 3 hours). A beautiful scenic trip along the valley floor—the historic route of the 20-mule team borax wagons. Turnouts to *Bennetts Well*, the ruins of *Eagle Borax Works*, *Shortys Well*, *Bennett-Arcane Long Camp* at Tule Spring, and the *Dayton-Harris* grave.

The Badwater-Westside Valley round trip from the visitor center is about 88 miles, with side trips and turnout stops. You should allow 8 hours for the full trip—and take lunch.

Harmony Borax Works and Mustard Canyon. (5 miles round trip; 1/2 hour). Inspect a well-preserved processing plant and drive through a colorful canyon.

ADMINISTRATION

Death Valley National Monument, established

row, winding, steep, dirt road frequently closed by storms. Check with a park ranger before starting this trip.

Scottys Castle (90.8 miles round trip; 5 hours). This is the desert mansion of a millionaire and his friend, Death Valley Scotty. A 45-minute trip through the castle leaves at frequent intervals throughout the day. A trip to *Ubehebe Crater* (17.4 miles round trip and 1 hour from the castle) will let you see a volcanic crater one-half mile across and 800 feet deep. Near the crater is the road south to the *Race Track* (54 miles round trip; 4 hours). You drive through a back-country mountain valley to the mud-flat bottom of an old lake. Check with a park ranger before starting this trip.

on February 11, 1933, covers almost 3,000 square miles. It is administered by the National Park Service, U.S. Department of the Interior. A superintendent, whose address is Death Valley, Calif. 92328, is in immediate charge. He and his staff have offices in the visitor center, which is open from 7:30 a.m. to 4:30 p.m., Monday through Friday, except holidays.

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.

August 1926 a P.O. was set up. In Jan. 1927 it closed and the town died. Finally from Leadfield we went down about 6 miles of very narrow twisty canyon - Titus Canyon - just wide enough for the car - steep walls rising or towering on each side and driving on what was obviously the same river bed (saw Petroglyphs on way down). Finally and abruptly we emerged into Death Valley and took road north to Scotty's Castle. Scotty was a character who reputedly or somehow hit it rich - people searched for years for his "golden" canyon around the valley. He satisfied a long time ambition (born as a mulesteiner in the valley) when with Art Johnson and Mrs Johnson (Eastman's who came west on Scotty's recommendation) he built a castle in Grapevine Canyon. Filled out with the most expensive and sometimes incredible furnishings. Beautiful woodwork - goat skin curtains! A fountain in the living room.

Finally left the castle and on the way out of Death Valley visited the Devil's cornfield and the Sand Dunes, where the kids played and rolled down the Sandhills for sometime - had great fun - they wanted to camp there but bloody hot - saw some blokes playing hide and seek with walkie-talkies. Then left the valley and drove back thro' Panamint Valley to Trona to China Lake - had a fish and chip dinner there - very good fish + chips - then drove back in dark to home and got there about 11 p.m.



Furnace Creek, Death Valley



Badwater, Death Valley



Badwater and the Dunes, Death Valley





Rhyolite Ghost Town, Death Valley



Petroglyphs, Titus Canyon, Death Valley



Petroglyphs and Titus Canyon, Death Valley



Scotty's Castle, Death Valley

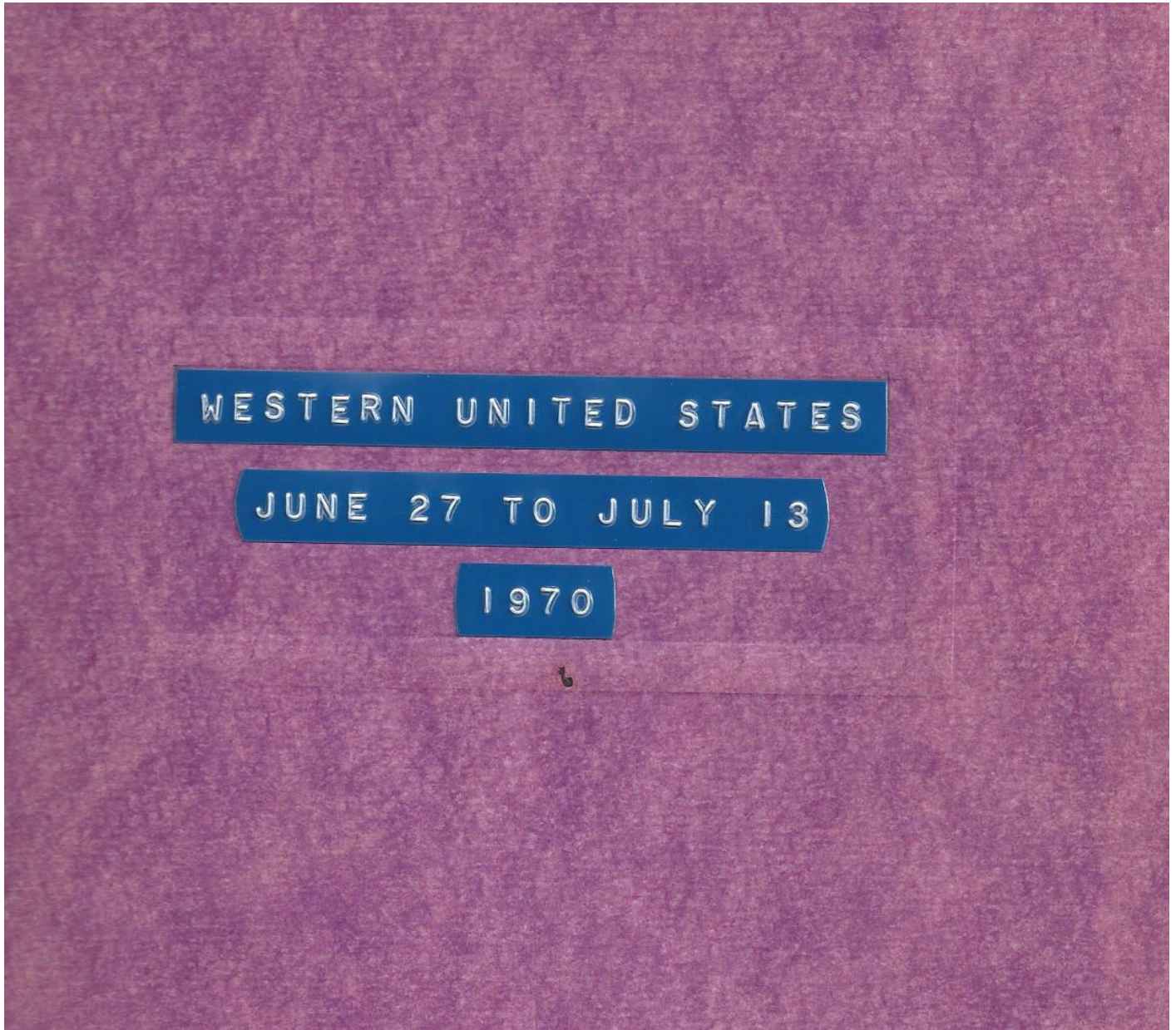
[Back to table of contents](#)

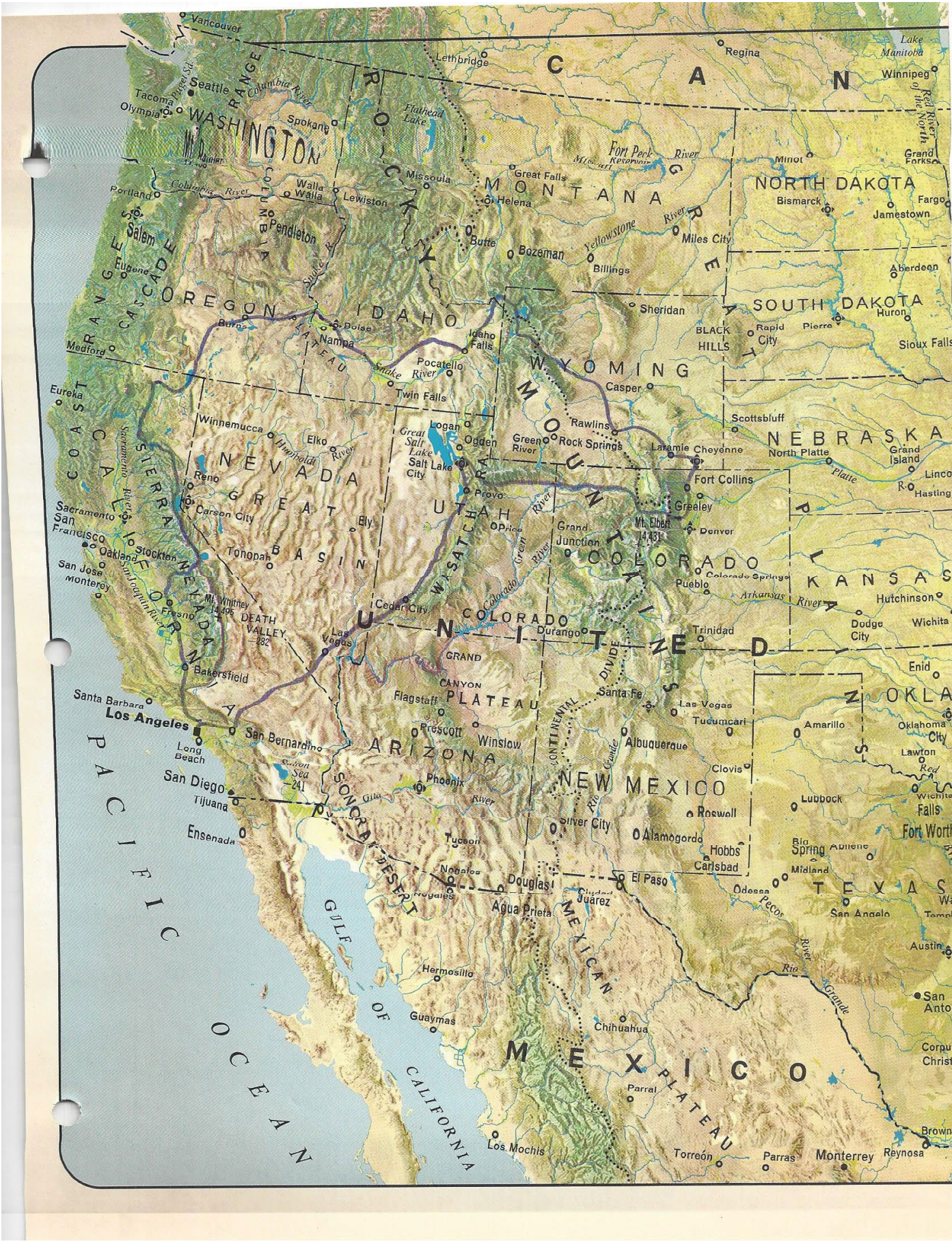
*Last updated 7/30/99.
Christopher E. Brennan*

TRAVELS NOW AND THEN

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CAMPING 1970







SATURDAY

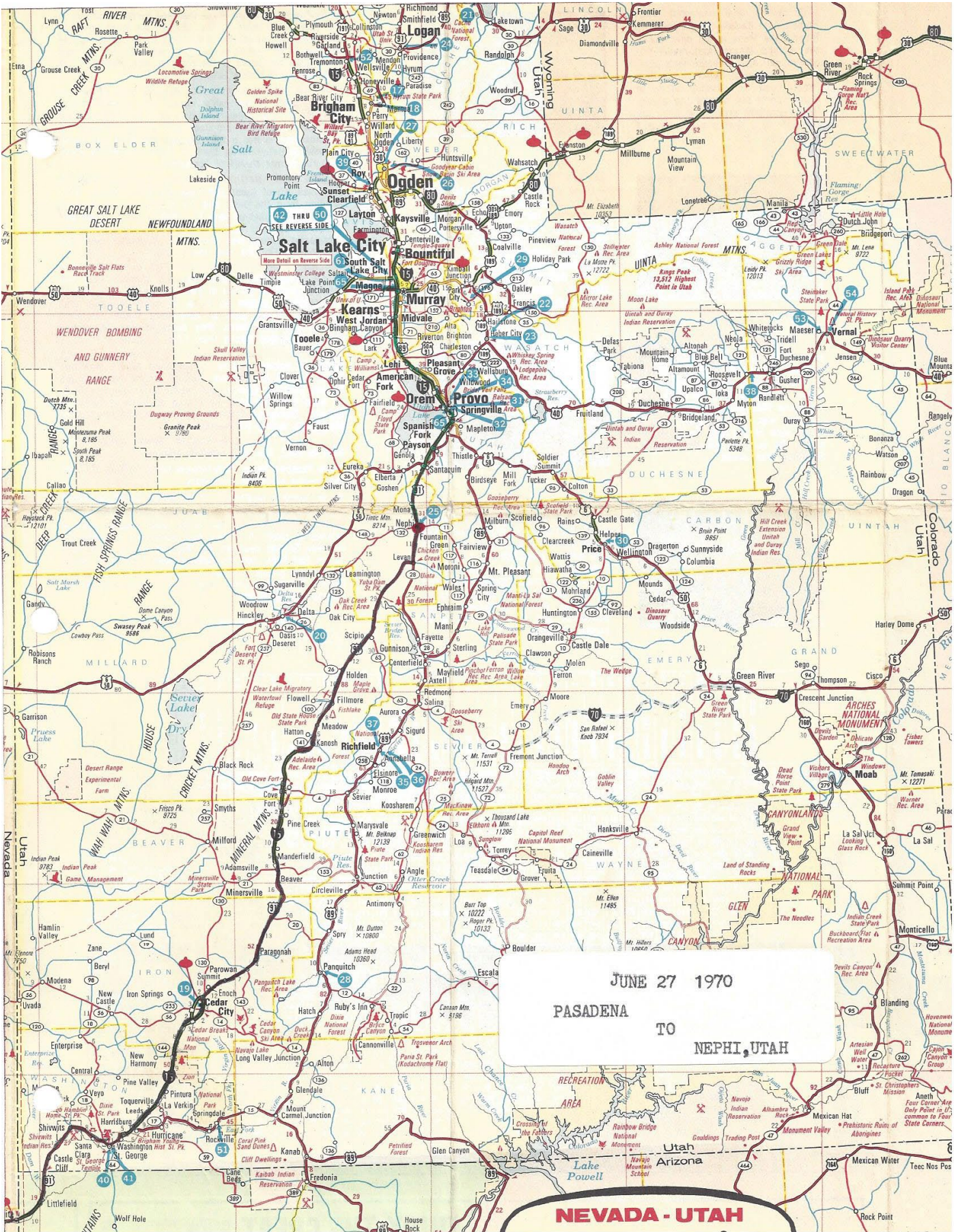
27th JUNE 1970

Sat. 27th

The car had been completely packed the previous evening, except for the ice-chest, so when we awoke about 5.45 on Saturday morning we were able to ~~make second time~~ it took us just 40 mins to wash, eat and lock-up. The route to Las Vegas is now fairly familiar to us, so there was little of interest on the way. The most noteworthy fact on that part of the trip was the temperature. The Desert temp. reached 115°. We had a snack around noon at Mesquite, where we had stopped on two previous occasions. Then followed the long uphill drive through a corner of ~~Arizona~~ and into Utah in the hottest part of the day. The car behaved v. well and we had no motoring problems. We had planned to get to Cedar City that day, but things went so well we pushed on to Nephi, where we had another snack, and checked into a motel, ^{The Safari} which was not good, broken-down air conditioner (luckily it was not too warm) and faulty T.V.







28th JUNE 1970

Sunday. 28th Up reasonably early, had breakfast in motel room, and drove the final short leg into Salt Lake City. Coming in from the south it was rather unimpressive - as we left the next day we got a much more dramatic view. By 10.30 we were putting up our tent in the V.I.P. campground, where Marg. & Ed had stayed 3 or so weeks previously on the outward leg of their trip. As soon as we were settled in base, we set off for a look at the Mormon Temple. We had heard that Salt Lake City was v. clean & attractive, but the parts we saw were comparable to other American cities, and the roads were generally worse. We toured the Visitors Centre, opulent & tasteless, and had a look at the various buildings in the Temple compound. The Temple itself is closed to non-believers. Then back to the campground for lunch. Afterwards we changed into our oldest swimming suits and went for a dip in the Great Salt Lake. Only one public beach, ^{blue sands} so it was pretty crowded. It was also pretty hot. I got a



Nephi motel



Great Salt Lake



Great Salt Lake



lit sun-burned, and a few insect bites. Chris and I were soon covered with itching lumps, and next day his arm swelled up from elbow to wrist. The camp site boasted a v. nice swimming pool, so we had a bathe before dinner, which got rid of the salt on our skins. The facilities at the campground were v. good. - T.V. rooms, showers, and even hot water ^{on tap} for dish washing. Our campsite was along side a municipal golf course.

SALT LAKE CITY SCENIC ATTRACTIONS

- BEEHIVE HOUSE** - This colonial-style house served as the official residence of the President of the Mormon Church from 1855 to 1918. Built in 1854-55 by Brigham Young, it is now restored to its original condition. Open all year 9 a.m. to 5 p.m. (except Sundays).
- BINGHAM COPPER MINE** - The largest open pit copper mine in the western hemisphere. Opened in 1914, the mine is now 2 miles across and two Empire State Buildings deep. Observation center.
- BONNEVILLE SALT FLATS** - This smooth expanse of hard crystallized salt has carried the world's fastest cars to land-speed records. Racing in fall (weather permitting).
- COUNCIL HALL** - Restored former capitol building of Utah's territorial government and Salt Lake City Hall. Home of the Utah Travel Council, information center and museum. Open winters 8:30 to 5 Monday-Friday. Summers 8:30 to 6 Monday-Friday, Saturday and Sunday 9:30 to 6.
- DAUGHTERS OF UTAH PIONEERS MUSEUM** - A treasure house of frontier relics, houses the wagon in which Brigham Young rode into the valley. Open 9 to 5 Monday-Saturday, 1 to 5 Sunday.
- EAGLE GATE** - Guards the entrance to what was once the private estate of Brigham Young.
- GREAT SALT LAKE** - America's inland salt sea. Water you can float on, sandy beaches for swimming and sun-bathing.
- HANSEN PLANETARIUM** - Space Science Library and Museum offers a unique black light gallery and star chamber. Open 9 to 5 year round. Daily shows except Monday.
- HISTORICAL SOCIETY** - Offers information and museum items covering early state history. Housed in a \$175,000 mansion built with lavish materials including mahogany from the Ural Mountains. Open 9 to 5 Monday-Friday, 9 to 1 Saturday.
- HOGLE ZOO** - One of the cleanest zoos in the nation. Visit Shasta, the country's only Liger (daughter of a lion and a tiger). June 1 - Labor Day 9:30 a.m.-8 p.m., Labor Day - Nov. 1 - 9:30 a.m. to 6 p.m.; Nov. 1 - March 15 - 9:30 a.m. to 4:30 p.m.; March 15 - June 1 - 9:30 a.m. to 6 p.m.
- INTERNATIONAL PEACE GARDENS** - Offers floral architecture representative of the countries of the world. Open May to September.
- LIBERTY PARK AND TRACY AVIARY** - Offers cool relaxation with family recreation. Riverboat rides and amusement park open April to September. Aviary open all year. (Closed Mondays)
- MUNICIPAL ROSE GARDENS** - More than 7,000 rose bushes, approximately 300 varieties, bloom profusely throughout the season in this garden, a project of the Utah Rose Society.
- PIONEER CRAFT HOUSE** - Contains a large collection of distinctive Utah art crafts. Open 9 a.m. to 3 p.m. Monday-Friday. Thursday evenings 7 to 9 p.m.
- PIONEER VILLAGE** - An authentic restoration of a frontier community, complete with a buffalo herd and rides in a covered wagon pulled by a pair of "praying" oxen. Open 9 to 5 p.m. Monday-Saturday, 2 to 6 Sunday, April 1 to Oct. 31.
- STATE CAPITOL** - Overlooking the city of Salt Lake. Completed in 1916, the pure Corinthian style resembles the National Capitol. Open all year. 8:30 a.m. - 6 p.m. Monday-Friday; Saturday and Sunday 9:30 a.m. - 6 p.m. Memorial Day to Labor Day.
- TEMPLE SQUARE** - World center of the Church of Jesus Christ of Latter-day Saints. Historical and interesting. Tours given. See nearby Beehive House, Brigham Young's home. Open year round 9 a.m. to 5 p.m. daily.



compliments
TEMPLE SQUARE
Bureau of Information

Temple
Square
in SALT LAKE CITY

JOHN SILVER
AND
SONS *New Silver Sands Beach*
ON THE GREAT SALT LAKE

VALUABLE COURTESY CERTIFICATE

One To a Car — Not Transferable — Good Day of Issue ONLY

- ★ Present this Certificate at our Souvenir Shop for a Special Lake Souvenir package value at 25c
- ★ Present this Certificate at our ticket office and receive One Child's Ticket Free or Half Price on an Adults ticket on our Nationally Famous Amphibious Sea Monster Fun Cruise into the Great Salt Lake valued at 50c.

75c VALUE



WELCOME TRAVELER TO V.I.P. NATIONAL TRAILER & CAMPER PARK

1326 W. N. Temple

328-0224

Salt Lake City, Utah 84116

NO REFUNDS

- **CHECK OUT TIME 1:00 P.M.** — If you plan on staying over please come into the office and make arrangements PRIOR to 1:00 P.M.
- **PARKING INSTRUCTIONS.**— Put your tent or trailer camper on GRAVEL in center of space. Use table that is fastened to your space only. Park your car or tow vehicle parallel to ROAD.
- **PETS** — Tenants with pets should leash them at all times when not in your car or trailer. They are to be walked in petland only. Do not walk them on lawns, into or through main mobile home section or buildings. Please do not leave howling pets behind while sight-seeing.
- **WASTE WATER** — (This includes all water). Do not run water on grounds. Dish water, wash water, detergents, overnight jars, etc., are to be taken over to waste water disposals.
- **WASHING OF VEHICLES STRICTLY FORBIDDEN.**
- **CHILDREN** — Parents are to supervise and assume responsibility for all actions of their children.
- **PARENTS** — Please use SIDEWALKS where possible and advise your children to do the same. (Save embarrassment.) Don't let your children scatter or carry gravel from the camp sites to the road way or any other area, or put rocks and debris in open sewer connections.
- **OUTSIDE CLOTHESLINES PROHIBITED.** No ropes on trees or otherwise attached to nearby buildings, fences, posts, etc. A clothesline has been provided at the main building.
- **QUIET HOURS** — 10 P.M. to 9 A.M.
- **SWIMMING POOL RULES** —
No children under 10 years of age will be admitted without adult supervision.
All girls (and boys with long hair) are **required** to wear swimming caps.
All swimmers are encouraged to take soap showers before entering the pool.
- **PLEASE LEAVE YOUR SPACE CLEAN** — Be thoughtful in the rest rooms and laundromats. Be courteous to your neighbor so he too will have a pleasant vacation.

NOTE: We are trying to grow shade trees for your future pleasure and we need every camper's help in keeping detergents and other poison materials from being dumped around trees.

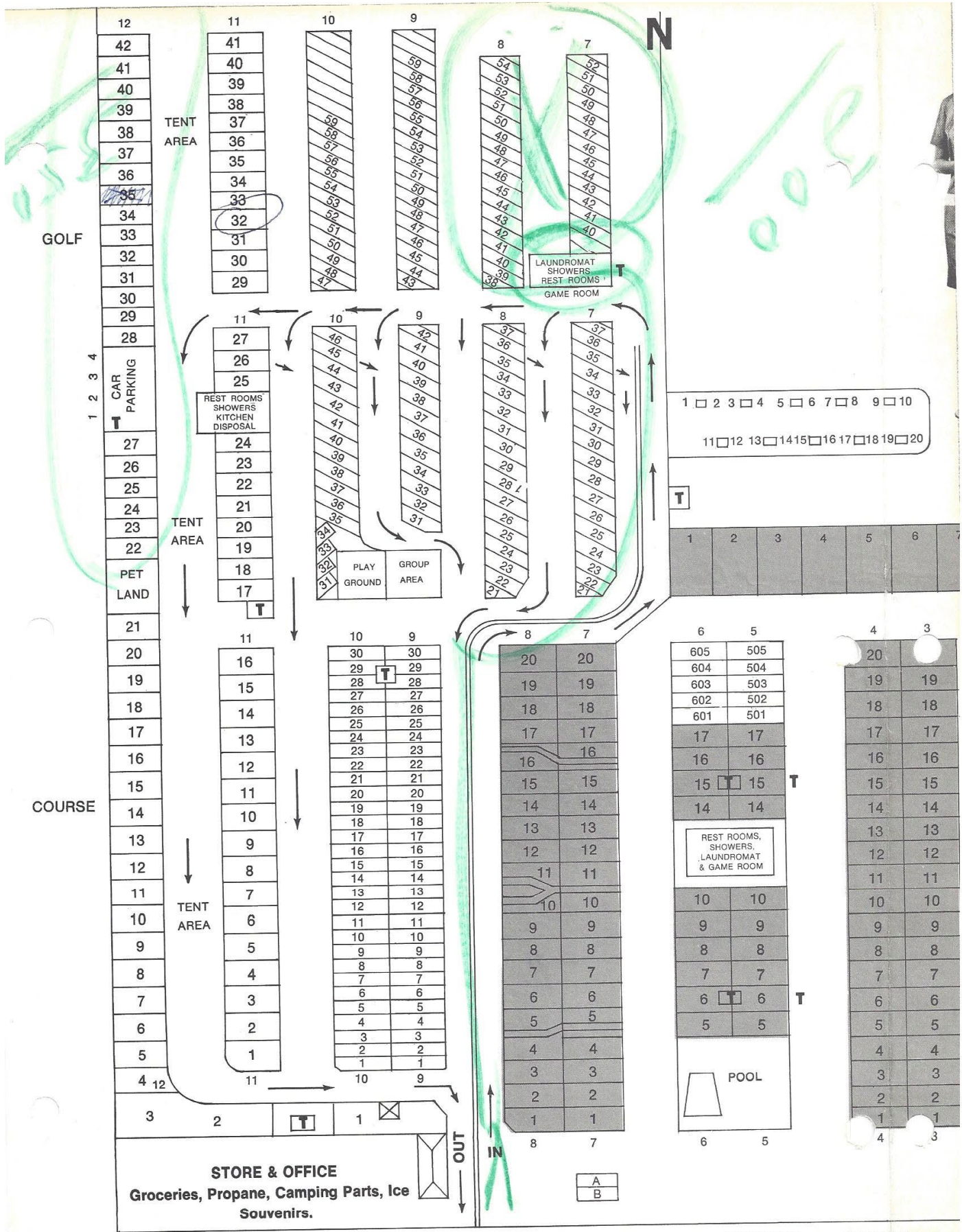
We sincerely thank you for your patronage and wish you happy vacationing.

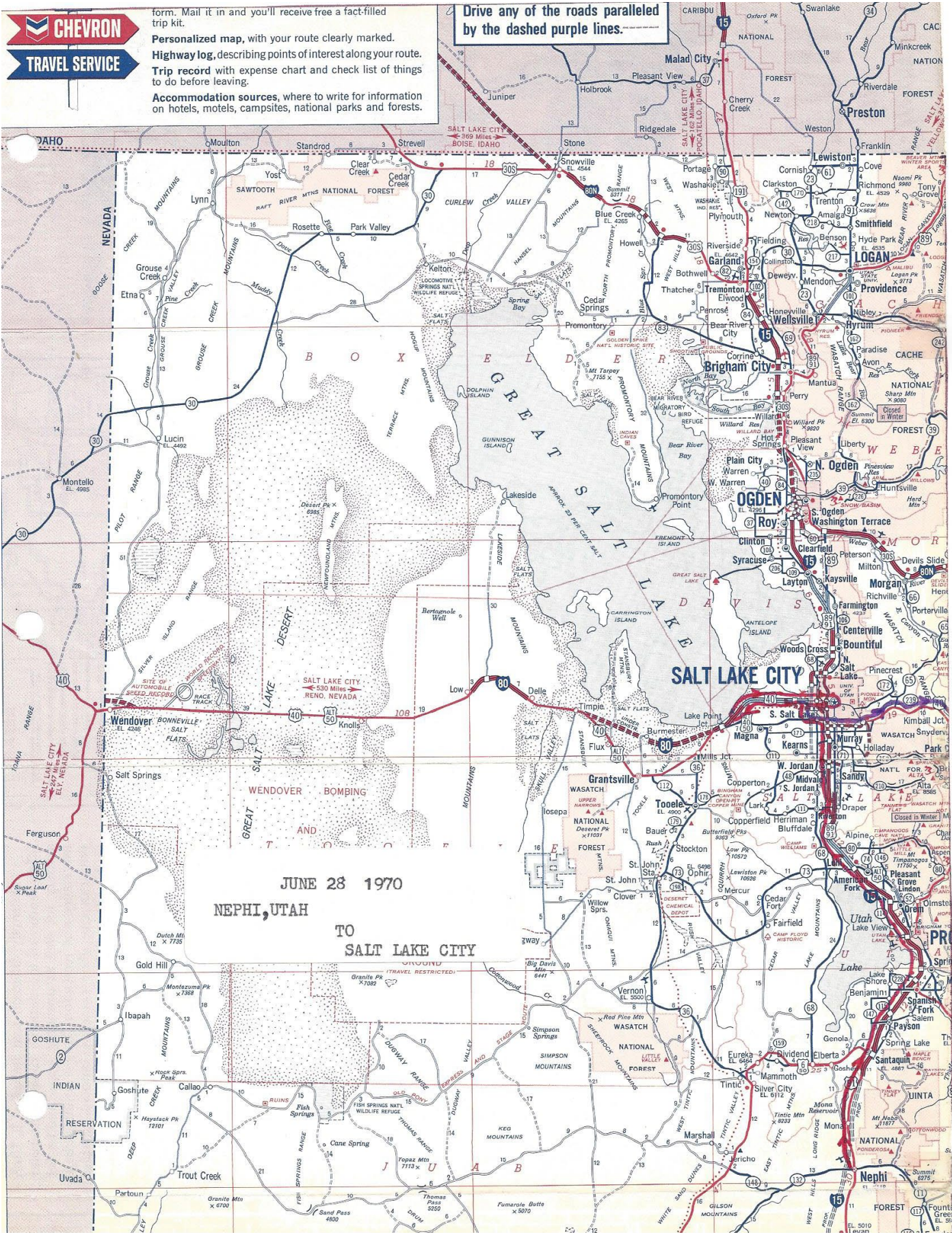
THE MANAGEMENT



VISTA *international* PARKS

DELUXE ACCOMMODATIONS





MONDAY.

29th JUNE 1970Monday 29th.

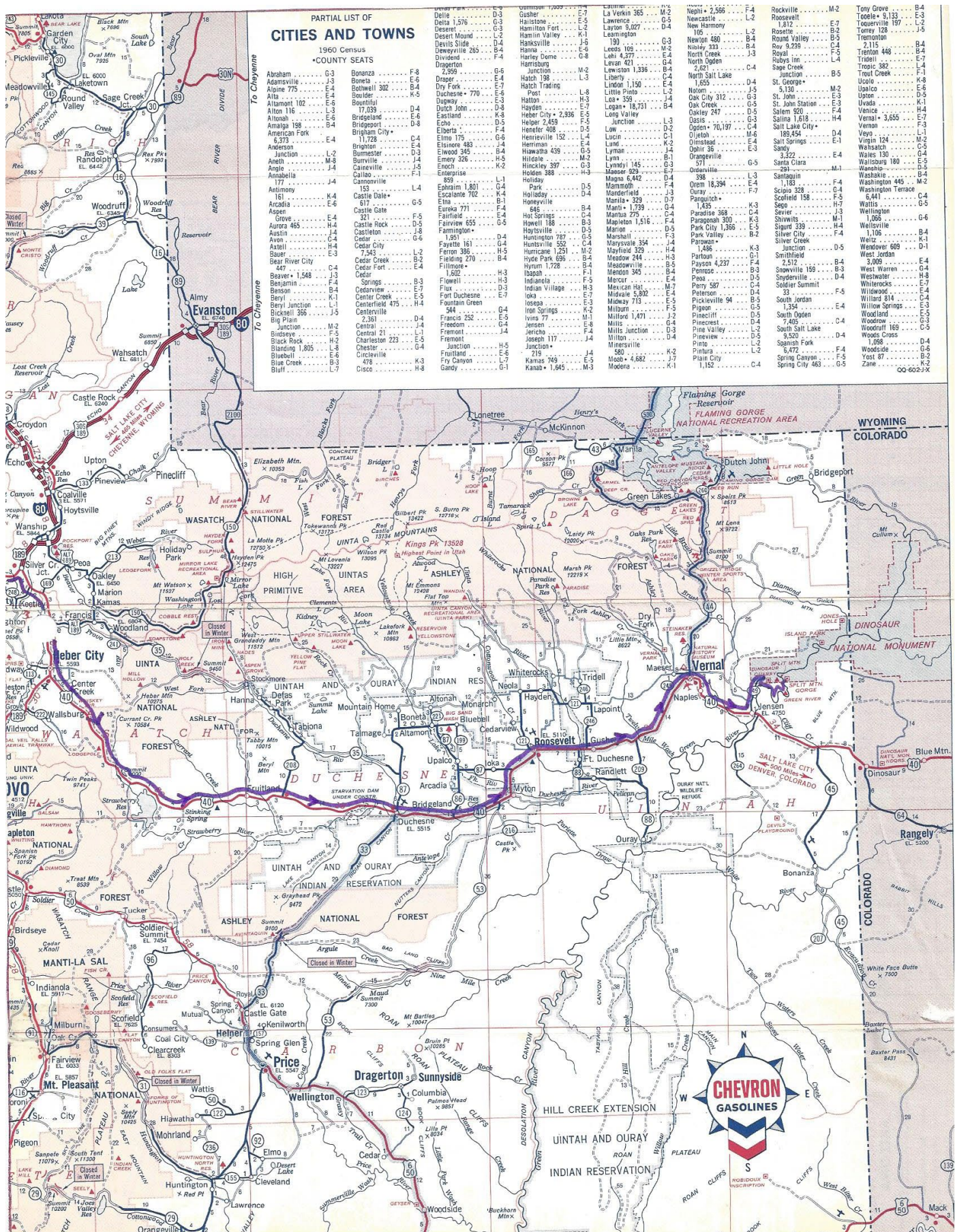
Left Salt Lake City early in the morning, headed for Dinosaur Nat. Monument. Around two o'clock we reached Vernal, and spent half an hour looking around the Natural History Mus. Jane and Kathy were v. impressed by the huge skeleton of a dinosaur inside the museum. From Vernal it is a short drive to Dinosaur Nat. Mon. we went to the Visitors centre there, of which one wall is living rock, loaded with dinosaur bones, which the workmen are v. slowly removing from the quarry. It was very hot, and we were pleasantly surprised to find the Camp site by the river bank, and well shaded. It was called Split Mountain Gorge Campground and was where the ^{Green} river emerges from the said gorge. We saw a couple of groups of young people who had just come down the gorge in rubber rafts. Chris was interested in doing the same, but the cost was prohibitive - our total would have been about \$50. The temperature dropped in the evening, so we all slept comfortably.

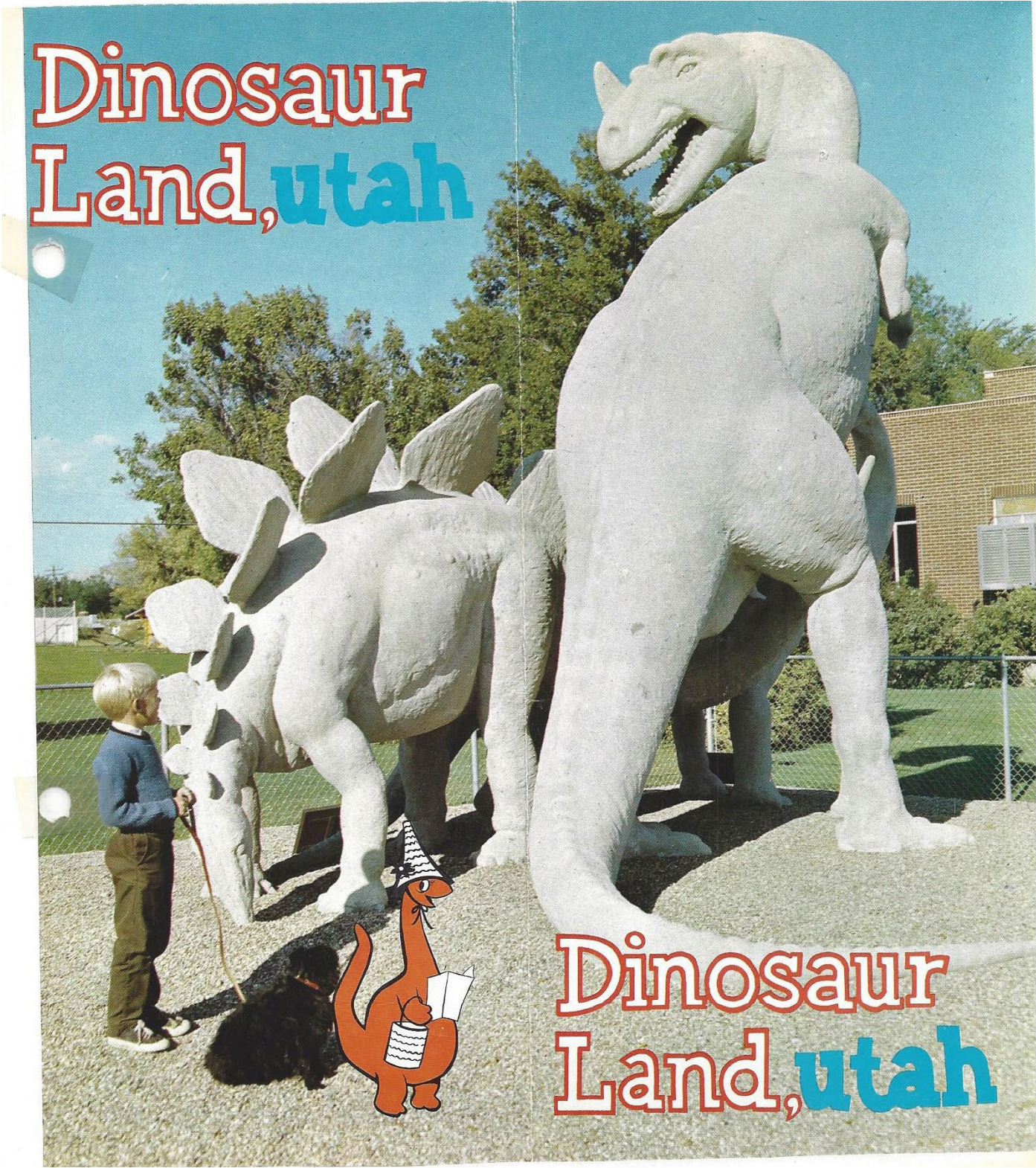


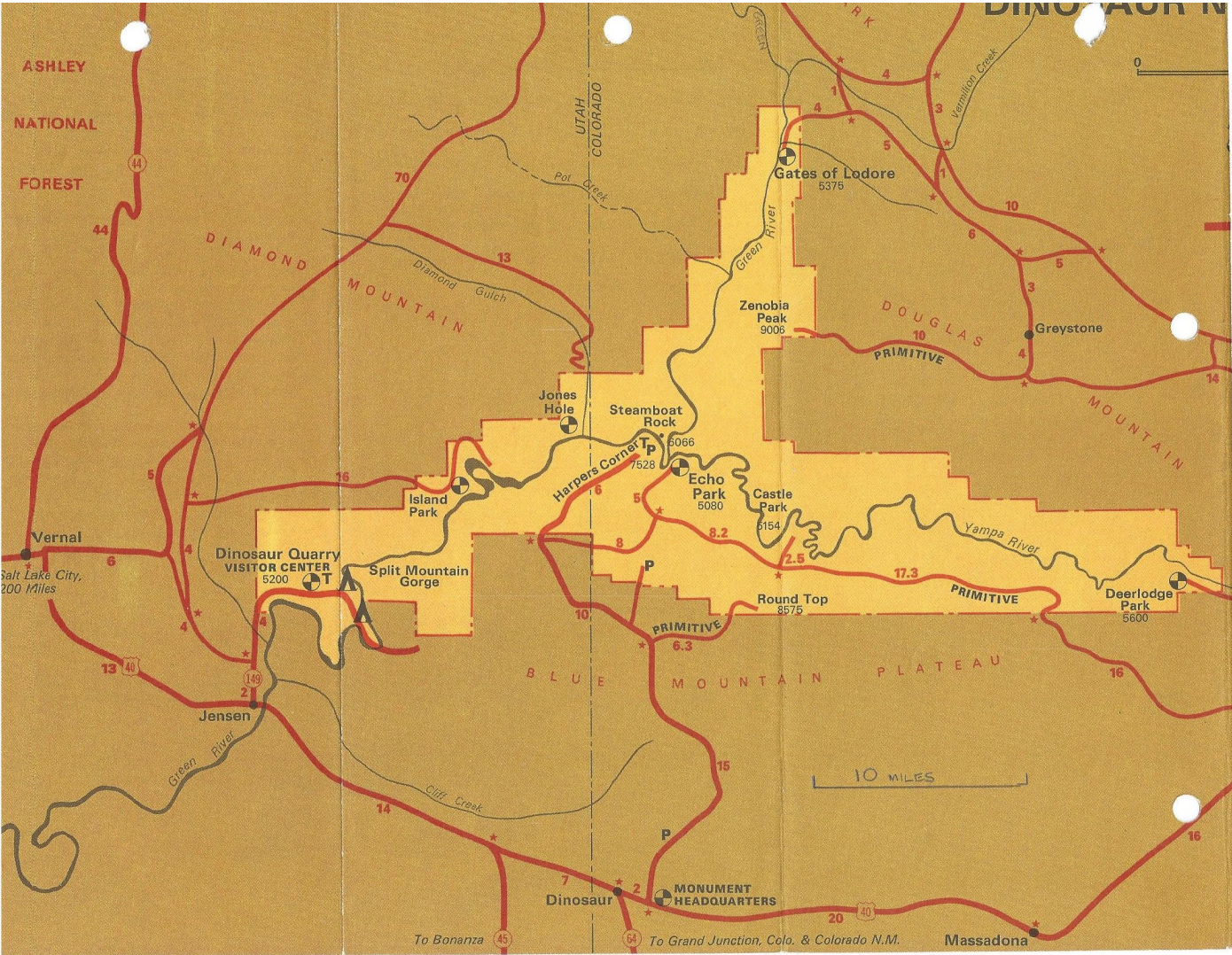
Dinosaur National Monument

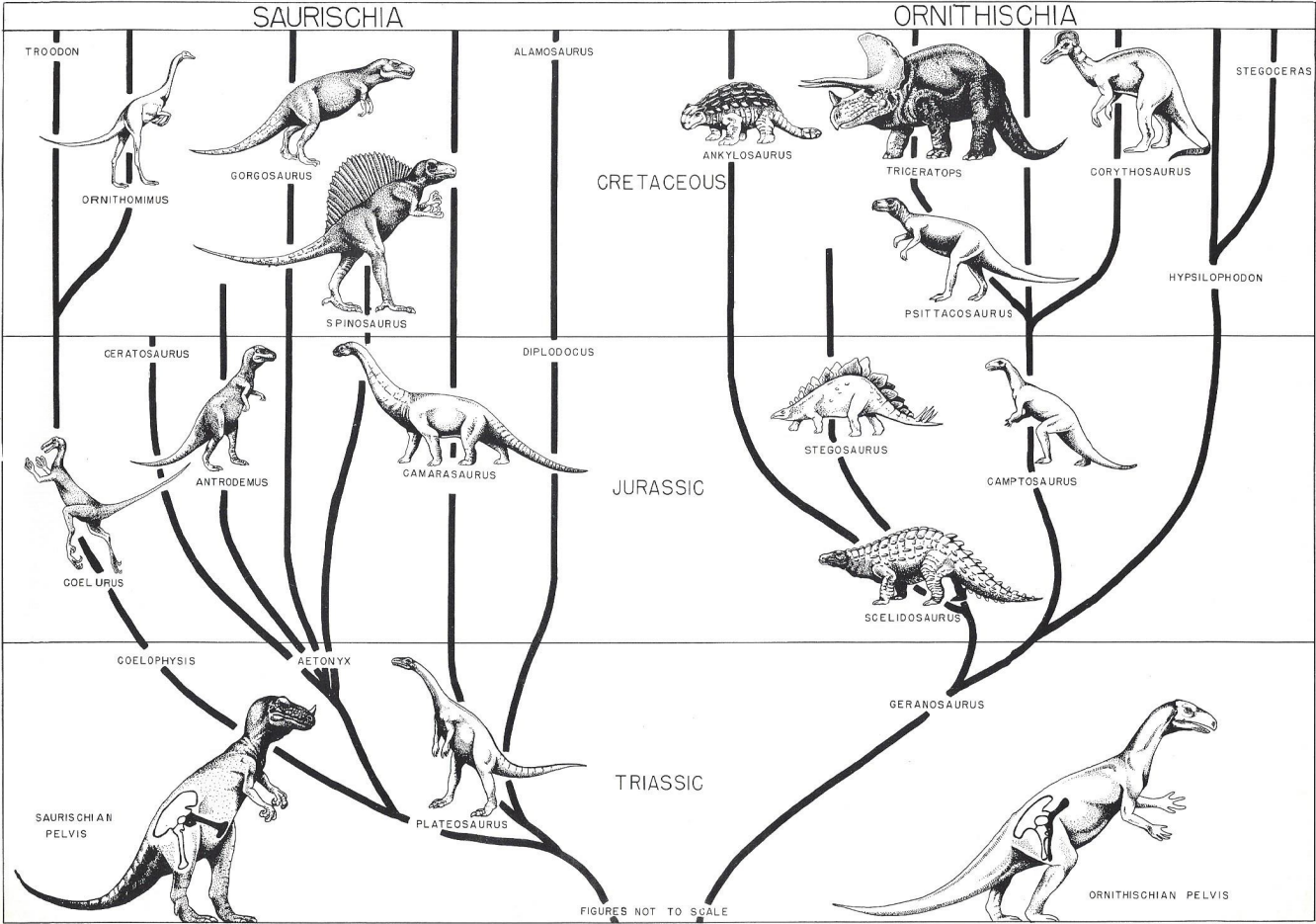


Dinosaur National Monument









TUESDAY

30th JUNE 1970

Tuesday 30th.

The drive from Durango to Boulder was through v. beautiful country. The Rockies were tremendous, snow and pines waterfalls, and clear crisp air. We got to Steamboat Springs by lunch time. From there we phoned Marg. to tell her we would be arriving that day. Then on through the Rockies, There were a lot of ski resorts of course, looking rather strange and even unattractive denuded of snow. Around 4-30. we stopped at Central City*, once a flourishing mining town. We rode some mine trains and had a general tour around ~ Then on to Boulder.

* Competed with Denver for the capital of Colorado in 1860s. Rode a mine train pulled by mule into Bobtail Gold Mine (extinct). There are close to a 100 miles of mine tunnels in the area and the remains of the panning operations still litter the valley on the short road trip up from Black Hawk to Central City. They have renovated part of the old Colorado Central Narrow Gauge Railroad which used to run between the two towns and we ~~rode~~ ^{rode} this. The engine was not original. It had been discovered in and shipped from El Salvador where it had been in regular service until 1967! Regular service for over 100 years! Also strolled around the tourist oriented Central City - full of old time bars, Willy Fong's office, etc - though its Opera House is famous and dates from the old days.



Berthold Pass, Colorado

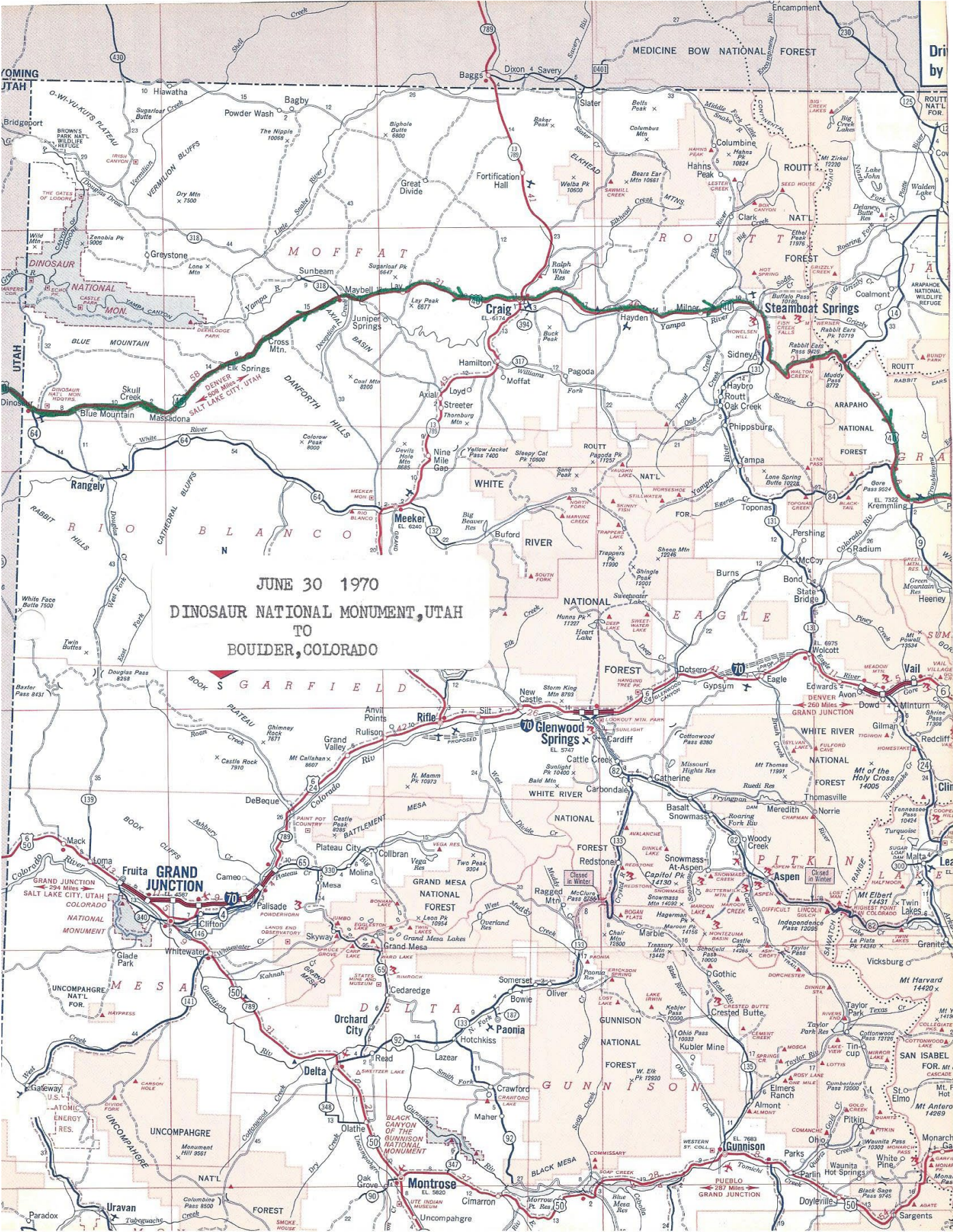


Central City, Colorado

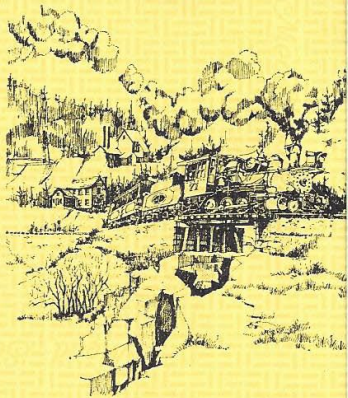


Central City, Colorado





COLORADO CENTRAL
Narrow Gauge
Railway Company, Inc.



SPECIAL TICKET

GOOD FOR ONE FULL FARE BETWEEN
CENTRAL CITY AND END OF TRACK
AND RETURN

Recreating the Original
Colorado Central Railway
of the 1880's

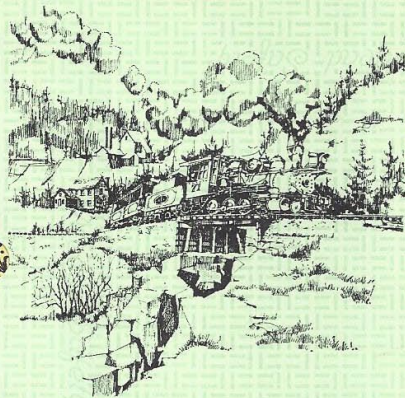
CENTRAL CITY, COLO.

George S. Shumway
GENERAL MANAGER

Nº 9191 ONE FULL FARE

Void If Stub Detached

COLORADO CENTRAL
Narrow Gauge
Railway Company, Inc.



SPECIAL TICKET

GOOD FOR ONE FULL FARE BETWEEN
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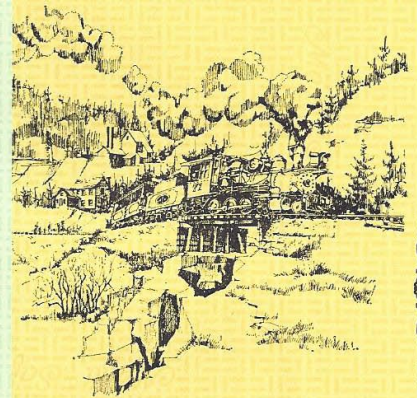
CENTRAL CITY, COLO.

George S. Shumway
GENERAL MANAGER

Nº 4996 ONE HALF FARE

Void If Stub Detached

COLORADO CENTRAL
Narrow Gauge
Railway Company, Inc.



SPECIAL TICKET

GOOD FOR ONE FULL FARE BETWEEN
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AND RETURN

Recreating the Original
Colorado Central Railway
of the 1880's

CENTRAL CITY, COLO.

George S. Shumway
GENERAL MANAGER

Nº 9192 ONE FULL FARE

Void If Stub Detached

Recreating the Original
Colorado Central Railway
of the 1880's

CENTRAL CITY, COLO.

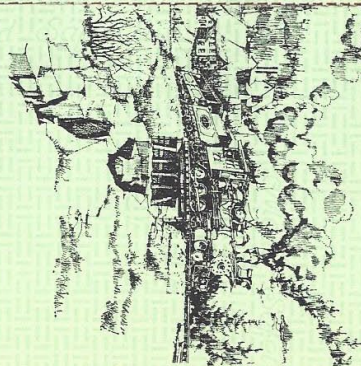
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GENERAL MANAGER

4995 ONE HALF FARE

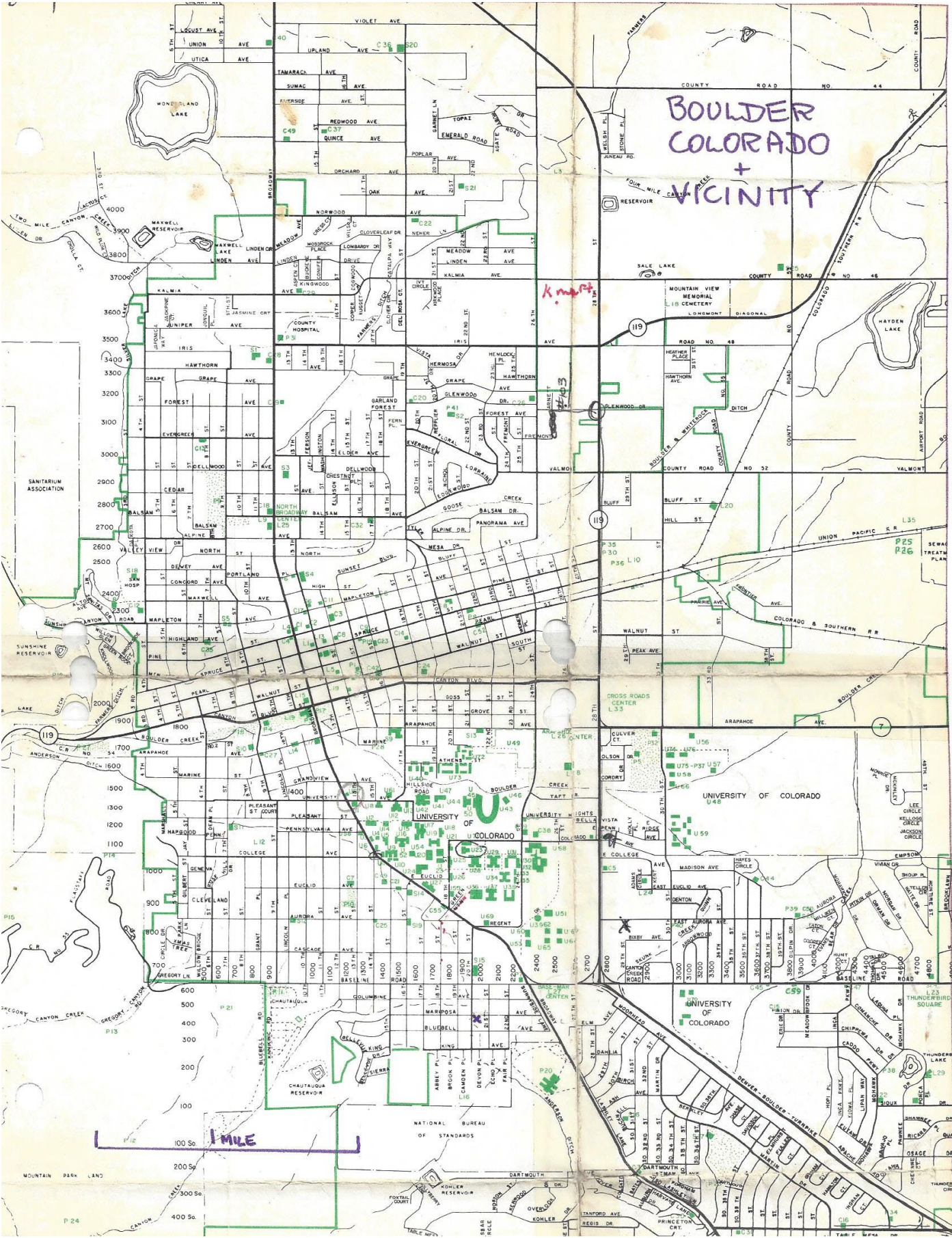
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SPECIAL TICKET

GOOD FOR ONE FULL FARE BETWEEN
CENTRAL CITY AND END OF TRACK
AND RETURN



COLORADO CENTRAL
Narrow Gauge
Railway Company, Inc.



WEDNESDAY

JULY 1ST, 1970

Wednesday 1st we spent the day at Rocky Mountain National Park. Ed had to work, but Margaret and her children came with us. The Park is about 30 miles from Boulder, entrance at Estes Park. A few miles inside the Park we came to an unpaved road ^(Fall River Canyon Road), one-way ^(UP!), which led to the Visitors Centre perched on the summit, at 12,000 feet. The scenery was really beautiful, looking back down to where the Rockies meet the plain. Unfortunately our car is tuned for sea-level driving, and about half-way up ^(Flooding from back of car) she just couldn't pull up. Margaret, the kids and I hiked for a bit and finally accepted a lift to the top. Chris adjusted the carburetor, cars in front of him pulled over so he didn't have to slow down behind them and he finally made it to the top. We had lunch at the Visitors' Centre and then went down the other side, beautiful but not so dramatic scenically as the way-up. On the way home we stopped at Estes Park to let the



Rocky Mountain National Park

kids visit an amusement park
- monster slide and ~~an~~ a moon
walk balloon.

Thursday, 2nd.

While Chris visited Boulder Univ.
Margaret and I went shopping.
After lunch we went to
Boulder Reservoir to swim, and
spent most of the afternoon
there.

In the evening we packed
our car, and made preparations
for the trip to Yellowstone.

Rocky Mountain

NATIONAL PARK • COLORADO

☆ U.S. GOVERNMENT PRINTING OFFICE: 1969—392-711/32
REVISED 1969

ADMINISTRATION

Rocky Mountain National Park is administered by the National Park Service, U.S. Department of the Interior. A superintendent, whose address is Estes Park, CO 80517, 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
National Park Service

Within its boundaries, Rocky Mountain National Park includes 410 square miles of the Front Range of the Rockies in north-central Colorado.

High mountains, alpine lakes, glacier-sculptured valleys, rugged gorges, and vast areas of alpine tundra are features of this park—one of the most spectacular yet most easily accessible high-mountain areas in America. This is high country, with elevations ranging from 8,000 feet to the 14,256-foot Longs Peak.

Trail Ridge Road, which reaches 12,183 feet and stays above timberline for 11 miles, crosses the crest of the Front Range and the Continental Divide. A trip across this road in summer provides sweeping views of mountains, forests, and open meadows. At nearly every point on this and other park roads are open vistas—ideal for sightseeing from your car. A short drive to Bear Lake takes you to the very base of the east face of the Front Range rising abruptly above the lake.

The roads at Rocky Mountain are not high-speed highways; they are designed instead to help you get the greatest enjoyment from the park's scenery. Speed limits and traffic laws are enforced. Please obey signs. Report all accidents and complaints to the nearest ranger station.

Enjoy, but do not destroy, injure, deface, remove, or disturb public property, natural features, wild animals, or any park resource. Since Rocky Mountain is a wildlife sanctuary, hunting is prohibited. Any device designed to discharge missiles and capable of injuring or destroying animal life is not permitted.

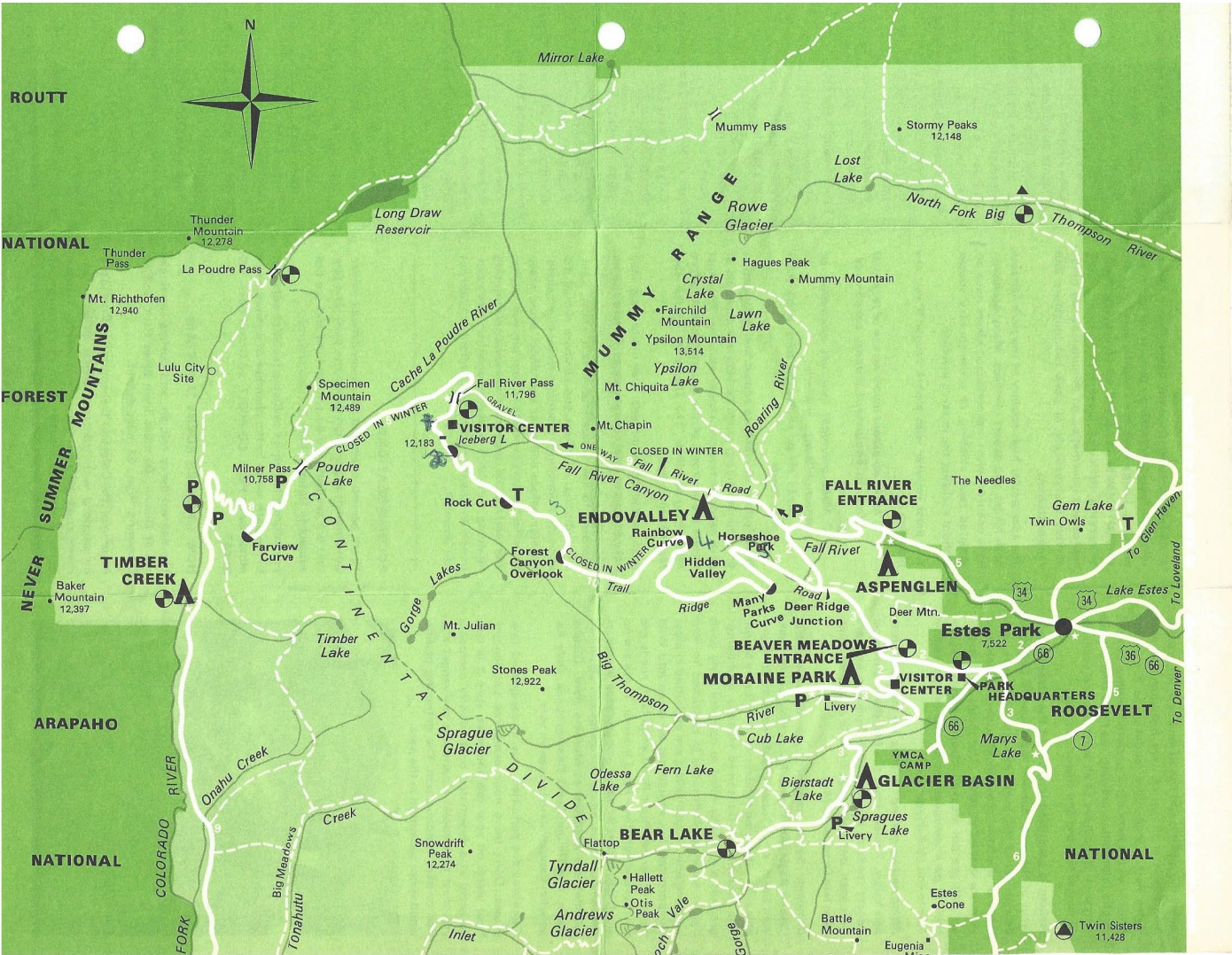
WHAT TO DO

While sightseeing by car is popular at Rocky Mountain, the person who ventures out on foot will see much more of what the park offers. Many short hikes lead to scenic features. The Bear Lake and Glacier Gorge areas are good starting points for short hikes to the lakes. Easy strolls start from the Cub Lake and Fern Lake trailheads. Back-country camping is available at many spots along the 300 miles of trails.

Pets are permitted in the park if they are kept under physical control; however, they are not allowed on trails or areas not accessible to automobiles. Vehicles are not allowed on trails or off the roads.

Rocky Mountain is especially rewarding during September and October, when aspen groves turn golden in a progression of color down the slopes. Winter in the Rockies, normally from late October to early May, is beautiful. A fresh snowfall transforms the landscape, and mountain peaks are more spectacular when blanketed with snow.

Interpretive programs. The National Park Service offers you the opportunity to understand the park better through its interpretive programs, which are available from mid-June to September 1. There are exhibits at the Alpine and Moraine Park Visitor Centers, self-guiding trails, wayside exhibits, conducted walks and hikes, evening campfire talks, and several publications dealing with the history and natural history of the area. A self-guiding





DEUR TO BEHOLD!

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Safe Highways and Trails are everywhere for "High Adventure," exploration and enjoyment.

Hidden Valley in Rocky Mountain National Park, is fast becoming one of the most popular and best-equipped winter recreation areas in the Colorado Rockies, opened from mid-December to mid-April. It is located just nine miles west of the Estes Park community, has excellent T-bar lifts during the season, skiing, ice-skating, platter-sliding and snowshoeing offer fun and excitement for the winter sports fan.

Deluxe Motels, Lodges, Dude Ranches, Hotels, Cottages, Trailer Parks and Public Camp Grounds. Accommodations for more than 15,000 visitors a night at reasonable rates. The Estes Park Chamber of Commerce maintains a Free Referral Service for summer visitors.

Rates are included in an Accommodation and Business Directory available on request from the Estes Park Chamber of Commerce.

Food to match your healthy mountain appetite—cuisine ranging from tempting and exotic dishes to hearty western-style Colorado Beef and chuck-wagon fare. You'll find just what you're looking for in a selection of eating places from short-order cafes to restaurants and luxurious hotel and lodge dining rooms.

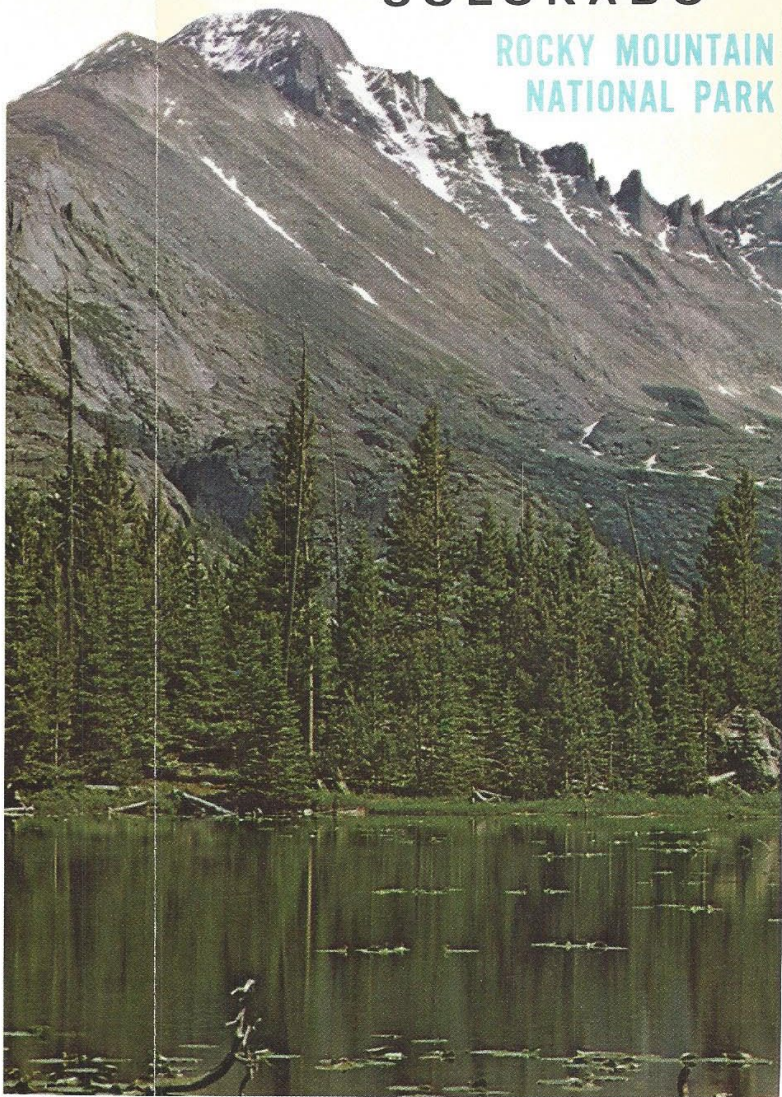
Shops and Services: When it comes to conveniences, Estes Park is no small town. It has everything you would expect to find in any city. Whether you're looking for an exclusive shop, a shop to find a little souvenir, or even a super-market—it's there to serve you in Estes. And it's fun to browse in the shops at Estes because you'll find objects d'art that usually aren't available.

The New Estes Park Center for Research and Education. Four of Colorado's major universities and colleges have co-operated to establish an off-campus facility in Estes Park. They chose Estes Park because of its location in the midst of a scenic environment and its strategic proximity to western educational institutions. This is the first of its kind in the nation. The Center offers an efficient and pleasant meeting place for seminars, conferences, panels, business or professional clinics and research.

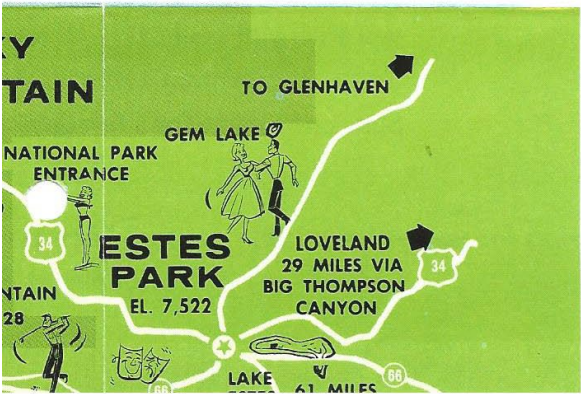
"The Nicest Resort People You Ever Met"—that's what visitors are constantly saying about the business people of Estes Park. The reason is this: Estes Park has the highest percentage of membership per capita of its Business Community in its Chamber of Commerce. This is the means used to organize your welcome and be sure that all facilities are placed fairly and reasonably at your disposal. The Estes Park Chamber of Commerce offers such unique services as an accommodations clearing house, a list of baby-sitters, all kinds of free maps, and other services. Centrally located, the Estes Park Chamber of Commerce invites you to stop in the moment you arrive. You'll like the service.

Estes Park
COLORADO

ROCKY MOUNTAIN
NATIONAL PARK



ANYTIME! Summer, winter, spring or fall, Estes Park is a quick pleasant drive by wide, scenic, all-weather paved highways. Yet, it has that remote, rugged beauty that suggests a delightful alpine village.



SO EASILY ACCESSIBLE!



by car

U. S. Highway No. 34, by way of the Big Thompson Canon and State Highway No. 66, North St. Vrain Canon, from the east; or State Highway No. 7 from the south and U. S. Highway No. 34 over famous Trail Ridge; and State Highway No. 66 from the west. Auto rentals are available.



by bus

Rocky Mountain Motor Co. busses serve Estes Park from Denver where six major bus lines connect. In the summer,

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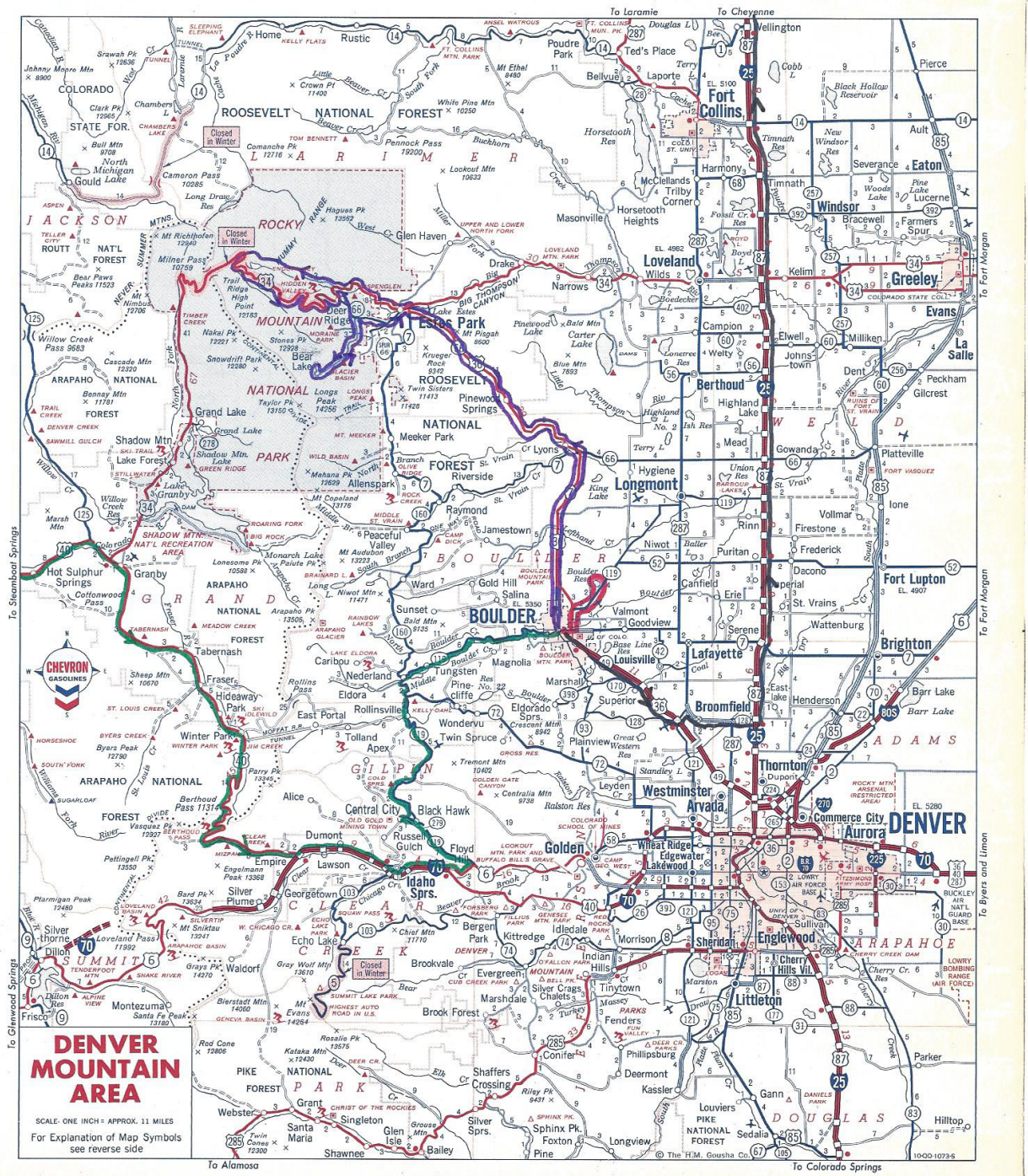
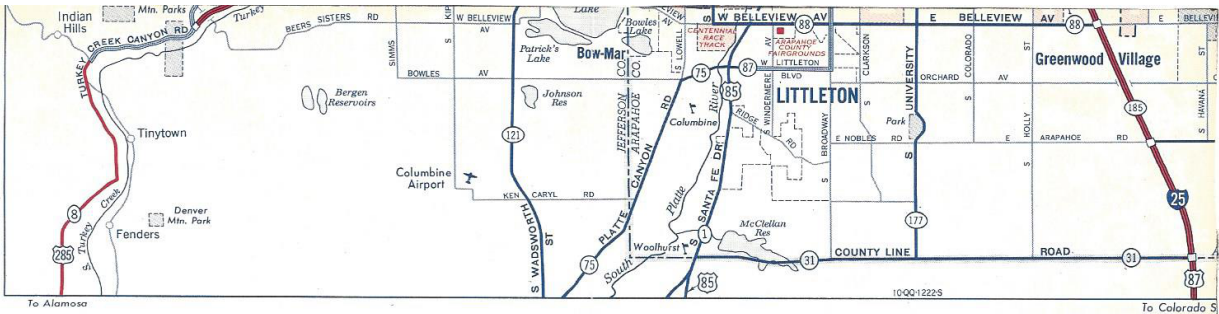
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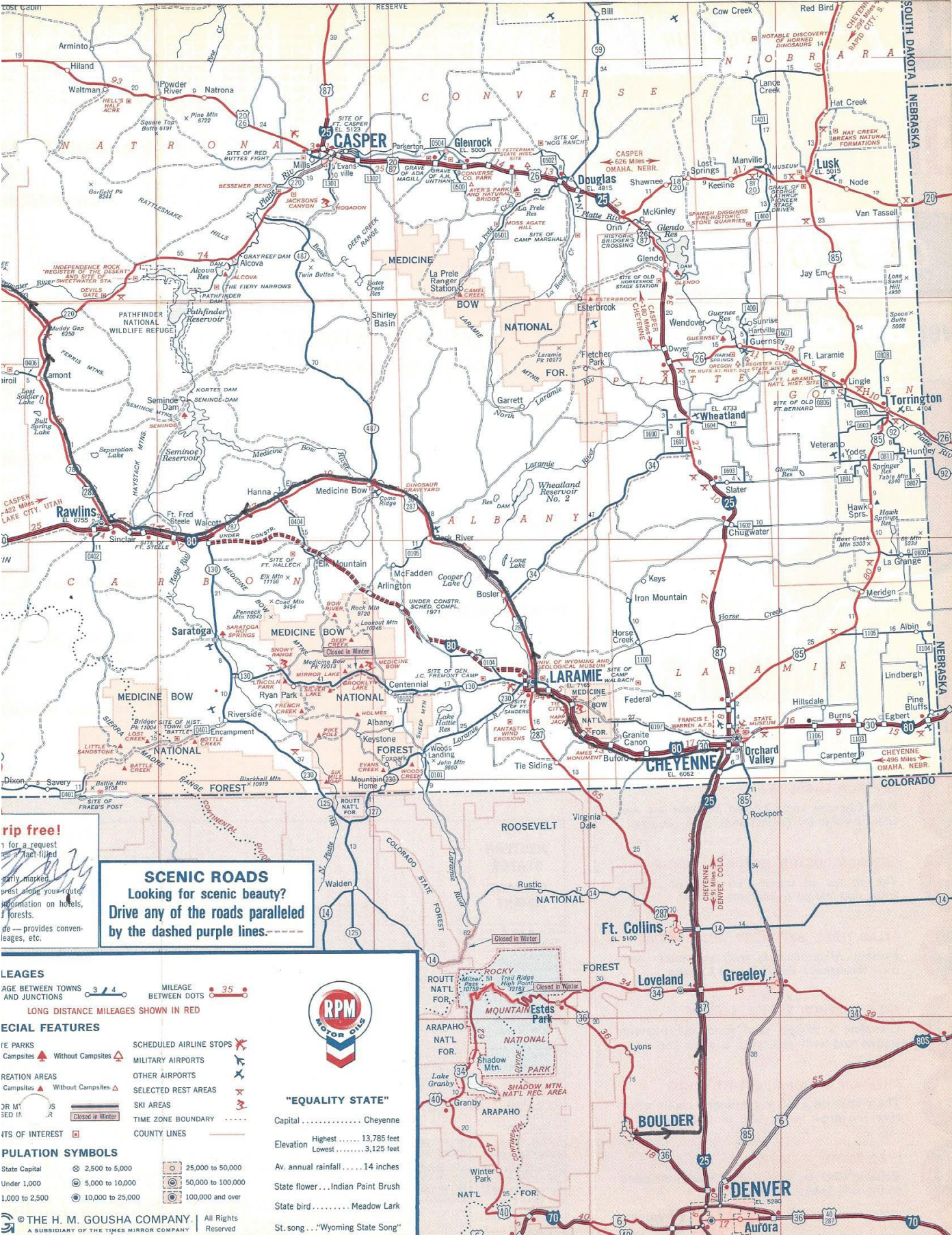
al attention



Friday 3rd.
FRIDAY

JULY 3, 1970

Set off for Yellowstone, a little later than planned as the hewises were not quite organized. Stopped for coffee and doughnuts at Medicine Bow, and then drove on, eating lunch by the side of the road. First sight of the Grand Tetons around 5 o'clock. The camp sites were full, so we went back down the road looking for a campsite. We tried a commercial site but it was swarming with mosquitoes so we got out of it v. quickly. I'd then had the idea of getting the Rangers permission to camp at a picnic area. It proved to be a v. nice site, and we managed without wash-rooms for one evening.



Saturday 4th Packed up quickly in the morning, and rushed into Yellowstone. We went first to Grant Village, and actually had a choice of campsites. We put up the two tents, did some shopping, had lunch, and then went on a tour of the geyser area, ~~and~~ saw Old Faithful, and other geysers, mud volcanoes and hot pools. Quite a lot of walking was involved touring the various geyser basins, and I opted out of most of the tour as my ankle had swollen up badly because of mosquito bites. Dana and Chris saw 99% of all there was to see.



Yellowstone National Park



Yellowstone National Park



Yellowstone National Park



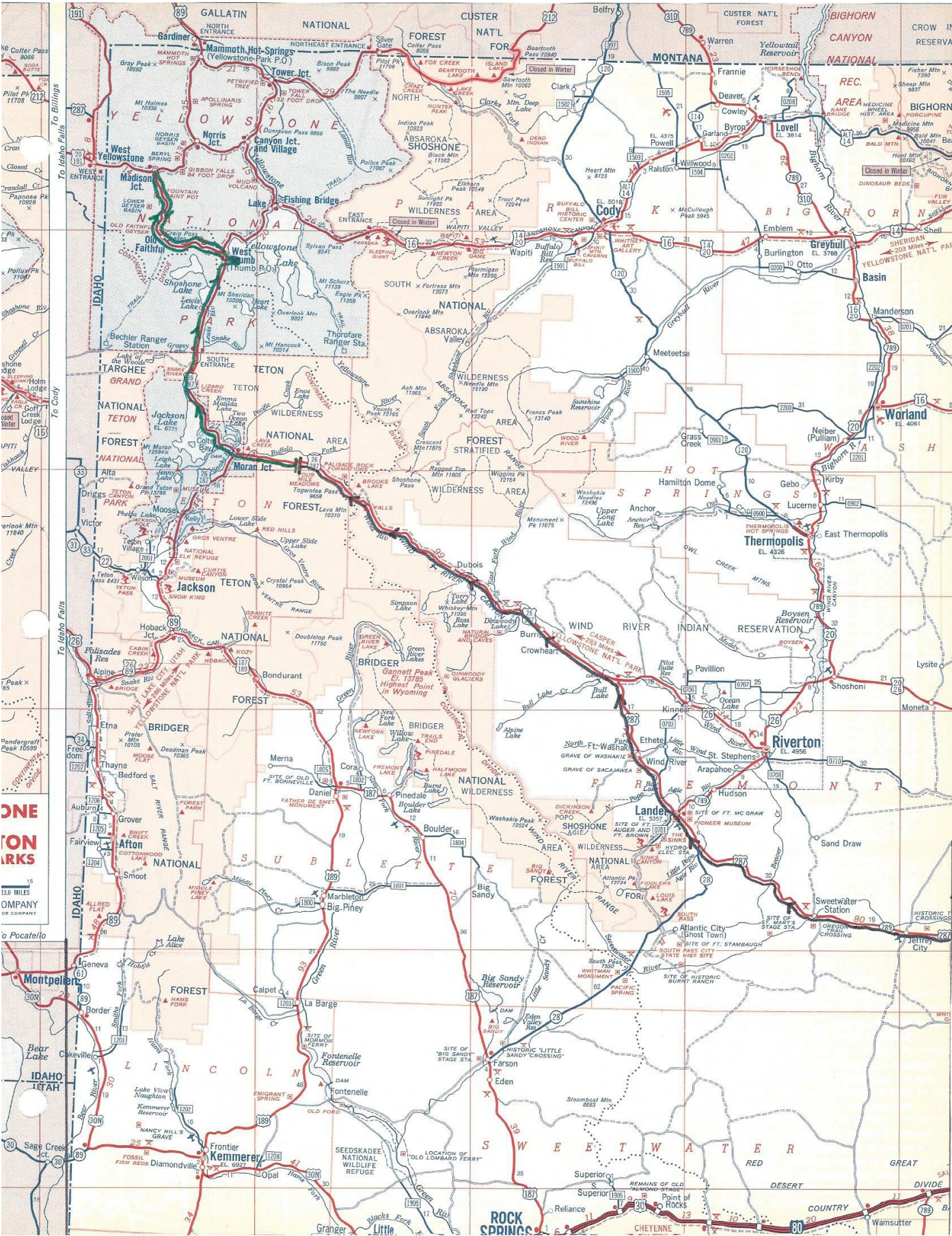
Yellowstone National Park



Yellowstone National Park



Yellowstone National Park



Mammoth Hot Springs

Upper Terrace Walk—A 2-hour trip, explores active and ancient spring sites. Tu, Th, Sat, 9 a.m., starting from Liberty Cap. Bring car.

Fort Yellowstone Twilight Walk—Stroll for an hour along the barracks and stables of Old Fort Yellowstone. Meet at Mammoth visitor center M, W, F, 7:00 p.m.

SELF-GUIDING TRAILS

Short, easy-grade self-guiding loop trails are located at **Porcelain Basin** in Norris Geyser Basin, at **Fountain Paint Pots** in the Lower Geyser Basin, **Mud Volcano** on the road between Canyon and Lake, and at the **Mammoth Terraces**. Guide booklets, on hand at the start of trails, tell about things to look for as you walk.

Trail guide booklets are also available for the **Canyon** and the **Upper Geyser Basin** areas.

CAMPFIRE PROGRAMS

Illustrated talks are given every evening at amphitheaters in 7 Park campgrounds. Programs, lasting about an hour, begin at 9:30 p.m. June through July, 9:00 p.m. beginning August 1. Campground amphitheater locations are **Grant Village**, **Bridge Bay**, **Fishing Bridge**, **Canyon**, **Madison**, **Tower Falls** and **Mammoth**.

Sunday **The Living Land**
the plants and animals of Yellowstone, their dependence upon one another, and man's role.

Monday **Yellowstone Country**
is a broad look at many park features and can help you plan your stay here.

Tuesday **The Fires Within**
relates Yellowstone's volcanic past to today's landscape.

Wednesday... **National Parks - An American Idea**
talks about this park and others, and what open space and wild land can mean to our lives.

Thursday **The Living Land**

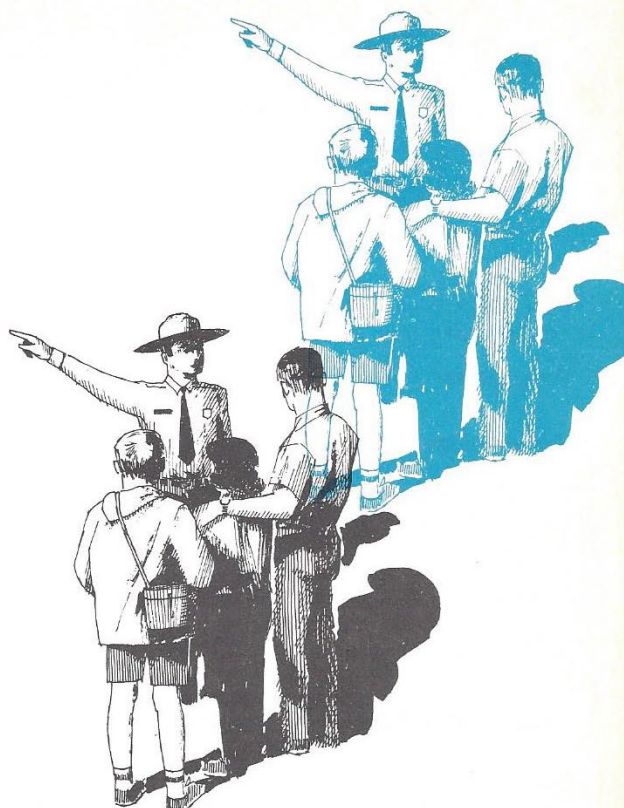
Friday **Yellowstone Country**

Saturday **The Fires Within**

PUBLICATIONS

A wealth of reading matter on Yellowstone, natural and human history, and other National Parks is on sale at all visitor centers. These pamphlets and books are sold by the Yellowstone Library and Museum Association, a non-profit organization dedicated to helping the National Park Service program of information and education in Yellowstone.

This pamphlet courtesy of the
Yellowstone Library & Museum Association.



EXPLORE YELLOWSTONE!

ranger conducted activities 1970

To Help You Enjoy Your Trip

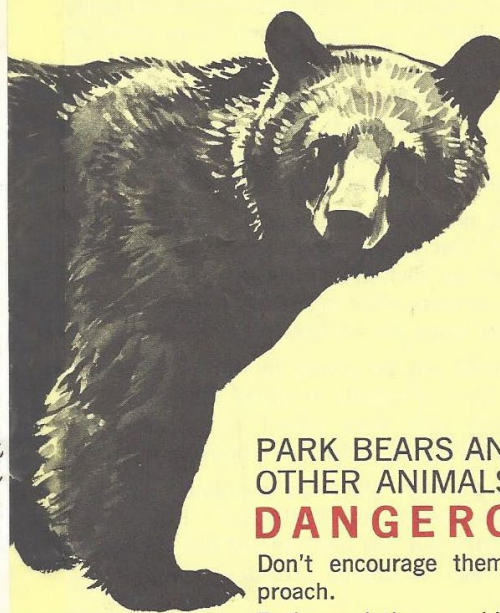
While you are in Yellowstone the National Park Service invites you to take advantage of the many free services offered to help you learn about the Park. The interpretive program described in this pamphlet is conducted by Park Rangers. The program has something of interest for everyone—for a family or tour group, whether you are here for a day or a week. Won't you join us?



ENJOY
THEM



AT A
DISTANCE



PARK BEARS AND
OTHER ANIMALS ARE
DANGEROUS

Don't encourage them to approach.

Park regulations prohibit feeding or molesting animals.

Stop cars in pullouts ONLY — not on roadway.

Keep car windows closed when near bears.

THIS WARNING IS FOR YOUR PROTECTION

1,2
Forecaster
of the Firehole

| Name | NAME | ERUPTION
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| UPPER GEYSER
BASIN | OLD FAITHFUL | 32 → 98 | 120 → 300 | 90 → 180 | | Bubbles a fair bit before
eruption |
| | CASTLE | 510 → 540 | ~1200 | 90 | | - followed by noisy steam phase
- last erupt and blow |
| | GIANT (domest) | | | ≤ 250 | | Discharge 10 ⁶ gallons |
| | GIANTESS | | | | | |
| | GRAND | 480 → 900 | 12 → 10 mins
for 8 → 12 bursts | 6 to 45 bursts
& 200 ft | | |
| | PLUME | 27 | ~1 min | 25 → 30 ft | | |
| | RIVERSIDE | 380 | | 75 | | |

it goes. Where the hot water can escape at the ground surface, a hot spring is formed. The diagram shows how a hot spring may appear in cross section.

Two properties of the extremely hot water are important in the development of the plumbing system of a hot spring. First of all very hot water has a lower viscosity, so that it can flow faster through small channels. Secondly, it is a much better solvent than the cooler waters we are accustomed to at the earth's surface. It dissolves astounding amounts of silica, a common component of volcanic rocks. In this way small channels are enlarged and the water can move more freely.

Uncommon elements such as lithium, fluorine, arsenic and boron are contained in the substances dissolved by the hot waters and carried to the surface. There they may be deposited in the spring or in the runoff channels. Silica, sometimes called siliceous, is the gray to white deposit that lines the bottom of the spring and forms terraces along the runoff channels.

Silex Spring's water supply is so great that it overflows most of the time. Throughout the year the overflow provides a restricted hot environment for the algae.

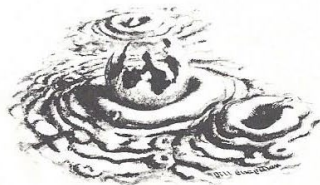
The algae are food for several kinds of flies that live in and on the hot water. The flies, in turn, are food for mites, spiders and various insects. It is fascinating to watch this little community and see the interactions between the plants and animals in it. Notice that in the pool and at the head of the overflow, the water is too hot (188° to 199° F.) for the community to exist.

Let's go to the next stop and look at a paint pot.

FOUNTAIN PAINT POT

In climbing the slope from Silex Spring you have reached an area which has a variable supply of surface water. In early summer the muds are thin and watery. By late summer the mud becomes quite thick. The bubbling action which is

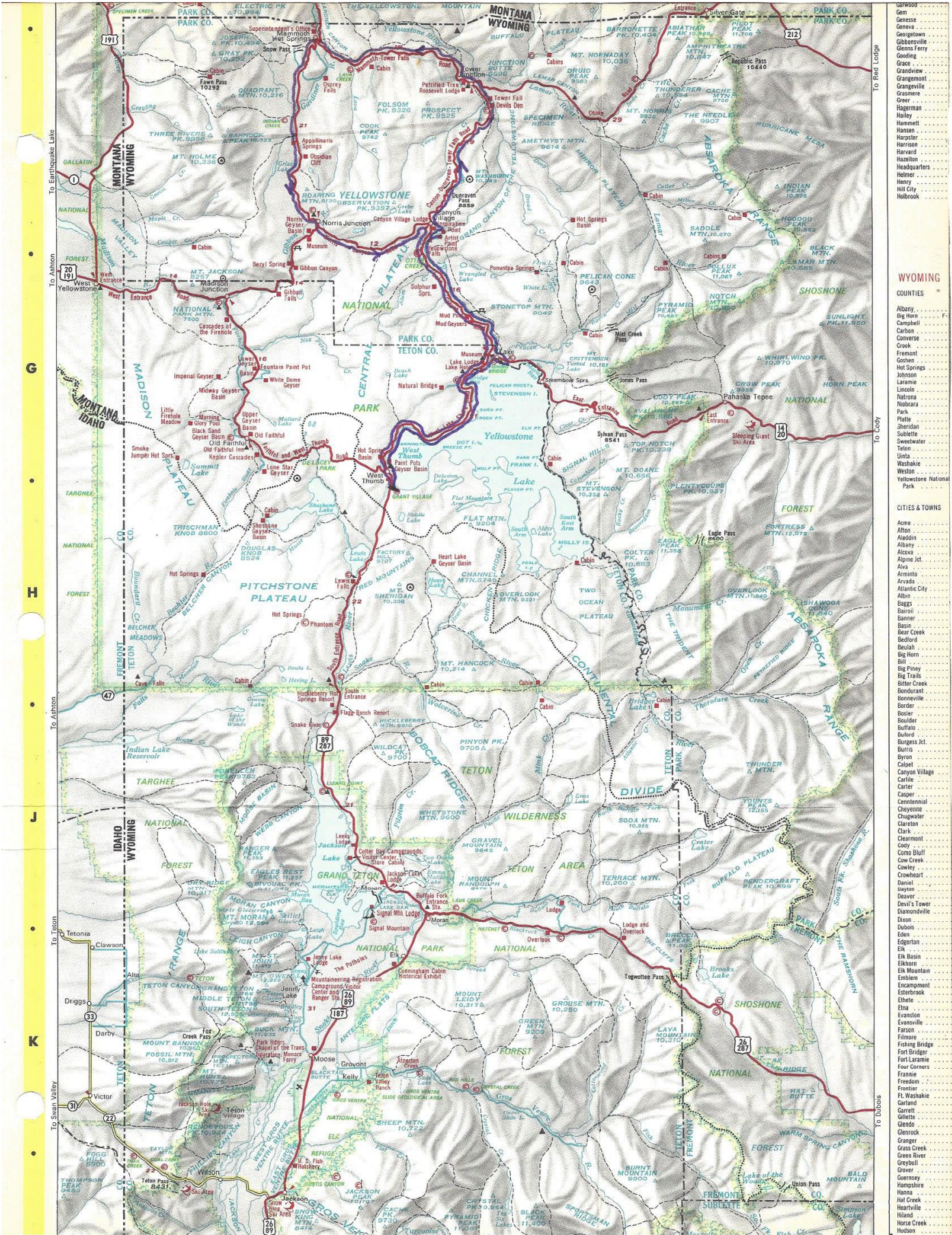
Steam bubble bursting in the
Fountain Paint Pot.

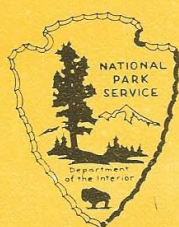
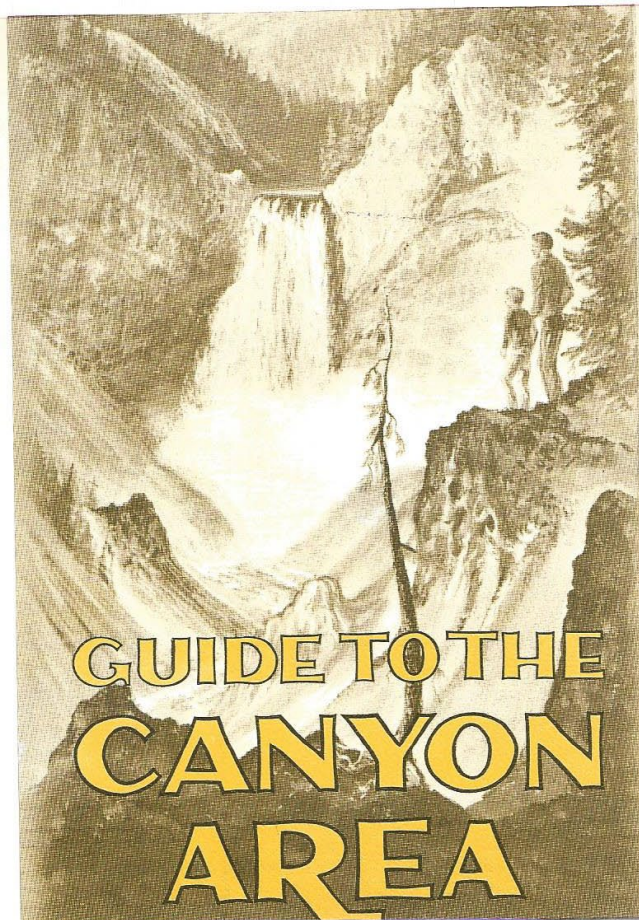


Sunday 5th. After breakfast we all piled into the newish Ford Galaxie and started on a loop tour of Yellowstone. The area is of course high plateau - pine covered slopes and grassy meadows, well watered and beautiful. The most dramatic scenery we saw was the Grand Canyon of the Yellowstone - a deep narrow gorge cut through the yellow rock by the Yellowstone river. The Park is famous for its bears. We had frequent bear warnings - Told to keep food in the car etc - and we had heard lots of stories from friends about all the bears they had seen. Therefore we were rather disappointed when we had driven practically 100 miles around the Park without seeing a single bear. We had been consoled by sights of other wild animals - deer, elk, moose, coyote. Then when we had almost given up hope, we came up to a traffic jam, caused by one black bear ambling along beside the road. Chris and Ed jumped out of the car, leaving Margaret to drive, and the kids and I got out for a bit too. When the bear

moved towards us, we got in quickly and did the rest of our viewing from the car. The mass hysteria was the most notable aspect of the episode - everyone was terribly excited.

Yellowstone is extremely well developed, and there were lots of tourists around. However as there are a number of villages and the campsites are well spread out there was no sense of crowding. Yosemite was very different.





This leaflet has been produced to increase your enjoyment of Yellowstone National Park by the Yellowstone Library and Museum Association in cooperation with the National Park Service. U. S. Department of the Interior

Canyon Area Trails

There are miles of trails in the Canyon area. Many are well traveled, short, and paved; others are maintained and marked, but not paved.

The elevation of the Canyon rim is about 8000 feet, which makes even the short walks surprisingly strenuous for many people. Take your time, and wear good walking shoes or boots. At times it is wise to carry raingear. On the longer trails you may want to carry water and a lunch, or whatever food you think necessary.

As you travel, to avoid accidents, watch your footing and please stay on the trails. Climbing into the Canyon off the established trails is both dangerous and prohibited by law. Due to the steepness of the Canyon walls many trails have been constructed in switchback ("zigzag") fashion. It is dangerous to cut across switchbacks. You can easily slip and fall and you might knock rocks down on someone below you. You will also cause ugly and unnatural erosion of the walls.

Do not throw anything into the canyon. Rocks and other hard objects might injure someone below you. Litter is unsightly. Removing litter from the Canyon is a dangerous and expensive job. Please help us keep the area clean.

If you plan to hike the backcountry be sure to pick up a fire permit at the Ranger Station. While there you can also obtain the latest trail information. Any person in uniform will be happy to help you with the permit and advise you regarding the adequacy of your equipment for the

The climb to **Observation Peak** is strenuous, rising about 1400 feet in 3 miles. From the top the hiker is rewarded with an outstanding view of some of Yellowstone's wilderness country.

A second spur from the Howard Eaton Trail in this area takes the hiker from **Cascade Lake to Cascade Lake Picnic Area**, which is 1-1/4 miles north of Canyon Junction on the Tower-Canyon road. The hiker with limited time can take a very enjoyable walk from the picnic area to the lake, then on to the trailhead at the Norris-Canyon road, covering about 5 miles.

A third spur from the Howard Eaton Trail offers easy access to **Grebe Lake** from the Norris-Canyon road. About 3 miles west of Canyon Junction, at the Grebe Lake parking area and trailhead, a 3 mile trail goes directly into Grebe Lake. When coupled with the Howard Eaton Trail from either Cascade Lake Picnic Area, or the trailhead 1/2 mile west of the junction, half day walks of about 6-1/4 and 7-1/4 miles, respectively, are possible.

Howard Eaton Trail to Tower Fall; Seven Mile Hole — Park at the Glacial Boulder. Until its juncture with the Howard Eaton Trail, this trail follows the Canyon rim past a good view of Silver Cord Cascade, at 1-1/2 miles. At almost 2 miles this rim trail joins the Howard Eaton. Continue north at this junction.

At 3 miles the **Seven Mile Hole Trail** drops off to the right, 1250 vertical feet in about 2 miles. Hike it carefully, watch your footing, and conserve your energy. Depending on your condition and the weather, it can be a long climb back

Monday 6th.

Margaret had started a cold on Sunday & Monday morning she felt worse, so the Lewises decided to go home. Unfortunately it rained most of the morning. We went down to the Grand Tetons, and had a brief look around, did some shopping and had lunch. Then we went back to Yellowstone, and had a short car ride. At ~~Inspiration Point~~ a lady ranger had set up a telescope, trained on a herd of bison, with some grizzlies also in the area. By the time we got back to our camp, everything had dried up pretty well. There were a few drops of rain, but we were able to have dinner without getting wet, and the evening was v. pleasant. Chris and the children went down to the lake for a while.



lowstone

AL PARK • WYOMING, MONTANA, IDAHO

PRINTING OFFICE: 1968—346-116/147

REVISED 1968

MENT OF THE INTERIOR — the
pal natural resource agency bears
ation to assure that our expend-
are conserved, that our renew-
are managed to produce optimum
that all resources contribute to
nd prosperity of the United States,
e future.

partment of the Interior
National Park Service



Embracing a wonderland of hot springs, geysers, steam and gas vents, boiling pools, mud volcanoes, and canyons, Yellowstone National Park is the oldest unit in the National Park System. It was established on March 1, 1872, and now contains about 3,400 square miles in the northwest corner of Wyoming, overlapping into Montana on the north and west and Idaho on the west and south.

The central part of the park is essentially a broad, elevated, volcanic plateau, with an average elevation of about 8,000 feet. Surrounding it on the south, east, north, and northwest are mountain ranges, their highest peaks and ridges rising from 2,000 to 4,000 feet above the general level of the tableland.

Its geysers are celebrated the world over; for size, power, and variety of action, as well as number, Yellowstone's geysers have no rivals. The more prominent geysers are confined to three basins lying near each other in the west-central part of the park, but other hot-water manifestations occur at more widely separated points. Marvelously colored hot springs and mud volcanoes are among other thermal features of Yellowstone.

WHAT TO SEE AND DO

To most visitors, the four main subjects of interest at Yellowstone are the *thermal features*, the *Grand Canyon of the Yellowstone*, *Yellowstone Lake*, and the *wildlife*.

The major *thermal areas* can be reached easily by driving the Grand Loop Road. The largest concentration of thermal features is found between Old Faithful and Fountain Paint Pots. Other significant thermal features are found at Mammoth Hot Springs, Mud Volcano, West Thumb, and Norris Geyser Basin. Though most of the thermal features are beside the road, many of them require a short walk. For the back-country hiker, Shoshone Geyser Basin offers an opportunity to visit a thermal area free of manmade intrusions.

Thermal areas frequently contain thin crusts and pools of boiling water. Stay on boardwalks at all times and keep children and pets under physical restraint.

The spectacular *Grand Canyon of the Yellowstone* and *Yellowstone Falls* at Canyon Village can be enjoyed either from the numerous viewpoints along the road or from the extensive trail system along the canyon rim.

Yellowstone Lake, a true window to the wilderness, provides one of the easiest means of access to the wilderness areas in the southeastern corner of the park. Private boats may be used or boats can be rented at various points along the lake.

In Yellowstone, a *wildlife* display unsurpassed in the United States is available if you have the time

YELLOWSTONE

to seek it out. Many of the wildlife forms are found throughout the park. Early mornings and late afternoons are best for observing wildlife. Rangers in the visitor centers can give you some helpful hints on where to look.

Yellowstone is a place where you must adjust your personal timetable to nature's performance. In good time, you will see things happening—an osprey alighting on a pinnacle-top nest, a bull moose emerging from forest shadow and wading into a marsh, a family of grizzlies searching for food in a wind-rippled prairie, or a cut-throat trout rising for insects.

Bears and other animals are dangerous. When observing wildlife, park safely and, in the case of bears, stay in your car with the windows closed. Do not get close to any animal—not only are you in danger but you will tend to drive them away. If camping, maintain a clean camp and keep food locked in the trunk of your car. Do not feed or molest any wild animals.

Wildlife photography is a popular visitor activity. All park animals however, are wild and dangerous. Avoid approaching them closely or getting between a mother and her young.

ENJOYING YOUR VISIT

Trails reach all parts of the park. Some require a degree of skill to travel because they are long and traverse rough terrain, but many are quite pleasant for a 1- or 2-hour walk or ½-day hike. A visit to the more remote sections of the park will be amply rewarded in the study of wild animals in their native habitats. Here nature remains undisturbed, scenic beauty is vividly expressed, and spots that appeal can be studied to your heart's content. Park rangers will be glad to suggest hikes in keeping with your interests.

Fishing in Yellowstone is for wild trout, and you don't need a license to fish in park waters. The fishing regulations are designed to preserve wild fish populations and maintain high quality angling. Enjoy fishing as part of your park experience.

At Yellowstone the varied interpretive programs will help you to greater knowledge and understanding of both the natural and the human history of the park. The program includes exhibits at the visitor centers, guided walks, campfire programs, and informal talks.

ACCOMMODATIONS AND SERVICES

The park season is from May 1 to October 31. Most concessioner accommodations are open from mid-June to Labor Day, with limited accommodations and services maintaining an

YELLOWSTONE SIDELIGHTS

In addition to the more familiar attractions such as Old Faithful and the Grand Canyon of the Yellowstone, the park contains many less famed but equally interesting features. The following hints may make your visit more complete:

Wildlife and their favorite haunts:

Pronghorn frequent the flats around the North Entrance Station, and the lowland areas between Mammoth and the Northeast Entrance.

Elk are generally found in meadows throughout the park. Check the large meadows south of Norris and the meadow areas between the West Entrance to Old Faithful. Elk are more commonly seen in spring and autumn than in summer.

Moose may be seen in the big willow thicket between Indian Creek Campground and Apollinaris Spring; Hayden Valley between Lake and Canyon; and Pelican Creek east of Fishing Bridge.

Bison are not commonly seen in summer. Explore Lower Geyser Basin in spring and autumn, and Lamar Valley in spring.

Bighorn sightings are common on Mount Washburn.

Birds. Watch for osprey in the Grand Canyon of the Yellowstone and for trumpeter swan, osprey, pelicans, eagles, ducks, and geese in Hayden Valley.

Interesting thermal areas:

The most concentrated area where geysers, hot springs, mud pots, and fumaroles can be seen is the Fountain Paint Pots halfway between Madison Junction and Old Faithful.

Looking for beautifully colored mud pots? Try the Artist Paint Pots on a short trail at the south end of Gibbon Meadows south of Norris.

For a good spot from which to obtain an excellent photograph of Grand Prismatic Spring, the largest hot spring in the park, hike up the small bluff on the opposite side of the road at Midway Geyser Basin.

Black Sand Basin in the Old Faithful area is a choice location for highly colored pools and runoff channels.

Visit West Thumb for deep, blue pools.

After you have seen Old Faithful, check at the visitor center for a prediction on when other large, spectacular geysers in the vicinity will erupt.

Mud Volcano area between Lake and Canyon contains excellent examples of violently churning, highly fluid mud springs.

Water wonderland:

For the waterfalls enthusiast, Yellowstone is a paradise. In addition to the Upper and Lower Falls at Canyon, numerous other falls are to be found along the roadways, including Rustic Falls just south of Mammoth; Gibbon Falls between Norris and Madison Junction; Kepler Cascades about 2 miles south of Old Faithful; Virginia Cascades between Norris and Canyon; and Tower Falls just south of Tower Junction.

Short hikes lead to Mystic and Fairy Falls in the Old Faithful area. The seasoned hiker will find the falls in the Bechler area among the park's most beautiful.

Out-of-the-way places:

If you like to get off the beaten path, try the Bunsen Peak Road or the old Mammoth-Tower Road. For outstanding mountain scenery, take a trip to the top of Mount Washburn.

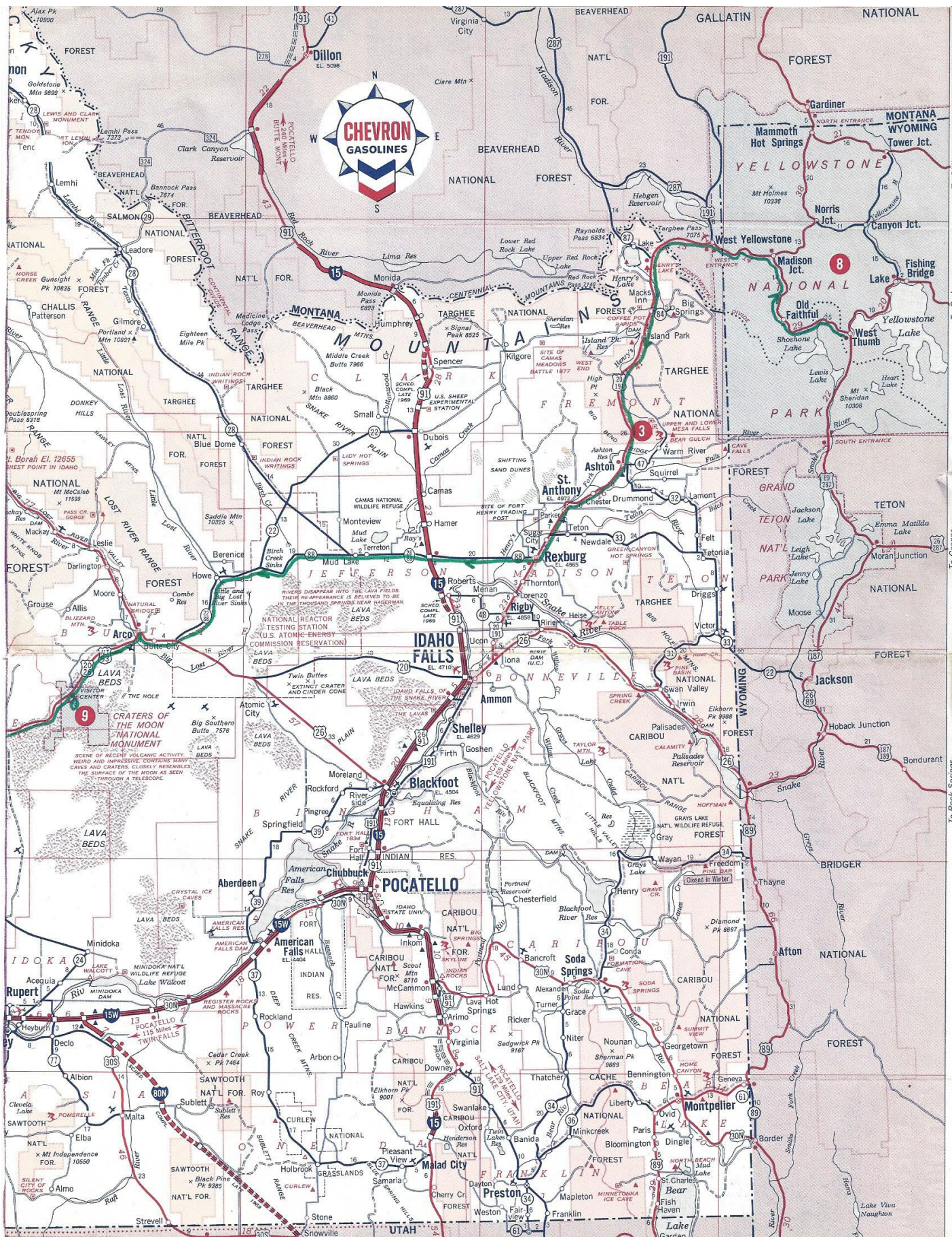
| | Mammoth | Madison Junction | Norris | Old Faithful | West Thumb | Gibbon Meadows | Fishing Bridge | Lake | Tower Junction | Rosevelt |
|-----------------------------------|---------|------------------|--------|--------------|----------------|----------------|----------------|------|----------------|----------|
| Hotel | x | | | x | | | | x | | |
| Cabin (economy-family-regular) | x | | | x | | | | x | x | x |
| Overnight shelter | | | | | x | | | x | | |
| Amphitheater | x | | x | x | | x | x | | x | x |
| Auto repair | x | | | x | | | | | x | x |
| Boat rental | | | | | x | x | x | | | |
| Eating facility | x | | | x | x | | | x | x | x |
| Cas station | x | | | x | x | | | x | x | x |
| Grocery and curio store | x | | | x | x | | | x | x | x |
| Horse rental | x | | | x | | | | | | x |
| Ice | x | | | x | x | x | x | x | x | x |
| Laundromat | | | | x | x ¹ | | | | x | x |
| Medical (hospital-clinic) | x | | | | | | | x | | |
| Nurse on duty | | | | x | x | | | | x | |
| Photo shop | x | | | x | x | | | x | x | x |
| Post office | x | | | x | x | | | | x | x |
| Propane service | | | | x | | | | | x | |
| Rent-a-car | x | | | x | | | | x | | |
| Sewage dump station | | | x | x | | x | x | | x | x |
| Shower | x | | | x | x | | | x | x | x |
| Stagecoach ride | | | | | | | | | | x |
| Telegraph | x | | | x | | | | x | x | |
| Tour bus | | | | x | | | | x | x | |
| Trailer park with utilities (fee) | | | | | | | | | x | |
| Visitor center | x | x | | x | | x | | | x | x |

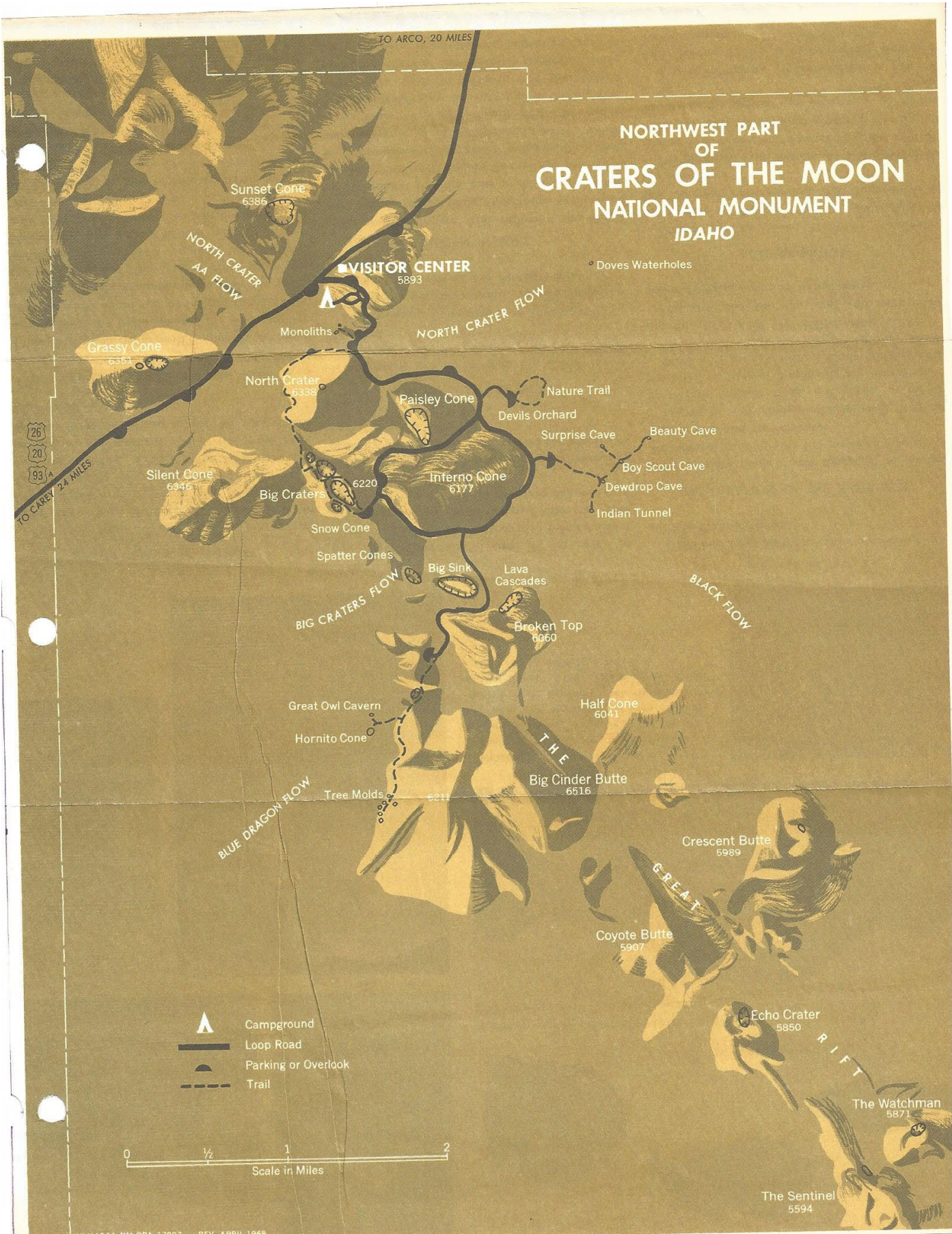
¹Launderette at West Thumb not self-service.

Tuesday 7th we left Yellowstone by the West Entrance and started our journey across Idaho on long straight roads through ranching and farming country. We had lunch at Pico, and then stopped at Craters of the Moon Nat. Mon. Lava beds dot the region, but the Monument has a concentration of lava beds, cinder cones and splatter cones. Since it is recent lava flow, the vegetation is scant. The bleakness of the landscape was emphasized by the storm which was passing overhead while we were there. We visited a couple of cones and Chris and Jana hiked to a cave. Then we left, after about a hour and a half, headed for Boise. We actually had hopes of reaching Burns, Oregon, but we began to feel the strain and stopped at Ontario. We checked into a motel there, and Chris took a load of washing to a laundrette while the kids and I showered and watched T.V.



Craters of the Moon National Park







Wednesday 8th

The trip from Ontario to the Hara Beds National Monument was fairly easy. We had lunch at Goose Lake Recreation Area, and reached Hara Beds by mid-afternoon. The campground was v. good ~ well shaded, half-empty, clean gravel sites, good "comfort stations". The only draw-back was rattle-snake warnings. However we didn't see any, not for lack of looking on my part. After setting up camp, we went to the Museum at the Visitors Centre, and explored a few caves: Mush Pit, Valentine Cave and Skull Ice Cave. ~ the latter named after the large number of big-horned sheep skulls found in it, and the ice. Jana and Kathy were as keen as Chris to explore them, and they especially liked the ones with ice in. Then, having had dinner, we went to a campfire programme. The talk was given by a ranger ~ main topic was big-horned sheep, which once lived in the area and which they hope to reintroduce, and we saw slides of the area & the native animals.



Lava Beds National Park



Lava Beds National Park



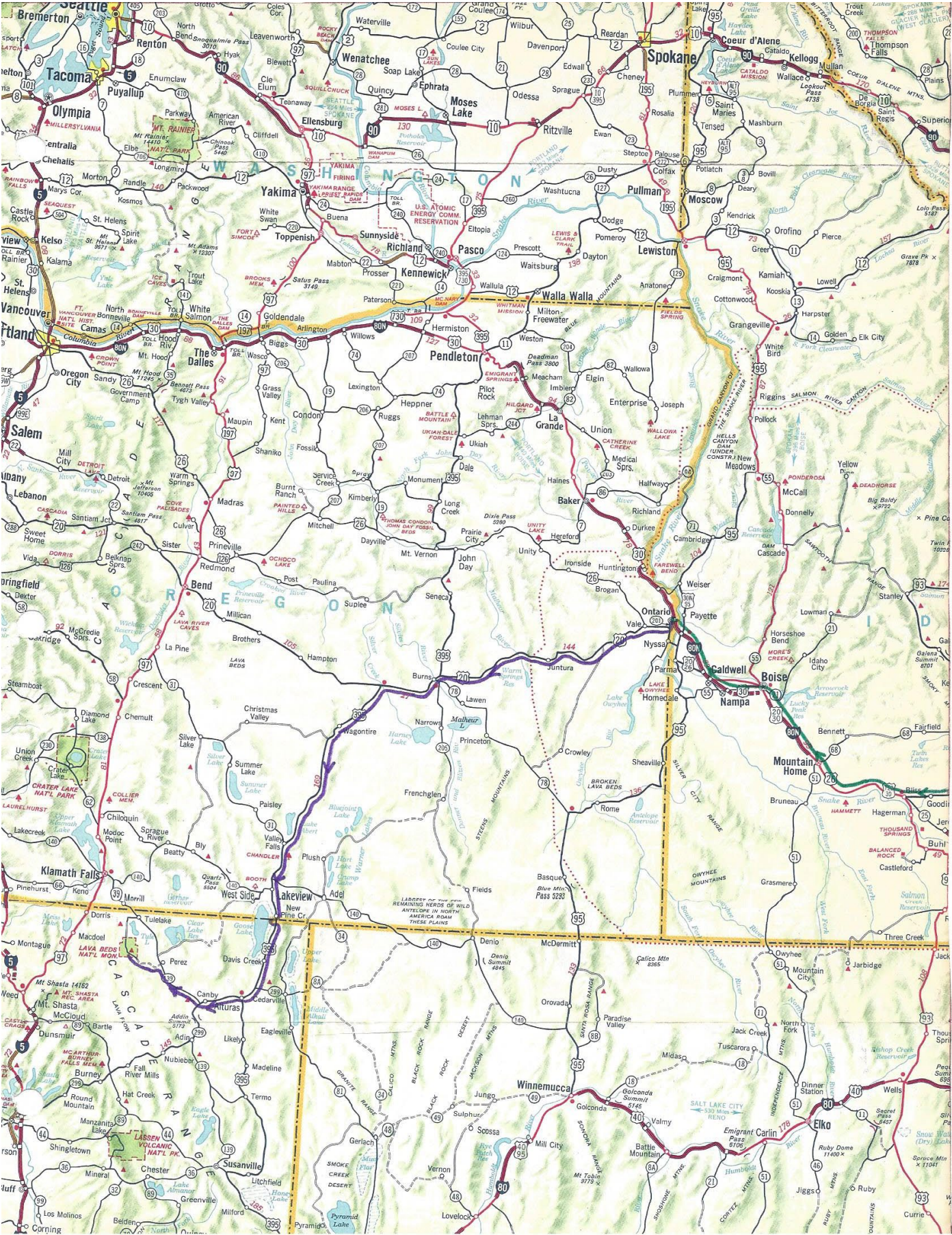
Lava Beds National Park



Lava Beds National Park

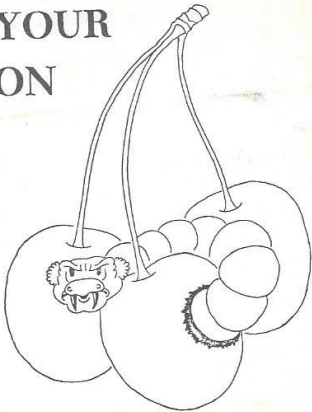


Lava Beds National Park



THANKS FOR YOUR
COOPERATION

Here's how you have
helped California
... and yourself:




FRUIT FLIES IN CHERRIES . . . You have traveled through an area infested with the Western cherry fruit fly. This insect is not known to occur in the commercial cherry orchards in California. The cherry crop in California has a gross value of over \$13 million each year. It is estimated that the loss in production and control costs, from this pest in California's cherry orchards, would be \$1.3 million annually.

VEHICLES ARE INSPECTED . . . to prevent many destructive insects, plant diseases, weeds and wild animals present in other states from entering California. These pests, which destroy food crops, trees and ornamental plant and flowers, can easily hitchhike a ride into the State in your vehicle without your knowledge. They can hide on the leaves or roots of a favorite plant from a backyard garden, in good-looking fruit or vegetables which you may have purchased while traveling.

PLANT PESTS THREATEN OUR FOOD SUPPLY . . . Nearly one-half of the fruits and vegetables consumed in the United States is produced in California. Over 200 food and fiber crops are grown in this State. Any one of several plant pests present in other states could do great harm to this food supply as well as to our forests, parks and home gardens.

DON'T HELP HITCHHIKING BUGS . . . We seek your cooperation in preventing the unintentional movement of plant pests. If you are carrying any plants, fruits or vegetables, soil or wild animals which you did not declare at the agricultural inspection station, please call the County Agricultural Commission (list on reverse side) for inspection upon arrival at your California destination. Thank you.

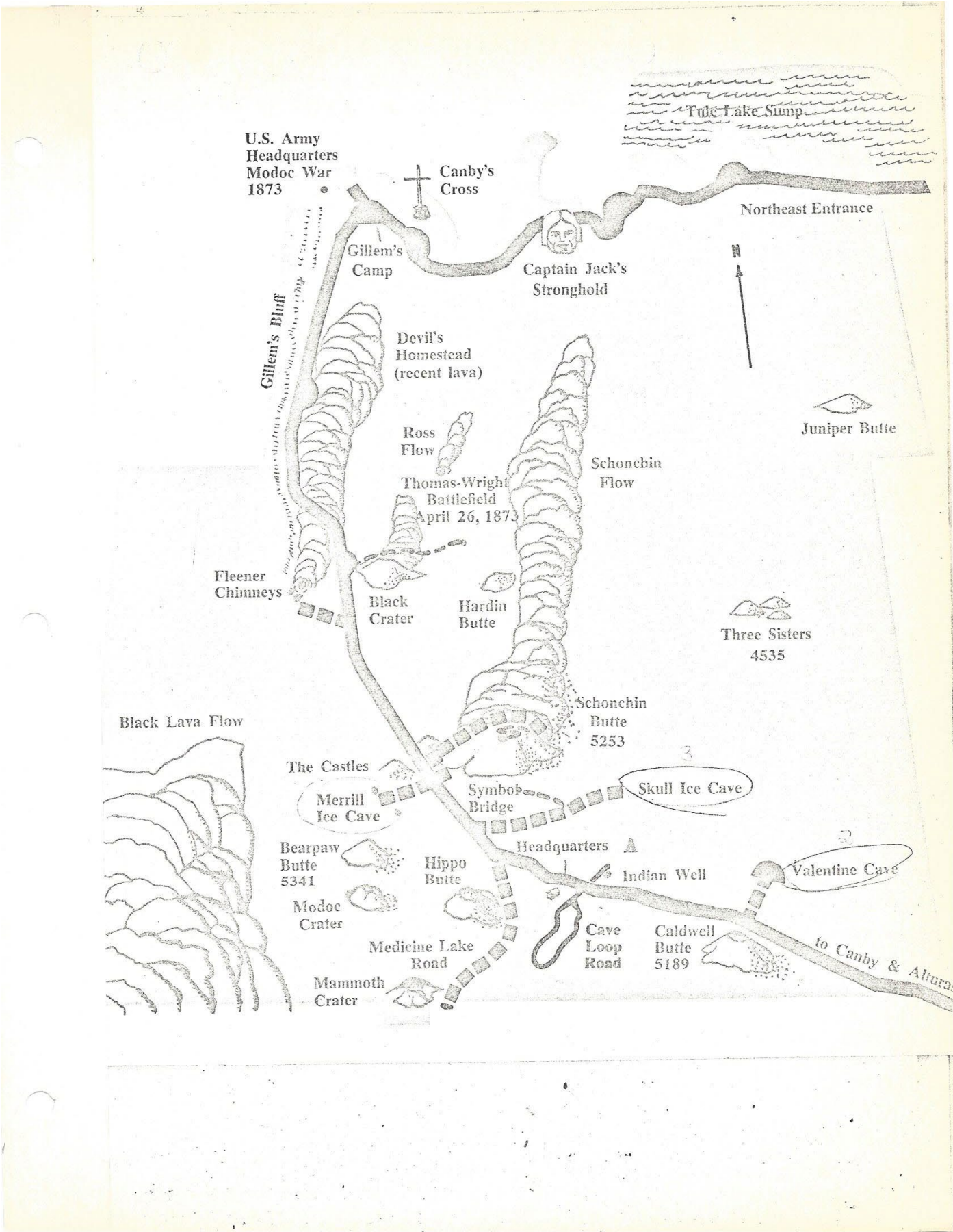
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| BENTON | | 2 | 18 | FEB. | |
| BLYTHE | | 3 | 19 | MAR. | |
| DORRIS | | 4 | 20 | APR. | |
| HORNBROOK | | 5 | 21 | MAY | |
| LONG VALLEY | | 6 | 22 | JUNE | |
| MEYERS | | 7 | 23 | JULY | |
| NEEDLES | | 8 | 24 | AUG. | |
| REDWOOD HWY. | | 9 | 25 | SEPT. | |
| SEARCHLIGHT | | 10 | 26 | OCT. | |
| SMITH RIVER | | 11 | 27 | NOV. | |
| SPAZ | | 12 | 28 | DEC. | |
| TRUCKEE | | 13 | 29 | | |
| TULELAKE | | 14 | 30 | 1969 | |
| VIDAL | | 15 | 31 | 1970 | |
| WINTERHAVEN | | 16 | | 1971 | |
| WOODFORDS | | | | | |
| YERMO | | | | | |

CERTIFICATE OF INSPECTION

This vehicle has been inspected by a duly authorized inspector of the California Department of Agriculture.

BUREAU OF PLANT QUARANTINE
California Department of Agriculture
HEADQUARTERS ADDRESS
1220 N STREET
SACRAMENTO, CALIF. 95814

Insp. No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18



war

MODOC

The Modoc War of 1872-73 was one of the last clashes between Indians and white men in the Pacific west. Considering the small number of Indians involved and the hundreds of troops amassed against them, it probably was the most costly Indian campaign ever waged by the United States. The Modocs were not exceptional fighters, nor were they well organized, but the skill and organization of the Americans were even worse. These facts, combined with the clear advantage for the Indians of the incredibly rugged yet familiar terrain, prolonged the dispute beyond all expectations.

The Modocs were an independent people, fiercely attached to their homeland of sagebrush plateaus, wooded mountains, and broad, shallow lakes. They lived largely on fish and waterfowl, and on bulbs and seeds. When settlers began to cross their territory and disturb the game, the Modocs attacked wagon trains and harassed would-be ranchers. Troops and volunteers sent to protect the emigrants learned that the Modoc homeland was highly suitable for stock-raising, and demand grew for the removal of the Indians.



CAMP AT TULE LAKE.

In 1864 the Modocs agreed to move north to the Klamath Indian Reservation. But there they lived on Klamath homeland, a fact that the Klamaths would not let them forget. One group, led by Captain Jack, finally had all it could take of the overbearing Klamaths and returned to its former home



CAPTAIN JACK.

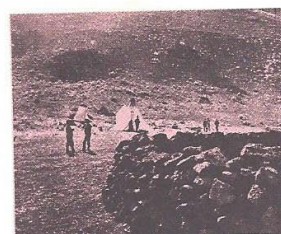
on Lost River, north of Tule Lake. Friction then developed with the ranchers who, meanwhile, had occupied the region. Jack's men walked freely into the settlers' homes, frightened their families, and demanded tribute for use of the land.



ON THE LOOKOUT FOR AN ATTACK.

On November 29, 1872, troops, aided by settlers, attempted to force the Modocs back to the reservation. However, there were too few soldiers to overawe the Indians. After a brief fight the Modocs escaped to the natural fortress in the lava beds now known as Captain Jack's Stronghold. During their retreat, a few Modocs killed 14 male settlers on isolated ranches near Tule Lake.

The settlers in this California-Oregon border country became more and more indignant. Troops were rushed to the Modoc country,



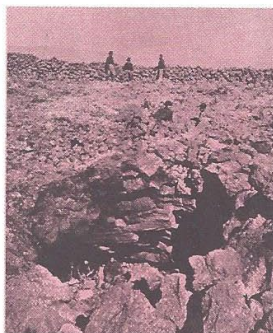
BLUFF WEST OF TULE LAKE.

and on January 17, 1873, nearly 350 soldiers and volunteers attacked the 50 or more Indian fighting men and their families—some 160 in all—in the Stronghold. Confused by fog, hampered by the brutal terrain and winter cold, and intimidated by enemy fire which seemed to come from everywhere, the troops after a long day retreated. They had lost about 10 percent of their number to the Modocs.

At the urging of humanitarians throughout the country, the Government next attempted to negotiate. The Modocs spun out the talks as long as possible, hoping to escape with the coming of good weather. They feared trusting themselves to the soldiers and had no desire to return to the reservation, particularly since some of them were by then under indictment for murder.

The Modocs had one more plan: a group among them decided to assassinate the peace commissioners and a few high-ranking army officers. Following what would have been true under their own customs, they believed that by killing the white man's leaders they would end the opposition. Captain Jack at first opposed this plan, but he was shamed into endorsing it.

On April 11, 1873, the peace commission and a Modoc group led by Captain Jack met between the two camps under a flag of truce. The Indians produced weapons, and Brig. Gen. E. R. S. Canby and the Reverend Eleasar Thomas were killed. Ironically, these two men had been among the most sympathetic and strongest advocates of fair treatment of the Modocs.

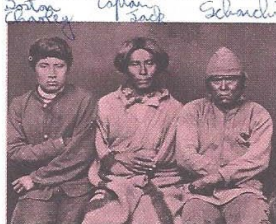


CAPTAIN JACK'S CAVE.

Four days later the final attack on the stronghold was launched by about 1,000 soldiers. On April 16 troops advancing from west and east joined along the lakeshore and cut the Modocs off from their water supply. This event shook the Indians' faith in their shaman, or medicine man, who had asserted that no soldiers would reach the stronghold. Another blow came that night when the Modocs lost their first man. The shaman, who had convinced the defenders they were invincible, now was considered powerless. The dispirited Modocs decided to abandon their fortress, and the same night silently moved their entire camp along a natural depression southward into the Schonchin lava flow.

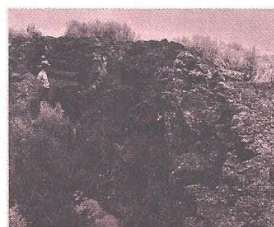
Ten days later, pursuing the Modocs, Capt. Evan Thomas marched about 70 soldiers into an ambush at Hardin Butte. As the men stopped for lunch, the Indians opened fire, killing or wounding nearly two-thirds of the force.

The army won its first victory on May 10 at Dry Lake, repulsing what began as a surprise attack by the Modocs. Divided by quarrels, two-thirds of the band surrendered. Captain Jack was tracked down and captured by June 1. He and three others were convicted of murder and hanged at Fort Klamath on October 3, 1873. The remainder of the band was removed to Oklahoma.



MURDERERS OF LOST RIVER SETTLERS.

The main battlefields of the Modoc War, located in the monument, are practically the same today as they were in 1873. The rock forts marking the scenes of conflict are preserved and protected by the National Park Service.



CAPTAIN JACK'S STRONGHOLD.

ABOUT YOUR VISIT

The monument is in California near the Oregon-California line between U.S. 97 and Calif. 139. It is 41 miles south of Klamath Falls, Oreg., the nearest large town.

There is an improved campground at headquarters. A picnic area (no water is available and fires are prohibited) is located at Fleener Chimneys. Gasoline lanterns for visiting caves are available at headquarters. Lodging, food, and gasoline are *not* available in the monument but may be obtained in nearby Tulelake and Newell, on Calif. 139.

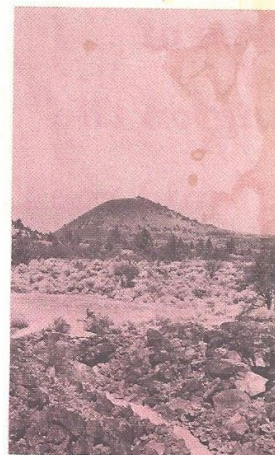
ADMINISTRATION

LAVA BEDS NATIONAL MONUMENT, established on November 21, 1925, and containing about 72 square miles, is administered by the National Park Service, U.S. Department of the Interior.

The National Park System, of which this area is a unit, is dedicated to conserving the scenic, scientific, and historic heritage of the United States for the benefit and enjoyment of its people.

A superintendent, whose address is Box 867, Tulelake, Calif. 96134, is in immediate charge.

THE DEPARTMENT OF THE INTERIOR—the Nation's principal natural resource agency—bears 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 to the progress and prosperity of the United States, now and in the future.



SCHONCHIN BUTTE.

**U. S. Department
of the Interior**



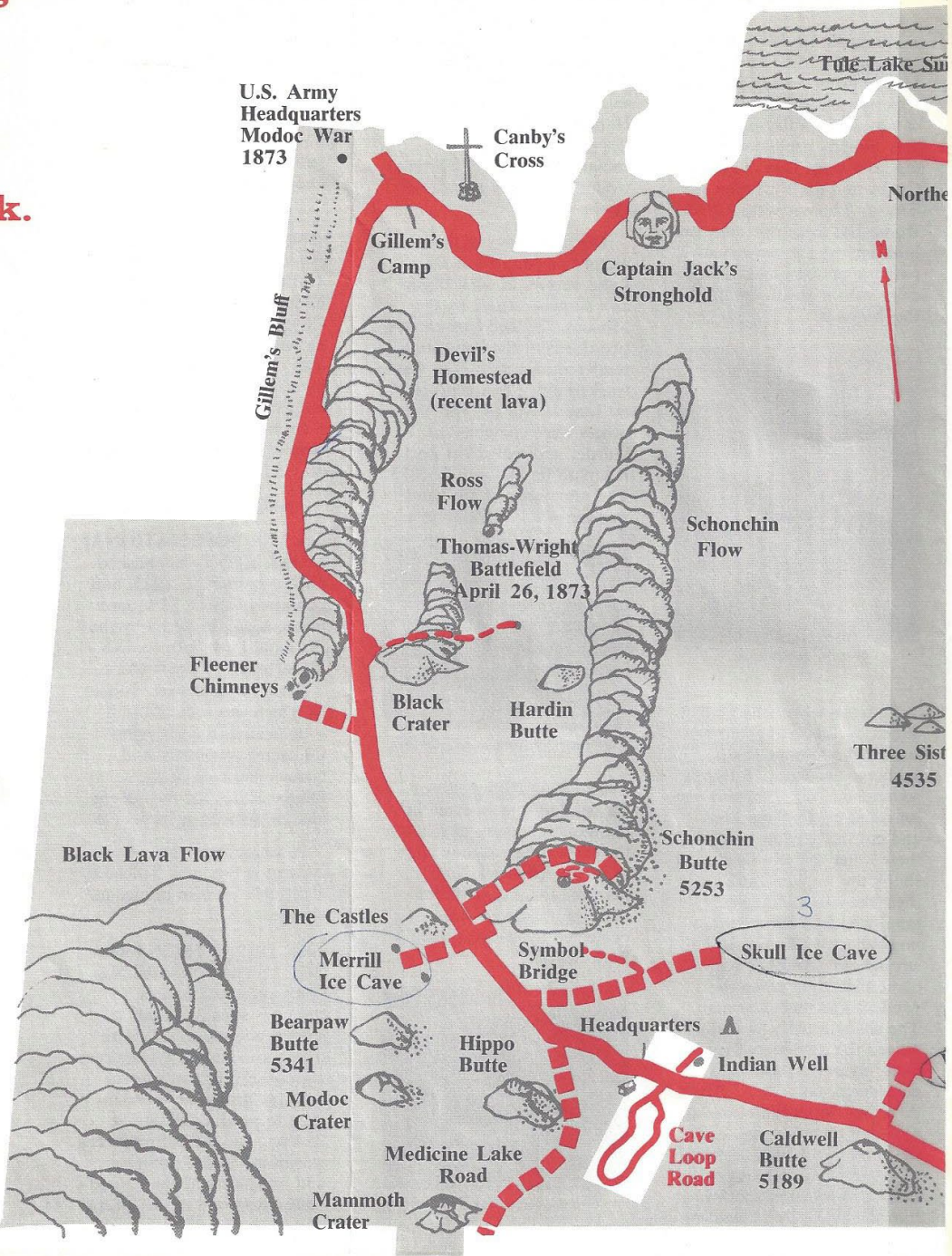
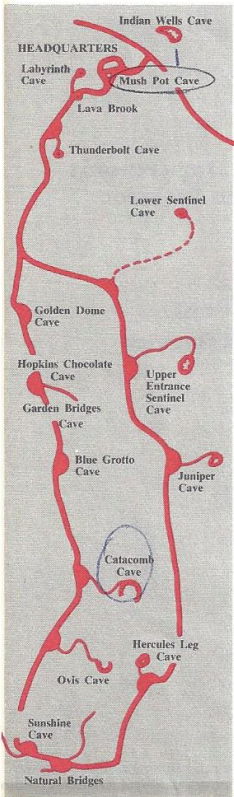
**National
Park Service**

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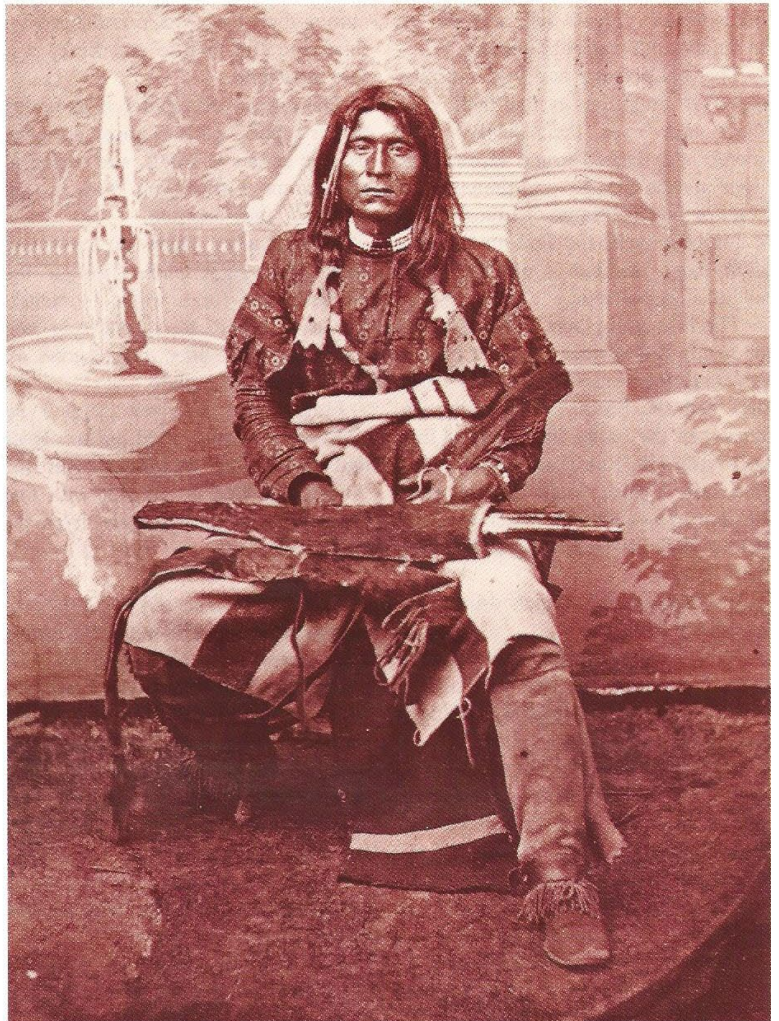
The Modocs' Last Stand

By Rupert Costo

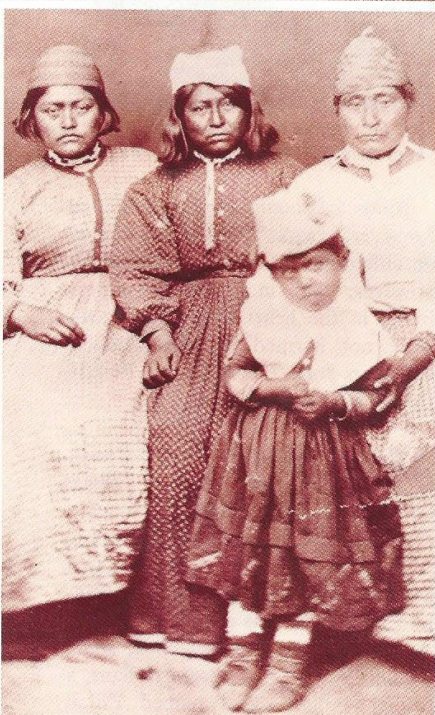
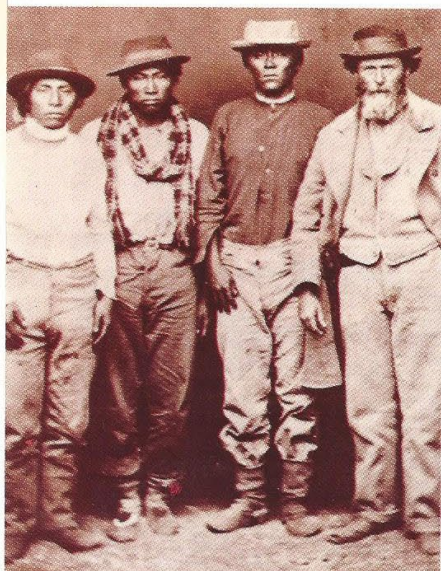
NORTHERN CALIFORNIA'S Lava Beds National Monument is awe-inspiring. To the casual visitor the area south of Tule Lake is a vast and desolate wasteland of sagebrush-covered plains. Unless they have visited the monument, most people are unaware that 100 years ago a war ended on this land, a war in which the Modoc nation that had lived here from time immemorial fought for their land. They sought to hold it against encroaching forty-niners, state militia, scalp hunters and the United States Army, in the most costly but short-lived war the United States ever waged against an Indian nation.

The Modoc domain stretched from Northern California to south-central Oregon. From the present monument, their country extended west to what is now the city of Yreka, south to the ridge separating the McCloud and Pit rivers, then followed the Pit River northeast to beyond Goose Lake, where Paiute lands began. The area surrounding Goose Lake was used in common by several tribes. From Goose Lake, the Modoc land extended northwest to the Lost River country, and from there on to Yreka. This was the great empire of the Modoc nation, their beloved home.

PHOTOGRAPHS COURTESY SOUTHWEST MUSEUM

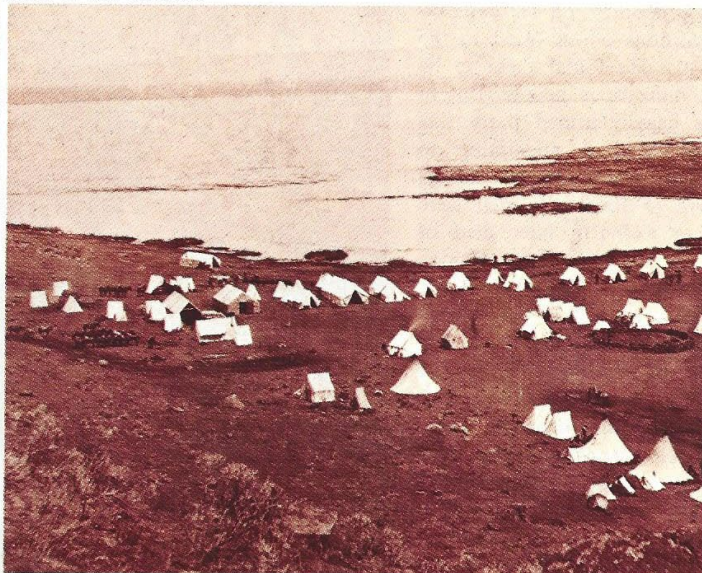


Keint-poos, the Modoc chief called "Captain Jack" by white settlers, sits for a formal studio portrait in 1864, by photographer-writer George Wharton James



Modoc braves, from left, Shacknasty Jim, Hooka Jim and Steamboat Frank, patiently pose with John Fairchild, a friendly rancher; while stoically facing James's camera are Jack's two wives, wearing fashionable basket hats; his sister and his daughter. General Canby's bivouac near Tule Lake, upper right, was photographed by Eadweard Muybridge

ROBERT B. HAAS COLLECTION



To the west were high, snow-covered mountains forested with pine. Magnificent streams teemed with fish. The lower reaches were covered with trees and shrubs of many varieties, furnishing nuts and berries. The plains were seed-gathering areas, which also produced herbs and basket-making materials.

Small game, such as quail, rabbits and sage hen abounded. Herds of mule deer and antelope covered the valleys and foothills, with bighorn sheep in the higher elevations. The lakes and rivers were breeding grounds for literally millions of waterfowl, and to this day Tule Lake is a paradise for the goose and duck hunter. The Klamath and Tule lakes not only furnished the Modocs with waterfowl and fish, with materials for clothing and housing, but also supplied a staple food. The seed of a species of pond lily, called *wocus*, was harvested annually. The mature seed was ground into flour; it was also used as a cereal. The unripened pods were gathered, dried, and stored for winter use. *Wocus* was highly prized and is still gathered and used today.

Like most tribes, the Modocs used many campsites when food gathering, and catching and drying fish and meat, as well as when gathering ma-

terials for baskets and bows and arrows. Every summer the Modocs moved to homes located in the higher elevations. Many were on Mount Shasta, and some were at Goose Lake. Some of these were approximately 100 miles from the more permanent homes located on Lost River, Tule Lake, Lower Klamath Lake, Sprague River, Willow Creek and what is now known as the city of Klamath Falls.

The Modoc and Klamath tribes are closely related, but in times past they drifted apart, the Modoc territory lying south of Klamath Falls, and the Klamath land north of that point. This rift became more pronounced with white intrusion, and soon there were bitter differences between the two groups.

PROBABLY the Modocs' first direct contact with white trappers and traders was with the Hudson's Bay Company, which moved into Oregon in the 1820s. Later, Canadian trappers and traders appeared in their country, remaining only a short time. When they left, some Modocs accompanied them to the Dalles on the Columbia River.

John Charles Frémont was one of the first Americans known to traverse

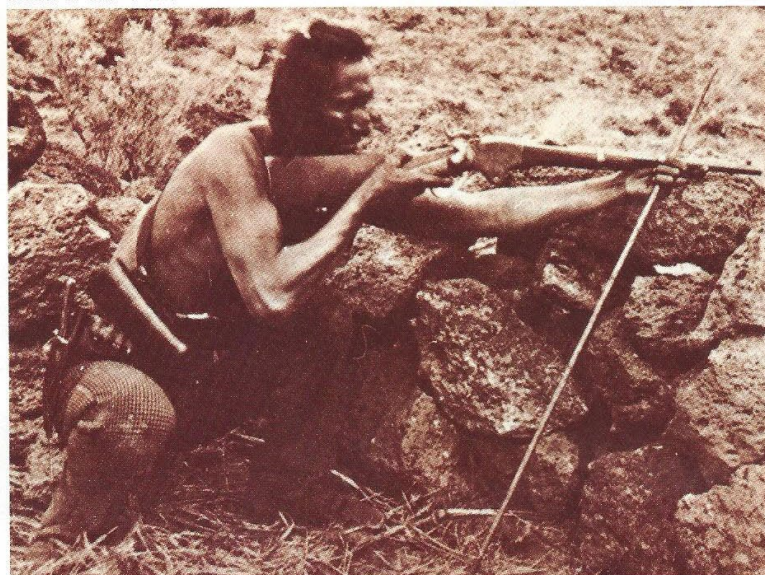
the Modoc country, on his exploratory expeditions of the West in the early 1840s. He found them to be peaceful, industrious people. But in 1846 his heavily armed party was raided by Modocs attempting to stampede the horses. In the ensuing fight, three of Frémont's men were killed, and a fourth later died of wounds. In retaliation, Kit Carson burned a nearby Klamath village, killing practically all of the inhabitants, including children.

Alerted by the fate of brother Indians, the Modocs watched with suspicious eyes the increasing numbers of whites traveling across their lands. Wagon trains of emigrants to the Oregon territory made common use of South Emigrant Road that ran through the summer range of the Modocs. This was the Modocs' traditional larder; from these herds the hunters would take enough meat for the lean wintertime. But with the intrusion of settlers, some of whom homesteaded in this area, the game moved to other pastures. A vital part of the Modoc economy was being threatened; and so they struck back at the invaders.

Wagon trains were attacked, settlers killed and livestock run off, but the deeds seldom matched the rumors circulated. The Modocs were described by whites as savage and cruel; practically every warlike incident that involved Indians in the region bounded by the Columbia, Sacramento and Humbolt rivers was attributed to them. If the Modocs had killed as many people as was claimed, the historically rapid settlement of Northern California and Oregon would have been severely delayed.

Suddenly the hostilities ceased. Late in 1847 the Modocs were struck by an epidemic of smallpox. It is believed they lost at least half of their people during a two-year period alone. Among Indians, the awesome news was that the Modocs had suffered the same fate as the Pit River tribes: blankets and clothing known to have been used by whites infected with smallpox were deliberately allowed to fall into Indian hands. Flour

ROBERT B. HAAS COLLECTION



For six months 70 to 80 Modoc warriors, like the one in this Muybridge photograph, holed up in the lava beds and kept nearly 1,000 U.S. soldiers at bay

and food laced with strychnine were also known to have been "lost" on Indian trails.

But the Modocs recouped and again began to harass the emigrants. A report of the Commissioner of Indian Affairs stated that in 1849 eighteen white people were killed by the Modocs. The discovery of gold in California and Oregon brought a deluge of emigrants now, and they flooded the roads into Modoc lands. Many of the new emigrants were criminal elements: white, yellow, black and brown, to whom the taking of land, property and life was of little consequence. When a strike was made on Greenhorn Creek near Yreka, miners pushed into the area, staking claims on the creeks, rivers and mountains. Timber was needed for the mines and buildings, forage for their stock, and game for their own use. All of this came from the Modoc and Shasta Indian lands. Retaliation was quick. A large pack train of some forty and fifty horses and mules loaded with supplies for the mines was struck, the animals and supplies taken. Now it was the miners' turn, and a force of men was recruited under the leadership of Ben Wright, a known scalp hunter.

Raids and counter-raids continued for several years. There was no mercy on either side. It is well documented, however, that many white settlers living in the heart of the war zone were not harmed by the Modocs. Ranchers John Fairchild and Pressly Dorris are two examples.

MUCH bloodshed could have been averted, and perhaps peace established, if the United States government had seriously considered a treaty proposed by one of the principal Modoc chiefs, Keint-poos, or Captain Jack as he was called by Anglos. At the request of Keint-poos, some Klamaths and some Shasta Indians, a former Indian agent named Elijah Steele drew up the treaty in 1864. The most important article of this treaty was the creation of a reservation for Keint-poos' band on their own homeland along the Lost River. They agreed to stop fighting. The treaty was submitted to the Office of Indian Affairs; it was ignored. Later that year the Commissioner of Indian Affairs authorized J. W. P. Huntington to make a treaty with the Klamaths, the Modocs and a band of Paiutes called the Yahooskin Snakes. The main purpose of the treaty was to

remove the Modocs from their homeland.

On October 9, 1864, government officials arrived at the treaty-making site, approximately a mile from the Klamath Indian Agency. Well over a thousand Indian people were there for the negotiations. Under the proposed treaty, all land claimed by these three tribes was ceded to the United States in exchange for a small Klamath reservation. No land owned by the Paiutes or the Modocs was reserved for them. The Klamath tribal leaders accepted the terms of the treaty. Those Modocs under the leadership of the elder Schonchin also agreed to the treaty. But Keint-poops and his band of Modocs strongly opposed settling on the Klamath reservation.

Keint-poops insisted that the land be reserved for them in the area where they had always lived, in Lost River country. Furthermore, the Modocs had long been in conflict with the Klamaths and they knew that sooner or later their differences would erupt into open violence. Under severe pressure Keint-poops reluctantly signed the treaty. Other Modoc signers were Schonchin, Stat-it-ut and Chuckeiox.

Some twenty Klamath chiefs and headmen signed the treaty on October 14, 1864. Kile-to-ah and Sky-te-ock-et signed as chiefs of the Yahooskin band of Snakes. Huntington was made superintendent of the new reservation. Not until July 2, 1866, was the treaty ratified, and not until February 17, 1870, was it proclaimed.

Almost a year after the treaty was signed, most of the Paiutes, faced with starvation, moved off the reservation. Keint-poops was now embroiled with the Klamaths over land and timber rights. He was also at odds with Schonchin who was favored by the administrative personnel of the Indian agency. Finally, Keint-poops left the Klamath reservation and returned to Lost River, there to find most of his homeland occupied by white settlers, even though the treaty had not as yet been ratified. The invaders requested the agency to force Keint-poops back to the reservation. He refused to go. Negotiations were of no avail, and Superintendent Huntington threatened to punish Keint-poops and his band. Instead, the Modocs moved across the river, warning Huntington that if they were followed, war would again erupt. They were not pursued.

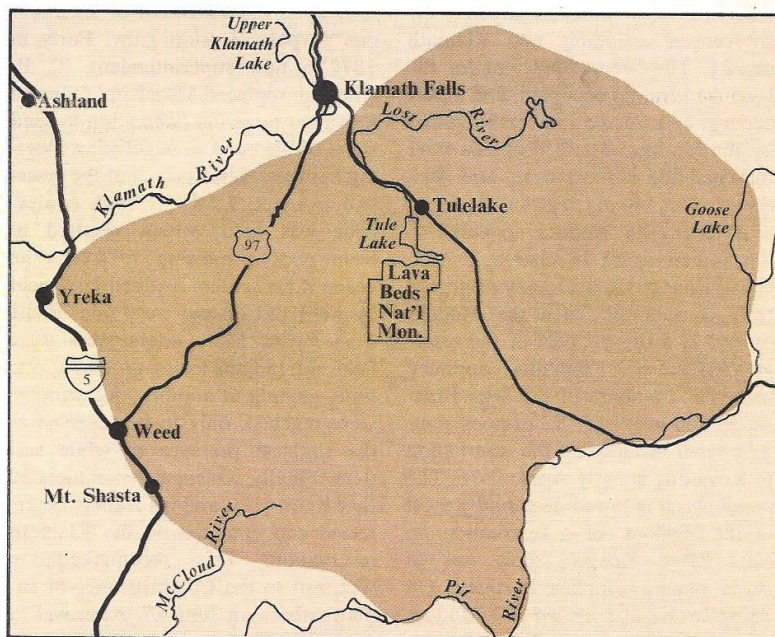
Upon Huntington's return to Fort Klamath, he requested the army to pursue the Modocs. The commanding officer refused. For three years Keint-poops and his band remained off the reservation, living in their old homeland. They frequented Yreka, buying and trading for food, supplies and ammunition, conferring and visiting with their old friends, the ex-Indian agent Steele, and Judge A. M. Rosborough. In this wild, wide-open mining town of Yreka they were not involved in incidents of any consequence.

At this time there was a change in the federal government. President Ulysses S. Grant had taken office. A new Indian superintendent, Alfred B. Meacham, appeared at Klamath. A. B. Meacham was a proponent of Grant's "Quaker policy," which advocated Christianizing the Indians in the hope they would forsake their religion, culture and economic way of life. One of Meacham's first acts was to forbid the practices of Indian religious leaders, the native healers and doctors, called shamans, or medicine men. In 1870 Meacham issued a directive which forbade all practices of the shamans. Link River Doctor,

PHOTOGRAPH BY RIK NAY



Vernon Walker of the Oklahoma Modocs stands beside his grandfather's plot in the cemetery at Miami, Oklahoma—today the only parcel of land still owned by the tribe. Lands claimed by the Modocs in 1840 are shown on the map, right



a Klamath native doctor, was arrested and jailed for practicing "spiritual medicine." This action did not endear Meacham to the Indian people. Another of Meacham's mistakes was to order the election of tribal chiefs in the white man's way, completely violating the age-old way of selecting tribal leaders. This dictum was bitterly resented by the three tribes.

Meacham was instructed to persuade the Paiutes and the Keint-poops Modocs to return to the reservation. Only a handful of the Paiutes agreed, but they soon left the reservation, stating they could not live in that place. But negotiations began December 23, 1869, and ended with the Modocs agreeing to return to Klamath, arriving at the reservation December 28. The Klamaths were out en masse to see their return. They were surprised to find that Keint-poops had but forty-three people with him. The old animosity was still there. It would erupt again and again.

THE OLD year ended peacefully. The new year was fraught with disaster. The Klamaths overwhelmed the Modocs numerically and taunted, tormented and ridiculed them incessantly. They boasted that their very existence depended upon Klamath land, Klamath lumber, Klamath resources of all kinds and Klamath charity. They demanded rent for the land the Modocs occupied, and a percentage of logs and lumber harvested by the Modocs. These demands were tolerated for a short time, and then the Modocs bluntly rejected them.

At first, the Modocs appealed to the Indian agent in charge, a man called Knapp. He brusquely dismissed their complaints. Then the Modocs moved to a distant part of the reservation; but the Klamaths continued to demand a share of the logs. Frustrated and harassed, Keint-poops summoned all Modocs on the reservation to a meeting in early April, 1870. The result was a renewed demand by most of the Modocs for a reservation on Lost River. Knapp's reply was to cease issuing supplies to them. On April 26, Keint-poops led 371 Modocs

off the Klamath reservation. Among those who went with him was old Schonchin's younger brother, John.

Soon the Modocs were again visiting and trading in Yreka. In fact, many of the tribe assisted Yreka volunteer firemen battle a fire that almost destroyed the town on July 4, 1871. Subsequently a conference between concerned white and Modoc leaders issued a statement intended to reassure jittery settlers of the Modocs' peaceful intentions. However, Keint-poops continued to press for a Modoc reservation. At last Meacham agreed to the idea, recommending it to the government. Announcement of the proposed site spread like wildfire among the settlers, and those holding Modoc land were in an uproar. They feared new Indian raids, but Keint-poops kept the Modocs generally peaceful.

Many whites wanted Keint-poops returned to the Klamath reservation and petitions circulated to this effect. Meacham forwarded one petition to General Edward R. S. Canby, army commander of the department of Columbia, and suggested that it would take fifty soldiers at least to accomplish the removal. Canby refused to act, pending the decision on establishment of a Modoc reservation.

Despite the statement of harmonious purpose, tension grew. Early in 1872 a new superintendent, T. B. Odeneal, replaced Meacham. Odeneal prevailed upon old Schonchin to send some of his band to negotiate a meeting between Keint-poops and the reservation agent, L. S. Dyar. A conference was held, which resulted in Keint-poops promising to keep the peace if no settlers invaded land held by his band on the west side of the Lost River. More conferences were held, the Indians losing ground at one time, gaining at another. Agreements were reached, only to be reversed at the slightest pressure of white settlers. Finally, Odeneal recommended that Keint-poops and his leaders be arrested and confined on the Klamath reservation. This recommendation was sent to the Commissioner of Indian Affairs on June 17. Approval to

use the military to arrest Keint-poops and his band was received late in July. The arrests were to take place in September.

In September, Odeneal notified General Canby that the time had come for the arrests and removal of the Modocs. Mobilizing the area's army posts, Canby ordered Major John Green of Fort Klamath to make a reconnaissance through the Lost River country. Green met Keint-poops and informed him that he had *not* come to arrest him. This Keint-poops did not believe until he saw the soldiers unsaddling their mounts and putting them out to graze. In his report of October 5, 1873, Major Green revealed that despite intensive questioning of the settlers in the Modoc country, "none could point out any especial depredations," nor could "any particular robbery they had committed" be described.

By now Odeneal had received final orders from the Commissioner of Indian Affairs in Washington, to move the Modocs to the Klamath reservation, "peacefully if you can, forcibly if you must." It was preposterous to think that Keint-poops would agree to moving his people to the Klamath reservation. He stated flatly that he wanted no further conferences; there was no need for further talk. He had been meeting and talking for years; he would not remove his band to the Klamath. The younger men wanted war at once; but Keint-poops overwhelmed them, insisting upon order and peace.

Preparations went ahead to force the Modocs back on the Klamath reservation. The army was still uneasy about sending troops in such an action. Yet, on November 28 Major Green ordered Captain James Jackson to take "all available men of his troop to Lost River and to arrest Jack (Keint-poops), Black Jim and Scarface Charley by the next morning." None of Green's superiors were aware of the order until it was too late. For it was thus, finally and irrevocably, that the outrage of the Modoc war began. Nevertheless, all preliminary

Continued on page 80

THE MODOCS' LAST STAND

Continued from page 32

conditions for such a conflict had already been created; the United States government, the army, the settlers, the Indian agents and the general policy of usurpation of Indian land had created the conditions. What had not been visualized was the extent of the Indian spirit for resistance, their will to fight, their willingness to die for their land and way of life.

For his bizarre action, Major John Green later received the Congressional Medal of Honor.

AFTER six months of grueling battle in the lava beds, Keint-poos and his people were forced to surrender to the U.S. Army. A military court found Keint-poos and five others guilty of murdering General Canby and another peace commissioner during truce negotiations at the lava beds. The Modocs were sentenced to hang on October 3. On September 9, President Grant commuted the death sentences of two teenagers, Barcho and Sloluk, to life imprisonment on Alcatraz Island. Grant also ordered all remaining Modocs into exile in Indian Territory, part of which is present-day Oklahoma.

A macabre situation developed prior to the executions. Six graves were dug in a prominent location, where the prisoners and all others could view them. On the day of the hanging, the prisoners were ordered out of their cells, dragging their chains, to climb aboard a wagon which was drawn by four horses and loaded with four coffins. The men seated themselves on the coffins and the wagon was driven to the gallows. Each man was ordered to climb the ladder to the gallows platform. Keint-poos was first, followed by Schonchin John, Boston Charley and Black Jim. Barcho and Sloluk stoically remained on the coffins, not knowing what their fate would be.

Upon being pronounced dead, the four hanged men were buried in the prepared graves. That night, the grave of Keint-poos was opened and his body transported to Yreka where it was embalmed. It was then shipped to Washington, D.C., where rumor has it that his body was displayed in

a sideshow. Eventually his skeleton was displayed in the museum of the Surgeon General's office as a "specimen of Indian anatomy."

Four thousand acres of land was acquired from the Shawnees of Oklahoma for the Modocs. This was to be their reservation. No housing had been provided for the 153 survivors. In 1909 the government allowed any Modoc wishing to return to Klamath to do so. Many returned, and their descendants are living there today. Their lives have become interwoven with that of the Klamaths. Some have intermarried with the once unfriendly tribe. Those Modocs who remained in Oklahoma were allotted forty-eight acres, but practically all of the allotments were lost to white men, in various ways and by various means. However, Vernon Walker, past chairman of the tribe, still retains his allotment, probably the one parcel left to the Modocs. The only property owned by the tribe is the cemetery in Miami, Oklahoma. Interred there are Sloluk, Long Jim and many other distinguished Modocs.

There are thirty-two Modocs still living in Oklahoma, descendants of those who were exiled in 1873. Many have married members of other tribes and have names that in no way resemble the old Modoc names. Among them are Pauline Greenback, Viola Fryatt (granddaughter of Shagnasty Jim) and Walker, who is a grandson of Long Jim, said to be the youngest participant in the Modoc War. Bill Follis, a successful cattleman, is the current chairman of the Oklahoma Modocs.

The Modocs have not and will not become extinct. We find them today in all walks of life—in Northern California, in Oregon and in Oklahoma. They are ranchers, businessmen, teachers. They do not consider themselves to be one more complaining minority, weeping over past grievances and past injustices. They know the circle has been completed and that once more they will find their place on Mother Earth, for they are The People. They are Modocs. They will endure. ww

Rupert Costo, a Cahuilla Indian, is the founder and president of the American Indian Historical Society.

Thursday 9th. In the morning we visited another cave, Merrill Ice Cave, a large, two level cave, and some splatter cones, Fleeners Chimneys, but the main point of interest was the location of the Modoc Wars. We saw Captain Jack's stronghold, Canby's Cross etc. Having "done" Lava Beds we had lunch and went on to Lassen Volcanic National Park.

We arrived there late in the afternoon. After setting up tent, we had a trip to the store, and spent a while at the lake before dinner. Then we strolled along Reflection Lake for a while and went back to camp. The area was covered in manzanita bushes, which Jona and Kathy loved running through. Just as I had put them to bed, and was sitting by the campfire, I looked up to see a mule deer, standing 10' away ~ I called the children and they peeped out of the tent to see, and were convinced she had just come to say good-night to them ~ then she disappeared into the bushes again.

Lassen Volcanic

NATIONAL PARK • CALIFORNIA

DISTANCES ALONG LASSEN PARK ROAD

| From
southwest
entrance | Feature | From
northwest
entrance |
|-------------------------------|--|-------------------------------|
| Miles | | Miles |
| 0.0 | Southwest boundary. The Raker Memorial. | 29.7 |
| .9 | Sulphur Works entrance station | 28.8 |
| 2.0 | Sulphur Works. Thermal area, steam vents, mud pots, self-guiding trail. | 27.7 |
| 4.0 | Diamond Peak. Fine vistas. | 25.7 |
| 6.7 | Emerald Lake. Rainbow trout can be seen from the shore. No fishing. | 23.0 |
| 7.1 | Bumpass Hell Self-guiding Trail. 1.3-mile walk to largest hot springs area in the park; 1 1/2- to 2-1/2-hour round trip; alpine flowers along trail. | 22.6 |
| 7.2 | Lake Helen. Named for Helen Brodt, first white woman to climb Lassen Peak, 1864. | 22.5 |
| 7.9 | Lassen Peak Trail. A 2 1/2 mile trail to summit, elevation 10,457 feet; 3- to 5-hour round trip. Take your time hiking at this high elevation! | 21.8 |
| 8.1 | Park Road Summit, 8,512 feet. | 21.6 |
| 12.6 | Kings Creek Meadows. Campground. | 17.1 |
| 17.5 | Summit Lake. Campground, campfire programs, fishing. | 12.2 |
| 20.0 | Devastated Area, denuded of all vegetation by mudflow and hot blast from Lassen Peak in May 1915. | 9.7 |
| 22.0 | "The Hot Rock," a large boulder of 1915 lava deposited as part of the great mudflow, remained hot for days. | 7.7 |
| 27.5 | Chaos Jumbles and Dwarf Forest. Jumbles caused by avalanche from Chaos Crags. | 2.2 |
| 29.0 | Manzanita Lake Area. Lodge, cabins, meals, post office, gas station, store, campground, visitor center, evening programs, interpretive activities, Lily Pond Self-guiding Nature Trail. Information, lost-and-found, and first aid services at ranger station. | .7 |
| 29.4 | Manzanita Lake Entrance Station. | .3 |
| 29.7 | Northwest boundary. | 0.0 |

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As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral and land and geological resources. Indian and Territorial affairs are other major concerns of America's Department of Natural Resources. The Department works to assure the wise 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
National Park Service



More than 100,000 acres of evergreen forest, a scattering of 50 wilderness lakes, and almost as many mountains are dominated by the grandeur of Lassen Peak. This plug-dome volcano of 10,457 feet sleeps at the southern tip of the Cascades. The great mass of Lassen Peak began as stiff pasty lava forced from a vent on the north slope of a larger extinct volcano, known as Tehama. The lava was squeezed up to form a rough dome-shaped mass, plugging the vent from which it came. After this plug dome was formed, Lassen Peak was calm for a long period. Then on May 30, 1914, a series of eruptions began which were to last intermittently for more than 7 years. Other evidences of volcanism are the beautifully symmetrical Cinder Cone and the active hot springs, steaming fumaroles, and sulfurous vents.

Lassen Park Road winds around three sides of Lassen Peak and affords many beautiful views of the volcano, examples of its destructive action, and views of woodlands and meadows, clear brooks and lakes.

Some 150 miles of foot trails will lead the more hardy through this sweet-smelling and sparkling land of Lassen. In the course of a hike, you may see a variety of evergreens—pines, firs, and cedars—and stands of broadleaf trees—aspens and cottonwoods that add color to the autumn. Willows and alders border Lassen's many streams and lakes. Wildflowers are usually abundant from mid-June through September.

Because this national park is so well watered and has such a variety of habitats, it is rich in animal life—some 50 kinds of mammals, 150 kinds of birds, about 12 different amphibians and reptiles, and a wealth of insects.

WHAT TO DO—HOW TO DO IT

The park has one main visitor center at Manzanita Lake, plus a smaller visitor-use building near the southwest entrance. This serves as a winter-sports center from Thanksgiving until Easter, and as a visitor-contact station from mid-June through Labor Day. Publications about the park are available at both places during the summer travel season.

Interpretive Program. To learn as much as possible about the geology, plants, animals, and history of the park, you are invited to participate in the free interpretive programs. During the summer season, park naturalists lead nature walks and hikes to nearby points of interest.

Evening programs are held at Manzanita Lake, Summit Lake, and Butte Lake Campgrounds; talks on Indian lore are given at the Manzanita Lake museum; and an illustrated program is shown every half hour at the visitor center. Schedules are posted and are available at the visitor center and at ranger stations.

Self-guiding trails are near Butte Lake, Bumpass Hell, Sulphur Works, Warner Valley, and the Manzanita Lake Visitor Center. Guide leaflets are available at the respective trails. Pushbutton audio stations are located at Chaos Jumbles, Devastated Area, and the Lassen Peak Trail parking area, telling the story of these features.

Driving. Many of the important features of the park can be seen from the park road, which half encircles Lassen Peak. Numbered posts are keyed to brief descriptions in the park's color Road Guide—for sale at the entrance stations. Maximum speed is 45 m.p.h.

Camping and picnicking. Four campgrounds and five picnic sites are located along the Lassen Park Road (see map). The campgrounds at Manzanita Lake, Summit Lake, and Butte Lake have modern conveniences and spaces for trailers (no hookups for electricity, water, or sewage). The Sulphur Works Campground also has modern facilities, but it is a walk-in from the parking area—about 100 yards. Camping is available from mid-May to October—depending on the weather and the location of the campground. Camping is limited to 14 days. No overflow camping is allowed. A complete list of campgrounds and facilities can be obtained on request.

Special campgrounds are set aside for organized groups. Advance reservations for these must be made by writing to the superintendent.

All campsites have fireplaces. Put all fires completely out before leaving camp. Fire permits must be obtained from park headquarters in Mineral or at any ranger station before building fires in places other than established campsites. Carry out of the back country all bottles, cans, and other materials that can't be burned.

Hiking. More than 150 miles of trails lead to lakes, streams, waterfalls, mountain meadows, thermal areas, old volcanoes, and lava flows. Trails are well marked and easily followed. The booklet *Lassen Trails* and a copy of the topographic map of the park are helpful in deciding which trails to take. No shortcuts, please. Pets and motor vehicles are not allowed on trails.

Fishing. Many of the lakes and streams in the park are stocked with rainbow, brook, and brown trout. You may fish anywhere except in Emerald Lake, Manzanita Creek, and within 150 feet of the inlet to Manzanita Lake. You'll need a California fishing license, obtainable at Manzanita Lake Lodge. Complete fishing regulations should be read in advance.

Boating. Rowboats, canoes, and other craft may be used on any lake except Reflection, Emerald, Helen, and Boiling Springs. Motor-



Lassen Volcanic National Park



Lassen Volcanic National Park



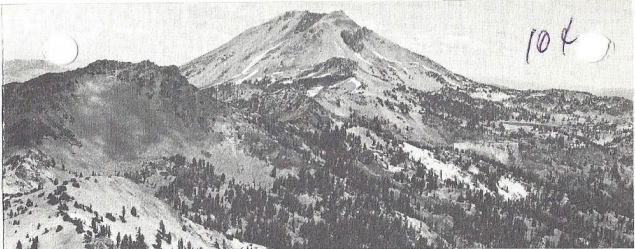
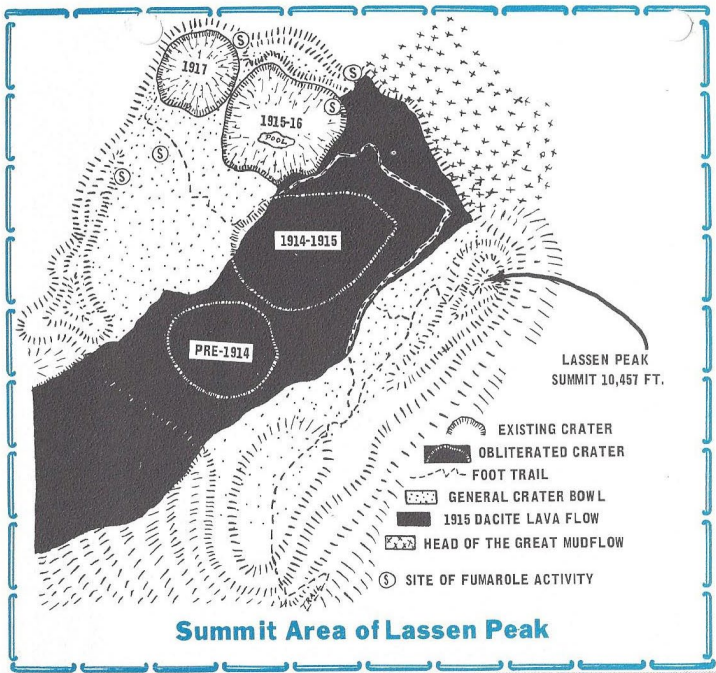
Lassen Volcanic National Park



Lassen Volcanic National Park

Friday 10th. The morning was spent "taking things easy". First of all we hired a row boat, and rowed around the lake (Manzanita lake) for a couple of hours, Jana taking her turn at the oars and proving to be an expert in going round in circles. Then the children and Chris had a swim before lunch. In the afternoon we left the lake area and headed into the mountains, stopping at points of interest, such as the Devastated Area, the result of the last eruption of Mt. Lassen, which is still practically bare of vegetation, and The Hot Rock, an enormous rock which remained hot for days after it was thrown up by the volcano. There was a lot of snow around, and at one particular spot a lot of fun was had sliding down a snow slope on sleds quickly made from wood, cardboard and Kathy's swimming vest (which proved too efficient and fast, especially for Kathy who got the fright of her life when she insisted on trying it.)

Mount Lassen last erupted in the period 1914-1921, with its largest eruption and extensive lava flow in 1915. There are still of course geysers and mud volcanoes in the area. Chris and Jana hiked to one geyser basin, part of the way through snow, named Bumpass Hell, after the man who discovered it. On that afternoon trip we went as far as the southern entrance to the park, and then back to base. The temperature dropped that night, and it was pretty chilly.



Lassen Peak Trail

A sense of awesome power mantles the silent, barren slopes of Lassen Peak. This is a dormant volcano; an opening freshly formed in the earth's crust as nature released its mighty power.

A 2.2-mile trail zig-zags up wind-swept slopes, revealing signs of the mountain's recent birth. Life and death of plants in brutal weather also unfold as part of the story of the Cascade Range.

A round trip takes about 4 hours. A slow pace is advised at this elevation (8,500 to 10,457 feet). For comfort, take suntan lotion, a hat, water, and a windbreaker. Be prepared for strong winds at the summit, even though it may be calm when you start your trip. Stay on the trail, please.

Birth of the Cascade Range

A land of earthquakes and eruptions is constantly changing. If so, how did this region appear last year? 1,000 years ago? 10,000 years ago?

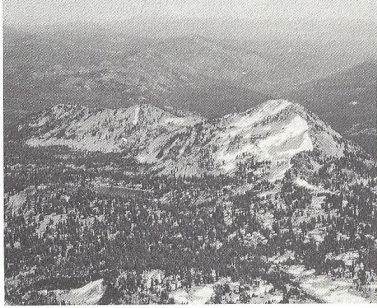
Slowly, violent activity pushed the Cascade Range above receding Pacific waters. This 1,000-mile barrier to prevailing westerly winds continued to rise. Precipitation increased; glaciers often formed. Plants slowly changed to represent Canadian forests.

Eruptions were sporadic, often alternating in character. First a layer of lava, then one of ash was laid—a process repeated until great peaks formed. One, Mount Tehama, rose to dominate the southern Cascades. Then, at some distant time in the past, cataclysmic earthquakes fractured the mountain. In a scene of terrifying destruction, Mount Tehama collapsed within itself (just as Mount Mazama collapsed, forming Crater Lake). The remaining caldera lost its original bowl form as streams, glaciers, rising steam and gases eroded away the southern wall. Brokeoff Mountain and Mount Diller still tower as reminders of Tehama Volcano's majesty.

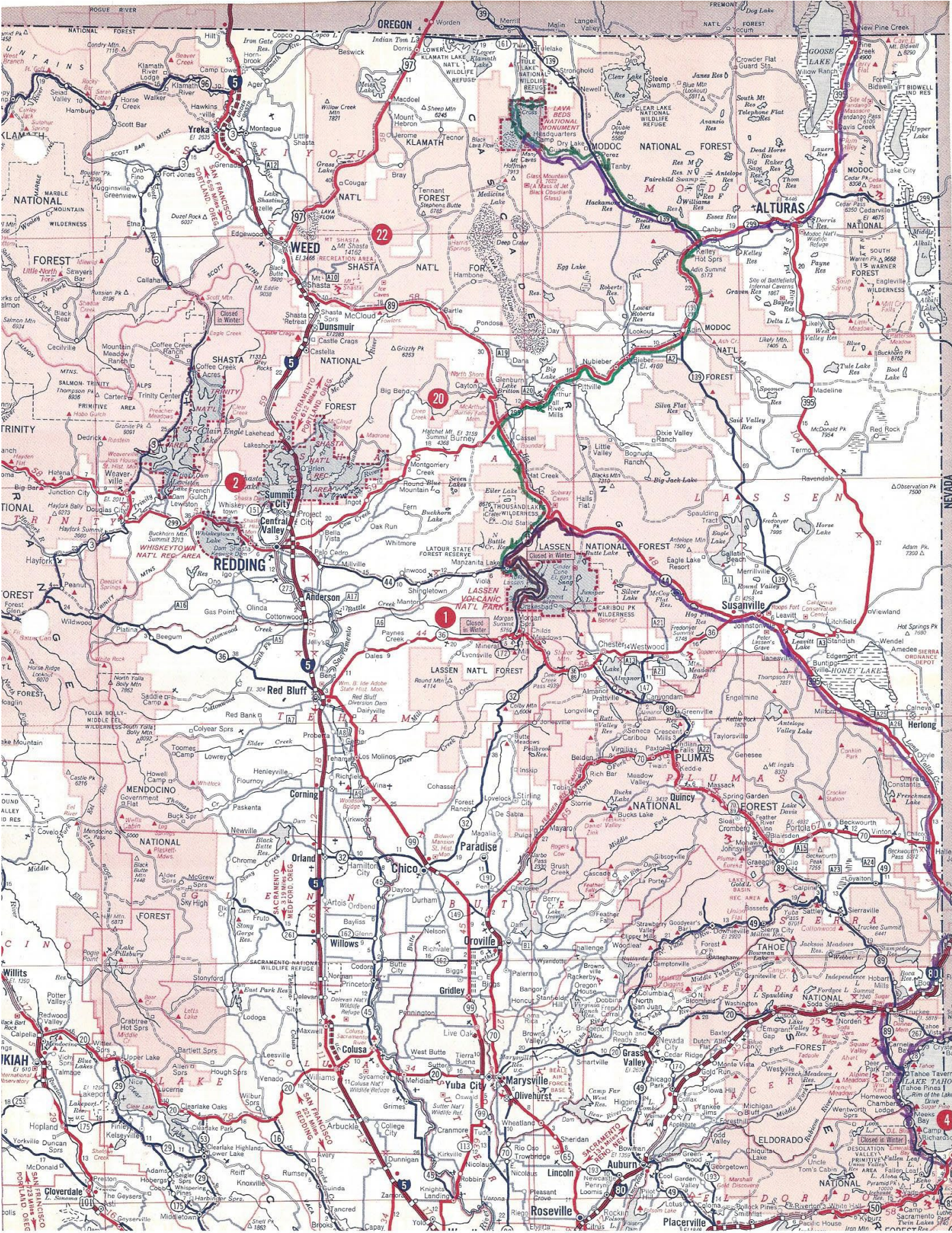
Slowly, the climate became drier. Winter snowfall dropped, and glaciers gradually disappeared. Evidence of their most recent activity covers slopes around Lake Helen.



WEATHERED WHITEBARK PINE



READING PEAK FROM LASSEN PEAK TRAIL



Saturday 11th The trip from Lassen to Lake Tahoe is quite short, so we got there well before noon.

The roads were however v. crowded going into Tahoe, so we were worried about finding somewhere to camp. We therefore took the first campsite we saw, which was a National Forest Campground, and pretty bleak as regards facilities & chemical toilets.

After lunch we went on a tour around the lake, which is v. beautiful. The South West shore, containing various state parks, is most spectacular, with cliffs the mountains going vertically into the ~~lake~~ lake.

At the southern end we stopped at Baldwin Beach, a v. pretty stretch of sand fringed by the lake and backed by lily ponds. We spent a couple of hours there and continued through South Lake Tahoe (a mini Las Vegas at Stateline) and into Nevada. The eastern shore is very unspoiled. We thought about going to Virginia City, and the Bonanza Ranch (a commercial enterprise inspired by the T.V. western series) but



Lake Tahoe



Lake Tahoe

it was getting late by then
and we still had to eat
and sleep, so we gave it a miss.
we had dinner in a coffee shop,
did our marketing, and went back
to camp.

Sunday 12th. Drove back down the west shore of Lake Tahoe, and on to Yosemite. We entered the park from the east ~ spectacular climb through Tioga Pass, and by lunch time had reached Tuolumne Meadows. We then continued westwards, with frequent stops at view points, at some of which we saw marmots. The campgrounds in the Valley were full so we went straight to Crane Flats. The actual campsite was small and sloped, so our tent was slightly tilted. The slope behind was well wooded. After a cup of coffee we went to Yosemite Village. There we had a look around the Visitor's Centre, which featured information about the glacial formation of the Valley. The floor of the Valley was packed with people, and a one way traffic system proved annoying and confusing at times. From a certain point cars are not allowed, so we took a tram tour, going as far as Mirror Lake, a glassy lake reflecting a remarkably clear image of Half Dome. Then back to the campground, with a glimpse of

a fox by the road on the way, to have dinner, followed for Chris and I by a fairly sleepless and terrifying night. As we had had no bear warnings we didn't worry about putting the ice chest away in the back. Around twelve a bob-cat came along and tried to get at it, but Chris frightened it away with the light from his torch. He was therefore not too wide up when I shook him around two, thinking the noises I heard were being caused by another cat. Within a few seconds however there were the unmistakable sounds of a bear tearing apart our polystyrene ice-box, which was only a few ^{feet} yards from the tent as the campsite was v. small. Chris grabbed his torch (not daring to switch it on however) and his axe, and we lay there, praying Dena and Kathy would sleep through, until the bear finally left. Shortly afterwards another one arrived, he breathed more heavily than the first, and made more noise eating, so

Sunday 12th

it was dawn when we finally managed to get some sleep.

Next morning we packed up our gear, the bear having made up our minds not to camp there another night.



Yosemite

NATIONAL PARK • CALIFORNIA

☆ U.S. GOVERNMENT PRINTING OFFICE: 1970-392-715/65
REVISED 1970

U. S. Department of the Interior
National Park Service

THIS IS YOSEMITE NATIONAL PARK—a 1,189-square mile geological wonderland with sculptured peaks and domes, waterfalls tumbling from hanging valleys down the faces of shining granite cliffs; groves of giant sequoias and extensive forests of pine, fir, and oak; wildflowers in alpine meadows; hundreds of species of birds and mammals; and scenic drives and trails to areas of high-country grandeur with sparkling glacial lakes.

We urge you to stop at the visitor center in Yosemite Valley. Here you can see audiovisual programs and museum exhibits about the park, and obtain information and orientation before starting your tour. A booklet, *Yosemite Road Guide*, which you can purchase at the visitor center or the concessioners, will prove to be of great assistance to you in planning your initial tour of the park. Other publications about the park are also available.

Interpretive program. Naturalist-guided walks and campfire, junior ranger, and audiovisual programs are offered. Check visitor center and campground bulletin boards for details.

Hiking. More than 700 miles of trails await you if you would know the park intimately. Try one of the shorter trails from the valley or an overnight trip into the high country. Be sure to get a fire permit for the latter. A visit to the Happy Isles Trail Center in the valley will help you plan your hiking.

Climbing. Inexperienced persons should not engage in rock climbing. Qualified climbers should register at the visitor center before beginning a climb and immediately upon completion. Guide service and a climbing school are available.

Riding. In summer, saddle and pack animals are available at the stables in Yosemite Valley, at White Wolf, Tuolumne Meadows, Wawona, and Mather, on the road to Hetch Hetchy.

Driving. Yosemite has more than 200 miles of public roads for scenic drives. For your safety, and the protection of park values, you are required to stay on the surfaced roads. Speed limit for all motorized equipment is 35 m.p.h. unless otherwise posted. Commercial trucks allowed only on park business; commercial buses need prior written permission.

Fishing. Trout can be found in most park streams and lakes. A California license is required, and State rules on catch and season apply.

Swimming. There are swimming pools at several of the lodging units. Swimming in the Merced River is not recommended because of swift currents and deep pools.

Skiing. Ski slopes at Badger Pass challenge all but the experts. The season is usually mid-December

to early April. For details write Yosemite Park and Curry Co., Yosemite National Park, CA 95389.

Camping. From June 1 to September 15, camping is limited to 7 days in Yosemite Valley and 14 in the rest of the park; from September 16 to May 30, it is limited to 30 days throughout the park. All camping is restricted to designated campsites.

Pets. Visitors must keep pets on leash. They may not be taken on trails or beaches or into public buildings. Campers with pets are restricted to Camp 12 in Yosemite Valley, Camp 7 during winter season, and to designated sections elsewhere. Dogs may be boarded in kennels.

Trail use. Stay on designated trails; do not shortcut between zigzags or switchbacks. Never hike alone; tell someone where you are going and when you will return. Horses have the right-of-way; stand quietly at trailside until they pass. Motor bikes, or other motorized equipment, are not allowed to operate off designated roadways.

Fires. Report fires immediately to nearest ranger station. Campfire permits required except in public automobile camps. Never leave fires unattended, and extinguish with water before leaving.

Preserving natural features. Do not deface or remove trees or rocks, pick wildflowers or other plants, or kill, capture, or injure wildlife; they are protected by law.

Wildlife. All park animals are wild. **DO NOT TOUCH OR FEED THEM.**

Firearms. Hunting or discharging of any kind of weapon is prohibited. Firearms must be unloaded and cased or broken down.

Assistance. In emergencies, telephone 372-4466. For weather, road conditions, etc., telephone 372-4222.

NATURAL FEATURES

Flora and fauna. Elevations within the park range from less than 2,000 to more than 13,000 feet above sea level. In this range are five plant belts, each with its related community of animals. Conifers are the predominant trees, but there are a number of hardwoods, especially black oak and canyon live oak. Flowering trees and shrubs include dogwood and azalea, and there are meadows colorful with seasonal wildflowers at almost every elevation. Of the 220 bird and 75 mammal species known to live in Yosemite, many stay within their accustomed zones, but others, like the California mule deer, migrate with the seasons between high and low elevations. Illustrated books describing plants and animals of the park are on sale at park visitor centers and studios. For list and prices of

publications, write Yosemite Natural History Association, Box 545, Yosemite National Park, CA 95389.

Geology. Nature's handiwork in the Yosemite region, as you now see it, began with an enormous granite intrusion into existing rock. Then followed an uplift of this granite block and its wearing down, first by stream erosion, then by glacial erosion. It was the glacial action that created the broad, U-shaped valleys and lakes.

A more graphic account of how the mountains and Yosemite Valley, with its towering cliffs and waterfalls, were formed is told by exhibits at the main visitor center and in publications on sale there.

YOU WILL WANT TO SEE:

- *Yosemite Valley*, with its sheer cliffs and waterfalls, reaching their maximum flow in May and June; some have no water from about mid-August through early autumn. (Yosemite Valley is open all year.)
- *Principal scenic features of the valley*—Yosemite Falls, Bridalveil and Nevada Falls, Mirror Lake, Half Dome, Sentinel Rock, Sentinel Dome, and El Capitan.
- *Happy Isles Trail Center*, which features natural history, stressing wilderness, Trailhead for Vernal and Nevada Falls and the high country.
- *Giant sequoias* in three groves. The largest is Mariposa Grove, 35 miles from the valley near the South Entrance; here you will see the Grizzly Giant. Private vehicles may be driven only to the edge of this grove. Beyond that point you can board the tour car transportation (for a nominal fee) or hike the trail system through the grove. Other giant sequoias are at Tuolumne and Merced Groves near Crane Flat.
- *Glacier Point*, one of the best high views of Yosemite Valley and of the crest of the lofty Sierra Nevada. (Closed in winter.)
- *Pioneer Yosemite History Center* at Wawona—a collection of historic buildings and horse-drawn vehicles associated with the history of the park.
- *Tuolumne Meadows* (8,600 feet), the largest sub-alpine meadow in the High Sierra. This area is 55 miles from the valley by way of the highly scenic Big Oak Flat and Tioga Roads, and is the starting point for hiking and pack trips into the high country. The Service operates a large campground and conducts a full-scale naturalist program here in summer. (Closed in winter.)
- *El Portal Museum*, where exhibits tell the story of early-day railroad and auto transportation in the Yosemite region.

Monday 13th

We spent the morning touring Yosemite Valley. We hiked to the foot of Bridalveil Falls and Yosemite Falls, did some shopping and had lunch by the river. In the afternoon we drove up to Glacier Point, which is vertically above the valley at a height of 3,000' and offers a beautiful view of Half Dome. Then on our way out of the Park we stopped at Mariposa Grove, and took the tram ride around the groves of giant sequoias. By five we were out of the Park, and headed home via Fresno and Bakersfield ~ the San Joaquin valley was extremely hot ~ we were also bothered by the smell of fertilizers at intervals along the road. We had pancakes at Delano, a familiar stopping place for us on that route, and reached home about 10.30.



Yosemite National Park



Yosemite National Park

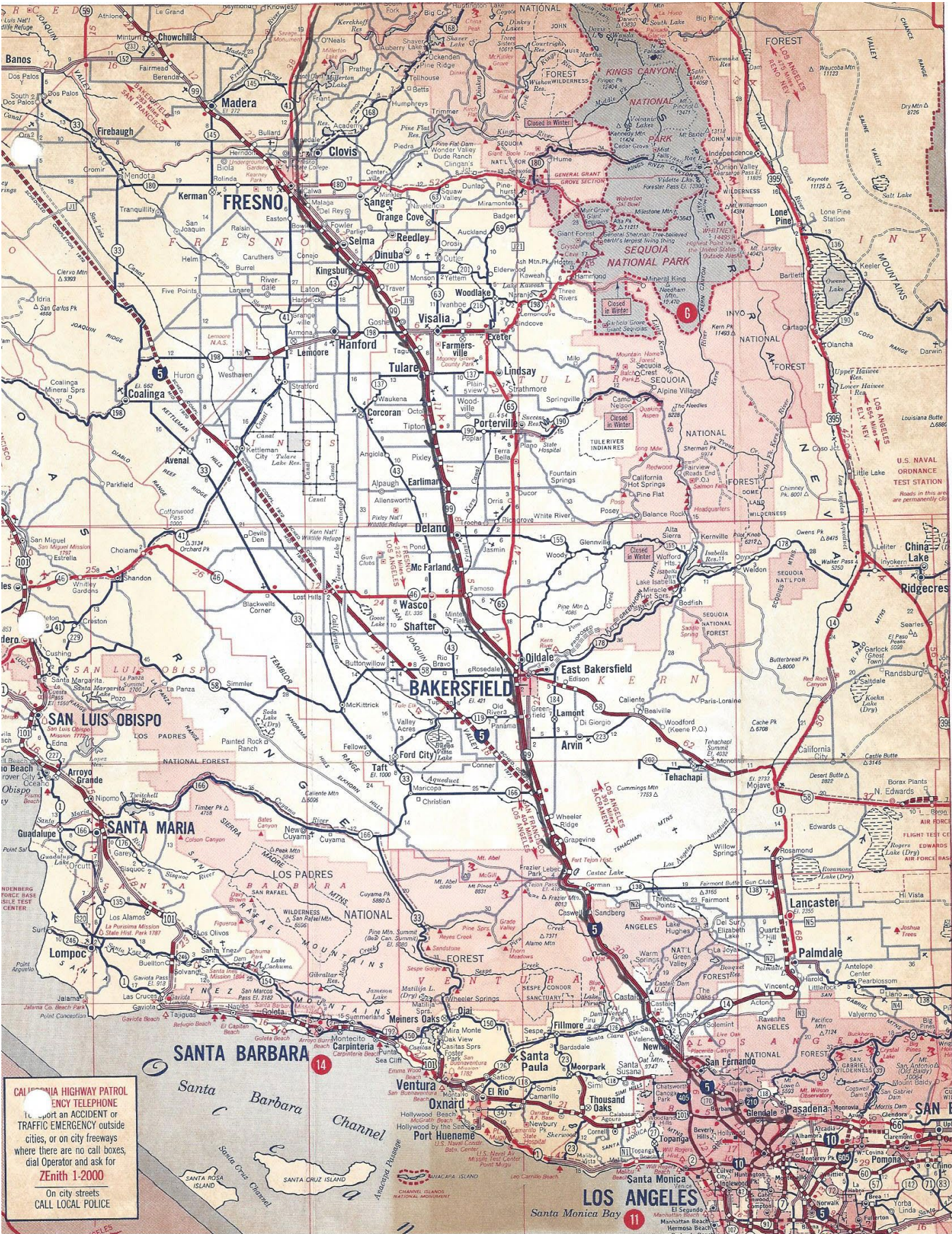


Yosemite National Park



Yosemite National Park





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



Ministry of Technology
NATIONAL PHYSICAL LABORATORY
TEDDINGTON, Middlesex, England
Telex: 262344 Telegrams: Bushylab, Teddington, Telex
Telephone: 01-977 3222, ext.

Please address any reply to
THE DIRECTOR
and quote:
Your reference:

4th June, 1970.

Dear Chris,

I am very sorry that I have taken so long to reply to your letter of 4th April in which you tell me that your spell in the States must end later this year. Certainly I shall bear your name in mind if I hear of any university position which might appeal to you; I presume that you are keeping in touch directly with Oxford, but I am sending a copy of your letter to Geoff Goodrich who, as you know, is now Professor of Ship Science at the University of Southampton. It may be that something will occur there which would interest you.

Needless to say, I hope that you and the family are still enjoying your stay in California, and I hope that we see you when you return.

Yours sincerely,

A. Silverleaf
Deputy Director (C)

Dr. C. Brennen,
Hydrodynamics Laboratory,
California Institute of Technology,
Pasadena,
California 91109,
USA.

Mathematical Institute

24-29 St Giles

Oxford OX1 3LB

Telephone 0865 54295

LCW:CAM

28 April 1970

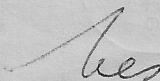
Dear Chris,

Thank you for your letter describing the work you have done at Caltech and asking for information about suitable positions. There is just a possibility that you could replace me as Tutor in Engineering Science at Balliol College. I have been promoted to a Professorship in Mathematics and as from next term there will be a vacancy. The college have not yet decided how it will fill this vacancy and I expect in the short term, say in the next year or so, it will seek the services of a college lecturer. We would need someone who could cover the subjects I have dealt with in the past (engineering mathematics, thermo-dynamics, fluid mechanics and perhaps some elasticity). You would fit very well, but of course Alastair will have a considerable influence in the final choice. I will keep you in touch with developments.

I shall also keep an eye open for another suitable university post. You should also look at the airmail editions of the English weekend papers, like the Observer and Sunday Times.

With best wishes,

Yours sincerely,



L. C. Woods

P.S. Let me have a "curriculum vitae" please, i.e. an "open" application for a position.

Dr. C. Brennen
Karman Laboratory of
Fluid Mechanics and Jet Propulsion
California Institute of Technology
Pasadena, California 91109, U.S.A.

9th June

Dear Leo,

I hope that I am not being a nuisance but I thought that I might write to you again to re-express my interest in the ~~the~~ opportunity which we have corresponded about a short time - you mentioned previously. and so I wondered whether the situation had been ~~not~~ clarified any further, and what the ~~present~~ prognosis might be. I would ^{be very grateful for any} ~~certainly appreciate~~ ~~some indications~~ ^{you could give me.} ~~for your~~ ~~point~~ ~~on this~~ and since I am beginning to ~~become concerned over my near future.~~ I have taken the liberty of writing a note to Dr. Houston as well in order to provide him with a copy of my records.

Our group has become very interested in all aspects of aquatic propulsion as you may have gathered from Ted Wei's papers in JFM. My particular interest of late has been in the field of micro-organisms (ciliates in particular) which involve a number of intriguing fundamental fluid mechanical phenomena. ~~Also~~ I have also become involved in more teaching of late. ~~and~~ giving a new graduate course I wrote and presented a new graduate course last term - "Cavitation and Bubble Dynamics" - which took a considerable proportion of my time.

~~Again my apologies,~~

Again I ~~hope would be of~~ would certainly appreciate your recent thoughts on the job situation

Dear Dr. Howatson,

Some time ago Les Woods mentioned in a letter to me that ~~there~~
~~was a possibility~~ ~~if~~ Ballal might soon be ~~filling~~ ~~advising~~ a position in
position might be of might be a position opening in Ballal and
the Engineering Science Dept in the not too distant future. I hope you do
not think it rude of me but I thought that I would write to
you to express my interest in applying in being considered for such a
position should it become available, though I expect Les Woods has
already ~~let you know of this~~ ~~that~~ mentioned it to you. However I
thought that I would in any case send you a copy of the enclosed
records of my present and past. I am also gathering together reprints
selection of reprints of a selection of my publications ~~and will let you~~
~~have it and use~~ ~~and you may want~~ which I could send to you
if required.

~~I would certainly~~
I would be extremely grateful for any indication you might
be able to give me of the prospects. Again I do apologize if I
have been at all presumptive,

Yours sincerely,

Christopher Brennan

8th June.

Dear Professor Holder,

I write to you ~~with the hope that should the~~
^{in the Engineering Department} ~~in the hope that should~~ ~~an~~ job
opportunity arise you might ~~also~~ consider an application from me, or
or

Dear Professor Holder,

I write to you in the hope that you
remembers me from my days as a graduate student in Oxford
and in the hope that should an appropriate job opportunity ~~in~~
the Engineering Department arise that you might consider an
application from me for that post. ~~etc~~

Let me sketch briefly my career since leaving Oxford.

I spent two very fruitful years as a research fellow at
the Ship Division of N.P.L. working with Dr George Codd and others.

I then was offered an opportunity to come here to the California Institute
of Technology as a senior research fellow to work principally with
Professor Theodore V. Wier. For this purpose I ~~was~~ also won a
Fulbright Scholarship. I have now spent $2\frac{1}{2}$ existing

and educational years here working in ~~diverse~~ areas a number of
diverse new frontiers (I ~~have~~ attached an account of the details

of my research to date) ~~with~~ working not only closely with Ted Wu
though also to a greater or a lesser degree with Professors M.S. Plesset,
A.S. Acosta and R. Sabersky. Incidentally they have all given

~~However my wife and I do have~~
~~I have~~
me permission to mention that they are making strenuous efforts to keep me
here in a permanent position. However my wife, two daughters and I ^{would} ~~do have~~
^{like} as ~~handing~~ to return to the United Kingdom, indeed to Oxford in particular. In
any case, ^{our} ~~my~~ visas cannot be extended ~~for that~~ ~~without~~ beyond the end of this
calendar year without exceptional circumstances.

I do hope that it is ~~not too~~ you do not mind my writing to
you about this. Indeed I would be very grateful to you for any indications
of such prospects. Should you be interested I enclose (i) ^{a brief curriculum} ~~an~~ ^{vita}
account of my research experiences (ii) and of my teaching experience
(iii) a list of publications and (iv) ☒ reprints of a number of those
publications.

My sincerest regards to you (with continuing thanks for your
previous efforts on my behalf), Also to ~~my many friends in the~~
Engage

Yours sincerely,

Antony Bennett.

From: Professor L. C. Woods

Mathematical Institute

24-29 St Giles

Telephone 0865 54295

Oxford OX1 3LB

LCW:CAM

3 November 1970

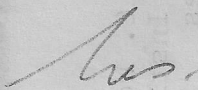
Dear Chris,

I can now tell you what has been decided in Balliol concerning the Fellowship in Engineering Science. We are not going to advertise the fellowship until a joint appointment can be arranged with a University Lectureship in the Engineering Laboratory. Dr. Howatson tells me that we are third on the list of colleges requiring such joint appointments, which probably means that within a year the post could be advertised. This is bad news in a way, for the period of waiting is of uncertain length, but on the other hand we are firmly resolved to make an appointment when possible. The idea of waiting for a joint appointment is of course that it will save the college a good deal of money, and at the moment we are a little pressed in the college (the million pounds was spent rather rapidly).

If you are still interested and keep in contact with me, I will certainly advise you when the post is advertised for I think you would be ideal for the post.

Best wishes to you and your family,

Yours sincerely,



Dr. C. Brennen
Karman Laboratory of Fluid Mechanics
and Jet Propulsion
California Institute of Technology
Pasadena
California 91109
U.S.A.

Dear Leo,

Many thanks for your letter and the information. It is kind of you to keep me informed.

Partly because no suitable opportunity ^{arose} and partly because my work with Ted Wu has been so fruitful that I required a little more time to complete all I have undertaken, I asked for an extension of my visa ~~at least until the~~ for a further possible year beyond ~~however we are~~ ~~however we~~ ~~however we~~

Dec. 31 of this year. However I would ~~be~~ prefer to move sooner should the chance come. ~~and~~ Ted Wu is fully cognizant with the situation, ~~and~~ ~~been to see that I get a good~~ ~~been to be considered for the posts you mention when they become available and should the timing which you as you think it might you the timing may very well suit very nicely.~~ I would indeed be grateful if you could let me know as soon as the position is advertised.

I think I may have told you of the work I ~~did~~ was doing on the solution of unsteady, non-linear wave problems using the Lagrangian description of the motions. That work is now more or less complete. I gave papers at the 8th O.N.R. Conference on Naval Hydrodynamics and at the 2nd International Conf Symposium on Numerical Methods in Fluid Mechanics on this subject this summer. For the last few months I have been working on some very interesting problems in the swimming of micro-organisms, a fairly unexplored field. ~~which is a~~

Thanks again and best wishes,

Chris

CURRICULUM VITAE

NAME: BRENNEN, CHRISTOPHER

DATE, PLACE OF BIRTH: 2nd Dec 1941, BELFAST, NORTHERN IRELAND.

NATIONALITY: UNITED KINGDOM

DEGREES: B.A. (Oxford, First Class) in ENGINEERING SCIENCE. 1963
M.A. (Oxford) 1966
D.Phil. (Oxford) 1966 (doctorate).

PARENTS: Father: Wilfred M. BRENNEN, F.R.C.S.
Senior Consultant Surgeon, Mid-Ulster Hospital,
Magherafelt Co. Derry, N. Ireland.
(British, born ^{Belfast} 6th Oct 1911)

Mother: Muriel M. BRENNEN. (nee Earls)
(British, born Belfast, March 1914)

Address: "Cranagh Dhu",
Magherafelt,
Co. Derry,
Northern Ireland.

Two younger brothers, one younger sister.

Married Katharine Doreen Kew (b. Dungannon, N. Ireland,
19th Dec. 1942) in June, 1963. Two daughters, Dana (b.
22nd June 1964) and Katharine (b. 28th March, 1967).

SCHOOL : Rainey Endowed School, Magherafelt, Co. Derry, N. Ireland.
from 1946 -1960

Ministry of Education Examinations for Grammar Schools;

1956 - Junior Certificate - passed with distinction in all ten subjects

1958 - Senior Certificate, Ordinary Level

1959 - Senior Certificate, Advanced Level - distinction in the 3 Maths subjects, physics and chemistry.

1960 - Senior Certificate, Ordinary Level Latin for Oxford entry.

March, 1960. Took the Open Scholarship Examinations for Oxford University, England. Awarded the Williams Open Exhibition for entry to Balliol College.

Other school interests - Sport (Athletics, Rugby first teams), Drama, Debating Society.

- Head Boy 1958-59 and 1959-60

UNIVERSITY

Balliol College, University of Oxford.

Entered September 1960, as Williams Open Exhibitioner.

Read Engineering Science. Tutored by Dr. L.C. Woods, Balliol College.

Sat for my final examinations, June, 1963. Obtained First Class Honours in Engineering Science.

Other undergraduate interests; Played for the College teams at most sports: an active part in the University Dramatic societies.

Elected a member of the Balliol Junior Common Room Committee (1961).

Awarded an Atlantic Crossing Trust Scholarship by Balliol (1963) which resulted in my visiting and travelling throughout the United States for three months in the summer of 1963. Other vacations were spent in travelling to most of Europe.

GRADUATE On being awarded a research scholarship by the N. Ireland Government, I returned to Oxford to begin research under the supervision of Dr. L.C. Woods in Oct., 1963. This was completed in 1966 and I obtained my D.Phil. (doctorate) for a thesis on the numerical solution of axisymmetric cavity flows.

Post Doctoral Work

In Oct 1966, I was appointed a Junior Research Fellow at the National Physical Laboratory, Middlesex, England and worked ~~from~~ for two years at the Ship Division of that laboratory, principally in association with Mr. A. Silverleaf and Dr. G.E. Gadd. Most of this research was concerned either with fully developed cavity flows or with the various drag-reducing and other properties of dilute polymer solutions.

~~In Dec 1968, I be~~

~~In Jan 1970, I became a Research Fellow in Engineering Science at the California Institute of Technology.~~

In Jan 1970, I became a Research Fellow in Engineering Science at the California Institute of Technology. For the purposes of this, I was awarded a Fulbright Scholarship. At Caltech I have been working in association with principally with Professors T.Y. Wu, ~~Professor~~ M.S. Plesset and A.J. Acosta.

Publications

Aging and Degradation in dilute Polymer Solutions. Nature, Sept. 1967 (jointly with GEGadd)

The dynamic balances of dissolved air and heat in natural cavity flows. 1969 Journal of Fluid Mechanics, 37, 1.

A numerical solution of axisymmetric cavity flows. 1969 Journal of Fluid Mechanics, 37, 4.

~~Cavity surface wave patterns and general appearance~~
Wave patterns on the surface of hydrodynamic cavities. 1968
~~As~~ N.P.L. Ship Division Report, No. 121.

Cavity surface wave patterns and general appearance. 1969.
(to appear shortly in JFM).

Some cavitation experiments with dilute polymer solutions. 1969. Being considered for publication by the Journal of Fluid Mechanics.

Notes on a small, vertical cavitation tunnel. ¹⁹⁶⁸ NPL Ship Division T.M. 236.

Some viscous and other real fluid effects in ~~the~~ fully developed cavity flows. 1969 ASME; Cavitation State of Knowledge.

Dear Mr. Silverleaf,

~~At the end of the~~

By the time this calendar year comes to a close

I will have spent this very happy, ~~educational~~ and instructive years at Caltech. Though ~~my~~ ~~for~~ most of the work which I have done has been in association with

Ted Wu, Milton Plesset, Allan Acosta and Rolf Zaberkey I have had considerable contact with people in just about every department. However, at the end of this year I must leave the U.S.A. if for no other reason than ~~that~~ ~~my~~ my visa expires.

~~I don't know~~ Since they have told me so, I don't think it would be presumptive of me to say that people here have been ~~also~~ very happy with the work I have done and were it not for the visa problem (it is incidentally impossible to have this changed) would be very keen for me to stay. But Doron and I ~~are~~ ^{would} rather like to return to the United Kingdom.

You have been so ~~extremely~~ ^{very} good to me in the

CALIFORNIA INSTITUTE OF TECHNOLOGY

PASADENA, CALIFORNIA 91109

HYDRODYNAMICS LABORATORY

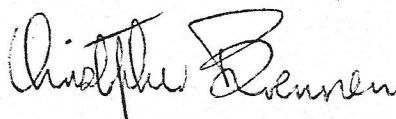
KARMAN LABORATORY OF
FLUID MECHANICS AND JET PROPULSION

Dear Professor Hauptmann,

I want to write to you to thank you most sincerely for your efforts on my behalf. I have written an application to Professor Finn and , since you may be interested, I enclose copies of the material which I sent to him (except for the actual publications themselves).

Whatever comes of it, I am extremely grateful for your help. Professor Wu mentioned that you may be in Pasadena next month. In that case I look forward to meeting you,

Yours sincerely

A handwritten signature in dark ink, appearing to read 'Christopher Brennen', with a stylized, cursive script.

Christopher Brennen

THE UNIVERSITY OF BRITISH COLUMBIA

VANCOUVER 8, CANADA

DEPARTMENT OF MECHANICAL ENGINEERING

May 5, 1970

Professor T.Y. Wu
California Institute of Technology
Pasadena, California

Dear Ted:

Further to our telephone conversation re Chris Brennan ,
I shall repeat that I know of no positions presently open in our
department, however, it appears that we will shortly begin an
inter-disciplinary group in Ocean Engineering within this faculty
and perhaps there may be some opportunities there. I would urge
Dr. Brennan to write directly to:

large
envelope

Professor W.D.L. Finn
Dean, Faculty of Applied Science
#410, Civil Engineering Building
The University of British Columbia
Vancouver 8, B.C.

I have mentioned this matter to Dr. Finn and if Dr.
Brennan could include a brief resume of his background and possible
activities in the area of Ocean Engineering, it would be very
helpful.

I look forward to seeing you in Pasadena towards the
end of next month.

Best regards,

Yours sincerely,

Ed H.

P

E.G. Hauptmann
Associate Professor

Also Professor E.G. Hauptmann

CALIFORNIA INSTITUTE OF TECHNOLOGY

PASADENA, CALIFORNIA 91109

ENGINEERING SCIENCE DEPARTMENT

Professor W.D.L. Finn,
Dean, Faculty of Applied Science,
410, Civil Engineering Building,
University of British Columbia,
Vancouver 8, B.C.

Dear Professor Finn,

Following telephone conversations with Professor Hauptmann of your Mechanical Engineering Department, Professors M. S. Plesset and T.Y. Wu of Caltech suggested that I write to you in the hope that you might consider this application for a position in ocean engineering and science at the University of British Columbia.

I have briefly reviewed my background in the enclosed curriculum vitae and in a report upon my research activities to date. But I ought to add a postscript. When I came to Caltech I was not fully aware that the visa under which I was entering the U.S. (type J-1) was so very restrictive. Some months ago, however, Professors Plesset and Wu suggested the possibility that Caltech might offer me a more permanent academic position. So with the willing help of the Office of Naval Research, we approached the Department of State only to find that there was no way in which my visa could be changed and that before the end of 1970 I should have to leave the U.S., at least for two years. Of the possibilities open to me I thought that the University of British Columbia was by far the most attractive and so I write to you now.

As you will gather from the enclosed review virtually all of my research activities to date have some connection with ocean engineering. Incidentally I might briefly add that as a result of my work on the use of the Lagrangian equations to solve non-linear free surface wave problems, I have been invited to give a paper at the upcoming International O.N.R. Symposium in ocean Hydrodynamics. This I think is something of an honour. I mention this because I feel that these methods have considerable potential in the field of ocean engineering; for example in the study of tsunami waves and their interaction with various coastal and seabed geometries. Indeed features such as seabed movement, stratified flows, etc. could be accommodated more easily than in the Eulerian methods. Another area in which I feel I could contribute to a program of ocean

science would be the field of the fluid mechanics of long chain molecular solutions, not only of the synthetic type but also of the polysaccharides excreted by so much of the water dwelling fauna. In this last regard I might mention that during my stay in Pasadena I have remained in close contact with Drs. Jack Hoyt and Andrew Fabula of the Naval Undersea Research and Development Center. Indeed whilst I was still working at N.P.L. in London, Dr. Gadd and I collaborated with them to investigate the effect upon ship model tests of the presence of algae growth in the Ship Divisions towing tanks. In this general area I might also mention my work in the subject of the swimming of micro-organisms.

However, I have followed many other aspects of marine and ocean engineering (such as the dispersal of effluent) with interest and would welcome an opportunity to follow some of them up.

As you will gather I have been involved primarily with research. However you may also be interested in my teaching experience. As a graduate at Oxford University I was invited by my supervisor, Dr. L.C. Woods, to carry a part of his tutorial load. Thus for three years I tutored undergraduates for some four or five hours per week. Here at Caltech I have also had experience in teaching undergraduates (taking classes for Professor Sabersky), in giving graduate seminars and in conducting undergraduate laboratory courses. This last was somewhat unconventional in that we chose a particular topic and each pair of undergraduates progressively developed the investigation to produce in the end a fairly complete body of research work.

I would, of course, be very grateful for an opportunity to work at the University of British Columbia and I feel I could contribute significantly to a program in ocean science. If there is any other information you might require do not hesitate to let me know.

Yours sincerely,

A handwritten signature in cursive script, reading "Christopher Brennan".

Christopher Brennan

CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA

OFFICE OF THE PRESIDENT

December 4, 1970

Dr. Christopher Brennen
830 North El Molino Avenue, Apt. 7
Pasadena, California 91104

Dear Dr. Brennen:

I am happy to notify you officially that the Executive Committee of the Board of Trustees, at its meeting on December 3, 1970, reappointed you Research Fellow in Engineering Science for one year, effective January 1, 1971, with an increase in salary to \$11,400 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.

We assume you have written to your U. S. Government sponsor requesting an extension of your stay in this country. 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