

Trail Log 1960-1969

Holmes Rolston, III

Summary

These are records Rolston kept of trails and trips, only of special trips before he moved West to Colorado.

1960-1964. No records

1965. July 29-August 23. Wilderness horseback trip in the San Juan Mountains, vicinity of Durango, Colorado.

1966. Maine. Sphagnum bogs. Mt. Katahdin. Bay of Fundy, tidal bore.

1967. July 13-July 23. Rolston led Boy Scout trip to Philmont Scout Ranch, New Mexico

July 27-August 5. Grand Canyon River Run, Lee's Ferry to Lake Mead

followed by text of an article published as "Bristolian Shoots Rapids on American's Wildest River, *Bristol (Virginia) Herald Courier*, August 27, 1967, p., 5A.

1968. Rolston moved to Colorado August 1968 and records are more thorough afterward.

Local Colorado trails and trips, fall 1968.

1969. Local Colorado trails and trips.

Wilderness Trip in San Juan Mountains - Aug. 3 - 16, 1965

Rio Grande and San Juan National Forests

July 29, 1965. Thursday. Left 6.15 a.m., mileage 29,900. Drove to Knoxville via Kingsport, Bean Station, and Morristown. Thence to Rockwood, where Cumberland Front is prominent escarpment. Semi-mountainous as far as Crab Orchard, and subsequently much flatter.

Lunch at an artesian well west of Carthage. Drive into Nashville quite flat. Strata since Rockwood quite flat, often very striking in road cuts on the interstate highway.

Past Nashville, terrain seems continuous, tho gradually more rolling. Western Highland Rim not noticed. Tennessee River is wide and flat here. Terrain in Camden area seems poor, often much washed. Night at Natchez Trace State Park. Day's drive - 466 miles.

July 30, Friday. Mileage 30,373. Leave 6.30 a.m. Straight drive on interstate 40 across Jackson Plain. Plain is flat, sometimes a little rolling. Crossed Forked Deer and Hatchie Rivers. Enter Memphis and crossed Mississippi. Bluffs on which Memphis is built visible looking back from Western side.

Crossed very flat Mississippi alluvial plain. Crossed St. Francis River. Crowley's Ridge conspicuous as low wooded ridge both on approach and after crossing. Continued on flat plain. Crossed White River on massive bridge.

Lunched west of Beebe in church yard. Drive through Arkansas Valley. Residual ridges on both sides. Gently rolling terrain with low mountains either side. Crossed Arkansas River twice. Wide and sandy channel at both places. Saw Mt. Nebo, s.e. of Russellville. Creek's adjacent channel, dry except in flood is called a relief.

Night at Tenkiller State Park, in Okla. So called from Indian family by that name. Lovely campsite on lakeshore. Illinois River, incised before damming. Horizontal sandstone. Mileage 30,892. Day's drive - 502 miles.

Saturday, July 31. Leave 6.30 a.m., re-crossing Arkansas River near Gore. Drove into Osage Plains, rolling plains, rather well watered and green. Broken forest and prairie. First oil well seen east of Henryetta. Clear skies at sunrise becoming heavy to broken overcast. Good numbers of cattle seen in area. Crossed North Canadian River s. of Prague enroute from Rt. 62 to Interstate 40. Re-crossed again several times on Interstate 40 into Oklahoma City. Arrive Oklahoma City 9.45 a.m.

Spent several hours in Oklahoma City. Bought hats at Bundy's Western Wear, 114 W. Sheridan, Okla. City. Resistol. Plains (model) in Canyon (color: brown) \$ 12.75. Lunched in restaurant there.

Drove west on Rt. 66 to Rt. 281 and thence n.w. toward Kansas, between North Fork Canadian and the Cimarron Rivers. Flat to very gently rolling prairie, section known as Enid Prairies. (Enid is nearby town.) Grassland with scrub growth at times apparently overtaking grassland. Further west grassland with few or no trees. Whole area is well covered with vegetation. Considerable cattle.

Overcast skies all day and occasional very light rain. Soil is mostly quite red, as are earth banks.

Entered Kansas about 5.00 p.m. Crossed Cimarron River - muddy, medium small, but wide, dry sandy

channel. Entered Red Hills section, sub-dissected area. Towards Meade quite flat. Cool all day.

Night at Meade County State Lake, s. w. of Meade. Small lake, cottonwoods around lake in flat area. Noticeable bird life (duck hawk, red-headed woodpecker, and smaller common birds). Also ground squirrels and rabbits. Mileage 31,340. Day's drive 448 miles.

Sunday, August 1. Leave 6.55 a.m. Drive to Dodge City on flat grassland. Boot Hill Cemetery and museum, recounting tales of Wyatt Earp, Bat Masterson, Doc Holliday, Luke Short, etc.

Crossed Arkansas River here. Drove to Garden City, attended First Christian Church and lunched in picnic area here. Flat, high plains going on to Colorado, becoming somewhat drier, but everywhere a vegetative cover and land all utilized for grazing and/or crops. Considerable irrigation. Some trees, many seem to have been planted.

Entered Colorado, and crossed Arkansas River near Holly. Between here and re-crossing at Lamar, much evidence of flooding. Sandy, washed flat expanses up to quarter mile wide. Road much washed and one main bridge washed out (temporary bridge provided).

Colorado Piedmont area, some scarps here. Countryside still under good vegetative cover near Arkansas River, though drier in distance on either side. Rockies faintly visible on horizon at La Junta. Crossed Apishapa River e. of Fowler, 10-15 yards across. Crossed Huerfano River east of Pueblo, also Arkansas River broad, muddy, sandy. Many tepee buttes seen from bypass 50 n.e. of Pueblo.

Pueblo service station attendant says this is wettest year in memory. Says recent floods (2-3 weeks back). Horizon is full of mountains from Pueblo. Pikes Peak area visible northward, Sange de Cristo Range, etc. to south. Higher scarps west of Pueblo are covered with dark juniper. The Arkansas River is much

entrenched to the south.

Towards Canyon City - deeply eroded flat strata and much juniper. Scenery lovely. Past Canyon City strata dip away from mountains. Hogbacks and scarps, often red.

Visited Royal Gorge of the Arkansas River. Suspension Bridge over the gorge, 1,000 ft deep. narrow channel, red sandstone strata almost vertical here. Overcast skies in late evening after clear skies with cumulus through much of the day. Pikes Peak is visible from Royal Gorge.

Camped at private campground 1/2 mile east of entrance road to Royal Gorge. Mileage 31,748. Day 418 miles.

August 2, Monday. Leave 7.00 a.m. Continued up gorge of Arkansas River, which is immediately to right of road. River is 20 yards wide, rapidly flowing. Towards Salida valley broadens out to some size. Rock strata dip away from mountains, and rocks are metamorphosed to some extent.

Sawatch Range is prominent from Salida, with glimpses of Sangre de Cristo Range, mostly hidden by nearer hills. All higher mountains have considerable snow patches. Clouds envelop parts of the mountains, though the day is bright and clear.

Weather report on radio records snowfall on Mount of Holy Cross two nights ago. Some roads closed as a result.

Begin climb past Salida. Mountains are well forested here. Crossed Monarch Pass, 11,312 ft. Cool here and clouds enveloped the area. Pass had been closed by rockslide a few weeks earlier.

Descent beyond Sargents becomes broad and open flood plain 1/2 mile wide. Well grassed, along Tomichi (tom mee chee) Creek. West of Gunnison drove through upper canyon of Gunnison, crossing Lake Fork Gunnison, Blue Creek, and Cimarron River. Broken country with scarps, mesas, buttes.

At Cero summit, broad open Uncompahgre Plateau is visible in extreme distance. Toward Montrose valley becomes broad, open, flat, miles across with the high ground of the Uncompahgre Plateau forming conspicuous, flat, higher horizon. This region is known as the Western Slope. Some light rain in Gunnison area.

Lunched at Gunnison, very nice town. Uncompahgre River joins the Gunnison here. Turning southward, drove up the Uncompahgre River towards Ouray. San Juans are visible, with snow patches southward.

original text has skyline profile of San Juan Range pasted in here.

Uncompahgre Mtn. (un - come - pahg - grey, a Ute Indian word).

Towards Ouray, flood plain is narrower, and walls steeper. Rock here is quite red, rather horizontal strata. Ouray Village is rather Swiss-like, nestled below massive peaks. Drive through it in rain, with peaks visible through mist.

Steady climb with spectacular scenery south of Ouray. Strata red, and dark, now steeply inclined. Old mines along the way. Continued mist and rain, much debris washed across the road in spots. Willie complains of difficult driving. Active mining, gold, silver, lead, copper, zinc.

Reached Red Mountain Pass, 2.30 p.m. The pass was closed with snow two days ago. Rocks are now often lighter red, or tan, mixed with darker. Similar descent on south side of divide, with broader open

grassy mountain sides, and flood plains, breaking heavy forest.

Arrive Silverton, small town in flat area, said to be one of the richest mineral areas in the world. Needle Mountains first visible from here. Willie took one look and said. "Heavens to Betsy." - Climb again south of Silverton to Molas Divide, with Needle Mountains becoming more visible. Continued with some climbing. Some descent to Durango. Some mountains with very horizontal strata, especially in region known as Hermosa Cliffs. Arrive Durango, 32,048 miles - 2,141 miles from Bristol.

Checked in hotel. Got haircut and did laundry. 7:30 p.m. get together supper for the group given by the Wilderness Society. Met the members of the group here.

1. Mrs. Patsy O'Brien

114 South Third

Bozeman, MT

2. Mr. William Thomas Clements

211 Plantation Road

Bristol, VA

3 Mrs. Kay Lyman

1227 Shafter Street

San Mateo, CA

4. Mrs. E. Judson (Helen) Griswold

Goshen Road, Route 5

Newton Square, PA

5. Miss Pat Landis

225 W. Lafayette Avenue

Baltimore, MD 21204

6. Miss Jean Chapman

7700 Greenview Terrace

Baltimore, MD 21204

7. Miss Ann O'Neill

130 Madison Terrace

Bridgeport, CT

8. Miss Lori Larkin

Miss O'Neill's niece

9. Mr. Myron (Mike) G. Silbert

3050-A Walnut Street

Los Alamos, NM

10-11. failed

12. Miss Judith Sawyer

1116 Fairlane Ave. S.W.

Canton, OH

13. Mr. David E. Snyder

1116 Fairlane Ave., S. W.

Canton, OH 44710

14. Miss Shirley Crumm

132 Maple Hill Road

Huntington, NY

15. Dr. Murry L. Nusbaum

Upper Higby Road

New Hartford, NY

16. Mrs. Bettie Nusbaum

Upper Higby Road

New Hartford, NY

17. Miss Debra Nusbaum

Upper Higby Road

New Hartford, NY

18. Korrine Nusbaum

Upper Higby Road

New Hartford, NY

19. Mrs. Verne Evans

Elkhorn

Wisconsin

20. Nan Roper

465 Northam Road

Columbus, Ohio

21. Connie Wilson

granddaughter of Mrs. Evans

22. Dr. Holmes Rolston, III

Route 1

Bristol, VA

23. Mrs. Sue Ann Peterkin

1000 Riverbend Drive

Houston, TX

Trip Outfitter

Mr. Joe Hotter

Hotter Brothers

Box No. 1308

Durango, CO

Trip Representative

Dr. Robert O'Brien

Earth Science Dept.

Montana State University

Bozeman, MT

Trip Doctor

Dr. Raymond C. Malone

4550 N. 51st Avenue

Phoenix, AZ

4. Miss Jean Chapman

7700 Greenview Terrace

Bridgeport, CT

Supervisor of this area of San Juan National Forest, Rod Blackard, spoke to the group. There are mountain lions and bear in the area, elk, deer, bighorn sheep. Federal trappers report about 13 grizzly bear at the head of Piedra River. (A later ranger at West Ute Creek said the grizzly bear preserve was in the West Ute Creek area.) There are coyotes at all altitudes. No wolves. There are no snakes at high altitudes.

Joe Hotter, outfitter, gave tips for riding.

August 3, Tuesday. Rose 6.00 a.m., finished packing. Breakfast at hotel. Drove Bill's car out to Hotter Bros. Ranch.

Denver and Rio Grande Narrow Gauge Railroad left 9.10 a.m. Spectacular ride up the canyon of the Los Animas River. Saw Needle Mountains, Grenadier Range, etc.

Off at Elk Park, where we were given lunch, and took about 2 hours fitting us to horses. Climb through the Elk Creek Canyon - lovely all the way.

My horse is Chief, a large horse presumably given to me because of my height. Joe Hotter describes Chief as a "pusher." Bill's horse is Trigger. Hard to ride and take pictures.

Camped for the night in a flat park some halfway up the canyon. Very flat area in canyon bottom, presumably alluvium in old lake bed, formed by massive rock slide at lower end. (so Atwood says) Good supper, steak and potatoes. Altitude here 10,000 plus, seems to leave you a little short of breath.

Chipmunks are abundant. On rockslide near camp heard cony. Rabbit-like animal of high mountains, lives in rocks. Sound is like a short toot me from a Halloween horn. Horses are always hobbled for the night.

August 4, Wednesday. Rain in the night, with thunder, lightning, but clearing by breakfast. Hotter says night thunderstorms are not uncommon. Got off about 10.00 a.m.

Continued climb up Elk Creek Canyon - of exquisite beauty. Steep climb for the horses up often narrow trail. The Grenadier Range is south side of canyon. Further away West Needle Mountains, and a few peaks of the Needle Mountains seen behind the Grenadiers. Ate lunch on continental divide - here open rolling bald meadows, representing the San Juan peneplain (so Atwood.)

Unidentified hawk here. Crossed upland area, re-routing some because of snow banks across trail. Numerous snow banks remain scattered in area. Descend to Beartown area (Bear creek) with rest stop near creek. Steep ascent through woods breaking out to higher open area about at the divide between Bear Creek and Starvation Gulch. Here we crossed several snowbanks with some difficulty, some of the horses stumbling, esp. just as we reached Ute Pass.

From this area distant mountains can be seen - the Sange de Cristo? or Uncompahgre?

Descent into the West Ute Creek area, and camp for the night, about 11,200 ft. Lovely scenery through the whole day, but we were whipped at day's end. Headaches and short of breath. Bill says about 4.00 p.m., "Doc, I can't take much more of this. The only reason I'm staying on is that I can't get off." Pretty severe case of "lockjaw of the knee".

Cook is Dean Minor; assistant cook is Betty, who has love affair with Ronnie Hensinger one of the wranglers. Wranglers: Syd Bryd, little Ronnie (Kolz), Daryl, Bob Wood - a loner and confirmed bachelor, Kenny Ledford. They are in late teens, early twenties.

Dean and Betty travel with saddle string. Kitchen pack string travels early, leaving a little after and often arriving before the saddle string. Gear travels in 5 pack strings, which are latest to leave and to arrive, often couple of hours after saddle string arrives. All told 65 head of horses.

Tents are 7 x 9, tepee style, of very heavy canvas. Two sleep in a tent. They weigh 40 lbs each, are put up with two large wooden poles, available at each camp site. Riders pitch their own tents, selecting sites.

Aug 5, Thursday. Layover day in West Ute Creek area, gently sloping area, grassed in center and forested either side. Red-tailed hawk seen in a.m. Stayed in camp getting used to high altitude. Malone and others fished up to West Ute Lake with good luck and we had fish for breakfast on Friday. Trail Blazing Crew is camped up the meadow, also some 30 Future Farmers of America camped in next canyon. Cold night; thermometer read 38 degrees, wranglers said there was some ice on water buckets. Patched leaks in air mattress.

August 6, Friday. Rode down West Ute Creek to the junction of the three forks, over open grassland. Then

a steep switch back climb up forested slope toward Rio Grande pyramid. Break out onto meadow, for lunch, then slabside slope of light grass and rock to a pass just east of Rio Grande Pyramid, about 13,300. Several tuff rockslides rather difficult to cross. Steep descent, and rode around to get closeup view of the Spanish window, a rock "window" adjacent to Rio Grande Pyramid. The two make a noticeable high landmark, and are on the horizon for miles around. We could look back and see them often afterwards.

Backtrack and slabside now on opposite (Pacific) side of drainage, area drains into Los Pinos River. Deeper and flatter floor than I had imagined from topo sheet. Camp at Weminuche Pass (women - ooch), 10,629 ft, broad open pass, with much meadow either side and some open forest. Squirrels and chipmunks here. Also saw snowshoe rabbit - brown with white rear feet. Patched another leak in air mattress.

August 7, Saturday. Spent day in camp at Weminuche Pass. Bill and I walked a couple miles across the meadow at the pass. For wildflower list, see books.

August 8, Sunday. Ride to Squaw Lake. We rode down from the Pass to 1st canyon and up this canyon, partly wooded, partly open. Lunched on top at the divide. Large hawk-like bird, perhaps immature eagle seen at rest stop. Rode into Squaw Lake across high country with a sea of peaks in distance on all sides. Sheep graze here, kept by a lone sheepherder.

Chief, my horse, gave me some trouble here. He is bad to roll with gear on, rolled with Exakta camera in sidebag at rest stop. He shies when I go to mount. Also hard to stop in line, when other horses move on, and hard to keep from trotting when other horses trot. Binocular strap snagged in spruce tree and broke and binoculars fell off. Here loosened side bag unnoticed from which camera subsequently fell and rolled

down steep hillside. Rain briefly at camp.

August 9. Monday. At Squaw Lake, a perfect cirque with cirque lake, now enlarged by artificial dam. 11,800 ft. The group had breakfast on beautiful trout caught by Malone evening before. Bill and I hiked to head of cirque and on to the higher summit some 1,000 ft above lake, about 12,800 ft. Several cirques are compound here. Saw and heard several conies at close range. Saw marmot - yellow bellied. Saw and photographed ptarmigan with 5 chicks.

Rocks are all volcanic, look like cinders. Rain in late afternoon.

Considerable marsh below the lake.

Pack string rode out 16 miles round trip for groceries from here. Mosquitoes and flies something of a pest here, though the mosquito bite is not severe and leaves no swelling.

August 10, Tuesday. Breakfast on trout again. Ride to campsite below Trout Lake. Rode down the drainage (cirque?) southeast of Squaw Lake, and on down to the main Squaw Creek valley, wide and open, and thence up Squaw Creek (s.e.) to its head. Flushed grouse with three chicks at rest stop. Squirrels and chipmunks frequent, also conies.

Lunch at grassy spot near head of creek, with rain now threatening. Raingear on in saddle for first time in trip. Switchback climb eastward to continental divide, and then rode a hi-line trail partly slabsiding Little Squaw Creek valley and partly slabsiding Williams creek drainage.

Rain and some hail more or less continuous through the remainder of day. In the distance peaks in sunlight could be seen. Most of group got pretty cold, but the ride was pretty even in rain and hail.

Descended to Trout Lake, with Williams Lake directly south and on opposite side of Continental Divide. Steep descent past Trout Lake into large Cirque several hundred feet below. Waterfalls into cirque. Marshy floor with high ground on s. side, where we made camp. Riding is easier now, but still glad to get off the horse at day's end. Waited about 2 hours in rain for gear, though Bill's gear and tent had come on earlier packstring with the kitchen. He sacked out while the rest huddled around fire in rain. Clearing skies in the night.

August 11, Wednesday. Day in camp at cirque below Trout Lake. Awoke with horse's nose in tent. Frost on grass outside tent, enough to crunch underfoot. Cloudless sky and soon warmed up and dried out. Washed up before lunch.

After lunch walked around cirque to waterfall on far side and spent afternoon there.

After supper, campfire singing led by Malone, as is now usual every night.

August 12, Thursday. Rode down West Trout creek to junction with main Trout Creek, then up East Trout Creek to camp near head. Trail was mostly timbered down and up, with some delay on account of fallen logs across trail and much working around fallen timber. On earlier days, Hotter and a couple wranglers have scouted trail for blowdowns. Chain saw is carried by pack horses, used for trail clearing and to provide firewood.

Passed old sulphur mine, and crossed low open valley of Trout Creek on private land. Delicious steak supper.

August 15, Friday. Layover at East Trout Creek. Washed up and napped. Lunch at waterfall on trail down the creek.

Group is somewhat keyed up over 25 mile ride over high-line trail tomorrow, especially in view of rain in late afternoon. Temperatures at rising in a.m. have been 38-42 degrees lately. Peculiar mixture of rain, sleet, and few flakes of snow falls out of up wind cloud, with blue overhead and sun shining.

August 14, Saturday. Fabulous hi-line ride on the continental divide. Rose 6.50 a.m. on trail by 9.00 a.m. Rode to head of East Trout Creek, timbered trail breaking out at timberline just below continental divide.

Remainder of day was on a high, open, and exciting trail. About lunch we approached South River Peak, ate lunch on side of it, then steep switch back climb up, and steeper switchback climb down. Narrow, steep trail. Horses were kept 40 ft apart to minimize danger of rocks rolling off onto riders below.

At switchback point on way down, 51 elk seen, and seen better again a little further on trail over a ridge. Elk were distant in Goose Creek Valley. Later in day another half dozen elk were seen on hillside in Beaver Creek Valley.

Beyond South River Peak trail was often on razor edge divide, and sometimes slabside. Sawtooth Mountains, a jagged crest. Then bear south to Mt. Hope and Archuleta Lake, for camp. (arch you letter - Archuleta is name of a county here).

Arrived at 5.00 p.m. after 25 mile ride in 8 hours, or 7 hours and 1 hour for lunch and brief rest stops.

Sheepherder had taken campsite so we went a quarter mile past lake toward Spotted lake. Hotter, et al, have great disdain for sheepherders. The whole group pitched in to build a campsite, i.e. two logs nailed horizontally to a tree and posts for table frame, and four logs in square for campfire. Horses dragged logs of considerable size up steep hill. Supper about 8.30 p.m.

First set of batteries is getting dim in flashlight after 2 weeks use.

Bear has killed several of sheepherder's flock night before and scattered the flock badly.

The day's ride was a majestic ride and worth the whole trip. Finished the day not too tired and in pretty good shape. Weather was lovely. Storm threatened at lunch and made us hasten lunch and on up the high trail so as not to be high in lightning storm. Lightning flashes in distance. But storm did not materialize over us, and cleared later.

Managed to keep Chief from trotting, by holding him behind Trigger. Otherwise he did quite well. Horses get excited as they near camp and are hard to hold back.

Sunday, August 15. Rose 7.15 a.m. and went to walk. Saw two elk and stalked them an hour and a half. Got to within a couple hundred yards distance. Returned for breakfast. Conducted a church service for the group at 11.00 a.m.

Bill and I at lunch on hillside at tent, feeding camp robbers (Canada jay, or Rocky Mountain jay). Came within a couple feet to get bread crumbs. A few disgruntled Clark's Nutcrackers in background. A few robins here.

Many in camp are limping with upset stomach; some say from the drinking water here. Bill and I have escaped it.

Trucks pulling Wolf Creek pass can be heard from here - 6 miles airline distance, 11 miles by trail.

Spent several hours in afternoon on crest (continental divide) above lake and camp. Mixed stormy and

clear with lovely clouds, rainbow, over a sea of peaks on all sides. Quite lovely. Evening campfire with singing and a jovial group. The group has been most compatible.

Monday, August 16. Ride out to Wolf Creek Pass, 11 miles. Very pretty ride, but feeling rather dirty and grubby and anxious to get cleaned up. Reached Wolf Creek Pass, 10,850 , about 2.30 p.m. Trail's end.

Cars there brought us back to Durango, some 70 miles. We drove Joe Hotter's car, went to Hotter's Ranch to get Bill's car. Had to use jumper cables to start it.

Whole trip by horseback - 130 miles (70 airline miles).

Bob O'Brien says grizzlies regularly visit Trout Creek Garbage dump in Yellowstone, in Central Plateau Region. It is kept locked.

Tuesday, August 17. Breakfast at restaurant across from hotel. Haircut. Put new battery in Bill's car. Got off from Durango about 12.30. Mileage 32,070

Visited Mesa Verde National Park. Saw sleeping Ute Mountains (Ute Peak), Montezuma Valley.

Park is type locality of Mesa Verde group, consisting in descending order of

Mesa Verde Group

1. Cliff House sandstone
2. Magnify formation - shale and coal
3. Point Lookout sandstone

Mangos shale - to 2,200 ft deep.

Weathers so because of:

1. talus slope
2. shale erodes differently.

Mesa Verde ("green mesa") is large mesa, dissected into long north-south mesas and canyons. See Fenneman and park map.

sandstone above

shale in middle - erodes out and forms ledges and indented regions

sandstone below

Cliffs are formed with caves because of water seepage along shale, (impermeable) out to opening, and subsequent weathering.

Visited Indian cliff dwellings, occupied off and on from about 1. A. D. to 1200 A. D.

Tour of Spruce Tree House and a ranger guided tour of cliff House, largest cliff dwellings in world of this type. One accipiter hawk. One deer seen.

After supper, campfire program. Lecture on Europeans versus the Mesa Verde Indians in similar periods, followed by Indian dancers by 6 Navajos.

Heavy rain in night, ceasing about daybreak. Everyone comments on large amounts of rain. Overcast most of day.

August 18, Wednesday. Leave 8.00 a.m. Mileage 32,175, drive to Canyonlands and Arches National Monument. Bought gas in Montecello. Blue Mountains and La Sal Mountains covered with cloud. La Sal (the salt) mountains later seen clearly from Arches Nat'l Monument campground. Up to 13,089, they are 2nd highest in Utah.

Window Rock Arch seen on roadside. Dark clouds and some rain. Approaching Moab, scenery becomes bizarre, with many buttes and mesas, "monuments" or columns.

Crossed Colorado River beyond Moab, a uranium mining center, from mineral carnotite. Stopped at Arches Nat'l Monument to inquire about conditions in Canyonlands Nat'l Park. Drove into Canyonlands on primitive road.

Grandview point overlook, overlooks the confluence of the Colorado and Green Rivers. Spectacular canyon. Ate lunch at overlook. Rivers are not visible from here, but can be seen at other points on way in. Cataract Canyon (where Bob O'Brien, tour leader, was 9 days stranded) is below here.

Flat tire on way out. Saw very few people in here.

Arches Nat'l Monument - weird erosional forms, including arches.

Entrada sandstone - makes the caps

Carmel sandstone - erodes under the caps to make the columns

Navaho sandstone - makes the base.

Balanced Rock, with La Sal Mountains in background, seen later in sunset from camp.

Pitched camp. Walked into Devil's Garden area to see Tunnel Arch, Pine Tree Arch, Landscape Arch, etc.
Campfire program after supper.

The light green strata noticeable in area is a source of carnotite, uranium ore. Ore from this area was shipped to Madam Curie in 1905.

High winds in night, had to get up and tie down the tent. Cloudy and light rain. Clear by morning.

August 19, Thursday. Bought new tire in Moab. Drive north to Crescent Junction, and turned eastward toward Grand Junction. Country is rather dry - semi-desert. Book Cliffs are prominent at Crescent Junction. Some rain on drive into Grand Junction.

Both the Gunnison and the Colorado Rivers were formerly called Grand Rivers. Area here is known as Grand River Valley. Hence the name: Grand Junction. The Gunnison River was re-named after an early day explorer and surveyor.

Grand Mesa on the north and Uncompahgre Plateau on south flank the road to Montrose. San Juans again visible from here.

Camped at the Black Canyon of the Gunnison Nat'l Monument.

hills of the canyon are Mesozoic

at rim of canyon, all the Paleozoic rocks are missing

canyon itself is pre-Cambrian metamorphic

Canyon is carved in plateau by Gunnison River. Rain in afternoon.

Campfire program on canyon exploration and river running. Rather cold and rain in night. The Indian name for the Black Canyon and the Gunnison is Tomichi.

August 20, Friday. Clear at first driving toward Gunnison.

The upper part of the canyon was later draped in fog.

Crossed Monarch Pass, 11,312 in the lower Sawatch Range. Fog on way up, clearing on descent. Turned northward at Poncha Springs, near Salida, and drove up fairly broad valley of Arkansas River. Sawatch Range is lovely to west. Peaks are named by road side signs. Mt. Shavano, Mt. Antero, Mt. Princeton. Arkansas Hills on the east. Beyond (not visible) is South Park. Mt. Elbert not visible in clouds.

Colorado River heads in Rocky Mtn Nat'l Park, where it drains Western Slope of Front Range, and hence pushes the divide eastward. The divide is more often not on the Front Range but on the second, more western belt of ranges (Sawatch, San Juans, Park Range, Medicine Bow Range, etc.)

Leadville - high town, 10,152. Once the scene of a silver boom, and once the second largest town in Colorado. Now rather full of shacks. Nearby mountain tops have fresh snow cover.

Mild climb to Climax, large molybdenum mine here. Descend along Tenmile Creek (divides Gore Range northward from Mosquito Range, southward).

Climb to Loveland Pass (11,992 ft) highest mountain pass continuously open in U. S. Rather long descent through Georgetown in narrow channel of Clear Creek, emerging on plains at Golden. Colorado School of Mines is here.

In Denver, campsite at Cherry Creek State Recreation area was washed out and closed by June floods. Went to Denver Museum of Natural History just before closing time. Lovely exhibits of fossils, dinosaurs, game, large mineral exhibit, including crystallized gold.

Leaving Denver, drove east toward Limon. Main bridge washed out in June floods, temporary bridge washed out the night before, at Bijou Creek, near Byers. Forced detour on Rt 36 to Last Chance. Bridge also out here, temporarily repaired. Spent night in motel at Burlington, Colorado.

Saturday, Aug 21. mileage 33,188. Leave Burlington and drive across high plains. Plains are green and wet. Pheasants seen here. Water is standing in pools here and there.

Drop south past Colby to pick up Interstate 70. Plains border region (Wakeeny, Hays, etc.) gently rolling to flat, or sometimes fair sized bluffs and escarpments.

Bought tire at Topeka. Drove through Kansas City. Spent night at Knob Noster State Park, Missouri. Arrived in thunderstorm. Mileage 33,732. Day's drive: 544 miles.

Sunday, Aug 22. Drove into St. Louis, crossing Missouri River twice. Crossed Mississippi at St. Louis. Routing in city is confusing, roads are being rebuilt here.

Drove across southern Illinois. Some coal and oil here. Drove into southern Indiana. Camped at site overlooking the Ohio River (Kentucky on the opposite side) in Harrison - Crawford State Forest, some 8 miles east of Corydon. Warm night.

Monday, August 23. Drove into Louisville. Route Interstate 64 to Rt 151, and uninteresting drive south to Danville, London, Middlesboro, and Bristol, arriving in Bristol about 5.00 p.m. Mileage:

Total miles for trip;

Gas: Bill spent about \$ 50; I spent about \$ 50. Total \$ 100. Groceries: \$ 10 each on way out, \$ 10 each on way back: Total \$ 40.

gear checklist in original

TRIP LOG sent to me by Bob and Pat O'Brien

August 3: Trip by narrow gauge to Elk Park. Lunch. Horse and rider pairings. Ride up the canyon of Elk Creek about 4 miles, with views of the Grenadier Range and the precipitous course of Elk Creek.

Camp in a small basin, bisected by a creek, with the bare shoulders of mountains hedging us in as they will do only once more on the trip.

August 4: 14 miles to camp on West Ute Creek. One of the most spectacular rides of trip this morning: Up Elk Creek to its source with views of jumbled, soaring peaks, waterfalls and probably the most brilliant flower fields of the trip. Lunch in these fields just above an abandoned hotel and mine. After lunch meander to top of pass with our first "top of the world" view, then meander down into the canyon of Bear Creek via Jeep road (fortunately not occupied) and a rest stop at hunter's camp near abandoned Beartown. Our first vertical trail through the forest brings us to a windy pass between Bear Creek and Starvation Gulch, then up and around the head of the gulch (so named evidently because either erosion or poor soil materials has left the upper sections almost denuded of vegetation). Get in our first series of snowfield crossing which, fortunately, is not repeated for the remainder of the trip. Cross Ute Ridge at 12,650' and then make a long descending traverse into our camp on an elevated section of the floor of West Ute Creek.

August 5: Holdover day: Main side trip to West Ute Lake for excellent fishing.

August 6: 13 miles today. Descend the open, meadowed floor of West Ute Creek to the main stream, then start a gradual climb up eastern canyon slopes. After about a mile make an abrupt right hand turn and start straight up the mountain on one of "Joe's trails". In a short distance (for riders, not horses) have broken

above timberline in a shallow valley with magnificent views of the Rio (Rye-oh) Grande Pyramid. Climb through this Alpine valley after lunch to our high point of the trip, 13,100'. Make a side trip for a close view of the Spanish Window (with protests from Trigger), and over one of the "lockjaw of the knees" trails along the side of Rincon la Vaca. After a short break descend through a burned-over area to a very pleasant camp (Timber and Little Weminuche Creek) at Weminuche Pass (10,629').

August 7: Some hiking along the diversion canal and fishing on the depleted Los Pinos River.

August 8: "Short" ride today (about 10-12 miles). Ride down Los Pinos drainage for a mile or two to first large tributary to east, and follow the tributary up a gradual but constantly ascending trail to the continental divide, where we have lunch on a broad swale containing several shallow lakes. Weather stormy but no rain. Cross swale and continue up through waist high (to the horses) shrubs to a 12,500' high point of day. Descend to head of Big Weminuche Creek and wade through several hundred sheep to cliffs above Squaw Lake. Sharp descent to camp (11,850') where the fisherman are soon dragging them in.

August 9: Fishing and hiking up to the 12,800' ridge above camp.

August 10: One of the longest (20 miles) and most beautiful rides of the trip. Sharp descent to Squaw Creek, then gentle rise through meadows to our lunch stop at head of Squaw Creek. Black clouds suggest slickers, which are needed later on. Climb up small tributary to continental divide, which we roughly follow to near camp. Beauty of trip is in crossing from one watershed to another and the changing vistas as we look into the headwaters of Williams Creek, little Squaw Creek, Williams again, etc., with occasional glances backwards to the Spanish Window. High point is about 12,400' and camp is made at 11,400'. In my opinion the most striking camp of the trip, located in a box canyon with waterfalls dropping from cliffs above camp.

August 11: Good fishing again. Riders to Williams Fork Lake and hikers to the falls and to the summit of Knife Edge (12,500').

August 12: Short ride again today (about 12 miles). Sharp descent to Trout Creek (with its roads, cows, and Sulfur mine) at low elevation of trip (9,400'). Continue along very beautiful East Trout Creek to our camp at about 10,800'. Incidentally we left the protected wilderness just before reaching West Trout Lake on the 10th and, except for short excursions into the San Juan Primitive area on the continental divide, will be out of it for the remainder of the trip.

August 13: A "day in camp" for nearly everyone. The main excursion away from camp was to a very beautiful little waterfall downstream.

August 14: 25 miles today: Climb the short distance to head of East Trout Creek and traverse around head of West Fork of South River to continental divide between it and Piedra River. Then over rock slide to saddle between Piedra Peak and its miniature twin for break. Down to saddle between South and Piedra Rivers (and some more water thievery) then up, up, up to near summit of South River where we eat lunch at above 13,000'. Before the lunch is digested hit the infamous South River Peak slide which with the trail in good shape isn't half bad. The switchbacks following are worst, mainly because of the wind and some leisurely elk watching. From here it's the continental divide all the way, above the West Fork of the San Juan, Beaver Creek and Goose Creek, with a little cold wind and a push to get to camp before the storm starts. In early with enough energy left to help Joe put in a new camp above Archuleta Lake.

August 15: A leisurely layover, marked (in my mind) by an impressive church service and some tremendous views from the hills above camp.

August 16: 13 miles to Wolf Creek Pass and the civilized comforts of the Diamond Belle

The Crew

Dean Minor

Route 2 - Box B6

Durango, Colorado

Ronnie Colts

Ignacio

Colorado

Barney Yeager

Durango,

Colorado

Ronnie Hensinger

New Mexico A & M

Las Cruces, New Mexico

Sid Byrd

Albuquerque

New Mexico

Kenny Ledford

Trinidad State Junior College

Trinidad

Colorado

Darrell Good

Mangos

Colorado

Betty Sue (Wood) Hensinger

New Mexico A & M

Las Cruces, New Mexico

Robert Wood

Box No. 1308

Durango, Colorado

Trip to New England, Maine, and Canada - July 1966

Summary:

Rolston accompanies his wife to the University of Maine. While she takes a class re-certifying her teaching certificate, Rolston prowls the Maine woods. Flora of Maine Sphagnum bogs. Rolston climbs Mt. Katahdin, also The Traveler. Impressions of New England. Trip to nearby Canada. Bay of Fundy and the tidal bore.

July 5, 1966. Tuesday. Left Richmond 6.10 a.m. Drove to Washington via 95, thence to Baltimore and to N. J. Turnpike. Ate lunch in service area. Took Garden State Parkway north through New Jersey, then to Suffern, N. Y. Ramapo Mountains are here, medium low hills. The Highlands is name of this section. It extends south into the Reading Prong.

N. Y. Thruway, # 6 and # 293 to West Point. Drove around grounds of U. S. Military Academy. The town overlooks the Hudson River. 9W to Newburgh and crossed the Hudson River on I-84. Perhaps half a mile wide here. Drove Taconic State Parkway to Milbrook and then to Rudd Pond (Taconic State Park) where we camped for the night. Campground had a floor for tent, but it was crowded and camp sites close together. Groundhogs, chipmunks, red squirrel. The Pond here is an old iron ore pond. Mileage 1,650. (in new white Ford)

July 6. Wednesday. Left 8.00 a.m. # 22 to Hillsdale, and into Massachusetts on # 23. Taconic Mountains. Resort area here to Great Harrington. Lovely old homes. We crossed the Housatonic River and thence north on # 7 to Pittsfield. Here we visited the Berkshire Museum, excellent in natural history. Here also is a dog sled, one of five sleds, used by Admiral Peary to reach the North Pole. Also here is a fur suit worn by Henson, an Eskimo aide, who accompanied him to the North Pole. Peary was the only white man to go to the pole from their base camp.

North of Lanesboro, we took a good dirt road to Mt. Greylock. Here we came upon a truck load of YMCA boys in an upset truck, none hurt. Stayed with them until help arrived. Then on to Mt. Greylock (3491 ft) the highest in Massachusetts. Drive through the woods was lovely, quaking aspen and white birch. The white birch trunks are as white as if white washed. Ruffed grouse hen at roadside with chicks in the brush. More groundhogs and chipmunks.

Mount Greylock was in cloud cover, poor visibility. The Appalachian Trail is here. We had lunch at the summit. There is a lodge and War Memorial at the top. 'The Hopper' is a triangular gorge on the western side, like a large grain hopper.

Went on to Williamston, and here drove through Williams College. Here is a monument to the Haystack Prayer Meeting (August 1806), where five college students met and took shelter in the lee of a haystack when a thunderstorm interrupted their meeting. Out

of this meeting grew a tremendous impetus to foreign missions and this is known as the birthplace of American Foreign Missions.

Drove on to Bennington, Vermont. Visited the Bennington Museum. Here is the oldest Stars and Stripes in existence, mounted in a tremendous glass cabinet on a wall in the museum.

Drove north on # 7 to Rutland. Camped at Gifford Woods State Park in the rain. Crossed the crest of the Green Mountains at Sherburne Pass. The Appalachian Trail and the Long Trail are here. The Appalachian Trail leaves the Long Trail just north of the pass and bears east, from here toward the White Mountains. The Long Trail continues on north toward Canada on the crest of the Green Mountains. Gifford State Park is on the Appalachian Trail.

Called home, and bought first of our maple syrup, some for Julia and mother. Rain in the night and a wet camp. Several redstarts in camp in the morning, a with a distinctive call. It cleared soon the next morning.

July 7, Thursday. Mileage 1,815. Returned to Rutland and then to nearby Proctor, Vermont, to visit a marble plant and exhibit. There is a large marble exhibit here, and much fine marble comes from several nearby locations in Vermont. The marble was earlier quarried from surface mines, but now the mines extend underground. World's largest granite quarries (Rock of Ages) are also in Vermont.

Returned to Gifford Woods State Park and had picnic lunch and drove on through the eastern side of the Green Mountains to the Connecticut River Valley. Jane bought some maple syrup from a farm, the good lady of which much pleased her. Quechee Gorge. We crossed the Connecticut River near Hanover, N. H., where we visited Dartmouth College. The college was founded initially to educate Indian youth, named for the Second Earl of Dartmouth, an early English benefactor. There are here now 3,000 men, women students only during the summer. There are extensive anthropological exhibits here.

Drove down the Connecticut River via 5 and I-91. Lovely drive. # 9 to Keene N. H. and thence to Mt. Monadnock State Park. Mount Monadnock rises above the surrounding terrain, seen clearly from west of Keene. It is the original type of a monadnock, other similar mountains now being called by this term. There are many stone fences here, collected initially by farmers who cleared fields. Oxen were used to remove the boulders. Many of these fields have subsequently become wooded. Camped at Monadnock State Park. Mosquitoes were a minor pest. Lovely weather. Mileage 2,002.

July 8. Friday. Drove to Concord, Massachusetts. Visited Cathedral of the Pines, south of Jaffrey. At Concord we spent most of the day. We saw the Old North Bridge, a reproduction of the bridge at the site where 'the Provincials' first resisted British troops, though the first shot was fired hours earlier in some skirmish at Lexington, a few miles east. The British were coming out from Boston to destroy provincial supplies hidden at

Concord, in a farmhouse near the bridge. 'One lantern if by land, two if by sea' refers to the British method of leaving Boston, via boat or via a narrow neck of land. The Monument at North Bridge was erected on July 4, 1837, and Emerson's 'Concord Hymn' was sung for that occasion. There is the famous 'Minuteman' statue on the other side of the bridge. The bridge has been frequently swept away by flood.

The Old North Manse is immediately nearby. We toured this. It was the home of Emerson's grandfather, living here at the time of the Concord fight. Emerson lived here intermittently and also elsewhere in Concord. Another home here is preserved as well as Emerson's home. Nathaniel Hawthorne rented the house several years, and wrote "Mosses from an Old Manse" here.

Shopped in Concord briefly, and I bought Thoreau's 'In the Maine Woods,' here (and subsequently read it in Maine). Drove just out of town to picnic at Walden Pond. It is a short walk into the site of Thoreau's cabin. Walden Pond was then on Emerson's property. The railroad runs on one side of the Pond. It is now a public park, with swimming facilities, though temporarily closed.

We toured the Antiquarian Museum. Emerson's study has been moved here from the Emerson House nearby. Saw his spectacles, furniture, books. Also here is Thoreau's self-made furniture from his hut – a bed, chair, and some surveyor's instruments. He was a surveyor by trade. Also here: his snowshoes and walking stick. These are all in a very small room off to one side.

Rooms here depict period furnishings. One of the lanterns originally in the old North Church in Boston, hung there by Paul Revere, is here. Also there are several silver and copper articles Revere made.

Jane visited the Orchard House, the home of Louisa Mae Alcott. She wrote 'Little Women' here. We drove back into N. H., to a private campground near Derry, N. H., the home of Astronaut Alan B. Sheppard, Jr. Mileage 2,117.

July 9. Saturday. Drove north on I-93 to White Mountain area and Franconia Notch State Park. Pitched camp at Lafayette Campground. Saw 'The Old Man of the Mountains,' 'The Great Stone Face' of Hawthorne's story. Lunch at camp. Saw 'The Basin,' a large glacial pothole. Saw 'The Flume,' a narrow gorge like channel, where a lava dike was eroded out of a granite country rock. Hike up and back by 'The Pool,' and some Glacial Boulders. Saw Mount Liberty (Washington-Lying-in-State) from here.

Drove the Kancamagus Highway, a scenic highway through the White Mountains, to Conway. Lovely drive. Had a picnic supper on the way to Mount Washington, bothered by bugs and gnats. There is much bare rock on the mountains, grey in the distance, and most probably granite. Presumably this is the origin of the name 'White Mountains.' Vermont takes its name from 'verd-most' the French for 'green-mountains.'

Drove to the Base Station of the Mount Washington Cog Railway. There is a good view

of Mount Washington from here. The top is an alpine or arctic area above timberline. Summit is 6,288 ft., the highest point north of the Carolinas in the eastern U. S. Mt. Mitchell is 6,684 ft; Roan Mtn. is 6,285 ft (just three feet under Mt. Washington). White Top Mtn. is 5,520 and Mt. Rogers is 5,719. Mt. Katahdin is 5,267 ft, almost 1,000 ft lower than Mt. Washington, though much further north. The world's highest wind velocity was recorded here, 231 miles per hour. Also there have been some extremely cold temperatures recorded here.

July 10, Sunday. A cold night. Drove north via Twin Mountain to Rt #2, which we followed the rest of the day. Went to a Methodist Church at Gotham. The country here is gently mountainous, with White Mountains to the south. There are many lakes, especially onward into Maine. There is considerable flatter country, usually forested, and much of it is sparsely inhabited. The road runs near the Androscoggin River, and later near the Kennebec River. I-95 from Newport to Bangor and Orono. Rain and then clearing in the afternoon. Drove to the University and moved into the dormitory room at 205 Androscoggin Hall.

July 12, Tuesday. I went on a field trip with a botany class to the University Forest, a tract used by the forestry department of the University here. The University has an extensive forestry department. A pulp and paper institute is in progress here with men in pulp and paper business from all over the U. S. in attendance. Dr. Charles D. Richards is the botanist who has the classes I am attending.

There are no poisonous snakes in Maine, or in the upper Green or White Mountains. Nor does their range extend into Canada, though there are a few rattlesnakes on some parts of the Canadian prairie. Both copperheads and rattlesnakes cannot stand the long, cold winters here, and their northernmost range limits are rather similar. (See Conant, Field Guide, etc.) Presumably this also accounts for the reports that none exist on the tops of the higher mounts of the Southern Appalachians, Rogers, Roan, etc.

Read off and on for several days Thoreau's 'In the Maine Woods,' arranged by Dudley C. Lunt, 1950 and paper, 1965. Traced out his routes and compared my impressions.

July 13, 1966. Visited the Bangor Bog, near Orono, with Dr. Charles D. Richards, on field trip with botany class. The vegetation here is very much as described in the Xerox pages from USGS Bulletin 376, Edson S. Bastin and Charles A. Davis, 1909, *Peat Deposits of Maine*, (in Univ. Maine Library).

Collected ss typical bog flora:

Sphagnum - very abundant, forming dense mats

Trees: all low and shrubby here

Tamarack (Larix laricina)

Black spruce (Picea mariana) - a typical tree of peat bogs here, and further north found uplands. The bog trees may be very old, relatively, for their size, and what appears to be now the lower limbs may once have been more elevated, the bog gradually filling in around them.

Shrubs:

Bog-rosemary (Andromeda glaucophylla)

Rhodora (Rhododendron canadense)

Labrador Tea (Ledum groenlandicum) common also elsewhere

Sheep laurel. Lambkill. (Kalmia angustifolia) common also elsewhere

Bog Laurel (Kalmia polifolia)

Leatherleaf (Chamaedaphne calyculata)

Small cranberry (Vaccinium Oxycoccus)

The following shrubs, were found on the bog, but are not typical bog plants, though often on bogs.

Speckled alder (Alnus rugosa)

Black 'Alder' (Ilex verticillata) a holly, not an alder

Black-fruited Choke berry (Pyrus, or Ajonchia melanocarpa)

Herbaceous plants

Sundew (Drosera rotundifolia)

Pitcher plant (Sarracenia purpurea,)

The following three orchids:

Grass pink (Calopogon pulchellus)

Snake mouth orchid (Pogonia ophioglossoides)

White fringed orchid (Habenaria blephariglottis)

Horned bladderwort (Utricularia cornuta)

Cotton grass (Eriophorum sp) - a sedge

Skunk cabbage (Symplocarpus foetidus)

Canada mayflower. Two leaved Solomon's Seal. (Maianthemum canadense)

July 15. Friday. Drove to Moosehead Lake alone. Jane had classes. Lovely day, clear and cool. Country is heavily forested with a number of farms, decreasing in number proceeding west. Flat to slightly rolling terrains with occasional and conspicuous mountains, rising as monadnocks above the level surface. Crossed the Appalachian Trail at Monson; near here is 'The Moosehorns,' antlers of a moose erected originally by Joseph Pearce. Thoreau mentions the Moosehorns, with comments. See In the Maine Woods, 24. Katahdin is visible from the higher points enroute to Moosehead, though not apparently from Moosehead.

Moosehead Lake was lovely, a windy day with white caps on the water. Stopped in Greenville, the gateway to the lake. Dock is in the village, as well as a port for float planes. These airplanes are used to reach much of the interior inaccessible by road. Drove to Rockwood, crossed the East Outlet and West Outlet of the Kennebec River. Mt. Kineo is visible prominently from here, a large rock outcrop above the lake, here much constricted. A hotel is here, accessible only by crossing the lake.

At the upper end of the lake (not visible from here) is Northeast Carry, a famous point at which canoes were portaged from Moosehead and waters of the Kennebec into waters of the Penobscot, West Branch.

Return to Greenville, and then to Lily Bay State Park, a lovely park on Lily Bay, a bay of Moosehead. Drove on logging roads to Spencer Pond. Many of the back roads here are owned by large paper companies (Scott Paper Company and Great Northern Paper Company here) but are open to the public. Passed logging operations in progress, and watched them drag out logs with a Timberjack, rather like a bulldozer adapted to snaking out logs.

Flushed 23 ravens from a trash dump. Bears also frequent the trash dumps here. Looked through the lumber camp quarters at Spencer Bay Lumber Camp. The camp is designed to operate some ten years, working timber in an eight to ten mile radius. The camp will handle some fifty men, but only a dozen or so are here now. Men live in during the week, often leave for home on weekends.

Logs formerly were floated out, now are carried out by trucks, though many are seen floating on larger rivers. There are many wooden logging dams, remaining on smaller ponds and streams, earlier used to impound water to 'build up a head' and then released to 'sluice through,' i.e. give the logs an extra boost downriver. The log dams

were then abandoned, or used only occasionally later. Cf. a splashdam in the Southern mountains.

Spencer Pond and Little Spencer Mountain are prominent here. There is a lovely view of the Pond from just below the Camp. Stayed here a couple of hours, and walked back along the shore in the woods. Spruce, fir, and much hemlock. Sugar maple, quaking aspen, grey and white birch. Pine warbler, kingfisher, gulls over the pond.

On return, at Lazy Tom, a tributary of the Roach River, which flows into Spencer Bay, saw cow moose. The area was open with much mud flat area, loaded with moose tracks. First, she was in the water some 75 yards away. Watched this moose perhaps a half an hour. She worked gradually upstream and away. Later, a deer was coming down the road, frightened by an approaching car from reaching us, otherwise it would have come right by.

Later, deer came out of the woods to drink at the same time with a second cow moose. I watched them both in scope and binoculars at once. A very extraordinary sight in a lovely setting. When frightened, the deer and moose reacted differently; the deer bounding away into the woods, the moose going into a fast trot. Both soon returned from the woods, however.

At sunset, both the deer and the cow worked considerably closer. Meanwhile the first cow had come back. I watched as the moose became a silhouette in the foreground of a stream with the setting sun and dusk in the background. Across the road, downstream a beaver was gnawing small twigs nearby. While the sun was yet out there were no mosquitoes or gnats, but almost immediately upon sunset, the midges appeared and drove us to refuge in our cars. Several had by now gathered to watch.

Moose were hunted in Maine until 1936, when the season was permanently closed for protection of their diminishing numbers. There is some possibility now of a limited season being re-opened.

Flora collected from Moosehead, typically characteristic of the forest floor:

Creeping Snowberry (Gaultheria hispidula)

Twinflower (Linnaea borealis)

Pyrola (Pyrola secunda)

One-sided Pyrola

Starflower (Trientalis borealis)

Goldthread (Coptis trifolia) syn.

Coptis groenlandica

Bunchberry (Cornus canadensis)

Lycopodiums:

Fox-tail Clubmoss (Lycopodium clavatum)

Interrupted Clubmoss (Lycopodium annotinum)

Ground pine (Lycopodium obscurum)

The following trees characterize the Maine woods:

White Pine – 95% of Maine's pine, but not in bogs, does best on sandy soils, on clay it mixes with hardwoods.

Norway Pine = Red pine - named for Norway, Maine. 5%

Pitch pine - small amount

Jack pine - small amount

Red Spruce - the common spruce

Black Spruce - in Sphagnum swamps, the less common species.

White, or Cat Spruce

Fir - Balsam fir. lighter than spruce, a pulp tree

American Larch - Tamarack, commonly called "juniper"

Hemlock

White cedar important in certain areas, also in swamps

The principal hardwoods:

American Beech

Sugar maple = Hard maple

Red maple

Yellow birch

White birch

White Ash

Basswood

Elm

Common aspen

Large toothed aspen

some oaks ?

some hickory ?

The following were also collected at various localities and are more or less common in Maine:

Speckled Alder (Alnus rugosa) - common at every streamline

Black-fruited Choke berry (Pyrus - Abronia melanocarpa)

Norway spruce (Picea abies) - a planted ornamental

White spruce (Picea glauca)

Red spruce (Picea rubens)

Northern white cedar (Thuja occidentalis)

Nannyberry (Viburnum lentago)

White birch (Betu1a papyrifera)

Gray birch (Betu1a popu1ifo1ia) Arrow-wood (Viburnum recognitum)

Meadowsweet (Spiraea latifolia)

Round-leaved Dogwood (Cornus rugosa)

Red-osier Dogwood (Cornus stolonifera)

Swamp milkweed (Asclepias incarnata)

Bladder campion (Silene cucubalus)

White campion (Lychnis alba)

Spreading Dogbane (Apocynum androsaemifolium)

Fireweed (Epilobium angustifolium) - collected at Moosehead, but common

Lupine (Lupinus polyphyllus)

The following ferns:

Marsh Fern (Dryopteris thelypteris)

Northern = Long Beech Fern (Dryopteris phegopteris)

These were new to me. In addition Sensitive fern is very, very common, along with Interrupted Fern, Hay-scented Fern is fairly common. Lady fern is very common.

Polytrichum (Christmas Fern) and Spleenworts seemed far less common than in southern woods.

There is no redbud in Maine woods.

July 15, 1966. Saturday. Weekend at Acadia National Park and Bar Harbor. Drove down via Bangor and Ellsworth. Got a campsite at Blackwoods Campground after a short wait. The campground with 395 spaces is filled all summer. Drove around the ocean drive, a circular highway about the main scenic points. The whole area is on Mount Desert Island, separated from the mainland by a very narrow seaway. The earliest explorer, Samuel de Champlain, in 1604, named it "L'Isle des Monts Deserts," or Isle of the Solitary Mountains. The island survives as the remnant upland of a now submerged terrain. Mountains come right down to the sea and the lakes on the island, for the most part long and finger-like, add to the loveliness of the scenery.

One lake is open to the sea as Somes Sound, the only true fiord in the eastern U. S. shoreline. Drove up Cadillac Mountain, 1530 feet. Red tail hawk here. Acadia National Park was formerly Lafayette National Park. A fire here in 1947 burned 17,000 acres. It started from a trash fire, was thought put out, but smoldered for several days underground, then was whipped back by an east wind and exploded across the island in several hours, forcing much evacuation of the island.

We had a lobster dinner that evening, our first. I also had steamed clams. Looked

around Bar Harbor and drove down the shore to camp.

July 17. Sunday. Went to church at a Congregationalist Church in Otter Creek. Went to Northeast Harbor, yachting center of the island. Rockefellers and Edsel Fords have homes here. Drove Sargents Drive up to Somes Sound, to Somesville, and on to Beech Cliff, overlooking Echo Lake and Somes Sound. Returned for a steak dinner at camp. Packed up and drove back up shore (Thunder Hole, Anemone Cave, a sea cave, and Siour de Monts Spring). Picnic supper at Bear Brook picnic area. Drive back to Orono that evening. Tides at Mount Desert Island average 10.5 feet.

Collected at Mt. Desert Island:

White Fir (Abies concolor) - an ornamental

Bearberry (Arctostaphylos uva-ursi)

Common juniper (Juniperus communis)

July 20, 1966, Wednesday. Left Orono after lunch and drove to Baxter State to climb Mount Katahdin. Took I-95 to Rowland, there crossed the Penobscot River, which is here two tenths of a mile wide. Drove on north on # 2 to Lincoln and Mattawamkeag, then # 157 to Millinocket. (mill uh knok it) The road here follows the Penobscott and then the West Branch. Millinocket is a pulp mill town with big mill at East Millinocket.

Made reservations at State Park Center at Millinocket, where they were confirmed via radio with ranger at Roaring Brook Campground. Drove on to Baxter State Park via Nesowadnehunk Tote-road, (nuh sow uh dull hunk), commonly shortened to Sowdyhunk. A tote-road is a road for hauling supplies, especially into a lumber camp. There are many lakes here. Roads within the park are dirt.

Left car at Katahdin Stream Campground and caught a ride (actually 2 rides) to Roaring Brook, got in about 6.00 p.m. Bears visit trash dumps in the park regularly. Took into Roaring Brook only my backpacking gear.

Stayed in two-man lean-to, one of twelve in a row facing Roaring Brook. The brook is well named. Drinking water was from the Brook, with a washing area designated downstream. I ate cheese sandwiches, as I wanted to get up to Sandy Stream Pond. I encountered a young buck deer in the path going up, with one small antler, in velvet. He seemed semi-tame, as I came within a few feet of him, and shoed him out of the trail, though reports here are that the deer are not that tame.

Sandy Stream Pond, perhaps a quarter of a mile in length, 150 yards across, lies below the east side of Katahdin and looks into the three basins or cirques that compose Katahdin's east side. It is in a lovely setting. There were two moose in the pond when I arrived, what I took to be two cows. One left the pond and presently appeared with a

calf on the far side of the lake. The calf was a light brown or tan, about the size of a deer and could easily have been mistaken for a deer. Calves arrive in June, and this one was probably five or six weeks old. They turn dark brown in the fall.

The calf stayed ashore in the company of what we took to be its mother, but presently the cow remaining in the pond began a rapid half swim-half walk out of the pond, making a sound somewhat like a bullfrog. On shore, she charged the moose with her calf and the first moose retreated, being what other bystanders now said was a young bull. This happened several times the cow driving the other moose from her calf.

Moose may measure ten feet in length and up to eight feet high at the humped shoulders. The moose here were very dark brown. The lip is prominently overhanging, and there is a large, furred, club-like appendage of skin known as the 'bell' hanging from the throat. They prefer the vicinity of lakes, and feed on water plants in summer. While in the ponds here the moose would all but submerge completely in feeding on aquatic plants, then lift head out, dripping with water. In the U. S. moose are found only in Maine and in the West. One of its staple foods is willow, for browse particularly in winter. They have favorite ponds that they visit repeatedly, especially in early morning or in the evening. (See Murie, *Field Guide to Tracks*; Sanderson, *How to Know the American Mammals*.)

Returned to the lean-to. The night was cold, or at least I was cold in my light sleeping bag. The air mattress went down. There was no trouble with insects.

Compass declination here forces the compass off 20°.

July 21. Thursday. Left about 7.15 for the hike up Katahdin. Took the trail into Chimney Pond Campground, 3.3 miles. Elevation at start 1,489 feet. The trail ascends more or less gradually into a spruce forest, a nice walk in. Passed three girls backpacking, then later a group of nineteen boys, and a second group of twelve boys. Passed the Great Basin Ponds, a chain of three ponds held in by small ridges which are glacial moraines. (See Dabney W. Caldwell, *The Geology of Baxter State Park and Mt. Katahdin*, Maine Geological Survey, 1960, for this and subsequent geological information.)

Passed Dry Pond, a depression in a glacial moraine that holds water after heavy rains. Came to Chimney Pond Campground. There is a ranger on duty here. The camp is a popular one for backpacking in, then ascending Katahdin from here. The ranger said there had been sixty here the night before. Campground closes here October 15, and snow follows some ten days or two weeks later. Chimney Pond is another glacial lake here. Across it and above it is a superb view of the Great Basin of Katahdin, with Katahdin above it.

The serious part of the climb begins here. The Saddle Trail to the summit is 2.17 miles; other trails are shorter, but more difficult. Katahdin is composed of two kinds of granite, both called Katahdin granite. The lower formation is a grey granite, the upper is a pink

granite.

Climbed slowly the headwall of the cirque. The trail is a rock scramble over boulders and talus, with a good deal of the trail over rockslides. About 3,800 to 4,000 feet, the trail emerges above the timberline, still climbing the head-wall. At length, came to the top of the headwall and the crest of the Saddle, a low col in the broad, open tableland that characterizes the higher portion of Katahdin.

Met about eight boys here who were backpacking, though not carrying packs over the summit. The path from here on to Baxter Peak, the summit, is a walk over rolling upland, fairly steady climb but not nearly so vigorous as the climb up the cirque. The trail is blazed in blue and marked by cairns, though equally striking is the pink path formed as the granite frequently trodden on preserves its true pink, while nearby granite is grey from weathering and lichen cover.

Reached summit about noon. Two ravens seen just prior to arrival at summit. The view is fabulous both near and far. In the foreground is the Knife Edge, an arete, a narrow irregular ridge, the retaining wall of the cirque on the south side. This leads to Pamola, named for a mythical Indian god, thought to dwell here. The headwall drops to the Cathedral, so-called from the vertically fractured granite, precipitous fall for 1,500 feet. In the vicinity of the Knife Edge about a week ago a man fell and had to be rescued by helicopter. His rescue was delayed for several days by strong winds on the mountain.

In the distance the view was clear for miles, the number of lakes more than could easily be counted. Particularly prominent: Chesuncook Lake (chuh sun kook) and the West Branch of the Penobscot. The summit is 5,267 feet, or 13 feet under one mile. A stone cairn thirteen feet high is at the summit, reaching the full mile. Both Whitetop and Rogers in Virginia are higher, and Mt. Washington and Mt. Mitchell and Roan much higher. But the latitude of Katahdin gives it arctic conditions at the summit despite its somewhat lower elevation. It is moreover left spectacular by glaciation.

Had lunch at the summit. The wind was fairly strong and cool, and soon chilling, forcing shelter in its lee. There were a good many people on the summit at one time or another in the hour I was there.

The flora here is a characteristic arctic flora, left from the retreat of the glaciers. There are also insects and rodents found here that are not otherwise found except farther north in the arctic zone.

Collected the following flora:

Bog-Bilberry, Alpine Bilberry (Vaccinium uliginosium)

Alpine Bearberry (Arctostaphylos alpina)

(Northern) Mountain-Cranberry (Vaccinium Vitis-Idaea)

Black Crowberry (*Empetrum nigrum*)

Lapland Rosebay (*Rhododendron lapponicum*)

Diapensia (*Diapensia lapponicum*)

Three-toothed Cinquefoil (*Potentilla tridentata*.)

Mountain sandwort (*Arenaria groenlandica*)

Three forked rush (*Juncus trifidus*)

Rand's Goldenrod (*Solidago Randii*)

Mountain Clubmoss (*Lycopodium selago*)

Also here, but not found, are: (See 'A Guide to Baxter State Park,' distributed by the Park.

Alpine Azalea, dwarf bilberry, Cassiope, Phyllodoce, purple crowberry, dwarf birch, bearberry willow and the herb-like willow.

Lichen prominent here is *Cetaria islandica* (according to Dr. Richards)

Tarr in 1900 observed glacial erratics close to Baxter Peak. (Thompson, part 3, 466, see bibliography)

Descent from the summit was via the Appalachian Trail, also known here as the Hunt Trail. It is the first 5.19 miles of the 2,200 mile trail ending in Georgia. There is an easy descent over a footway among rocks, past Thoreau Spring, across the Tableland, to the Gateway (3,349 feet). Here the trail drops off over Hunt Spur, and becomes a rough and strenuous scramble over gigantic boulders. It is quite a spectacular trail. The view is excellent over The Owl and Witherle Ravine, including trees blown down in great strips, a hurricane blowdown on the north side of the Owl. (See picture in Caldwell, op. cit.) This was probably a 1938 hurricane. This is on the slopes leading into an elevated swampy area called The Klondike. There are also great landslide scars visible.

The descent eventually becomes easier, and enters wooded area. Passed Katahdin Falls and on into Katahdin Stream Campground, arriving about 5.30 p.m. The total hike was 10.7 miles, a climb of 3,778 feet, and a descent of 4,163 feet. I survived without blisters, though was sore the following day. I did better than might have if the weather had been hot enough for me to heat up, but the continuous wind kept me well cooled.

Katahdin is the best mountain I have climbed to date, with the most spectacular trail up and down. I believe also that this is the most altitude I have ever climbed in a day's hike. It compares in scenery, though of course not in magnitude with the glaciated

mountains of the West such as the San Jeans, the Sierra Nevada, or the Grand Tetons.

Thoreau climbed Katahdin in 1846, but owing to bad weather did not make it to the summit. See *In the Maine Woods*, 261ff.

Drove the car back to Roaring Brook Campground. There was a group of sixteen girls in the next two lean-ToS. They were to be there six days, to backpack into Chimney Pond and then to climb Mt. Katahdin.

Went back to Sandy Stream Pond that evening, where there were three moose, two cows and one young bull. They soon spooked, two swam out the far side, and one came out my side, very near to me. There was rain sweeping down into the Great Basin, with clouds descending and sheets of rain falling from them. I hurried back to camp, though the main storm never broke there and we got only a good shower.

The camp this evening was more adequate, and I slept warmer in the big sleeping bag and on a cot. A woods mouse was about the fireplace.

July 22, Friday. Arose early about daybreak, and went to Sandy Stream Pond. There was a light steam fog over the pond and the summit of Katahdin intermittently visible and clouded. There was no activity for some time. At length a beaver swam out from rocks down pond, up past the Big Rock, where I was. I watched him with the scope and binoculars. Passing the rock, he turned, swam back, then turned and resumed his original swim up the pond. His total swim was some 100 yards.

A buck deer appeared on the upper shore of the pond in early sunlight with some steam fog yet on the rock, a lovely sight. He was working his way around the shore toward me, but presently disappeared along an edge of the shore that was out of my sight.

A cow moose had now entered the pond, and a very nice bull moose stood on the far shore. He had five prongs to the large palmate portion of his antlers. He just filled the field of the scope at 60x, very clear in the morning sun. There were a great many flies on him and buzzing about him. He browsed in the water for perhaps an hour. Those animals have all but no tail. It seems as though one would be useful against the flies. Sometimes they stay submerged to avoid them.

Birds here: Spotted sandpiper, in fall plumage. Canada jay. Cedar waxwing. Ruby crowned kinglet. Also chipmunk and red squirrel.

Returned to camp for breakfast and packed up, and returned to Aaron. There were many blueberry pickers along the way.

Caribou have been re-introduced here, trapped from New Brunswick. The herd is small.

Shortly after their release, three were found some miles away, crossing the border back into New Brunswick. They migrate widely, and it is uncertain whether the herd will stay in Maine as a transplant. Both sexes of caribou have antlers.

Further flora collected here:

Mountain Juneberry (*Amelanchier Bartramiana*)

Bristly Sarsaparilla (*Aralia hispida*)

Pin Cherry, Fire Cherry (*Prunus pensylvanica*)

Low Sweet Blueberry (*Vaccinium angustifolium*) This is the most important blueberry of the northern states.

Chief Justice Douglas spent two nights at Roaring Brook and one at South Branch Ponds. He walked the Chimney Pond Trail and part way up the Cathedral Trail. (See E. W. Smith, *Upriver and Down*, 169ff)

July 23. Saturday. Trip to Canada. New Brunswick and Fundy National Park. Left about 8.00. Drove northeast on # 9 to Calais (pronounced ka less here). Gently rolling country, forested, with many lakes. Saw a fox running along the roadside, noted his 'foxtrot.' More and subsequently in the weekend, we saw some sixteen porcupines killed on the roadside.

Crossed the U.S. Canadian border to St. Stephen, and drove # 1 to St. John. Here is the mouth of the St. John River, which in its upper north band forms the boundary between Maine and Canada. Saw the Reversing Falls, where the incoming tides produce a falls upstream.

Camped near Sussex at a private campground. Here I ran down the call of the White Throated Sparrow - Old Sam Peabody.

July 24. Sunday. Drove into Fundy National Park and drove around. Park is in a scenic area between Upper Salmon and Goose Rivers, skirts the Bay of Fundy for eight miles, bold, irregular shoreline. Missed church services on account of forgetting that we were on Atlantic Standard Time.

Drove on up 114 to 'The Rocks,' Hopewell Cape, unusual rock formations carved in a striking conglomerate by the high tides. They stretch along the shore for about a half mile, form 110 ft cliffs, variously carved and sculptured. Peculiar pedestals of conglomerate, larger at the top and with trees yet atop, are called 'flower pots.' We were there at low tide and walked down among them. Tides here are up to 46.5 ft.

The Bay of Fundy is famous for its high tides. The tide rolls in from the Atlantic Ocean and piles up in the funnel-shaped bay until at the narrower parts there is a vertical rise

of nearly 60 feet.

Saw the tidal bore at Moncton. A tidal bore is a wave front of water advancing steadily up a river, 'boring' against the natural flow and followed immediately - by the rising tide. They are known in a few places in the world, only here in the North American continent, on the Petitcodiac River. The wave front here averages three feet in height, and may be up to five feet if driven by wind and at highest tides (in spring and fall.) The bore advances 8.5 miles per hour. Under neap tides it may be only a ripple.

On arrival, the river was a narrow, shallow stream with great mud flats on either side. The tidal bore was due at 3.16 p.m., when it was seen more than a mile off, proceeding toward a bend in the river. It was a bubbling wave front, perhaps two foot in height, with the sound of rushing water. The front passed us, and went on upstream, followed at once by a steady upstream surge of tide. The water level rose rapidly thereafter. When full the river is half a mile wide.

Drive on to Magnetic Hill, an optical illusion where cars seem to be drawn uphill. Thence on the Trans-Canada Highway (#2) to Fredrickton, the latter part of this drive being up the St. John River. Crossed the border at McAdam-Vanceboro, and drove on to Aaron via #6 to Lincoln. Arrived at Aaron about 10.30 p.m.

Jane's class was entitled, 'Teaching Language Arts in the Elementary School,' taught by Mrs. Marion Boyce, in Badman Hall. These were 42 in the class, schoolteachers mostly from Maine but some from surrounding states. The class met Monday through Friday, all morning, for three weeks. The University of Maine is a small state university. Aaron is a small town, on the Penobscot River, close to Bangor, and close to Old Town. Campus is very nice, relatively open. Perhaps 5,000 here in the winter session. The Stillwater River is really an arm of the Penobscot, making the whole Aaron-Old Town area an island. (She made an A on the course!)

July 25. Visited the Old Town Canoe Company in Old Town. An old factory, saw canoes in process of being made, also a number of other boats. The canvass goes over planking. Old Town also makes fiberglass canoes. Main Appalachian Trail Club publishes a Guide to Canoe Trails in New England with water maps of the New England States, \$5. Four men made a 5,000 mile voyage, Denver to Maine in two Old Town canoes. They survived well, but battered, and were formerly on display here. See *Life*, June 23, 1958.

Canoes in Maine waters were often poled, as well as paddled. Wind is a factor in travel over the broader lakes, and canoeists often get up early to travel before the wind is up. 'Down the Allegash' is a famous canoe trip for its wildness and scenic value. The East Branch of the Penobscot is known for its difficulty, a test to the most skilled canoeist.

July 26. Tuesday. In the afternoon, we drove to Portland, via I-95, coming off at Lewiston to go to Freeport. Visited the L. L. Bean Company (sporting goods), and then drove into Portland. Henry Wadsworth Longfellow's home is here; we saw it from the

outside, but I was closed. Drove back to Aaron in the evening.

July 27. Wednesday. Drove to Baxter State Park to climb The Traveler. Went via Millinocket, made reservations. The drive in and around the west end of the park, via the Nesowadnehunk Tote-road, is a long one on a rather narrow dirt road. Saw two deer here. Lovely weather. Saw white-winged crossbills in the road.

Camped at South Branch Ponds Campground. More crowded than I thought it would be. I had a four man lean-to, beside the lake. (Lower South Branch Pond.) The two ponds were anciently one lake, now cut in half by a delta formed by Dry (Howe) Brook, presumably in deposition at the time of melting glaciers. Walked up to the edge of this delta in the evening. About a dozen bats were flying very low over the upper end of the pond, some coming in rather close.

Fisher and marten are in the park here but are seldom seen. According to the resident ranger here, two mink last year were frequent around the campground here.

Porcupine are almost non-existent as the fisher keep them killed out. Fisher and marten are both large weasels. Marten, sometimes called Sable, a term better reserved for a species from Siberia, inhabit the dense northern forests, live in trees. Fisher, so called from their habit not of fishing but of taking fish from traps, are the size of a small dog, live in trees and also hunt on the ground, killing rabbits, even small deer. It is in northern forests, only in Maine and the Adirondacks in the eastern U. S.

Moose and deer are here, moose frequent in South Branch Ponds.

The evening was lovely as the moon rose over the lake. I built a campfire and watched from the lean-to, but a few feet from the lake. There was a light mist over the lake, with a whip-poor-will calling, and elsewhere in camp someone was playing a harmonica. Woodsmen here prefer cedar for kindling, and hold a fire with green birch.

Not long after I went to bed I was awakened by rain, surprisingly, as it had been clear when I went to bed. It rained steadily all night, an enjoyable sound falling on the lean-to roof. It was fairly cold in the night but I was warm in the big sleeping bag.

July 28. Thursday. In early morning the rain was continuous, and gave prospects of a dull and dreary day, but by a quarter to seven the sun was out. I had breakfast and set out for North Traveler. It was nearly clear when I left. At the first lookout, Katahdin and the Knife Edge were clear in the distance, but later they were covered by cloud in the upper 500 feet.

The climb up North Traveler is three miles over rocky ridges, rockslides, and low brush. There is a fairly good trail, only the lower part and a short upper section is through timber. The mountain keeps unfolding as you climb, the summit is nowhere visible from the base, and not visible even on the ascent until the very last. Many fine lookouts along the way. Birds were active here, especially red crossbills and waxwings. The male red

crossbill is quite a sight in the green woods.

The day soon became overcast and I reached the summit with a stratocumulus cloud cover, (it proved subsequently to have rained all day in Aaron, but I had only a faint shower in the afternoon.

Ate lunch on top, sardines and a cheese sandwich, and later blueberries for dessert. The mountain is covered with them, also much fire cherry. The East Branch of the Penobscot is extensively visible from the summit, flowing somewhat around the mountain. To early river travelers, it seemed that the mountain 'traveled with them,' as they went down and up river. Hence the name of the mountain.

The Traveler is formed of 'Traveler rhyolite,' a light to dark gray rock that seemed more to me to resemble teff. Often it was banded with lenses in contrasting color. It is rather sharp in contrast to the granite of Katahdin over which I walked last week.

The descent was uneventful. Drove out through the Grand Lake Tote-Road to Patten. Stopped at 'Hurricane Deck' with majestic view over the Traveler, to look for glacial striations. (See Caldwell, op cit, 31), but am dubious about what I found.

Grossed Cebus River, and drove out by Shin Pond. Float planes are based here. Here and on to Patten are extensive potato fields, and I passed many fields in full blossom. This is in Penobscot, and in part in Aroostook Co. (uh Ross tk.) which covers the northern end of Maine.

Baxter State Park was lovely, the personnel cordial, and the ranger system well managed with two-way-radios, etc. But the dirt roads were unduly narrow, the pit toilets outdated.

Insects of Maine Woods.

Insect season is May to July. August is ordinarily fairly free of insects. Punkies, called 'no-see-ums' by the Maine Indians, are a tiny member of the fly order. In Texas they are called sand flies. One species is Ceratopogon stellifera, et al. They are midges, of which there are many kinds, but only some six species annoy man. They are found all over the U.S., but perhaps more noticeable in the damp forests of Maine. The larvae are aquatic or semi-aquatic, living in streams, lakes, or even under damp bark, etc. They resemble a minute worm.

Punkies are quite small, will pass through many ordinary screens. The bite is burning, but often with no lasting effect. They are repelled somewhat by smudge.

Black flies. Are also known as turkey gnat and buffalo gnat. The black fly is Simulium venustum, S. vittatum, and Prosimilium hirtipes et al. The turkey gnat is S. meridionale, the buffalo gnat Cnephia pecuarum. They are short, stout, with hump-shouldered

appearance. The broad wings have little-venation. *S. venustum* has white banded legs and appears later in the season, leading to the saying that when the black flies put on their stockings, the biting season is over. 1/25" to 1/6" long. The larvae live in flowing water. They are often in great numbers, May to July. Several persons are known to have died from mass bites. Some protection is offered from smudge.

See Glenn W. Herrick, Insects injurious to the Household and Annoying to Man, 1926. rev. ed. 329ff.

July 30. Saturday. Left Orono at 7.00 a.m. Drove southwest on # 2. Looked around Farmington, home of Stella McLean, with whom we had gotten acquainted at Univ. Maine. Farmington State College is here. Drove on into N. H. 5 and White Mountains. This is the same route we drove in, only then it was raining and today the mountains are much more prominent and quite lovely. Lovely drive from Bethel, Maine to Lancaster, Presidential Range to the south. Lunch at Moose Brook State Park.

Entered Vermont and ran into a village 'Old Home Day' at East St. Johnsbury. Parade and displays of arts and crafts. Bought a couple second hand books. Went to the Maple Museum at St. Johnsbury. This area is prominent in the maple sugar and syrup industry.

Drove on to Montpelier and via I-89 and # 100 to Stowe and Mount Mansfield in the Green Mountains. This is a noted ski area. We visited the Trapp Family Lodge near Stowe (family in *Sound of Music*). Lodge is situated high on a hill overlooking the town and valley.

Spent the night at Mt. Mansfield State Park, in overflow in picnic area. Roasted hot dogs over fire. The night was chilly.

July 31. Sunday. Went to church at St. Johns in the Mountains, a small Episcopal Church just outside of Stowe. Coffee in basement afterwards.

Rode ski chair lift up Mt. Mansfield. This is the highest mountain in Vermont, 4393 feet at 'The Chin.' The summit area is supposed to resemble a man's profile, seen from a distance. The Nose Dive Ski Trail leads downward from 'The Nose,' 2400 feet. It was done in record time of 1:35.83 minutes in 1964 by Buddy Werner of the U. S. Olympic team. The ski lift is 1 1/4 miles long, the longest in the east, a lift of 2040 feet in elevation. Takes 20 minutes in summer, 12 in winter. The Long Trail, though not the Appalachian Trail, crosses here.

Drove to 'Smugglers' Notch,' site of smuggling from Canada in 19th century. It is a scenic notch or gap with profile of 'The Hunter and His Dog.' Picnic lunch nearby.

Drove to Jeffersonville and via 15 to Burlington. Caught ferry across Lake Champlain,

very pretty crossing. Takes one hour. Camped at Poke-O-Moonshine Mountain, area south of Keeseville, N. Y. Camping area was too close to a main highway and trucks passing kept us awake.

August 1. Monday. Return to Keeseville, and 9-N to Lake Placid. Lovely drive through the Adirondack Mountains. Shopped at Lake Placid, a tourist town on the order of Gatlinburg. The Lake Placid is nearby but actually the town is on a smaller lake. Bought ski jacket, a light nylon shell windbreaker. Drove on to Saranac Lake where we went to an art exhibit. This is also a tourist town. The American home of Robert Louis Stevenson is here; we drove out to see it but did not go in. Picnic lunch outside Lake Eaton campsite, refusing to pay the 50 cents fee for our light picnic lunch.

Drove on through the Adirondacks, via Long Lake, Blue Mountain Lake, Old Forge. There are many lakes, not so mountainous here as I had imagined. Tourist development is limited to the town areas, the outlying areas are quite uninhabited, or with camps, etc. There is no advertising along the roads, except adjacent to occasional tourist homes, stores. The whole area, towns included seems to be included in a larger semi-park area, the Adirondack State Park.

Drove on south on 12, through Utica, intending to spend the night at Chanango State Park near Binghamton. It proved full and we were directed to a private campground nearby. There was much overflow from the park, and there must have been 25 campers, trailers, and tents in the private campground, all overflow.

August 2. Tuesday. Rose early for a long drive home. Overcast skies threatening rain, which never materialized. Drove south from Binghamton on I-81 (same route which will eventually be complete to Bristol) through Scranton, taking North East Extension of the Pennsylvania Turnpike to near Allentown, there taking I-78 to Harrisburg. The roads were all good, 4 lane and we made good time.

From Harrisburg (cross Susquehanna River here), took I-81 south to Hagerstown Maryland. Crossed Pennsylvania in five hours.

From Hagerstown, drove down 'The Great Valley,' via Harrisonburg, Staunton, Lexington, and home. I-81 is complete for parts of the way. Route 11 for the rest. Arrived back in Bristol about 7.30 p.m. Mileage on return home 6,113. Trip mileage total, about 5,500.

Bibliography on Maine

Henry David Thoreau, In the Maine Woods, arranged by Dudley C. Lunt, 1950, and paper, 1965.

Dabney W. Caldwell, The Geology of Baxter State Park and Mt. Katahdin. Maine Geological Survey. 1960.

Edson S. Bastin and Chas. A. Davis. Peat, Deposits of Marine. USGS Bulletin 376. 1901.

Edmund Ware Smith. Upriver and Down, stories from the Maine Woods. 1959. 1965. Holt Rinehart, Winston. Most of these appeared earlier in *Field and Stream*, *Ford Times*, etc. Read this in Maine, from the University Library, well written.

Guide to the Appalachian Trail in Maine, Katahdin Section. Covers the trails in and around Katahdin, with maps. I used my copy a good deal. There are many references here to other materials, a number of which I consulted in the library there. Myron H. Avery, now dead, has written a great deal about Katahdin. Main Section, separately, covers AT proper.

Theodore Winthrop (1823-1961), Life in the Open Air. 1863. A classic of the Maine woods. See Trail Guide, 3

Myron H. Avery, Katahdin and its country. *Nature Magazine*, October 1937. Read in Maine.

Will F. Thompson, *The Shape of New England Mountains*, in 3 parts. Dec. 60, June 61 and Dec. 61 - Appalachia. (*Journal of Appalachian Mountain Club*) read the third part at U. Maine.

10-day trip down the Allegash River, 2-5 people, \$ 300 each. F. W. King, registered Maine Guide. Rt. 5, Augusta, Maine, advertised in Appalachia.

Camping in Maine. 'Tenting in Maine' is a booklet listing private campgrounds, put out by the State of Maine Publicity Bureau.

'Forest Camp Sites' is a booklet listing the sites established and maintained by the Maine Forest Service, distributed by them. Many are maintained by the Forest Service on paper company lands.

End of New England, Maine, and Canada trip

Philmont Scout Ranch. New Mexico. July 1967

followed by Grand Canyon River Run July-August 1967

followed by *Bristol Herald Courier* canyon story.

July 13, 1967. Arrived 5.00 p.m. Settled in tent city. Our ranger is Johnny Vann. Supper at mess hall. Got food and equipment issued. Went to campfire on "The New Mexico Story" by Jerry Trout, biologist at the University of New Mexico. Saw buffalo herd on the way in.

July 14, 1967. Up at 6.00. Breakfast, then group photo. Shake down. Med[ical] lodge check. Got packs ready about lunch. Pack weighed 36 lbs. Onto bus about 2.00 and hiked into Harlan Camp. Easy hike, about 2 miles mostly uphill, in light rain. Pitched camp in drizzle. Job assignments.

Potatoes, beef and gravy

Peach cobbler

Peach slices

Gingerbread

Milk shake

Rain stopped about supper time. Cool evening. Campfire program about Philmont story. To bed about 10.00.

One of the rangers is quite a herpetologist. Says snake hunting best in warm sun just after a rain, when all is drying out. Pygmy rattler is the only one here, and is not supposed to be present at this elevation, but they are here nonetheless. Bears bother camp here frequently.

July 15, Saturday. Up late about 7.00. A little slow on breakfast. Potatoes. Sausage. Applesauce, bread cooked in Dutch oven.

Off 10.45. 5.5 miles mixed terrain. [William] Dubose and [Joe] Faulkner struggle, though all are whipped by a climb at the end. Arrived at 2.00. Cimaroncito Camp. Shelter and ten already up in one of Philmont's largest camps. 250 Scouts here today.

Lunch and a leisurely p.m. shower here and shaved. Boys cooked a great supper. Beef noodles, cornbread.

Bears are bad in camp here and in the night one caused considerable confusion in camp.

Rangers here have a fawn brought in a couple days ago, about a week old. it is quite a pet. They are arranging to put it in a zoo, or raised at camp. It cannot survive in the wild. Rained hard all night.

July 16, Sunday. Up about 6.00. Pancakes. Rain slackened a little. Went to R.C. mass and to conservation lecture. Our ranger, Johnny Vann, left us prior to church. He plans a 30 mile hike into camp today.

Wet all day and fairly hard rain this afternoon, though rangers say it is the driest year since 1902, at least to date. Average rainfall is 15".



Climax forest is Ponderosa Pine here. Some spruce and fir. Scrub oak.

The boys work on a conservation project, putting up bird houses, in the rainy afternoon.

Engelmann spruce. Hard to tell from Blue by needles, but told by flaky bark. Blue has grooved bark.

Cork Bark Fir. variety of Alpine Fir. Bark is soft and spongy.

Trembling Aspen

Douglas Fir. Cones have a forked bract that sticks out beyond the scales.

Limber Pine. 5 needles to a bunch.

Foxtail Pine. Has spine on the end of the scale.

a little Ponderosa Pine. long 3-needled pine. 10,200 ft, but Ponderosa usually doesn't come this high, 8,000-8,500 ft.

One Seeded Juniper

Two Seeded Juniper

Elephant Head.

Wild Strawberry, *Fragaria opulis*.

July 17, Monday. Off to visit a gold mine. Contention Mine. Gold is in a vein in a fault. Worked out. Took out about \$ 30,000. Went back in the shaft 1/4 mile.

Went panning for gold. Results nil.

Fixed supper.

Moon shining when went to bed. Rain in the night.

July 18, Tuesday. Up at 5.00 and off by 8.50. Steady climb to a pass, then climb to Comanche Peak and reached Mt. Philips about noon. 11,711 ft. Lunch near the top. Lovely day. Panorama view.

Descent to Clear Creek Camp with some hail on the way. Highest camp in Philmont, 10,200 ft. Pitched camp in hailstorm.

Couldn't get a fire going. Barry [Latham] cut his knee whittling shavings and had to take him out on a stretcher and got jeep ambulance about 9.00 p.m. Had to get ranger to help us build it and finally got it going using tent poles as blowpipes. Got dark before supper. 42 degrees.

July 19, Wednesday. Up at 7.00 and leisurely breakfast. Off about 11.15. Lovely day.

Steady descent for Crooked Creek Camp. 6 1/2 miles. Open park. Camped to one side. Saw deer in the meadow. Walked down to Porcupine Camp to get food and cooked big supper.

July... rest of trip (four more nights out, July 20-23) not recorded.

Grand Canyon River Run, 1967

Grand Canyon, Bristol Herald Courier story is at end.

Page, Arizona. July 27, 1967.

Charter flight, 25 airline miles from Page to Cliff Dweller's Lodge in small Cessna. Flew over the upper few miles of Lake Powell, here a narrow, curved neck of water half filling Glen Canyon. The pilot obligingly half circled the Glen Canyon Dam and bridge, highest steel arch bridge in the world, 700' over the river, then flew on over the last several miles of Glen Canyon, the lower reaches untouched by the dam.

Flew over Lee's Ferry and the confluence of the Paria River. The waters released from the dam are a clear green, but the Paria dumps in a muddy silt in obvious contrast to the mainstream Colorado. The Gorge is narrow until the confluence where it abruptly widens into a combination of an inner gorge (Marble Canyon) and a plateau area bracketed by two higher plateaus, the cliffs on the northwest being the Vermillion CLiffs and those on the southeast the Echo Cliffs.

Flew over the Navaho Bridge, until the construction of the Glen Canyon Dam Bridge, the highest, now the second highest steel arch bridge in the world. There is a small airstrip at Marble Canyon, a junction with the Lee's Ferry Road at the west end of the bridge.

Flew over Soap Creek Rapids, and then landed at the little dirt airstrip near Cliff Dweller's

Lodge, after buzzing the Lodge to alert the operator, Mrs. Ruth Baker to come out and get me. Cliff Dweller's Lodge is a stone oasis in the desert, merely a small motel, cafe, and filling station, built years ago by the Bakers, who are related to the present owner Art Greene. Mr. Greene is the concessionaire operator of the Waheap Marina, the principal marina on Lake Powell a few miles north of Page.

Spent the afternoon in leisure at Cliff Dwellers. Two other parties flew in to join the expedition, two couples from California, who had left a car at the other end of the trip and chartered a flight here, and a family of four from Texas, who flew in in their own private plane. Temperature 100 degrees F.

July 28. Friday. Up at 7.00, but our get together breakfast did not begin until about 7.45 when Sheila Smith arrived with the news that the water was low and we might have to postpone the trip half a day or even a day until sufficient water is released from the dam. After breakfast, several of us went with her to Lee's Ferry to look around. Here we met our two rivermen, Ron Smith and Buzz Belknap.

From 1872-1877, John D. Lee, a renegade Mormon leader, here operated a ferry the only river crossing for many hundred miles. Lee was a man of many colors; his ferry operations were incidental to his farming and made possible by his Mormon polygamy. He collected many wives, placed a wife on each farm, and inspected both wives and farms regularly. But he had a past with which he had to reckon, and in 1877, the long arm of frontier justice, delayed by remoteness, and the Civil War, caught up with him and he was executed by the U. S. Army for a massacre of 115 non-Mormon white settlers 20 years before, a massacre that Western historians have since much disputed and which remains enveloped in mystery. The ferry was subsequently operated until 1929, when the Navaho bridge was built. Krutch, 168.

Echo Peaks are here, named by Powell because of the profusion and confusion of echoes got from a gunshot. They were in the habit of fixing distances by the timing of echoes. Zane Grey wrote of this country.

There has been a big boom in Canyon travel in the last two years due to the publicity over the two dams in the Grand Canyon. Up through 1965, in all history barely a thousand persons had gone down the Colorado in the hundred years since Powell first traversed it in 1869. But figures have begun to climb dramatically.

Few went down in 1963 and 1964 because of low water. In 1965, 550 made the trip, in 1966, 1,064, and to date (July 29, 1967) 1,291 and our 9 (with 2 guides) have gone down the river. The park service ranger thought the figure might go as high as 2,000 this year alone. In his opinion, the swing has been from too few to too many, persons were now attempting the trip who were not physically up to it.

Additional publicity has been given to the Canyon from the trip down of Barry Goldwater and of the Kennedy's. Goldwater went down years ago, in the forties, then again recently, when Ron Smith was one of his guides. The Kennedy's went down as far as Phantom Ranch over July 4 of this year. Stuart Udall, Secretary of Interior, took a party down in June. (Later: His trip is written up in Venture, February 68. He was led by Jack Cuney, Mormon, Salt Lake City.) A party of Congressmen headed by Representative Morris Udall is leaving here tomorrow. This latter party's boats are already at the Ferry and ready for loading. They are to be taken though by Sanderson Brothers. Hatch took the Kennedy's through.

The dam has extended the season when it is possible to make the trip by mediating the water flow, and prolonging it into the latter part of the summer. Water flow now goes neither so

low nor so high as it did before. In a natural, state, the water flow varied from extremes of 50,000 - 100,000 cubic feet per second, and even on rare occasions to 200,000 and over c.f.s. to a minimum of 1,000 - 1,500 c.f.s. Now the flow fluctuates by release of the dam from 2,000 to 2,500 to 20,000 - 25,000 c.f.s., with a mean of 8,000 c.f.s. Lake Powell is not full, at an elevation of 3,532 and a desired level of 3,711, and authorities hold back what water they can without violating downriver commitments. The sandbars are disappearing since the dam was built. There is also no further driftwood.

In a natural state river trips were possible in the spring and early summer, probably in July, and impossible in August and September. (Powell went through the Grand Canyon in August, which partly accounts for the difficulty of his trip.) Generally, the lower the water, the more difficult the trip, as the low water exposes rock hazards in the rapids. There are some few rapids, however, where the reverse is true - high water makes the rapids bad.

Georgie White, the lady of the river, has run the canyon at 100,000 c.f.s., and made a movie, 30 minute color, White Water Adventure, at 90,000 c.f.s. There has been one round trip in the river, made in a jet boat, and one of our guides, Buzz Belknap, was one of the rivermen on that trip. The leader of this trip did not complete it, as he broke a leg, enroute.

Dick McCallum, Flagstaff schoolteacher, is Ron's partner in Grand Canyon Expeditions, though not on this trip. Buzz Belknap is substituting for him. This is the third summer of operation for Ron Smith and Grand Canyon Expeditions, though Ron has been river running nine years, formerly working for Hatch and Georgie White.

The river craft is a 33' war surplus pontoon, rubberized, shaped like the outline of a squared O, with two 'saussages' great long cigar shaped tubes strapped either side for added

stability. One sausage originally fitted into the center for pontoon use. This pontoon has since been replaced by an aluminum pontoon, and is no longer available, so the rivermen are buying up all that they can. Ron has about 50 and has paid \$ 15 to \$ 400 for them.

A pilot crashed yesterday into the south rim of the Grand Canyon, killing himself and six sightseers. (Arizona Republic, July 28, 67)

2.00 p.m. Loaded and shove off. We are propelled by a 20 h.p. Johnson that will hasten the trip, taking us though in 10 days, and also provides guidance so that oars are used only in emergency. The motor is run about half throttle, and 70 gallons of gas are aboard. A trip drifting through, without motor, takes about sixteen days, and there is no means of propulsion on Lake Mead.

For the first leg of the afternoon's journey we are in clear, cool water, released from the dam 15 m. above, but soon the Paria enters and adds the mud to make the muddy Colorado. A few 'riffles' - water flecked with white caps, remind us of turbulent water to come.

Our first rapids are Badger Creek, where Powell killed a Badger, (and made soap of him at Soap Creek), which we take in fine style. Next come Soap Creek where we get tossed and splashed and thoroughly wetted, as though the river were giving us fair warning that she is to be respected. Here on one of the early river expeditions, Stanton, 1889, a boat was upset and a man drowned. Stanton was the second to go all the way through the canyon. Three of his party drowned in Marble Canyon.

The afternoon takes us progressively deeper into Marble Gorge, though not yet to the 'marble' (Redwall limestone). We run 17 miles and put in just below House Rock Canyon

Rapids on a large sand bar. (See Dellenbaugh, Canyon Voyage, where they stayed above here, and on the origin of the name.) The accumulated driftwood provides ready firewood and in due course steaks are sizzling over driftwood embers. The boat is well stocked with food. Cooking is done on a folding grille that supports griddle, black buckets, coffee pot, and Dutch ovens. Drinking water is simply dipped from the river, but we are assured that the mud is harmless and the water good. With a little waiting, ordinarily not exercised, the mud will settle to the bottom and the clearer water can be poured off.

After supper, we took a short hike up House Rock Canyon. My sleeping bag is spread out on the sand, protected by a strip of plastic, but the whole thing is soon sandy. The night is spent under the stars, or first the clouds, and then the stars for it is overcast until after midnight. After I am bedded down I realize how close to the cliff like canyon walls I am and wonder how often a boulder loosens to tumble down.

July 29, 1967. Saturday. Up about 6.30 a.m. There are fox tracks around my bed. Off about 9.00 a.m.

North Canyon Rapids.

Tanner Wash Rapids - a good one. Bert Loper was upset here in 1949 and his body was never found. Those who were with him believe that he had a heart attack. His boat was later seen downstream above President Harding Rapids. Stanton lost a man - Peter Hansborough - here in 1889. We are now well into Marble Gorge - so called from a limestone that suggests marble. This is the Redwall Limestone, actually a grey, like our [Shenandoah] Valley limestone, but everywhere on exposure stained red from the runoff of the overlying red sandstone. As the river drops we enter the lower strata and the change from sandstone to



limestone is marked by the appearance of numerous potholes, recesses, and undercut walls and `caverns' in the canyon walls.

Vasey's Paradise - named by Powell in 1869 after a botanist friend. A stream of water pours out perhaps one third way up the canyon wall and makes a green rock garden of ferns and mosses up the precipitious wall. Lunch at Redwall Cavern - a gigantic recess in the canyon wall.

Passed Marble Gorge damsite at mile 39. Some steel towers are here and tailings mark the spot where test borings have been drilled.

Past Bert Loper's boat and Royal Arches.

Afternoon was fairly quiet run, except for President Harding Rapids, named 23 August 1923 by surveyors who got word by radio of his death while here. In the transit of this rapid we got swept around and thrown into the, canyon wall breaking a propeller pinon a submerged rock near the river's edge. Had to use the oars to land downstream.

Passed Triple Alcoves.

Camp at Nankoweep Creek and Rapids and open sand bar. We have run a total of 53 miles, 36 miles today. This is the entrance to the Grand Canyon National Park. High up the cliff, where the talus breaks into the sheer cliff, there are Indian Cliff Dwellings, presumed to be granaries used for storage when a small tribe lived on the flats below, but any existence here must have been precarious and forlorn. Hiked up to see the ruins, four small cubby holes blocked out in a recess in the cliff. Took about two hours round trip.

Much evidence of deer here but nothing recent. The deer live on the rims in the summer and make their way down the canyon in winter. Pork chops for supper.

July 30. Sunday. Off about 9.00. Small mouse is under my river bag when I lift it to load this morning. Mike Deets is waked in the night to find a fox nibbling at his feet. The tracks in the sand remind me of those by my bed the night before.

Here Powell wrote:

We are now ready to start on our way down the Great Unknown. Our goats, tied to a common stake, chafe each other as they are tossed by the fretful river. They ride high and buoyant, for their loads are lighter than we could desire. We have but a month's rations remaining. The flour has been resifted through the mosquito-net sieve; the spoiled bacon has been dried and the worst of it boiled; the few pounds of dried apples have been spread in the sun and reshrunken to their normal bulk. The sugar has all melted and gone on its way down the river. But we have a large sack of coffee. The lightening of the boats has this advantage: they will ride the waves better and we shall have but little to carry when we make a portage.

We are three quarters of a mile in the depths of the earth, and the great river shrinks into insignificance as it dashes its angry waves against the walls and cliffs that rise to the world above; the waves are but puny ripples, and we but pigmies running up and down the sands or lost among the boulders.

We have an unknown distance yet to run, an unknown river to explore. What falls there are we know not; what rocks beset the channel, we know not; what walls rise over the

river we know not. Ah well! we may conjecture many things. The men talk as cheerfully as ever; jests are bandied about freely this morning; but to me the cheer is somber and the jests are ghastly. (p. 247)

The rivermen say `we haven't run a real rapid yet,' but we begin today, with Hance. John Hance in 1880's was the first developer of the Canyon.

At 61 miles, the canyon opens out, for the entrance of the Little Colorado. The water becomes much more muddy, looking about like chocolate milk, or coffee with cream in it. (Stuart Udall reports the Little Colorado was clear and turquoise, [Venture](#) article.)

Here are wide, rough, 3,000 foot canyon walls, including 350' of green shale, 100' feet of `marble' and much sandstone, capped by 500' of grey limestone. From here the south rim can be seen in part, including a prominent Hopi Indian tower. We pass by a few pieces of a downed airplane, lost here in 1956.

Tanner Creek Rapids,

Unkar Creek Rapids.

In this area, between the entrance of the Little Colorado and the Hance, we are passing outside of the Marble Gorge into the second great subdivision of the Grand Canyon, the Upper Granite Gorge.

We lunch just above Hance, in a lovely site where parallel sheer walls, one sunlit and one in shadow rise above our luncheon party. The two riverrunners eat very little and discuss

the best way to run Hance. They are anxious to do it with the water high. After lunch we go downstream a little way, then pull ashore and hike forward to overlook Hance Rapids and see where the boulders are and what is the best run. Boulders form a V with the highest in the center and the guides calculate where the subsurface rocks are that can snag the boat.

Back aboard, all gear is tied down for the run. We are instructed where to sit and reminded to hold on. Downstream we go. The river is calm here but seems to drop off downstream and end in an ominous roar. Now we can see the waves; high and frenzied, but the white caps are gone, so muddy is the river with the new silt added by the Little Colorado. The crests are chocolate topped. Ron aims the boat as best he can; then we are sucked on into the roar. The waves are six feet high; we ride the first, break over the second, then the third breaks over us with a crash drenching all aboard. The rig bends and groans. The boat spins round, its bow caught in an upstream eddy and its aft still in the mainstream. Then we revolve into the current again, and alternately ride waves and have them dashed over us. Glancing back we see that the river has fallen some fifteen or twenty feet in several hundred yards. There is hardly time to collect ourselves before we are tossed into Sockdolager Rapids, for a repeat performance of the run at Hance.

Here is where the horizontal sedimentary formations through which we have run for two and a half days give way to the pre-Cambrian schists and gneiss, a cause, in part at least, of the new severity of the rapids. We drop rapidly now and journey far back in time. The rocks of the dark granite gorge we are now entering are pre-Cambrian, up to 2 billion years old. The metamorphics form a canyon of a different character, dark rocks, often quite black are shot through with dikes of flesh-red granite. Overall the appearance is quite menacing and eerie, especially as we look backward to see also a dark sky and a gathering storm. Someone quips that the water gods are angry at our coming.

There is little loose rock now; the racks are massive, and aside from the disordered criss crossing of the injected magma, there is little pattern or order to the lay of the rocks. There are almost no sand bars and the river now affords no place to land. Walls rise vertically from the water's edge.

We run Grapevine Rapid. The big boulders in low water reminded Powell's men of grapes on a vine, in low water. Here in 1960 a jet boat was sunk going upstream, one of four boats. One of our two river men, Buzz Belknap was on that run.

We arrive at Bright Angel Creek, and land at a sand bar to camp, passing under the suspension bridge over the river. We have now run 87 miles, 34 of them today, and dropped 682 feet to an elevation here of 2425 feet. It is some 5,000' ascent to the rim, at 7,000 feet, putting us a mile down in the earth.

Gear is unloaded just before the break of a storm. It rains, and rains. The rain comes harder and soon we are drenched and begin to chill. When wetted on the boat we are refreshed, and soon dry out, as the sun heats up the wet clothing. But the rain is cold, and we soon are hugging the walls of the canyon for a double protection. They shelter a little from the rain, and they are yet quite warm radiating into our bodies the heat gathered earlier in the day. The rain continues, harder; the river is pocked across the surface with the splatter.

After an hour or more, it cuts back to a drizzle, which continues off and on till dusk. We scramble into dry clothes and start supper, chicken, first fried, and then baked in a Dutch oven. But the water is a problem, too muddy to drink until mixed with lime and alum which hastens the settling of the silt. Then the clearer water is pured off for use in our camp kitchen. While the chicken cooks, several swim, to wash off sand and sweat and replace it with a thin mud coat.

The water is warmer than the air. By dark the rain is over and we see a faint reddish glow beneath the overhanging clouds. On the rim high above, park visitors are witnessing a glorious sunset after the storm. I bed down for the night in the wet sand.

July 31. Monday. A layover day at Phantom Ranch. I clean up and catch up on notes. My efforts to hike to Ribbon Falls are blocked by a closed trail. There have been floods here recently of unusual proportions, the type that comes once in 100 years. The North rim trail was wiped out, along with a pipeline that was to have taken water from the north rim to the south.

Adding to this the throng of visitors on the rim makes a curious contrast with the words of Lt. Joseph C. Ives, who made the first reconnaissance in 1857. 'Ours has been the first and will doubtless be the last party of whites to visit this profitless locality. It seems intended by nature that the Colorado river, along the greater portion of its lonely and majestic way shall be forever unvisited and undisturbed.' No longer unvisited, unless we see that it remains undisturbed, it will no longer remain majestic.

Helicopters are busy during the morning carrying construction material for the rebuilding of the line.

Doe and fawn are about the Ranch.

The boatload of Congressmen and families with Morris Udall's party arrive in the afternoon, some 20-30 of them. 2 boats. They set up camp next to us and at evening the beach is quite crowded.

Afternoon is quite hot, temperature over 100 degrees F. The Dietz family leave our trip here and we are joined by three newcomers, Rob Pyle, just graduated from Hobart College.

Dr. Bill Orris, and Lonnie Moss, physician and laboratory technician from Salt Lake City, and the latter two both friends of Ron Smith.

August 1. Tuesday. 7.00 a.m. breakfast at Phantom Ranch, but the water is low and we do not leave until 10.30 a.m., when the water has risen considerably, but not so much as our rivermen would like, for the big rapids below. We are told this is 'the big day on the river' and instructed to fasten everything down tight and to get ready to get wet, for the run is one of rapids in quick succession - Horn Creek Rapids, Granite Falls, Hermit Falls, Boucher Rapids, Crystal Rapids, Tuna Creek Rapids, Sapphire Creek Rapids, Ruby Canyon Rapids, Serpentine Canyon Rapids, Shinumo Rapids, Hakatai Rapids, Waltherberg Rapids, and on down the river.

After half an hour afloat, we put ashore to scramble up the talus slope and overlook Horn Rapids. The guides discuss the best shot through, and we board and make the pass safely but thoroughly wetted in the splash.

Other rapids go by, then comes Crystal, named for Crystal Creek and but recently a rapid of major significance. Last winter a major flood washed out a large boulder fan into the river and constricted the earlier rapid and scattered the river the boulders. This one hasn't had time to settle down and is rough and something of an unknown to the river men. The river, if it were undammed, would at flood stage soon flush out these boulders, but with the even flow of water allowed by Glen Canyon dam, it will not.

We put ashore and hike up a talus slope, then out onto the fan. This is geology in action. It is hard to imagine a flood of dimensions sufficient to carry these boulders, some four and five feet across, down the side canyon to drop them in the river. Plugged by the fan, the river is half its usual width and the boulders so lie that only a passage to the left is feasible; the currents

swirl below that to take us we know not where. Ron doesn't like it; he needs six inches more water, but decides to run it anyway.

Back aboard, we are given new instructions about how to hang on if the raft capsizes, and what to do if we strike rock. The crew is tense as we shove off and head into the mainstream. Hats are tied on, eyeglasses strapped on, and everything tied down. Each is to hold onto two ropes.

We are aimed down the narrow constriction that remains open, ride over a swell and plunge deep into a trough. The boat partly lifts on the next swell, but doesn't rise far enough and the top half of the wave crashes over us. This further holds us down, and more waves drench us. Then an eight footer lifts the bow high while the stern is yet in a trough. Our seats give way beneath us and we are hurled a foot or so out into the air, but hang on to the ropes that reconnect us to our seats. Canteens and loose cameras cases flap in the air, and I see the six river bags tied onto the saussages lift off the pontoon and then watch the ropes tug them back aboard. Pop cans float in the front compartment now nearly filled with water.

Suddenly we come dovm hard, with a loud crash that jars the whole boat. We have hit rock, a big one. We were dropped on top of it. There is a grinding crash as the wood and fiberglass in the front compartment is splintered. Blinded by the water, it is difficult to see just what has happened. We spin round, the aft end goes downstream and we are stuck in the rapid, hung up on the rock. Doc sprawls over the front to see whether a pontoon has been punctured, but cannot see for the water piling up on the front. Someone hollows to get to the back of the boat, and we scramble back to take the weight off the front end to see whether we will float free. The rock beneath us grates against the floor as the current pulls us loose, and again we are moving. Downstream we stop to inspect the damage. The floor of the front

compartment is fractured in three places, and the corner by which it hangs onto the pontoon has been torn loose, but we go on, concluding that repairs can wait till sunset.

We lunch late at Shinwmo Creek. Hidden up a narrow side canyon, carved in dark rock, is a delightful plunge pool. A waterfall perhaps eight feet high pours a steady stream of water into a pool beneath. The water is warm, the temperature of bathwater, and we soap and shower beneath the falls. A little rock corridor runs round to the right beneath gigantic boulders wedged into the rock basin and you can crawl around behind the falls and give out through them, which proves great fun.

All today the level above us of the unconformity between the sedimentary rock high above us and the schist and gneiss of the inner gorge has been lowering. In the afternoon, punctuated by rapids, we watch the line of unconformity drop to the river and camp where the unconformity contacts the water. This is just below Elves Chasm. The flat strata of sandstone are etched into a wall 300 feet above us, and a grotesque red butte towers high over that. We make our back along rough travertine formations to Elves Chasm. Talus rocks are of every shape, and type and color and pattern, - reds, browns, whites, black, green, mottled.

After a hard hour of rock hopping on the sharp boulders, we come upon a side-stream and another plunge pool for a delightful swim. On the return to camp, chicken in the Dutch oven is soon followed by a night on the sand beneath the starry sky.

August 2. Wednesday. The morning is clear and yet cool in the shadow of the canyon walls. All is quiet except for the ever present rush of the river and a few locusts persistently singing. Then our breakfast is interrupted by the thunderous flopping of a Bureau of Reclamation helicopter bringing another load of ice, drinks, and the morning papers to the boatload of

Congressmen camped out of sight up the river. Our rivermen are angry at the VIP treatment, for they have sought to use helicopters in the canyon to supply their boats, but have been repeatedly denied the permission, except in case of extreme emergency. The helicopters break the solitude of the canyon.

The water is low and we have to gather the whole party to push the boat off the sand where it has become stranded in the night - and our boatmen curse the dam(n) men upstream for messing up the river and holding back the water.

We drift down Conquistador Aisle. The river forms a majestic promenade between limestone and sandstone cliffs. The canyon is more open above us than earlier. So muddy is the river than when we pass, in the heat of the day, nearly 100 degrees F, a rapid that spews up especially fine spray, the atomized droplets evaporate in midair to leave a fine dust which rises in thin brown puffs above the water. Soon the river turns north, and we enter the Middle Granite Gorge. A dark rock appears, like that seen earlier, only blacker and glistening, like an anthracite coal, or like the steel blue-black of a gun barrel. This rises from the river a hundred feet, and is capped by the red sandstone.

When mud splashes dry on the skin and clothing, it leaves a brown film of caked silt. Our clothing is now stained the color of the river, about the color of well tanned skin, and it is hard to tell where browned clothing leaves off and tanned skin begins.

Rapids are fewer today, but trouble us because of low water, some 6,000 - 8,000 c.f.s. After Bedrock Rapid, we come to Deubendorf Rapid, named for an upset of Deubendorf, on the Galloway Stone Expedition of 1909. We put ashore and walk ahead to find many boulders exposed in the low water. Our rivermen conclude that the water is rising and that we ought to



wait for higher water. We wait an hour and a half in the early afternoon sun, dipping into the river to keep cool in the heat by evaporation, but our wait is to no avail, for the river does not rise.

On such a wait, we have to keep the pontoons watered down, so that they may be cooled by evaporation, for they will overinflate in the warmed air and burst. The alternative is to let some air out, but this means a repumping of them as soon as we are ready to travel again.

We walk around the rapids to lighten the boat and reduce chances of snagging on the rocks, while the rivermen run her through.

Downstream the river enters the Granite Narrows, turning west as it does so. Here the canyon is very constricted and the river reaches its most narrow point on the whole voyage. The Great Unconformity is still almost at river level, and above the vertical granite walls the chasm widens out in the sedimentary rocks. We put in for the night in the late afternoon at Deer Creek Falls, the 150' plunge of a sidestream over a cliff into a pool, just before the tributary enters the river. The water is cool, clear, and refreshing. We drink, swim, and shower. The falls plunges across the Great Unconformity, halfway down the drop, crossing sandstone in the upper half and schist permeated with granite in the lower half of the fall.

Hardly is our swim past, and no sooner than we have begun setting up camp, than our solitude is interrupted by a helicopter coming down the canyon and swinging round to land on the sand bar just across the creek. The pilot tells us that the Congressional party upstream have had trouble, a man aboard failed to hold onto ropes in their run through Deubendorf, and was flung about the raft cutting his head badly and breaking his nose. Bleeding badly, he has already been airlifted out for hospitalization and the copter is here to wait two more who have

also decided to quit the party. The rotors stir up sand and fling it about, as we wait for their boats to appear to take aboard the pair.

We make a pet in camp of a chuckwalla - large lizard, slowed down with a dousing of cold water.

The Udall party have also lost three motors in today's run, jarred apart in the rocks and have had to have a new one coptered in. We understand now why Ron has three Johnson's aboard, a tool kit, a box of parts, and the manual for the motors. There is also a ground to aircraft radio aboard for emergency use. It is not possible to radio out of the canyon to park stations on the rim above, but with it we can contact aircraft that pass over, having them relay emergency messages.

Stew is the dinner fare, cooked over a driftwood fire, just a few feet from the river. We are glad for the fresh water, for we are tired of drinking the river water. We have come today 14 miles, a total of 136 miles. Today we dropped below 2,000 feet and are now at 1930 elevation. This accounts in part for the increasing heat.

The dinner fare is 40 mile stew, a hodge podge of a little of everything and very delicious and filling - disconcerting only as we learn that its originator and the best chef on the river drowned a month ago at what will be our first rapid downriver tomorrow - Upset Rapid. But drownings have been remarkably few on the Colorado, only this one in the last twenty years.

At dusk two dozen bats emerge to chast the insects that live about the green belt about the falls. The flutter about so low that we sometimes reflexively duck. Some more brave, or foolhardy, than I, swim in the rapids at twilight, and carried far downstream, then work their way

upstream on the opposite shore, and make it back to us, but not until it is well dark.

The night is spent on the sand bar, the water lapping at my feet. I watch the stars that seem brighter tonight than before on the trip. Myriads of them appear, even through my vision is limited to a narrow belt by the high canyon walls. I count a dozen falling stars in twice as many minutes, then fall asleep, lulled by the dull roar of the river at my feet and the higher pitched hiss of the plume of Deer Creek Falls above me.

August 3. Thursday. A long day, 49 miles, and a grand one, with calmer waters, and only two big rapids: one - Upset - at beginning of the day and the other - Lava - at the end. Off about 9.00, we soon pass Kanab Creek, where Powell left the river, Sept. 7, 1872. [probably a mistake] We put ashore a little later to look Upset Rapid over. It is named for Kolb's Upset in 1911. It is bad only if you hit the big 'hole' - a deep dropoff that can overturn even a craft of our size. But our skipper successfully runs it, and we shoot by the hole, gasping at the turbulence about the hole, thankful to be twenty feet to the left of it.

Much of the day is spent alternately in awe of the tier on tier of cliffs above and snoozing in the sun as we grow satiated with the vast and magnificent scenery. In quiet waters the rocking rhythm of the boat soon puts you to sleep. Flat on your back is a good place to look up, between naps, at the formations high above, inclined to wonder whether you are not perhaps dreaming of great medieval fortresses with turrets and bastions.

We lunch near the Havasu side canyon - with a five foot entry at river level opening into a vast side canyon. Squeezing through the narrow gateway to the canyon it is possible to spend several days in side trips in the Havasu (or, as Buzz calls it, the Supai (soo - pi) side canyon). Here we leave the National Park Boundary. The Bridge Canyon dam, if built, would



back up water to about here.

Late in the afternoon, the red rock becomes coated and plugged with a dark basaltic lava. It is as though some giant god had taken buckets of asphalt or tar and poured them over the cliffs. The great lava flow seems once to have dammed the river. What a mixture of fire and water that must have been. Here it seems charred and the rocks are like cinders, while shortly downstream, it is more crystalline and has jointed into basalt columns. A great lava pinnacle, called the Niggerhead, stands erect in the river. High above us a thin stream of water pours out, then hits rock, spills off it, and drops again in its descent to the river.

We climb a high bench laden with black lava and barrel cactus in fowler, to inspect Lava Falls, a dark and forbidding rapid, noted for its huge holes. This rapid is so treacherous that it was never run by boat but always ported or lined until the forties and the coming of the pontoon rigs. This one I was to walk around and take pictures of the boat as it came through. Painfully, I worked into a position above the rapids, then watched the few seconds it took the river to sweep the rig through, impressed with the speed with which the rapid was run and how the water pony was tossed about. Working on downstream along the steep slopes of broken lava, I rejoined the party to find them wet, but safe.

We camp on a sandbar at mile 185, coming 49 miles today.

August 4. Friday. A fairly quiet run, yet with enough rapids, especially in the Lower Granite Gorge to keep us wet, especially in the morning. The scenery continues fabulous, the sun even hotter, and we relax soaking up both. Two wild burros are spotted right at riverside about mid morning. These burros are descendants of animals abandoned by the Spanish and by early explorers and prospectors. They now perpetuate themselves and thrive in the arid



terrain.

By mid afternoon, we run our last rapids, Diamond Creek, Travertine, and Mile 231 Rapids, and are soon in the long stretch of water where all rapids have been silted in by the presence of Lake Mead below us. The water is quiet and the run becomes monotonous, though the scenery is undiminished.

In the late afternoon we pass Separation Rapids and Separation Canyon, which, prior to their silting in by the lake, were among the wildest rapids of the river. It was here that three of Powell's men - Seneca and O. G. Howland and Dunn in 1869 decided to quit the river considering it madness to go on - and leaving Powell and five others to what they felt was sure destruction in the rapids. The three deserters made their way out of the canyon, only to be murdered by Indians before they reached civilization.

Just upriver from Separation Canyon (at mile 236, 237) is the Bridge Canyon damsite - or more accurately the two damsites, for the Bureau of Reclamation has a site suited for a high dam and the State of Arizona has an alternate site suited for a lower dam. Bridge Canyon site is also called Hualapai Dam Site. The Bridge Canyon is named for a natural bridge up the side canyon (Sierra Club Bulletin, Mar. 68, p. 7., q.v.)

We camp at Spencer Creek, and at what used to be the Lava Cliff Rapid, formerly the most difficult in the canyon in medium water. The whole rapid is now silted in so that one would never guess that at this spot the river was formerly so violent. We are now at mile 246 and have come 61 miles today.

August 5. Saturday. Up at 5.00 p.m. and off not long after daylight, as the party has decided to see if they can cut the trip short a day and make the slow haul into Temple Bar on

Lake Mead in a single day. The canyon continues, though the river is quiet and the rapids silted in through the lower Granite Gorge. We ride loose and lazy, life jackets thrown aside, and gear simply tossed aboard.

We passed Bat Cave - mined formerly for guano. Great towers remain of these somewhat unsuccessful efforts.

Ate lunch aboard the boat.

The Grand Canyon ends abruptly at the Grand Wash, and here we emerge onto Lake Mead, at mile 284. But the nearest point of convenient access is Temple Bar Marina, and the afternoon is spent in a slow 5 mph crawl another 28 miles (7 hours) to Temple Bar. Our trip is delayed by high winds that whip up a squall on the lake and we are forced to take refuge in a cove for about an hour. Arrive about 8.00 p.m., just before high winds break again that would have prevented our coming in tonight. 66 miles today. 312 miles.

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Bristolian Shoots Rapids On America's Wildest River



Party Prepares The Big 'River Dinosaur' ...
... River Is Even Rough On This Monster

By HOLMES ROLSTON III

LEE'S FERRY, Ariz. — It was on Friday, July 28, at an elevation of 3,107 that the command splintered the silence: "All aboard! Let's shove off!"

Buzz Belknap pushed our river "dinosaur" — a 33 foot rig built around a war surplus pontoon — out into the swift current, and 11 canyoneers aboard buckled on orange life jackets and wondered what lay ahead for 312 down-stream miles on the Colorado River.

Ron Smith headed her into Marble Gorge: Seated up front on a tarp that covered our duffle, I craned my neck upward at towering red cliffs, then looked downstream as Badger Creek Rapids came in sight. The cliffs were silent; but the river could roar!

SOON SWEEPED INTO water whipped white, I felt the raft toss, heave, and bend beneath me, and recalled the old Indian's warning to John Wesley Powell, one-armed Civil War veteran, who first ran the river in 1869: "The rocks, the rocks h-e-a-p, h-e-a-p high; the water go h-oo-wogh, h-oo-wogh; water-pony h-e-a-p buck; water catch 'em; no see 'em Injun any more! no see 'em squaw any more! no see 'em papoose any more!" I recalled the queasy feeling I had when I signed away all liability rights. Not long after, washing through Soap Creek Rapids, I had an inkling of what the Indian meant and why insurance was unavailable.

It seemed that the river had resolved early to teach us due

respect, and to remind us that here, on the third of the early river expeditions, Stanton in 1839 upset a boat and drowned a man. Our water-pony bucked, and we held on. The waves crashed over the bow and drenched us, and we held on. This was our initiation, a wild and exhilarating baptism into the muddy and violent Colorado.

THE RIVER TRIP starts here at the junction of the Paria and the Colorado because just above us is the mammoth Glen Canyon Dam, a tribute to modern man's ingenuity and constructive skill. Five million cubic yards of concrete have been poured into Glen Canyon to conquer the river, destroy the gorge, and create a spectacular artificial lake — a dubious exchange but seemingly a necessary one, granting the needs for power and water and popular tastes for "developed recreation" being what they are. Most prefer speedboats on impounded waters to rafts caught in roaring cataracts; the lake does substitute amusement for awe and wonder.

Long before the dam, Lee's Ferry was where men reached the river. Here, where Glen Canyon meets Marble Canyon, the land breaks away to give the best vehicle access to the river in 500 miles. Behind us, chaffing at the stakes to which they are tied we left two more rubber "dinosaurs," waiting for tomorrow and the voyage of a delegation of Congressmen headed by Rep. Morris Udall. Udall's grandfather was John D. Lee, renegade Mormon leader, who from 1872-1877 operated a ferry here, a service which continued until the building of the Navaho Bridge in 1929.

We move on now downstream, propelled and steered by a 20 horsepower Johnson outboard motor that cuts the duration of the trip in half. Oars are used only in emergency. Seventy gallons of gas are on board. Tied to our oval pontoon are two sausages, great long cigar shaped tubes that give stability. In the center are four fiberglass compartments that support us

and our gear. The silver and red rig draws only three or four inches of water, as we travel at seven miles an hour. Half the speed is that of the motor and half is that of the current. There are two rivermen: our skipper, Ron Smith of Grand Canyon Expeditions, and his boatman, Buzz Belknap. Both know the river well. Ron has run it for nine years; Buzz was with the first river trip upstream, a jet boat run in 1960.

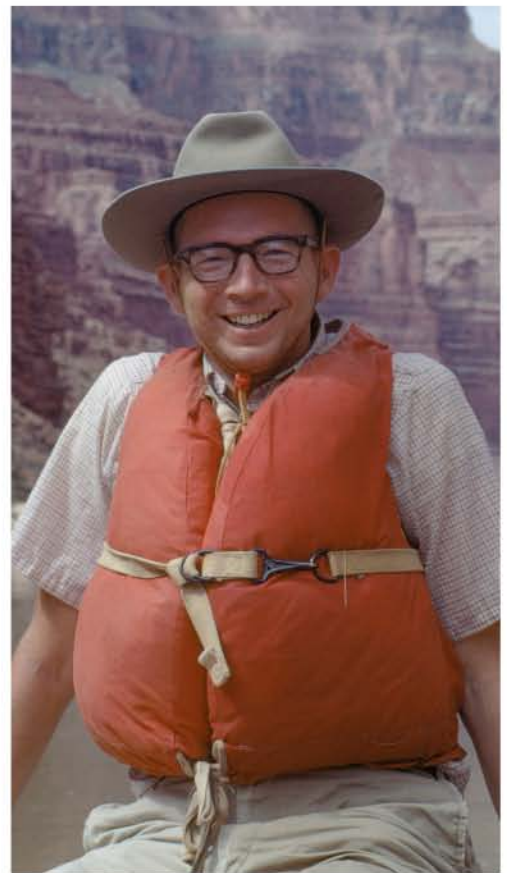
THE AFTERNOON takes us progressively deeper into Marble Gorge. We run 17 miles and put in on a large sand bar just below House Rock Canyon Rapids. The accumulated driftwood provides ready firewood and soon steaks are sizzling, cooked on a folding grill that supports griddle, black buckets, coffee pot, and Dutch oven. Water is simply dipped from the river, with assurances that the mud in it is harmless.

The night is spent under the stars, sleeping bag spread out on the sand. In the restlessness of the first night, I try to adjust to the new dimensions of time and space. Here am I, as ephemeral as a mayfly, in a canyon of canyons that could bury the East's grandest mountain, nine million years old and carved in the most ancient rocks on earth. I stare upward, realize how close I am to the precipitous walls, and hope this is not the night for the loose rocks above to tumble down.

Saturday, July 29. On awakening, I discover I have been investigated. Fresh fox tracks encircle my bed. We get off about nine. Our first white water is Tanner Wash Rapids. Bert Loper was upset here in 1949 and his body never found,

his misfortune preceded, most think, by a heart attack. Stanton lost a man, Peter H. Ansbrough, here in 1889.

We are now 2,000 feet deep in Marble Gorge, one of the most majestic of the great canyons of the Southwest. The Redwall limestone rises above us, suggesting marble, for which the gorge is named. Though actually gray, it is stained red by the runoff of the overlying sandstone. As the river descends to lower strata, the change is marked by the appearance of numerous and fantastic pot-holes, recesses, undercut walls, and caverns. At Vasey's Paradise a subterranean stream pours out one third the way up the canyon wall to make a vertical green rock garden of ferns and mosses. Our lunch is on a sand bar beneath a gigantic alcove recessed in the canyon wall, Redwall Cavern.



Holmes Rolston Ready For River ...
... Lifejacket And Sense Of Excitement



Under That Spray, Maybe A Deadly Rock ...
... One Never Knows When Shooting Rapids

STEEL TOWERS, TEST borings, at "mile 39" mark the Marble Canyon damsite. We are reminded of the Bureau of Reclamation's proposal, now temporarily withdrawn, to flood with 275 feet of water the area we have been enjoying, destroying the first of the great Grand Canyon gorges. At the prospect of Marble Canyon's extinction we talk wistfully of what Glen Canyon once was. This was the place no one knew, or ever can know now. Those few who went there dubbed it the ladies choice among canyons for its calm waters beneath high cliffs of grandeur.

The quiet of the afternoon is interrupted by President Harding Rapids, named in 1923 by surveyors who while here got word by radio of his death. In the run we get swept around and thrown into the canyon wall, breaking a propeller pin on a submerged rock and being forced to use oars to pull the raft ashore for repairs.

We pitch camp at Nankoweap Creek on a sand bar covered

with mesquite and tamarisk. High above, where the talus yields to vertical walls, there are Indian Cliff dwellings, 900 years old, thought to be granaries used for storage by a small tribe living on the flats below. Any existence here must have been precarious and forlorn. The hike up to see the four small cubby holes blocked out in a recess in the cliff takes two hours. Lizards skitter across the rocks at every step. There is much evidence of deer here, though the signs are not recent, for they live on the canyon rims in the summer and winter deep in the canyon. We have run 53 miles — 36 miles today. Here we enter the boundary of the Grand Canyon National Park.

SUNDAY, JULY 30. Foxes again! One of our party is waked in the night to find one nibbling on his feet. The river runners say we haven't run a "real" rapid yet, but promise us one today, Hance Rapids, adding excitement to our take-off.

At "mile 61" the canyon widens with the entrance from the south of the Little Colorado, a major tributary dumping tons of silt. The mainstream before has carried only the Paria's mud, as the dam catches all upstream silt. Now it becomes twice as muddy, recalling the Mormon settlers' complaint that the river was too thick to drink and too thin to plow.

Here the walls are 3,000 feet high, including 350 feet of green shale, then 100 feet of "marble," and many hundreds of feet of sandstone, capped by 500 feet of grey limestone. As we move, the walls are an ever variegating kaleidoscope of form and color. The south rim is visible now and in a single gaze we embrace strata from half a billion years. We are passing out of the Marble Gorge into the second great division of the canyon, the Upper Granite Gorge. We sight fragments torn from a downed airplane, lost here in 1956.

Just above Hance Rapids, we pause where sheer parallel walls, one sunlit and one in shadow, rise above our luncheon party. We reconnoiter the rapids to see where amidst the churning waters the big boulders lie. They form a "V" with the highest in the center. Back aboard, all gear is tied down for the run; we are instructed where to sit and ordered to hold on for dear life. The river seems to drop off downstream, ending in an ominous roar. Down the chute we go, into high, frenzied waves. So muddy is the river now that the white caps are gone. Wave crests are a chocolate topping on brown waters.

We ride the first of six fox waves, break over the second then the third breaks over us with a crash that drenches a

aboard. The raft bends and groans, then spins around, its bow caught in an upstream eddy and its stern still in the main stream. Then we revolve into the current again, alternating riding waves and having them dashed over us.

Glancing back we see that the river has fallen some fifteen or twenty feet in several hundred yards. Hance is past, but there is hardly time to collect ourselves before we are tossed into Sockdolager Rapids for a repeat performance.

THE HORIZONTAL sedimentary formations through which we have run for two days now give way to pre-Cambrian schist and gneiss, one cause of the new severity of the rapids. The river descends rapidly now and we journey in the bowels of the earth and far back in time, for the rocks of the sombre, narrow gorge we are entering are more than two billion years old. These metamorphics close in on us to form a canyon of a different character, often jet black and shot through with dikes of flesh-red granite. Their menacing appearance is enhanced as we look upward to see a gathering storm and lightning zig-zag across a darkening sky.

There is little loose rock now on the massive canyon walls and little pattern or order, aside from a disordered crisscrossing of the injected magma. There are no sand bars; walls rise immediately from the water's edge and afford no place to land.

We run Grapevine Rapid, where big boulders in low water reminded Powell's men of grapes on a vine. Buzz Belknap tells us how here in 1960 he watched a jet boat sunk going upstream. We pass under

a suspension foot bridge and arrive at Bright Angel Creek, having now run 87 miles, 34 of them today, and dropped 682 feet to an elevation of 2425 feet.

Our gear is unloaded just before the break of the storm. It rains, first softly, then harder. Soon we are soaked and begin to chill. Hugging the rock walls affords a double protection — a little shelter from the rain and more warmth, as they radiate into our bodies heat gathered earlier in the day. After an hour and a half the storm cuts back to a drizzle, which continues intermittently until dusk. Supper is chicken baked in a Dutch oven. Water for our kitchen is so muddy now that we mix it with lime and alum to hasten the settling of the silt. By dark, as I bed down in wet sand, the rain is over and there is a faint reddish glow beneath overhanging clouds.

MONDAY, JULY 31. A lay-over day at Phantom Ranch, the National Park Service lodge here is a mile deep in the earth. In the afternoon two boatloads of congressmen and their families arrive and set up camp next to us, crowding the beach — a symbol of the new boom in canyon travel. Up through 1965, in the hundred years since Powell first went through, barely a thousand persons made the trip. But in 1966, some 1,064 made the trip and this year to date 1,291 have made all or a part of the white water adventure. The upswing is due to the controversy over the two dams proposed in the canyon, to publicity surrounding the trips of the Kennedys and of Goldwater, and to advances in the river rigs that make the once perilous journey now at least relatively safe.



From High Above On Canyon Rims, River Looks Like Peaceful Ribbon

TUESDAY, AUGUST 1. We cannot get off as early as planned but must wait for the river to rise. The untamed river fluctuated widely in flow, from a spring flood maximum of 50,000 and 100,000 cubic feet per second, to a late summer and fall minimum of 1,000 c.f.s. Now the fluctuation is by release of the dam from 2,000 to 25,000 c.f.s., with a typical flow of 8,000 c.f.s. — not nearly as much as the 30,000 c.f.s. the river runners consider ideal, but it does prolong the water flow making trips possible now even in the fall. When the water is low, the rapids become doubly difficult, exposing rocks and increasing turbulence. By late morning the river has risen some, and our skipper decides to leave.

This is the big day on the river and we are carefully instructed to prepare for rapid after rapid in quick succession — Horn Creek, Granite Falls, Hermit Falls, Boucher, Crystal, Tuna Creek, Sapphire Creek, Ruby Canyon, Serpentine Canyon, Shinumo, Hakatai, Walthenberg, and so on. Crystal proves the most cantankerous. Named for Crystal Creek, it became a rapid of major significance last winter when a lateral canyon flood washed a large boulder fan out into the river. The rapid hasn't had time to settle down yet. Perhaps it will not. The untamed river in flood would soon flush out the boulders scattered into it, but now the flow of the captive monarch never reaches flood dimensions. We hike out on the boulder

fan. It is difficult to imagine a torrent sufficient to deposit rocks five feet in diameter and weighing tons. The river is studied with rocks cut to half its usual width, and they so lie that only a passage to the left is possible; then currents swirl below so that rocks will be hard to avoid. "If we only had six inches more water," moans Ron Smith.

THE CREW IS tense as we shove off. Life jackets buckled on, hats and glasses tied on, everything buckled down, each holding tightly into two ropes, we ride over a swell and plunge deep into a trough. Then the boat partly lifts but doesn't rise far enough and the top half of the next wave crashes over us. This further holds us down,

and more waves drench us. Then an eight footer lifts the bow high while the stern is yet in a trough. Our seats give way beneath us and we are hurled a foot or more out into the air, but hang on to the ropes that reconnect us to our seats. A couple of canteens and a camera get loose and flap in the air and I watch the six river bags tied on the sausages lift off the pontoon and then watch the ropes tug them back aboard. Pop cans float in the front compartment, now nearly filled with water.

Suddenly we come down hard, with a loud crash that jars the whole boat. We have hit a rock, a big one. A grinding crash follows as wood and fiberglass splinter. Blinded by the water, it is difficult to see just what



Colorado River Snakes Through Beautiful Walls Of Grand Canyon

has happened. We spin around, the stern pointed downstream, the bow stuck in the rapid, hung up on the rock. Some body sprawls over the front to see whether a pontoon has punctured but cannot see through the water piling up on us. The skipper shouts to get to the back of the boat and we scramble to the rear to take the weight off the front, hoping we will float free. The rock beneath us grates against the floor as the current pulls us loose. Downstream we stop to inspect the damage. The front compartment is fractured in three places, and a corner by which it hangs onto the pontoon has been torn loose, but we go on, concluding that repairs can wait till sunset.

LUNCH IS LATE at Shinumo Creek. Hidden up a narrow side canyon is a delightful plunge pool. A little waterfall pours in warm water; we soap and shower beneath the falls. An added delight is a rock corridor that runs round to the right by which you can crawl behind and dive out through the falls.

The level above us of the unconformity between sedimentary rock and the schist and gneiss of the inner gorge has been lowering. Camp is where the unconformity contacts the river, just below Elves Chasm. Flat sandstone strata are etched into a wall 300 feet above us, and a grotesque ragged butte towers high over that. Talus rocks are of every type, shape, color and pattern. I sleep on a sand dune.

Wednesday August 2. Our breakfast is interrupted by the thunderous flapping of a Bureau of Reclamation whirlybird bringing another load of ice, drinks, and the morning papers to the congressmen camped a mile up river. Our river men

are angry at the VIP treatment, as they have asked and been denied permission to use helicopters to supply their boats.

We drift down Conquistador Aisle, where the river forms a majestic promenade between cliffs that rise up and up. So muddy is the river that when, in the 100 degrees heat of the day, we pass a rapid that spews up especially fine spray, the atomized droplets evaporate in midair to leave a fine dust which rises in thin brown puffs above the water. Our clothing is now stained the color of the river and matches our well-tanned skin. The mud splash we constantly receive dries to leave a brown film of caked silt.

THE RIVER NOW turns north, as we enter the Middle Granite Gorge. Dark rock reappears, glistening like anthracite coal or the steel blue black of a gun barrel. Rapids trouble us today because of low water. At Deubendorf we wait an hour and a half in the midday sun, dipping into the river to keep cool, but the water does not rise. The pontoons have to be constantly wetted too when we wait, unless we deflate them some, for they will overinflate and burst. Eventually we walk around the rapids to lighten the boat.

Turning west, the river enters the Granite Narrows and reaches its most narrow point. We put in for the night at Deer Creek Falls, where a sidestream plunges 150 feet across the Great Unconformity, just as the tributary enters the river. We swim and begin to set up camp when a copter descends to land on the sand bar just across the creek. One of the congression-

al party failed to hold on in the Deubendorf run, was flung about the raft, broke his nose and cut his head badly with profuse bleeding. He has already been airlifted out for hospitalization and the chopper is here for two more who have decided to quit the party.

The Udall group has lost three motors in today's run and a new one has been flown in. This is why Ron has three identical motors aboard, tools, parts, and even the motor manual. There is also a radio with which we can contact passing aircraft, having them relay emergency messages out of the canyon.

The dinner fare is 40-mile stew, a delicious hodge podge—disconcerting only as we learn that its originator and the best chef on the river capsized and drowned a month ago at what will be our first rapid downriver tomorrow—Upset Rapid. The stew settles better when we learn that drownings have been remarkably few on the Colorado, only this one in the last twenty years. We are glad for the fresh water, for we are tired of drinking the river water.

WE HAVE COME today 14 miles, a total of 136 miles, dropping below 2,000 feet. This accounts for the increasing heat. At bedtime, my vision is restricted by the high canyon walls, but even so, myriads of stars appear through a ribbon belt in this rock-roofed world. I count a dozen falling stars in twice as many minutes, then fell asleep, lulled by the dull roar of the river at my feet and the higher pitched hiss of the plume falls above.

Thursday, August 3. A long day and a grand one, 49 miles.

Upset Rapids is bad only if you hit the big hole, a deep dropoff that can flip even a craft of our size. But we shoot by the hole, gasping at the turbulent hell of foam and thankful to be twenty feet to the left of it. Much of the day is spent alternately gaping at tier after tier of crags and cliffs and snoozing in the sun, as we become satiated with the vast scenery, then waking to wonder whether perhaps we are not dreaming yet of turrets and bastions on some great medieval fortress.

We lunch near Havasu Canyon, where a five foot entry at river level opens into a vast, labyrinthine lateral canyon. Here we pass from the National Park into the Grand Canyon National Monument. The Bridge Canyon dam, if built, will back water into this area. Late in the afternoon, the red rock becomes coated and plugged with a dark basaltic lava. The great eruption once dammed the river. What a mixture of fire and water that must have been! A gigantic lava pinnacle, called the Niggerhead stands erect in the river. High above us a thin plume of water pours out then hits rock, spills off it and drops again in its descent to the river.

TO INSPECT LAVA Falls we climb a high bench laden with lava and barrel cactus. This rapid is so treacherous, noted for its huge boiling holes, that, until the coming of pontoon rigs, it was never run by boat but always ported or lined. This one I spend an hour walking around to photograph, but I can get off only four shots in the moments that it takes the rapids to sweep the raft through.

Friday, August 4. Two burros are spotted at riverside about

mid-morning, descendants of animals abandoned by the early Spanish explorers. By afternoon we run our last rapids, Diamond Creek, Travertine, and Mile 231 Rapids, and are soon in the long stretch of water where all rapids have been silted in by Lake Mead below us. The water is quiet and the run becomes monotonous, though the sublime panorama is undiminished.

In the late afternoon we pass Separation Rapids, which, prior to their silting, were among the wildest of the river.

AFTER 61 MILES today, camp is an uneasy one as we are in a creek bed subject to frequent flash flooding and there is a thunderstorm brewing as we go to bed. But no higher ground is available.

Saturday, August 5. We leave not long after daylight, as we hope to cut the trip short and make the long haul 66 miles into Temple Bar on Lake Mead in one day. We ride loose and lazy, life jackets thrown aside and gear simply tossed in.

The Grand Canyon ends ab-

ruptly at the Grand Wash Cliffs, and we emerge on Lake Mead, elevation 1,000 feet. It is yet another seven hours at our slow 5 m.p.h. crawl to Temple Bar Marina, and we do not arrive until dark, barely beating a squall into port.

In over three hundred miles we have dropped 2,107 feet, run 107 rapids, and known a great adventure on a great river.

Dr. Holmes Rolston III, pastor since 1959 of the Walnut Grove Presbyterian Church, recently completed a boat ride down 300 miles of America's wildest river — the Colorado through the Grand Canyon rapids. Mr. Rolston, an amateur naturalist, recently wrote a story about the native fauna, flora and natural history of Washington County, and this is the day-by-day report of the wild river ride. His pastorate in Bristol has terminated and he will soon begin a graduate program in philosophy at the University of Pittsburgh. He took the river trip beginning on July 28 and ending on Aug. 6 after leading a Philmont Scout Expedition in New Mexico composed of members of the Sequoyah Council from June 28 to July 8.



1968

moved to Colorado, August 1968

Nov. 28, 1968. Thanksgiving. Light snow night before. Ft. Collins to Denver, west from Denver to Berthoud Pass, in light snow fall. 2 ft. of snow at the pass, and skiing there. Road snowpacked. To Winter Park and watched skiing there, including jumping. Moffat tunnel west portal is here.

To Granby and Kremmling in Middle Park. Road variously snowpacked or not. Saw shorttail weasel, in white, black tip tail on roadside. No motel open in Kremmling. Muddy Pass (8,772) is easy climb. Represents Divide here as it runs on Rabbit Ears Range. Not far onward is Rabbit Ears Pass in Park Range, divide again. Rabbit Ears Peak is notable here.

Beyond Rabbit Ears Pass is exquisite stretch of upland country mixed coniferous forest and upland meadow. Some 2-3 ft of snowpack here. Then long descent into Yampa River Valley and Steamboat Springs.

Nov. 29, 1968. Temperature was 15 below and car wouldn't start. Lovely day, trees in area are coated with rime. Drive back up Rabbit Ears Pass, much more of a climb from this side. Through North Park to Walden, lunched there. Country is well snow covered. Lovely view of Park Range, including Mt. Zirkel on west, and Front Range, including Medicine Bow Range on east.

On to Laramie, crossing lower region of Medicine Bow Range in extensive upland, coniferous forested, similar to that of the Rabbit Ears area.

Dec. 1, Sunday. Three hour walk up Empire, Devil, and Labeau Gulch, west of Horsetooth. Up Jeep Trail as indicated. New road built in here not shown on topo map gives more ready access to the area, which is posted. Cottontail rabbit. Rocks are sedimentary, but further in igneous and metamorphic, with much metamorphic float in the streambeds - probably.

Dec. 7, Saturday. Hike up West White Pine Mtn with Don Crosby. Lovely Day. 1 1/2 hours to Buckhorn Ranger Station, started hiking about 8.30. Auto road up sometimes snowpacked but no problem. Crystal Mountain Road probably impassable without four wheel drive. Jeep road to firetower, easy climb, but toward summit with about 1 foot of snow, more in drifts, made walking up difficult. Coming down no problem. There is a spout spring about halfway up in open area.



Sign in saddle indicates Flowers Trail. Excellent view from firetower; panoramic. Most prominent is Mummy Range; also Long's Peak and Meeker, probably Twin Sisters. Lookout and Crystal Mountains more adjacent. In the far distance, most probably the Park Range, across North Park. Horsetooth is clearly visible, and also out into plains, though hazy here.

Roadside driving up: two cottontail rabbits. Many tracks of deer, rabbits, and small mammals; also some tracks probably fox or coyote. Chickadees, jays, flushed one grouse.

Carried light packframe with down jacket up; wore ski, jacket and sweater. Atop used down jacket in 40-50 mph wind, and wore it down. Worked well. Taped heels in advance & used long cotton socks and over that wool socks. No blisters, about six miles.

Dec. 13, 1968. Stuck on Crown Point Road, with Don Kisiel. No snow on roads lower elevations, but got into considerable snowpack about 9200 ft., 2 miles above Salt Cabin Park. Got stuck about 8.30, worked till noon getting it out. Succeeded by jacking car up so that the wheel in the ditch had level or down-hill grade out, and similarly with the front wheel. Lovely day but cold, though not objectionably so. Lunch at Salt Cabin Park, then returned uphill about one mile to Jeep road up to mine prospect, and on over, down, then up to open summit at 9135 (see topo).

North side of hills had up to a foot of snow, south sides much less. Windy on top. Good view of local terrain, back to Grayrock and out over the plains. East and West White Pine Mountains visible from here, also Crown and Grown Point (but not higher Mummy Range, e.g. Commanche and Fall). Some of Rawah's visible. Uneventful return. Cottontail rabbit, deer and probably coyote (or dog) tracks, half dozen red squirrels, crows, maybe ravens, Stellar's Jay.

Dec. 14, 1968, Saturday. Snowshoeing in Rocky Mtn National Park, with Jane, and Don and Charlotte Crosby. Showshoed up to Dream Lake from Bear Lake, round trip 2 miles. Snow in drifts of several feet in places; other places little or no snow. Trip could have been made on foot without trouble.

end 1968.

1969

January 11, 1969. Saturday. Halfway to Signal Mountain. To Drake and thence to the Glen Haven area, turning off and a gate prior to the North Fork Picnic Ground. Hike made with Sierra Club. Jim Wagener, from Oregon, is president. National Forest service has access to the land this way. See other access on map. Dirt road up Dunraven Glade to a saddle where Signal Mountain Trail leaves. Go through another gate halfway up the glade and reach a saddle with locked gate and open area for parking.

Hike was originally scheduled for Lookout Mountain, but group did not want to make the drop from Bulwark Ridge down into Miller Fork and then climb again to Lookout (See Indian Trail switchbacks on map). So we took the Signal Mountain Trail. There was no significant snow to the top of Bulwark Ridge and signpost, about 1 mile, but thereafter snow became increasingly deep and retarded travel considerably. We went perhaps three of the five miles toward Signal Mountain, ate lunch atop a lookout rock and returned.

Rocks are notable for large and coarse xtals, including some of tourmaline 3-4 inches across and 6 inches long. One member of group found a freshly shed deer antler in excellent condition. The aspen in this area, especially where we first reached the top of Bulwark Ridge are much scarred by elk, and there were fresh barking scars both on standing trees, and more notably on blowdowns. See pix, Contor, Bighorn, Elk, Deer in RMNP, p. 28.

January 18, 1969. Rocky Mtn N. P. Spent day there deciphering the peaks. Mostly late afternoon saw 32 mule deer, few or no bucks, and 61 elk, many bulls. The elk were 24 in Little Horseshoe Park, and the remainder in Horseshoe Park. Seen about dark. Some majestic bulls.

Jan. 25, 1969. Drove to Ben Delatour Scout Camp and hiked in that area. Broken woods, mesas. Ponderosa pine, sage. Same sign of elk, rabbits. Light snow cover. Nice view of perched hawk, later soaring. Probably a rough-legged hawk.

Feb. 1, 1969. Hike up Hewlett Gulch, from Poudre Park, to Bidwell Mining Claim. Gentle to negligible climb. Sage-Ponderosa belt. One adit open and easily accessible. The mine seems to be worked enough to keep the claim open.

Feb. 8, 1969. Short hike along South Lateral Moraine with Jane. We tried Bierstadt Lake trail but it was too deep in snow. Eight deer afield, one a buck that had lost one antler but not the other.

Feb. 15, 1969. Hike up Prohibition Mtn, 9,140 ft. Road clear of snow above Rustic, but towards latter part of stretch up Prohibition Mtn drifts across road. Parked car at last switchback, where the road is deeply drifted, but there are by-passes. Over the highest part of the road there are northern exposures with drifts across road, perhaps impassable. Short hike up Prohibition Mtn.

View from top is good, West White Pine Mtn, Signal Mtn, Stormy Peaks, and Sugarloaf. Other Mtns apparently obscured with cloud cover. White-breasted nuthatch and mtn chickadee? One hawk. Ponderosa and limber pine on top. Returned to explore mines in vicinity. Ore uncertain. Much hornblende, considerable epidote.

Mar. 1, 69. Rocky Mtn. N. P. with Dr. Dave Harris, geology dept., CSU. Left in time to arrive at daybreak. 29 elk in Horseshoe Park area, some near road. 32 deer in small groups of up to a dozen, mostly in morning. Clear sky earlier in day, clouding up by noon. Earliest clouding was thin wisps condensing over the high peaks. No deer had antlers. Shed them?

Studied the peaks in mid-morning, with topo sheets and relief maps. In addition to skyline west of Longs, noting Little Matterhorn, The Gable, and Castle Rock, also noted Bighorn Mtn, Dark Mtn, and MacGregor.

Met Dr. Harris at 11.00, and stopped at North Lateral Moraine, noting faceted boulder(s). Object of trip was a roche moutonnee in center of Moraine Park. South and North Lateral Moraines do not abut the bedrock walls presumably because there was ice on either side; they are medial moraines. Subsequently drove to Bear Lake. Lake was frozen, considerable snow cover, and you could walk out on it. Typically 3' of snow here, drifts to 6'.

Returned via Devil's Gulch and Glen Haven. Tourmaline xtals abundant at roadside, but not easily dislodged from rock.

Half dozen mountain bluebirds in Moraine Park (not a winter resident?); magpies, Stellar's Jays, Rocky Mtn Jay, raven, woodpecker. Gray squirrel, with very prominent tassel ears. (Later: Abert's squirrel, probably.)

March 8, 1969. Day's drive thru Pawnee National Grassland, western half. 2-4" of snow afield, and drifting in roads which were generally passable, but at points I had to re-route. Cold day. Horned larks by the hundreds of thousands. Some mallards, green-winged teal, and pintails on one lake. Many hawks, tough to identify. Jackrabbit flushed from brush at one point. No antelope seen. Get better maps of this area before returning.

Apr. 5, 1969. Field trip with ornithology class. Return later in day in car; first time on bus. Out on Colo. 14 to RR, then turn left (north). 1st pond about 2 1/2 m. north. Later to three ponds north of Cobb lake; then to prairie dog colony; first road north of 3 ponds, turn east and go gently uphill, half mile. Burrowing owls here, and prairie dogs. Last stop a marshy area further north still, on Nunn Road.

I. Surface feeding ducks

1. Shoveller. several hundred seen. 5 alternating areas
dark (head), white (breast), dark (cinnamon sides) white (patch toward rear) dark tail.
2. Mallard - dozens seen

3. Gadwall - dozens seen
white wing patch - 'speculum'
4. Pintail - dozen seen
long 'pin' tails, white line up neck
5. Baldpate = Am. Widgeon several seen
white 'bald' stripe on head
green patch on side of head

Teal, included in surface feeding ducks ducks of half size.

3 of these:

6. Green-winged Teal
white mark in front of wing
7. Blue-winged Teal
blue wing patch; white crescent in front of eye
8. Cinnamon Teal
cinnamon red; blue wing patch

II. Diving Ducks

1. Lesser Scaup - thousands of these seen skaup - as in "saw"

scaup are ducks
black at both ends and white in the middle
2. Greater Scaup
3. Bufflehead - few seen
smaller duck; notable white patch on head
4. Golden-eye - 'whistler' from sound of winds
white spot between eye and bill
5. Redhead
grey with red head
6. Canvasback
white with red head

Gulls:

five here, all nest inland, 3 white-headed

1. California Gull
2. Ringbill Gull

3. Herring Gull

2 with black on head

4. Franklin's Gull - in great numbers in fall

5. Bonaparte's Gull

Other water and shore birds:

Coot - slate grey, whitish bill

Grebes:

1. Pied-billed Grebe - 'pied' 2 colored

2. Eared grebe

3. Western Grebe - later in the migration

Killdeer

Virginia Rail - call is conspicuous in evening; secretive birds

Sora Rail

Sandpipers

Plovers Greater

Yellowlegs

Lesser Yellowlegs

Dowitcher

Other birds:

Burrowing owl - in prairie dog colony. Diurnal. They use prairie dog holes (tho they do not prey on them), and though they can dig their own holes.

Short eared owl - might also be seen daytime.

Great Horned owl - sometimes seen perched in day.

Redwing Blackbirds - males come in in migration before the females, and as the females come in they flash more red in the wing.

Pine Siskins - 300 seen here recently

Common Goldfinch

Greenbacked Goldfinch

Sparrows:

Savannah sparrow - on prairies

Song Sparrow - prefers marshy area here.

Pheasant - couple dozen seen

Kingfisher

Meadowlark - males arrive a few weeks before the females and establish a territory.

Muskrat seen at first pond.

Hawks:

commonest three:

(1) Marsh Hawk - Harrier - white rump, low over ground, long tail, slim bird. V wings.

(2) Swainson's Hawk - common in summer. White at base of tail (above) wide dark breast band.

underside of wings: light front linings; darker rear flight feathers

(3) Am. Roughleg - here in winter; moves to Alaska in summer.

white at base of tail (above) black belly

black wrists on wings.

(4) Redtail

Accipiters:

Cooper's

Sharpie

Falcons:

Sparrow Hawk - Kestrel - some rufous

Pigeon Hawk - Merlin - small, robin-sized - no rufous.

Prairie Falcon - black patches where wings join body

Peregrine Falcon - Duck Hawk - rarer; dark colored.

Apr. 12, 1969. Return to ponds north of Cobb lake.

pheasants - half dozen

meadowlark
robin
house sparrow
magpie
redwing
muskrats - several
starling
squirrel
kingfisher
blue winged teal
green winged teal
cinnamon teal
bufflehead
pintail
redhead
gulls: ring-bill
 California
 herring
gadwall
shoveller
mallard
scaup
coot
yellow headed blackbird
cottontail
western grebe
Am. merganser - here and later in Poudre Canyon
Canada goose
avocet
widgeon
kildeer
pied billed grebe
prairie dogs
marsh hawk

Circle route up Poudre Canyon and return via Stove Prairie and Rist Canyon. Pasque Flower frequent and in full bloom. Willows budding. Alder catkins down, but not a great deal of signs of spring. Cloudy day, with moderately heavy rain at summit of Rist Canyon. Zoom scope performs well on a day like this, no heat waves to distort high magnification.

Apr. 20, 1969. Sunday evening. Ponds n. of Cobb Lake.

Calif. gull
coot
avocet
white-faced ibis
great blue heron
cinnamon teal
blue winged teal
green winged teal

yellow headed blackbird
redwing blackbird
gadwall
shoveler
scaup
mallard
pintail
bufflehead
pheasants
sora
marsh hawk
muskrats - several and tame
jackrabbits - 6 or 8

Heard sora call, a plaintive ker-wee, with rising inflection. On record, q.v.

May 6, 1969. Two coyotes in field behind 1712 Concord. They crossed the field in a period of about 20 minutes, entering from west and casually investigating a number of things as they went. Gray with some rusty, narrow noses, and tail down when trotting. Climbed the haystacks to look out from the top. Lost sight of them about the creek. Watched thru scope. Rainy day after 24 hours of rain.

May 3, 69. Raccoon dead on roadside.

May 69. Coyotes subsequently heard howling on several nights.

May 10, 69. Geological Society trip to Crystal Peak, Florissant area.
Found some fragments of large orthoclase (or microcline xtals); also petrified wood. Little vegetation out at this elevation, mountain bald cactus.

May 17, 69. Early a.m., field trip with ornithology class. Cold and foggy. At Laporte Lions Park:

blue jay
house wren
flicker
great blue heron
dove
chickadee
thrush - Swainson's? Gray checked?
magpie
kingfisher
warbler - myrtle?
kildeer
western tanager
goose
mallard
At Bingham Hill: lark sparrow

At Watson's Lake:

evening grosbeak
spotted sandpiper
yellow warbler
cliff swallow
violet green swallow

Subsequently drove up Rist Canyon, then up Buckhorn Canyon, and return via Pingree Park road and Poudre Canyon. Less and less vegetation in evidence yet, and at Pennock Pass virtually winter condition. Some snow left at this elevation. Clear day with lovely views. Two deer in Buckhorn Canyon. Marmot. Prairie dogs?, raven? approached very close.

Collected and subsequently keyed:

Pussy Toes	<u>Antennaria</u> sp.
Western Wallflower	<u>Erysimum aspergum</u>
Whiskbroom Parsley	<u>Harbouria trachypleura</u>
Wild Onion	<u>Alium textile</u>
Mouse-ear Chickweed	<u>Cerastium arvense</u>
Nelson's Larkspur	<u>Delphinium nelsonii</u>
Golden Corydalis	<u>Corydalis aurea</u>
Wolf's Milk	<u>Euphorbia esula</u>
Common Shadbush	<u>Amelanchier alnifolia</u>
Snowball Sanlfrage	<u>Saxifraga rhomboidea</u>
Foothills Penstemon	<u>Penstemon virens</u>
Skullcap	<u>Scutellaria britonii</u>
Veiny Dock	<u>Rumex venuosus</u>
Blue Clematis	<u>Clematis columbiana</u>
Common Harebells	<u>Campanula rotundifolia</u>
Death Camas	<u>Zygadenus veneuosus</u>
Sand Lily	<u>Leucocrinium montanum</u>
Common Lupine	<u>Lupinus argenteus</u>
Prairie Evening Primrose	<u>Oenoethra alibcaulis</u>

Apr. 26, 69. Cobb Lake and Poudre Canyon, return via Red Feather Lakes Rd. At Cobb Lake area:

coot
gadwall
shoveler
Calif. gull
Am. Widgeon
white faced ibis
scaup
western grebe
pintail
redhead
mallard
bufflehead
cinnamon teal
pheasant
blue winged teal

meadowlark
green winged teal
white capped sparrow
yellow headed blackbird
shrike
magpie
barnswallow

female marsh hawk - very close in, cry like tin whistle.

Enroute up Poudre:
sparrow hawk
mtn. bluebird
mourning dove

Snow flurry at head of climb above Rustic at Pingree Hill. A few early flowers out here - Pasque Flower; Spring Beauty, Draba; Cut-leaf Daisy. Prairie dog colony of considerable size between Manhattan and Scout Ranch, not far after turnoff east. Several deer seen here. Cooper's hawk.

May 25, 69. Hike up Greyrock Mtn., with Jane, Don and Bonnie Kiesel. Picnic lunch in Ft. Collins Water Plant area, then afternoon hike. Girls went half-way up. Trail climbs in stream side area, at this time lush with vegetation and much like a similar area in eastern mtns. Spring vegetation at prime. Later, trail leaves stream and rises up canyon wall, then arrives at a large flats, broken forest, with nice view of Greyrock above.

Trail then proceeds with more difficult climb up west side of Greyrock with final approach from north. Several interesting ponds close to top. (could be used for drinking water if boiled?). Notable view from top of plains, environs, and distant mtns. Threatening thunderstorm when we were on top. Time to climb: about 2 hours; return about an hour and a half.

May 24, 1969. Field trip with ornithology class. Ft. Collins waterworks.

Bullock's oriole
hummingbird - notable tail flutter sound
Lazuli bunting
song sparrow
spotted sandpiper
Virginia's warbler
siskin
canyon wren - notable descending call
Western kingbird
Rufous sided towhee

May 28, 69. Field trip with Ernest Wolff & Mac McCallum & geology students. To Masonville. Over Horsetooth, you descend thru the sequence, Dakota, Morrison (a grey, weaker rock just past summit going westward; the famous dinosaur formation, tho none here), then into a Lykins Valley. The Lyons is next; a ridge maker, famous for building stone; CSU is built of it. Next is Santakna, a little valley maker, seen here, then Ingleside, a ridge maker.

The Fountain follows, a big valley maker. But the Fountain at Boulder and Colo. Springs, forms the flatirons, and Garden of Gods respectively, a notable ridge maker. Here the cement is different. Then you enter preCambrians. Horsetooth is pre-C. But the section is repeated in

the Masonville vicinity due to faulting.

Up Buckhorn creek toward the pinching out of a fault there. Stopped at notable here, walked over toward highline ditch, walking out of sedimentaries, and across the contact to good metamorphic exposure. Notable for s1 and s2 surfaces, also, but less obvious s3. the s1 is presumed to be relict bedding; the s2 is more obvious, and elsewhere is the only obvious surface.

To Big Thompson Corner, and then over on canal to look at a xenolith exposure. The country rock is a quartzo-feldspathic schist, tho it seems a quartzite, dark. It does not split, is massive. But schist need not split; the thing is not to have layers of unlike material (gneissic). Some would call it a semi-schist. Meta-quartzite would not get it; as it is 30% feldspar.

At this location a tonalite (= quartz diorite) has invaded the quartzo-feldspathic schist, and great chunks of the schist are xenoliths in the tonalite.. Cross the canal just above tunnel for this location.

Return to location on canal n. of highway. Here is a graded bed series, now metamorphosed. White cattle are Charolais.

Country rock in Big Thompson Canyon is quartzo-feldspathic schist, with injected tonalite.

Morrison is well exposed beyond Ted's Place.

Above Drake, in pegmatite area. Hiked up stream with various float, and bedrock. Sillimanite and andalusite? are metamorphic minerals here, tho for the most part now altered to mica, etc. Darker rock has ilmenite and clinozoisite in it. At upper reach of hike, a staurolite-amphibolite. Staurolite porphyroblasts. The sillimanite and andalusite form clots in the metamorphic rx, even tho penetrated with mica. Sizeable beryl xtals not far above road, locate by dead tree.

Andalusite is unaltered at head of Cedar Park road (see topo); in road cuts.

East to West

Dakota - ridge maker, the first one

Morrison - under it, still the ridge

Lykins - the first valley

Lyons - ridge maker, the next ridge

Santana - under the Lyons, and a little lower ridge

Ingleside - still a ridge maker

Fountain - lesser valley maker

Breakfast with Jim Frumm. Chuck Beverly did rx in Rustic area, M.A. thesis

June 5, 69. Hike up Signal Mtn, with Don Crosby. Left 8.00, started hiking 9.30. Climb to crest of Bulwark Ridge and then up the ridge. Lunched at over-look some 3 miles up; then on to summit. Open areas prior to summit make latter part of hike more interesting. Some flora out, but still somewhat winterish.

Several sizeable snow drifts yet in last mile of walking, provided snow to quench thirst. This could have provided water for camp, also there were several run off meltwater streams. Nice view atop. Found two elk antlers dropped, both in vicinity of summit. Much elk sign. First hike with Voyager boots; did very well brand new. Round trip about 12 miles. Ptarmigan ? on return. Return about 5,30

Later: No: Blue Grouse. Ptarmigan do not venture far below timberline, and are smaller.

Collected:

Mtn Caraway	<u>Aletes acaulis</u>
Rock Primrose	<u>Adrosace septentrionalis</u>
Alpine Primrose	<u>Primula angustifolia</u>
Alpine Forget Me Not	<u>Eritrichium elongatum</u>
Marsh Marigold	<u>Caltha leptospeala</u>
Globe flower	<u>Trollius laxus</u>
(Drummond's) Rockcress	<u>Arabis drummondi</u>

June 9, 69. Up Poudre Canyon to Manhattan area with Mac McCallum. He was giving instructions to student mapping in Seven Mile Greek Area for master's thesis. Old gold mining and prospecting in this area. Halfway up the climb from Rustic, and again right at top are tertiary intrusives, a rhyo-dacite. Hard to be sure about what the ground mass is here.

Most of this area is Log Cabin granite, a batholithic intrusive from pre-Cambrian time, intruded into pre-Cambrian rx. gneiss & schist.

It is not greatly altered since pre-Cambrian times. The ridge north of Goodell Corner, parallel with road to Manhattan is a silicified shear zone core, now more resistant than the surrounding area.

Lower Poudre Canyon rx are a biotite sillimanite schist. Some good sillimanite can be found in road cut near Pingree Park turnoff. The whole canyon area is in the sillimanite zone. The Log Cabin granite is characterized by good Carlsbad twins in the orthoclase.

The Poudre Canyon follows in the upper reaches a shear zone, here weaker than surrounding rx. Where there are flats the canyon is in the shear zone, but the narrows are typically entrenched meanders. Notable landslide area seen enroute.. This is too low down to have been Wisconsin glaciation.

Bellvue Dome (Goat Hill) domes n-s, in Bellvue area.

June 13, 1969, Friday. Trail Ridge Road, with Jane. Heavy cloud cover when we left Ft Collins, a rainy period for 3-4 days. Persisted until Estes, when there were many open views, with much recent snow in high mtns. Lovely views in and out of cloud until Forest Canyon overlook. Lunched here in spitting snow. Heavier snow and hail onward in the afternoon, limited visibility at Fall River Pass.

Return in snow and snow mixed with rain as far as Loveland. Predicted danger of frost tonight. Almost no flora out at timberline and above on this drive. Long's Peak is bathed in snow and ice equipment (axe and crampons) required for climb.

June 20, Friday. Hike alone to Ypsilon Lake. Round trip 10 miles. Easy walking up good trail. Little flora out at lake, but much is out at lower elevations. Half dozen elk seen in upper Horseshoe Park. Audubon's Warbler.

June 28, Saturday. Saw bighorn sheep near Poudre Lakes at Milner Pass, with Clements. Two adults, presumably ewes, and one lamb. Brief view of them running from us, 100 yards distant. Beaver at Glacier Basin.

July 1-5. Trip with Clements to Great Sand Dunes, Mesa Verde, Durango.

July 10, 69. Thursday. Hike alone to Chapin, Chiquita, and Ypsilon. Round trip about 8 miles. Hard hike, seem to have been affected by altitude, and total climb of 3,200 ft, all above 11,000 ft. Left Fall River Pass Road to ascend to Chapin Pass, thence over several knolls upward to the hogback of Chapin. Climb here about 11,000 ft to 12,400. Went to west summit of Chapin only. Descend to saddle connecting Chapin and Chiquita, about 400 ft, then climb from saddle (12,000 ft) to summit of Chiquita (13,100, about 1,100 ft climb. Descend to saddle between Chiquita and Ypsilon, at 12,800, then climb to summit of Ypsilon, 13,500. Return contouring to minimize re-climbing.

Return trip somewhat more difficult walking across fell fields. 6 elk at timberline between Chiquita and Chapin Creek. Several conies, one quite close.

July 15, 69. Tuesday. Hike alone to Specimen Mtn. At Gore Range Overlook on way in saw elk herds as follows. 95 elk on broad ridge below Specimen Mtn; 23 elk in Forest Canyon Pass area, and 11 elk in area southeast of that.

In hike up Specimen Mtn saw 4 bighorn rams, first on s.e. ridge, then on the Crater. Carried scope and got nice views. The sheep did not seem especially spooky here. 3 rams were about half curl, one smaller. Watched at considerable length both enroute up and on return. Good many people on this trail later in the day, but the rams were still there. Elk again visible from the top. 4 miles return, easy hike except for some reason a little hard on the feet. 1,800 ft climb to 12,500 ft.

Sept. 5, 69. Hike to Flattop Mtn with Don Kiesel. From c. 9,500 (Bear Lake) to c. 12,300, i.e. 2800 ft climb. One deer enroute to Bear Lake, and two more at the Lake. Good climb, very windy atop and we were somewhat cold, warmed up later on descent, and hailstorm as we finished. Wore new size 12 hiking shoes. Passed a dozen persons enroute. Lunched over Tyndall Glacier. Water Pipits ? feeding on insects on the snowbanks. Note pipit call. Basically no aspen yet turned; a few limbs yellow here and there.

Sept. 11, 69. Drive in RMP with Davenports. At higher elevations aspen are beginning to turn in considerable numbers. Very noticeable change since Sept. 5. 3 deer. Interesting play of sun on summits around Bear Lake at sunset filtering thru heavy cloudiness, though generally the day was fair and exceptionally calm.

Sept. 17, 69. Hike to Chasm Lake with Jane. 2400 ft climb, about 11 miles round trip. Left about 9.00. Nice day. In elevation this is about half the Long's Peak Climb. Long's Peak is by

now icy on cable route and snow covers the narrows so as to make climbing questionable. Talked with one who had attempted the summit and turned back. Met A. Thielen, Cincinnati M. D., who hikes here every fall at Lake. Presbyterian elder. Shelters at Chasm Lake and Jim's Grove.

Sept. 28, 69, Sunday. Drove with Jane into Wild Basin, hiked short distance to Copeland Falls. Aspen are colorful. Bracken along this trail, also later just above Glacier Gorge Junction near Bear Lake. Keyed Bearberry Honeysuckle, Lonicera involucrata, from this trail. Aspen are fantastic on side of Bierstadt Moraine, and the whole Bear Lake road is lovely. Picnic supper at Visitor Center parking area. Spent dusk trying to hear elk bugle over noise of traffic! At overlook over Little Horseshoe Park heard coyotes howl, then in Horseshoe Park area heard elk about a dozen times.

Oct, 3, Friday. Snowed all day in Fort Collins!

Oct. 4, Saturday. Snow continues, 10-12" in Fort Collins, though never more than 2-3 inches on the ground. Up to 8" on the ground in Denver. Went in the p.m. to Rocky Mountain National Park, with increasing amounts on snow on the ground on the drive in. In Bear Lake area 15' to 24" was lying on the ground and still snowing moderately hard. Hiked out from Glacier Gorge Junction for about a half-mile. Snow is especially laden on the aspen, which still have leaves for the most part. Then hiked around Bear Lake. Beaver swimming in the far end of the lake, seen at close range. Half dozen deer at various places. Heard elk bugle in the evening in Horseshoe Park area. Clear and warmer on Sunday (though much steam fog).

The earliest measurable snow in the fall occurred Sept. 8?, 1961 - 4.2 inches. The latest first snow of the fall was on Nov. 14, 1944 - 0.1 inches. The average date of the first trace of snow in the fall is Oct. 7 and the average date of the first measurable snow in the fall is Oct, 21. Rocky Mtn News, Oct. 6.

Nov. 6, 1969. Shonny arrives.

Dec. 6, Saturday. Hiked about 3 miles in Beaver Meadows area, RMNP. Some light snow on ground. Clear but windy. Later about 2 dozen elk in Little Horseshoe Park and Horseshoe Park.

end 1969