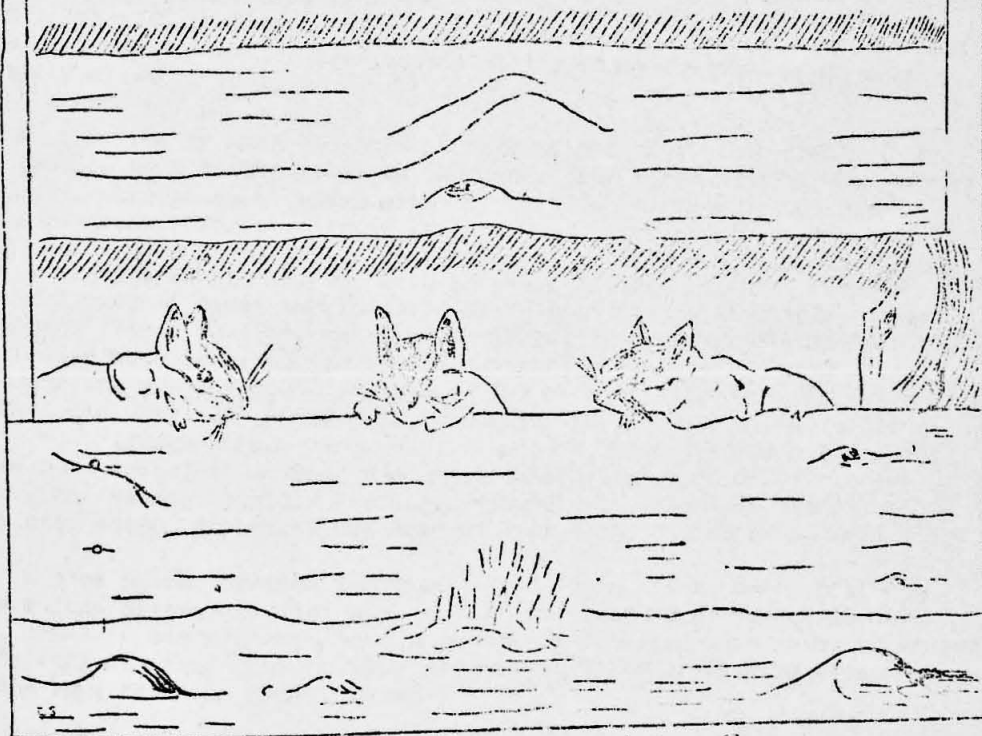


Nature Notes  
of  
Grand Canyon



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GRAND CANYON NATURE NOTES

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This bulletin is issued monthly for the purpose of giving information to those interested in the natural history and scientific features of the Grand Canyon National Park. Additional copies of these bulletins may be obtained free of charge by those who can make use of them, by addressing the Superintendent, Grand Canyon National Park, Grand Canyon, Arizona.  
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M. R. Tillotson, Superintendent. By - G. E. Sturdevant, Park Naturalist.  
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A VISIT TO AN UN-FREQUENTED PART OF THE GRAND CANYON.

On the south side of the Colorado river and in the western part of the park, lies a vast area of land which in bygone times rivaled other sections as a popular rendezvous for visitors. It was here that the Indian followed the mountain sheep to his rocky fastness among the crags and it was here that the prospector met with some degree of success in his search for nature's cloistered mineral wealth. Although the tourist no longer visits the region, the Indian abstains from hunting, and the prospector has abandoned his claims and dreams of wealth, a lack of intimate knowledge of the area prompted a patrol by Chief Ranger Brooks, Rangers Johnson and Niles, and the park naturalist. The journey occupied eight days of time and covered approximately sixty-four miles by auto and fifty miles on foot.

We traveled by auto via Pasture Wash Ranger Station to the head of Bass trail - some thirty miles to the west. The first part of the journey carried us through about seven miles of majestic western yellow pine (*Pinus ponderosa*) forest. After that the Coconino Plateau gradually revealed its true character of variation in vegetation. Stands of Utah juniper (*Juniperus utahensis*), with branches heavily laden with their bountiful crop of dusty looking blue berry-like forms, interspersed with pinon pine (*Pinus edulis*), and Gambel oak (*Quercus gambelii*), would give way to open meadows or to areas that appeared typical of an arid desert. Bordering the meadows might be seen clumps of cliff rose (*Cowania mexicana*), Apache plume (*Fallugia paradoxa*), fern bush (*Chamaebatia millefolium*), reed bush (*Chrysothamnus mohavensis*), and algarita (*Berberis fremontii*). In the more desert-like areas one could notice many species of cactus, Mormon tea (*Ephedra viridis* Joville), sage brush (*Artemisia tridentata*), and plants whose very existence depends upon their spires or pungent odor.

We even passed through one "dog town." However, no members of the large colony of prairie dogs were on hand to greet us or to scuttle to their homes at our approach, as the ground was covered with snow and frozen sufficiently to keep them in their respective holes until warm weather awakens them from the torpid state.

Before arriving at Pasture Wash Ranger Station, Big Jim's Tank, formed by a dam across a small draw, loomed up at our side. In the vicinity of the tank lives Big Jim, who by the way, is perhaps one of the most interesting members of the small Havasupai Indian tribe living within the park. Among other things Big Jim is third chief of the Havasupais, is the tallest

member of the tribe - standing, as he does, well over six feet, and as far as is known he was the only American Indian to have a medal bestowed upon him by King Albert of Belgium during the latter's visit to the Park in October 1919. When the first white people came to the Grand Canyon, Big Jim was living at the lower Indian Garden near the Bright Angel trail under conditions quite typical of his cliff-dwelling ancestors. Big Jim cultivates a small field of corn and beans near his tank and each autumn brings this picturesque figure, with high hat, thin beard, and white coat with silver coin buttons, to the village selling his produce.

A few flocks of pinon jays with their cah - cah' calls were sighted. Between Pasture Wash Ranger Station and Bass Camp, the jack rabbit and his smaller cousin the cottontail appeared particularly common. Fresh tracks of deer in the snow were noticeable and Rangers Johnson and Miles were fortunate enough to see a band of five before they disappeared among the junipers.

At Bass camp began the difficult part of the itinerary. To carry sufficient bedding, provisions for a week, canteens of water, and incidentals such as geological pick, kodak, etc., on one's back down an abandoned trail is no small task especially when snow partially covers the Canyon rim. Fortunately for us the snow-covered trail into the Canyon happened to be well-broken by deer that had used it, probably to descend from storms on the plateau. As we followed the tracks down the trail we discovered that deer were not the sole animals to use it. Tracks of the coyote, plateau wild cat, and small gray fox were unmistakably identified in the snow. The spurred towhee seemed to enjoy his retreat in the dense shrubs beneath the rim. On the east side of the trail appeared a small cliff dwelling. This was probably pointed out by the pioneer W. W. Bass when he guided the visitors down the trail and entertained them by reciting: --

"At your feet a human dwelling-  
See its crumbling walls today,  
Stone and mortar plainly telling  
Of a race long passed away."--

The top-most formation, the Kaibab limestone, appeared especially fossiliferous as one could view these forms once in the sea but now reposing in solid rock nearly 7,000 feet above sea level. On the west slopes one could see the accumulated results of nature's chemical agencies where some nearly perfect fossil forms have been etched out. At the base of the Kaibab limestone one enters the Coconino sandstone on the journey downwards. Some animal tracks were seen in the solid rock but they were so poorly-preserved that no attempt was made to collect specimens.

With the approach to Darwin Plateau, some 1200 feet below the rim, the last of the snow was left behind. Darwin Plateau is the name applied in this section to the Esplanade which is much broader here than in the eastern part of the park. Below Darwin Plateau occurs a change in vegetation. Pinon and juniper gradually give way to forms adapted to a lower life zone. Cats claw (*Acacia greggii*), Mormon tea (*Ephedra viridis* Coville), false sage (*Collegina*

ramosissima), and several species of cactus become the dominant plants. In the stream beds occurs Arizona red-bud (*Cercis arizonica*) - bare of leaves but with a few of last year's dried pods still clinging to the branches.

Although we intended to camp at Red Rock Tank in Bass Canyon, we agreed unanimously on a site beneath an over-hanging cliff on the Tonto platform about one mile above the tank. The ledge appeared most inviting but perhaps the deciding factor was the tolling effect of five long jolting miles we had just descended with heavy packs. Under the ledge we discovered five boards nailed together. They were about one by fourteen inches by six feet long. If the boards could have relayed ~~these~~ <sup>that</sup> story they would probably have told us about a ride by railroad to Grand Canyon, a journey of thirty miles by horse and wagon to the head of Bass trail, and finally a pack ride on the back of a burro until they were cached in this recess. Although the boards were probably never intended for such usage, nevertheless, they served us in the capacity of a most comfortable mattress. After being placed edge to edge, we raised the ends a little and made a family bed on the boards. A fireplace was arranged about two feet from the foot of the bed so that the heat would radiate back beneath the boards. Our canteens still held a sufficient supply of water to cook dinner, but in order to assure a supply for breakfast it was necessary to make sure of water at Red Rock Tank.

Water is one of the greatest problems at the Grand Canyon. Cutting of the Grand Canyon by the Colorado river and the nearly horizontal character of the formations has lowered the water table sufficiently to make it practically useless to drill for water. In fact most of the lateral canyons on the south side of the river are devoid of water during parts of the year. A canteen is therefore an absolute necessity to the hiker entering the Grand Canyon.

From the name "Red Rock Tank" one might be led to believe that a tank of water existed there. As we followed down Bass Canyon towards the tank, however, water indications appeared lacking. The intermittent stream contained plenty of dry sand but no water. In two or three places we discovered holes in the sand where some wild burro (a left-over of the prospectors' days) had been digging for water. At Red Rock Tank we found a small seep uncovered by a burro. Looking around we discovered several articles cached under a ledge, including pack saddles, cooking utensils, and the most-prized thing of all - a shovel. With the aid of the shovel, sand was thrown out of the seep and a small pool of good tasting water was the result of our efforts.

After filling our canteens and returning to camp, one member of the party cooked dinner while the others gathered cats claw for fire wood. Except for three cracked eggs and bread pressed into unusual shapes, all of our food supply arrived in good condition.

During the evening could be heard the intermittent hoots of the dusky horned owl. The blaze of our fire seemed to annoy a single burro as he descended the trail past our camp for water. He took up a position near camp and emitted a series of snorts until his curiosity was evidently satisfied. No mistake was made in choosing cats claw for fire wood. The heat radiated back beneath our board mattress until late in the night and the following morning found a thick bed of live coals.



After an early breakfast, the chief ranger and the park naturalist followed down the canyon to the river's edge while Rangers Johnson and Niles went east along the Tonto Plateau. The trail as the river followed the dry stream bed. Pools of water filled small basins secured out by rocks carried down in time of flood. The day was warm and one could see several species of lizards darting to cover beneath the rocks. A ledge of Bass limestone of Algonkian age was exposed below Red Rock Tank. Here one could see reefs built up by the primitive algal plants millions of years previously. The roaring of the Colorado could be heard long before we came in its sight. Near the river's edge the vegetation took on the appearance of spring time. *Thamnosma montana*, a member of the Rue family, was in full bloom. This plant probably owes its survival to the strong pungent camphor-like odor. Mariposa's tulips were already creeping through the soil giving promise to an early bloom. The old trail leading from Bass Canyon to the Bass Cable Crossing, opposite Shinumo Creek, is still visible.

The old cage, suspended on galvanized cables, did not appear as a safe means of conveyance so the idea of reaching the north side of the Colorado river was abandoned. The cable crossing formerly carried one across to the Shinumo Garden ruins near the mouth of Shinumo Creek. From the Shinumo Gardens, with their faint outlines of an ancient irrigation system, a trail formerly followed up through Muav Canyon to the Kaibab Plateau on the north rim.

While returning to camp, we noticed a circular pit of burnt rocks near Red Rock Tank. Such pits are common along most of the trails leading into the Canyon and are known as "mescal" pits. They were used by ancestors of the Havasupai Indians to roast the "mescal" (*Agave utchensis* Engl.). Some of the older members of the Havasupai Indians still roast the "mescal" but the outline of the pit has changed from circular to rectangular. (See Nature Notes Vol. 1 No. 4).

During our second night in camp we were awakened by a constant drizzle of rain. In our cliff shelter we were quite protected except for our feet which happened to extend beyond the ledge. The next morning we could see the Canyon walls blanketed in white as far down as the Redwall limestone. The rain had even extinguished our fire. This caused us no small amount of concern until we discovered the abandoned nest of a "trade" rat. The rodent had stored a quantity of fine twigs of oats clover and wormen tea along with numerous stones and spines of cactus in a protected crevice in the rocks. The dried twigs were most useful in getting our fire started.

After breakfast we suspended a portion of our supplies in a sack away from "trade" rats and started to Copper Canyon, about four miles to the west. A "mescal" pit was noticed about two hundred yards west of camp. Ranger Niles, who was in the lead, was seen to pick up a black and white object and cast it rather hurriedly to the ground. When the remaining members arrived the discarded object proved to be the tail of the Little Spotted Skunk (*Sailigale gracilis*). Tracks of the small gray fox about the remains might have led one to believe that the fox had eaten all of the skunk except the tail and possibly the larger portion of the scent.

A journey along the Tonto Plateau is most tedious. The air-line

distance across some of the draws is barely one hundred yards, yet to reach the opposite side it is often necessary to "zig-zag" follow the winding Tonto trail nearly one-half mile to the head of a long draw and out on the platform again on the other side.

Where the Tonto trail crosses Copper Canyon we found a cliff dwelling which made a very suitable camp-site. While smoothing the ground for our beds we discovered an inhabitant in this abandoned dwelling. The "inhabitant" proved to be a small scorpion. Mormon tea was gathered and several rows of the small branches made a most comfortable mattress. Two "mesquite" pits, one of which is fully twenty feet in diameter are present near the ruin. Indians probably roasted the "mesquite" in the larger pit for a number of years.

Still farther down the canyon is located the abandoned but locally rich copper mine. On the dump might be seen a wide variety of mineral specimens. Among the minerals could be listed the following; bornite, chalcocite, chalcopyrite, malachite, azurite, and argentiferous galena. We found it impossible to cross the river at this place into Hualapai Canyon where some of the finest asbestos in the United States is located.

Leaving Copper Canyon the next morning, we followed the Tonto trail west to Garnet Canyon - returning the same day. Between Copper and Garnet Canyons we discovered two more "mesquite" pits. Barrel, prickly pear, and pincushion cactus seemed to be particularly plentiful. In one place along the way we could see fresh signs where a burro had been feeding on all three species. Some were dug out and the roots eaten while in other instances the spiny leaves were eaten - the spines evidently holding no terror for this creature.

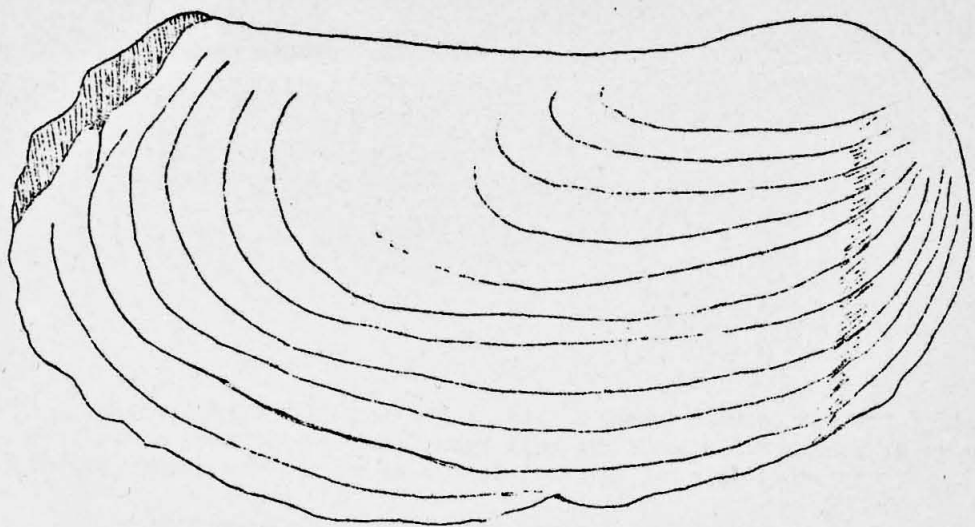
Although the Burro is cursed as a range destroyer, as a trail-maker he is unsurpassed by few animals. One pioneer once related that if he wanted to reach a certain ledge to prospect, he merely turned loose some burros and after a few months time he would find a trail with numerous zig-zags but with a uniform grade leading to his prospect.

The following day we journeyed back from Copper Canyon to Bass Canyon. A flock of juncos containing both Purber and Red-back species, was sighted along the trail. A single turkey vulture could be seen soaring in the vicinity of Darwin Plateau. The "trade" rat and White-tailed Chipmunk sought cover as we neared our former camp in Bass Canyon.

Arriving at camp we found our supplies un-molested. Rations were running low, however, thereby causing a change in plans. Three members of the party remained for an additional day and patroled east on the Tonto Plateau while the fourth member of the party returned to Pasture Wash Ranger Station to look for Indian ruins and collect fossils.

Although the Bass trail was bad on the trip into the Canyon, the recent rain and snow had made it noticeably worse on the journey out. One large land-slide had effectively blocked a small section of it.

Live oak (*Quercus wilcoxii*) branches, that had over-grown part of it, had to be forced around at another angle. A large and nearly perfect specimen of *Allerisma capax* Newberry was found in float material from the Kaitab limestone and was released from its rocky prison by a few taps of the hammer.

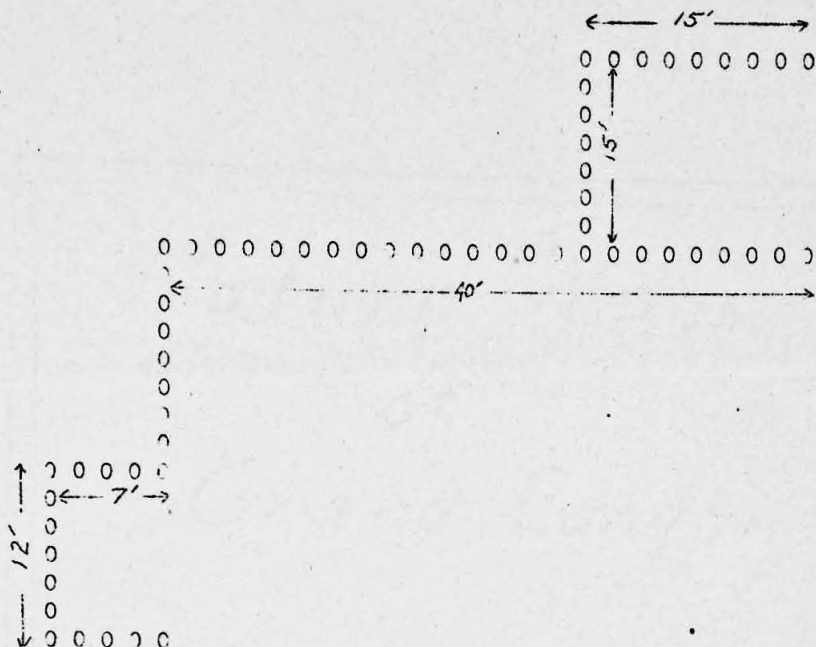


*Allerisma capax* Newberry  
(Actual size)

At Bass Camp, two Gila chipmunks were observed peering through the side of a house where a board was missing. The Kodak was set and snapped when the heads appeared. Later development of the film disclosed an excellent picture of three instead of two chipmunks.

Although snow partially covered the Canyon rim, a careful search in exposed places the following day was rewarded by the discovery of two Indian ruins. One of the ruins was circular with a diameter of about fifteen feet. Numerous fragments of pottery and one obsidian arrowhead were picked up at the ruin. The second ruin was rectangular in outline. Many fragments of pottery and one nearly perfect arrowhead were lying on the ground near it. A pinon pine fully one foot in diameter was grown up through the rock walls. As the rock walls had crumbled under the action of the weather unknown years before they presented a picture of a dilapidated stone wall about four feet

wide and one foot high.



East of Bass Camp and on the rim of Grand Canyon; several species of Permian fossils were collected from the Kaibab limestone. Many of the specimens were in an excellent state of preservation.

The coming of evening saw the arrival at the ranger station of the three members of the party who had remained an additional day in the Canyon. They had proceeded east on the Tonto Plateau to Turquoise Canyon. On the way they discovered two coveys of Gambel Quail. One covey was sighted north of the Grand Scenic Divide by Ranger Johnson while the second covey was discovered by Chief Ranger Brooks between Ruby and Turquoise Canyons.

The following day brought the members of the patrol back to Grand Canyon village in time to escape a heavy snow storm that would have necessitated a prolonged stop at Pasture Wash Ranger Station.

#### A NEAR TRAGEDY.

Asst. Supt. P. B. Patraw was a recent witness to one of the many life battles that take place daily in the great outdoors. As usual the strong was preying upon the weak but both participants escaped with their lives. Mr. Patraw came upon the scene about one mile east of park headquarters. Near the road he saw a "rock" having an outline of a very large hawk. As he called attention to the fact the "rock" started to flap its wings and become a hawk in reality. The hawk experienced difficulty in rising. He could be seen skimming the earth in a series of ups and downs with an Arizona Cotton-tail dangling in his talons. At last the cotton-tail broke loose and bounded to cover in the sage brush while the hawk circled the area for his intended prey.