NATURE NOTES FROM THE GRAND CANYON

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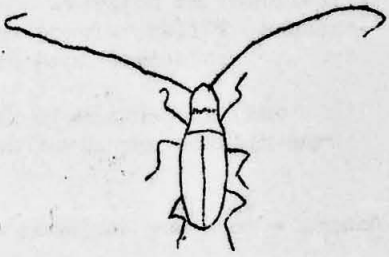
This Bulletin is issued monthly for the purpose of giving information to those interested in the natural history and scientific features of the Grand Canyon National Park. Additional copies of these Bulletins may be obtained free of charge by those who can make use of them, by addressing the Superintendent, Grand Canyon National Park, Grand Canyon, Arizona.

M. R. Tillotson, Superintendent, Edwin D. McKee, Park Naturalist

Table of Contents



SOME LIZARDS OF GRAND CANYON

By E.W. Count, Ranger-naturalist

Of the four lizards appearing on the cover of this issue, the central one will be recognized as the "Horned Toad" (Phrynosoma douglasii) which occurs on both rims and is prevalent in the Southwest in various subspecific forms. It is obviously not the same as the "long-horned" species of California. The color is indescribable - a gorgeous mixture that varies individually. Of the course, the lizard is neither "horned" nor a "toad."

The Desert Whiptail (Cnemodophorus tessalatus tessalatus) with the very long tail, occurs in the bottom of the canyon, notably near the lower end of Bright Angel Creek. Strangely, the scales of its tail are different from those of the rest of the body.

The little "Blue-bellied Swift" (Sceloporus sp.) with its two iridescent bluish stripes on the sides of the belly and the varying color to the throat, is represented locally as well as over a very large part of the western states by a number of species. There are some swifts in every life-zone of the canyon.

Sceloporus magister, the large lizard of the lower right-hand corner, is common in the bottom of the canyon. The color varies from steel-gray and white, to light brown and white. Popularly he is termed "Desert Scaly Lizard." This particular specimen has grown a new tail. It is common among lizards to sacrifice the tail when grabbed by that member, that the rest of the animal may escape. This accounts for the frequent occurrence of "stubby-tailed" lizards.

The white man is not unique in his prevailing aversion to reptiles; for the Indian has superstitions on a par with the popular belief concerning the wart-producing power of toads. A wise old Hopi comments:

"Old folks say if you tie string around neck of Machah-quah (the "Horned Toad") and you have hurt, then put him on hurt, you scratch hurt with him, then you get well.

"If women catch Machah-quah and tie beads - necklace you know - around his neck, they have many children."

Mountain Boomer: "This one have poison. Mustn't play with him, he make you nervous."

Blue-bellied Swift: "This one if you handle him, when you go on journey you get very thirsty. Old folks say."

And as for the poor Desert Whiptail, it is supposed to chase and urinate on one, causing death.

Messrs. Herrington and Henderson, the ethnologists, declare that the Town Indians do not distinguish species with any care, although they observe anatomical points to a considerable nicety. They even consider the

bat a bird. (Bureau of American Ethnology, Bulletin 56, Smithsonian Inst.) Mr. Bailey tells me, on the other hand, that Indians note even subspecies. A Hopi quickly named the above animals from the original drawing; but except for Machah-quah, I suspect that his tales apply to similar, as well as, or rather than, identical animals.

The chuckwalla, that strange, fat monster of the canyon depths, is eaten by some Indians. It is noteworthy, however, that of the four lizards on the cover, only the really loveable little Machah-quah is considered beneficial.

BRIEFS

March 23rd appears to have been the first day of Spring at Grand Canyon this year. On that date Chestnut-backed Bluebirds, Chipping Sparrows, a Song Sparrow, and some Gray-crowned Rosy Finches were all seen for the first time this season.

* * *

The Mourning Cloaks (Vanessa Antiopa) coming out of hibernation were the first butterflies to make their appearance this Spring. On March 14, an early warm day, quite a number of these made their appearance around Indian Gardens in the Canyon.

* * *

Some well-preserved marine fossils of Upper Cambrian Age were recently found in the Bright Angel Formation along the Tonto Trail. These fossils - some of the earliest forms of animal life, were preserved in greensand and thin shales. There were among them several species of small seashells or brachiopods (Obolus, Lingulipis, etc.,) and some trilobites - ancient crab-like animals.

* * *

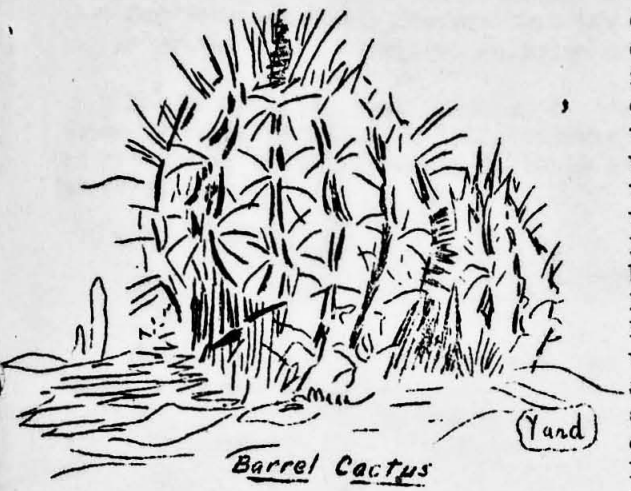
Three species of Juncos or Snowbirds were seen at the same time on March 15. These were the Schufeldt, the Pink Sided and the Grey Sided, all of which were members of a large flock of birds that visited the feeding station at the Park Naturalist's home.

* * *

Fishing should be good in Bright Angel Creek this year. Both Rainbow and Lochleven Trout are abundant and in good condition according to the report of Mr. Fred J. Foster, Fish Culturist of the US Bureau of Fisheries, detailed as expert for the National Parks.

OUR CACTUSES

By Miss Pauline Mead, Univ. of Chicago



Barrel Cactus

The great stretches of lonely desert from the Ute and Navajo country to the land of the Inca, is the home of the cactus. Where dry arroyos wind from purple hills through sage to the mosquito plains; where red cliffs echo the voice of the coyote, there the cactus gives water, food and shelter to the Indians, nests and protects the birds, and fights against the rainless air, the blazing sun, and the hot winds of the desert. The plant with its great variety of hooked and dagger-like spines is well armed against invading animals that would otherwise eat its succulent joints. It is so built that it can take up and hold what water it can get from the few rains. The greatest glory of the cactus, however, is hidden until spring, when it transforms the grey desert into a gay flower garden, for although the plant is wild, rugged, and uncouth it bears a most exquisite, delicate flower with brightly colored, waxy petals and a wealth of golden stamens.

In the Grand Canyon and on the bordering plateaus the cactus family is represented by comparatively few but very interesting plants. Down in the canyon below the Tonto Platform, growing with the mesquite and acacia are found cactuses, typical of Southern Arizona and Northern Mexico. The hedgehog cereus (Echanocereus engelmanii) large, red-purple flower holding a velvity bright green, lobed stigma above yellow stamens. One of the most beautiful of these cacti of the lower canyon region is a small round barrel cactus (Ferocactus lecontei) with long, red spines, some of which are hooked. The large, flat-stemmed prickly pear (Opuntia engelmanii) and the cow's-tongue cactus are quite abundant. A smaller prickly pear (Opuntia basilaris) found here, is infested with an insect, cohoneal (used in the manufacture of dyes) and the plant because of the infestation, turns red. A small slender tree cactus of cholla (Opuntia whipplii) grows all the way from this low desert zone up to the region of the yellow pine. It is most abundant in the sagebrush plains, however, and in the first weeks in June bears many yellow-green flowers.

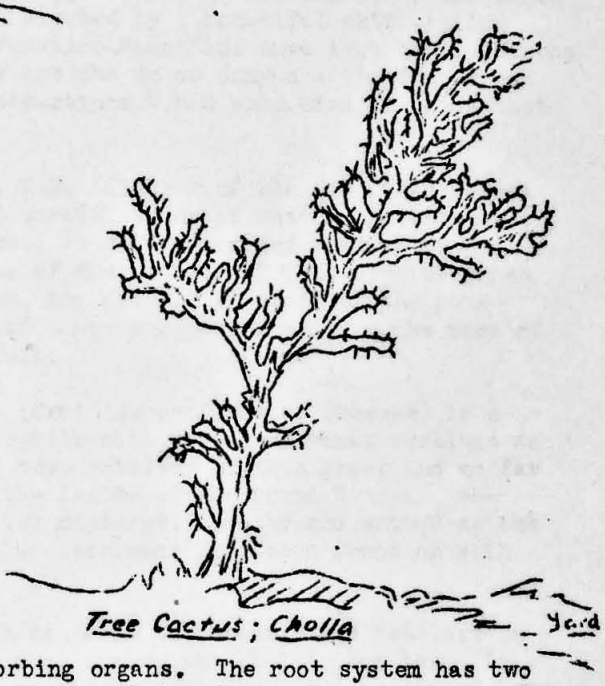
High up in the Canyon we find still another group of Cacti. Two small round pincushion or ball cacti (Mammalaria grahami and M. radiosa arizonica) with short white spines that press against the plant, lie close to the ground and hide among grey limestone rocks, where the pinyon pine, juniper and sage brush grow. Two prickly pears, one with a rich yellow flower and the other with a brilliant red flower grow with the sage and

cedar. In the month of June they are beautifully displayed along the rim, especially on Point Sublime and Cape Royal. With these is seen, growing in compact mounds, the hedgehog cactus (Echinocactus coccinia) bearing a bright red flower of narrow pointed petals.

Cactuses are native to the Americas only. They are usually tropical or semi-tropical and are numerous in the Southwestern deserts of North America and in South America in Chili, Argentine, on the pampas of Uruguay, and in Central

Prickly Pear

and Northern Brazil. The plant reaches its greatest development in Southern Arizona, New Mexico and California and central and northern Mexico. There are some cacti that can endure cold climates. Two prickly pears grow as far as north as British Columbia and another is found in New York and Virginia.



Tree Cactus; Cholla

The structure of the cactus plant is highly specialized to meet the conditions imposed upon it by the severe hot and dry climate in which it lives. The roots are extremely efficient absorbing organs. The root system has two dimensions, a long tap root for anchorage that extends straight downward, and long lateral branching roots that lie quite near the surface of the ground so that they can absorb the rain water before it runs off, evaporates or sinks deep into the ground.

The plant can store enough water to keep it alive during long periods of dreuth, six or ten years, and evaporation of water from the surface is greatly reduced due to a thick cutinized surface. The water storage cells contain much mucilage of water, holding power. The presence of certain starches is related to water imbibition and consequently to the swelling

and growth of the cactus. Particles of starch exhibit a greater imbibing power in the presence of acid, so that the greater the concentration of acid in the plant the greater will be its water imbibing capacity.

The fluted surface of the plant serves a definite purpose, allowing the plant to expand like an accordion and take up extra water when it is available. The ribs of such a plant become visibly plump when water is plentiful, and thin when it is scarce.

Though the cactuses are not the most conspicuous plants of this region, they are among the most interesting. Many desert plants have a certain adaptation to dry conditions but few have as complete a mechanism for water absorption and retention as to the cactuses.

THE GRAND CANYON RATTLESNAKE

At last Grand Canyon has a namesake! For many years the Painted Desert to the east has had a Kangaroo Rat named in its honor; to the north the Kaibab Forest has had its name carried by a beautiful white-tailed Squirrel; and southward the San Francisco Mountains have lent their lengthy title to a Wood Rat. Why then has not the Grand Canyon - the center and feature attraction in a land of attractions - had some bird or beast that could share its name?

In the winter just past, Mr. L.M. Klauber of the San Diego Museum of Natural History has completed a careful study of western Rattlesnakes of the species Crotalus Confluentus. In collecting and sending to Mr. Klauber some six or seven specimens of the rattler of this species which is found uncommonly in Grand Canyon, the naturalist staff of the park little realized that the creation of a new subspecies bearing the name of Grand Canyon Rattlesnake would result.

The Grand Canyon Rattlesnake (Crotalus confluentus obessus) is a typically pink or salmon-colored reptile with very indistinct markings in the adult form. It is larger than most rattlers of this group and so far as known, is confined in range to the inside of the Grand Canyon. The type specimen is a very large rattler captured alive by the writer on the Tanner Trail, September, 1929. Other specimens have been found on both sides of the river.

To the north in southern Utah is found the Great Basin Rattler; to the south right up to the Canyon's edge occurs the Prairie Rattler. Mr. Klauber believes that three of the specimens sent him - all collected from the South Rim of the Grand Canyon, are of the latter species or else intergrades between it and the Grand Canyon Rattler. The relationships of these subspecies with the Grand Canyon as an intermediate or transition zone is indeed an interesting feature of the reptile life of this region