

Nature Notes of Grand Canyon

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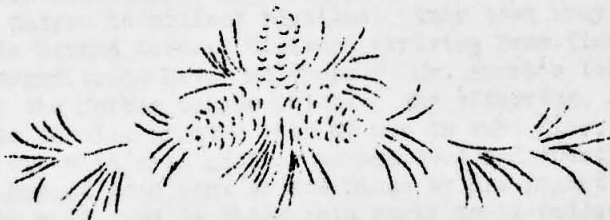
This Bulletin is issued monthly for the purpose of giving information to those interested in the natural history and scientific features of the Grand Canyon National Park. Additional copies of these Bulletins may be obtained free of charge by those who can make use of them, by addressing the Superintendent,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

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

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HORNED TOADS

By - Ranger-Naturalist S.B. Jones

August was horned toad month on the North Rim. In this month the pine and aspen woods were a big nursery for infant "hornies." The young of these interesting lizards are born alive. The females become very big just before the young are born, and in August these nearly spherical females were abundant in the woods. Oddly enough, the horned toads of the park are not found among the rocks, as are most lizards, nor down in the Canyon, but seem to live and die in the shade of the forested plateaus. Their abundance on the North Rim is rather surprising, for here at an altitude of 8,000 feet and over, the nights are cool, and often cold. The horned toads bury themselves in the pine needles at night, and so escape the worst of the chill. They have been found even in the high spruce woods of the Kaibab, among Canadian plants and animals. Our "hornies" are what are called the "short-horned horned toads," for the horns back of the eye and on the neck frill are never long like those of the Texas horned toad. By way of compensation the colors are extremely beautiful, especially just after the old skin has been shed.

I have kept several horned toads in a pen for a month or so, and have watched them feed - for that is about all a horned toad does. The pen was a circle of sheet metal, and was built around an ant hill. At first they showed an aversion to feeding while I was watching them, but hunger overcame their suspicions and I have witnessed the end of many an ant. Most of the time I have had three horned toads, a big one, Blanche, and two smaller ones, Ike and Mike. Ike was the most enterprising. One time when the ant supply was low Ike attacked and swallowed a week-old horned toad that unfortunately happened to be around. Ike swallowed him head first, in a couple of gulps. Ike was the first to take to eating in my presence. He would crouch low and sit still. An ant would crawl all over his back and head in safety. But let an ant walk in front of him, and his agile tongue shot out and another ant went to meet its maker. I never saw a horned toad eat a fly, even though flies were wallowing in the bait I put out. Paraphrasing Uncle Jimmy Owen's famous remark about the cougar's scream, - I don't say horned toads don't eat flies, I only say I never saw them.

Messrs. Lowell Woodbury of Zion Park and Clyde Searles of San Diego came down to the Canyon to collect reptiles. They took away with them some living female horned toads. Visitors arriving from Zion say that Mr. Woodbury's horned toads have had "pups." Mr. Searles took his to the South Rim via the Marble Canyon Bridge. The offspring, sixteen in number, from a single female, arrived when he was in Tuba City, so he guesses his horned toads are Navajos. Another horned toad had twenty-seven young at one birth. A horned toad sent to San Diego by Mr. Bogart had eleven young while in the mail, and we think this ought to be called Special Delivery.

I have exhibited horned toads at Grand Canyon Lodge many times, and I seldom find anyone, man or woman, who has any aversion to these curious reptiles. Perhaps it is the belief that they are toads instead of lizards

that makes people like them. It is a delight to catch one that has just shed his skin and to have people who have always shuddered at the very mention of reptiles exclaim at the colors of his velvety back, or to "put him to sleep" by rubbing his head and to hear people say "How cute" when an hour before, considering lizards abstractly they would have said "It makes me sick to look at them." In fact, one of my problems is to keep tourists from running off with our horned toads, so attractive are they. Aside from the difficulty of feeding an animal that seems to want living prey, we need the horned toads in the Forest, for they are one of our indispensable checks on insect life. That people want to make pets of these amazing lizards is, however, praiseworthy, for

"He prayeth best who loveth best
All things, both great and small.
For the good God that loveth us,
He made and loveth all."

THE GATHERING OF THE JAY CLAN
(*Cyanocephalus cyanocephalus*)

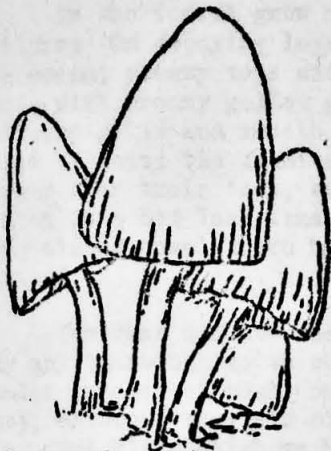
By - Ranger-Naturalist E.W. Count

About the end of August the brilliant long-crosted Jay, who all summer relieves the monotony of the pinyon pines, was overshadowed by the enthusiastic horde of Pinyon Jays gathering for migration. For a few days these self-confident and garrulous picnickers tramped the forest floor at Yavapai point and charged from tree to tree, making all sorts of dogmatic and forceful comments about things in general. It is eternally amusing to see one of them walk up to a hanging pinyon cone, eye it from that side and this, and open that scissor-like beak to clamp onto an obviously over-size mouthful. You immediately think of a boy biting at a suspended apple at a Halloween party. Or, this jay pecks and pecks, only to smear his beak with the gum oozing from the cone; whereupon he retires for a seige of whetting. If he secures a decent bite, say a pinyon nut or a whole cone, he has the usual jay-method of whacking it to pieces on the limb of a tree.

The pinyon jay wears the sky-blue of the French army, but is slightly lighter underneath, especially on the throat. He has no crest, and the crown of his head is a brighter blue than the rest of him. His tail is square and short, so that his very proportions easily distinguish him from the short-winged, long-tailed jays.

MUSHROOMS ON THE KAIBAB

By - Laura E. Mills



Inky-Caps

Caprinus sylvestris

These grow in thick clusters

Abundant summer rains mean mushrooms in some places, and the Kaibab is one of those places. Two days after the heavy hailstorm of July 10, 1929, followed by rain, (the first real precipitation of the summer) mushrooms began to spring up throughout the forest. With each succeeding rain more mushrooms poked their tops through the needle carpet or decorated the trunks of aspens and fallen conifers, or outlined "fairy rings" in park and forest.

At the foot of a white fir and in some other shady places where the soil was rich, we found masses of small inky caps (*Coprinus sylvestris*) with their pointed tops and, in the older specimens, black gills. Out in the parks a larger specimen of inky cap appeared, which, in its

later stages looked like a doll's parasol turned inside out by the wind. "The black "ink" into which the caps of *Coprinus* dissolve can be employed for writing." (Krieger, "Common Mushrooms of the United States" in National Geographic Magazine, May, 1920).

Among the most abundant are the *Bolotus* which have tubes or pores on the under surface instead of gills. Of these we found three species; the orange-cap, which the deer liked far better than we did; the brown-topped one, for which neither we nor the deer cared at all; and the pale tan sticky-topped one, the most plentiful of the three, which was a primo favorite with both the deer and us because of its pleasing texture and delicious taste. Anyone picking it found his fingers sticky, hence our name for it; sticky-top.

After many rains had soaked the dry park slopes, beautiful little white heads dotted the ground. Since this white field or meadow mushroom (*Agaricus campester*) is well known as an edible variety, the park was soon dotted with human beings carrying pails and gathering this delicacy. Deer came into the park earlier in the evening and stayed later in the morning where *Agaricus* grew most abundantly. Nor were deer and men the only creatures to appreciate these. Insects made their ravages even before the pink gills began to turn brown. At a somewhat lower level we found *Agaricus arvensis*, with its rough top from six to eight inches in diameter, but like the other in color and shape.

A curious mushroom is the star puffball, dried specimens of which we found before the rains began. Like the other puffballs it scatters its spores in a little cloud of "smoke" when stepped on or when any sudden pressure is applied to its "ball."

In the forest grow mushrooms that quickly capture the eye by their colors: On decaying logs, tiny ones the color of crushed strawberries in cream; creamy tops with pale yellow gills and stem; brilliant orange tops with creamy yellow gills and orange stems; silky gray tops with silvery gills and smooth silvery stem; bright yellow ones that look almost bilious; the Amanitas that appear to have oatmeal sprinkled sparingly over their tops, and the gorgeous coral mushroom (*Clavaria flava*) which does not look like a mushroom at all, but rather like a piece of gay-tinted coral which has wandered to the coolness of the Kaibab Forest.

The deer did not seem to be troubled by any questions as to whether any particular species of mushroom was edible or not, although they did not appear to care for some kinds which we had tried and proved harmless, they devoured some kinds which we were sure were poisonous. On the trail which leads from Bright Angel Point around the head of Transept Canyon we found a patch of what apparently were the Destroying Angel (*Amanita phalloides*) varying in development from the button stage with the veil just breaking, to large specimens just ready to scatter their spores. And ten of the deadly fungi had been eaten by deer, almost certainly, for deer tracks were the only tracks there, and they were present where ever a mushroom had been eaten. Again, we put out one of the brilliant vermillion *Amanita muscaria*, and the big buck that roams the North Rim Camp Ground gobbled it up as if he were afraid someone might take it away from him, and he seemed none the worse for it, either then or the next day.



Brilliant orange
top and stem,
creamy yellow
gills.

Just what part of the diet of the Kaibab squirrel consists of mushrooms would be difficult to say, but we found many of the fungi bearing the marks of squirrel and chipmunk teeth, and saw one squirrel run off through the yellow pines carrying a white mushroom about the size of a hen's egg. Both the squirrels and chipmunks preferred to uproot the mushrooms and gnaw or bite the pieces from the under side, while the deer usually ate the whole thing.

If you are on the Kaibab after the rains have come, look about you for the bits of brilliant or delicate coloring and shading of the mushrooms, for rains on the Kaibab mean mushrooms.



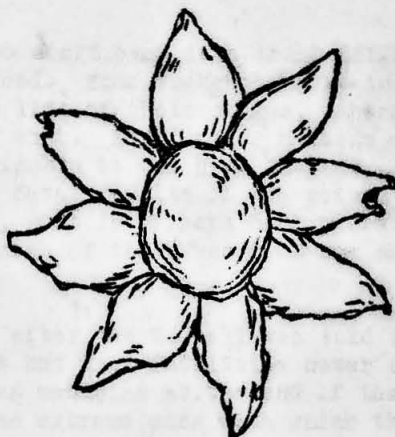
White shaded with cream -
Smoother top and stem.



Amanita phalloides
Creamy tan top, pale
daffodil yellow gills
and stem. Lighter bulb.



Amanitopsis
Silky gray top,
silvery stem and gills,
Smoother stem.



Star Puff Ball
(top view)
Geaster hygrometricus.

SNAKES AS MEDIATORS

By - The Park Naturalist

This year the twentieth of August was the date selected for the sacred ceremonies of the Snake Dance at the Hopi village of Mishongnevi. Upon this occasion some twenty specimens of desert snakes were collected, conveyed in three sacks to the dance-hogan, and delegated by the Hopis to carry their messages to the dieties beneath the ground.

From a biological standpoint it was extremely interesting to note the species of these reptiles. Nine were Gopher or Bull Snakes (*Pituophis catenifer*) of a sub-species somewhat lighter in color than that of the Kaibab, four were black and white racers, and the other seven were the much feared Plains Rattlers (*Crotalus confluentus*) - apparently of a greyer hue than those of Grand Canyon. No King Snakes were used. It has been suggested that these may have been omitted purposely because of their common tendency to eat other snakes - even rattlers.

With such an array of reptiles - constrictor-like Gopher Snakes measuring as much as five feet in length, very long and slender Racers, and several Rattlesnakes with unusually large numbers of rattles - a person possessed with the typical American fear and aversion to snakes might expect disastrous if not fatal results from their handling. On the contrary, however, the snakes seemed entirely docile and peaceable, and allowed themselves to be carried in the mouths of the dancers without any attempt at attacking. The writer did not see even a single case of a rattler striking.

The handling of poisonous snakes the world over is a thing difficult to explain and as yet but little understood. Some snake-charmers in India are definitely known to sew up the lips of their snakes, others to employ the temporary method of defanging them. Still other methods - methods sometimes suggested as being applicable to the Hopi Indians, are those of making themselves immune to the fatal results of the poison by early inoculation with small doses - or, what is perhaps more probable, the method of allowing snakes to use up much of their venom on one another before giving them freedom.

In conversing with one of the Hopis after the dance I was told that the snakes sometimes did bite the dancers but that fatalities never occurred because all participants were given medicine at the end of the ceremonies. Whatever the explanation - the extreme ease with which the Hopis handled the snakes, tickling them with feathers, scooping them up at will, and carrying them in their mouths, is a remarkable thing and interesting to the zoologist.

A MUTATING PENTSTEMON

By - Ranger-Naturalist E.W. Count

On the Yaki Point road there has occurred this summer a specimen of Pentstemon linarioides ("Little Blue Pentstemon") having, simultaneously, five, six, and seven-petaled flowers. Of the five-petaled flowers there were quite a number; of the six, at least two; and of the seven-petaled, one. The six-petaled flower had an extra petal on its lower lip; the seven-petaled probably had an extra one in each lip, although the specimen has unfortunately disappeared, along with some other materials, since collected.

So far, in only one other case have I found a plant bearing a five-and a six-petaled flower. This occurred on the path north of Chief Ranger Brooks' house.

Some seeds have been collected and shipped for planting and for cytological investigations.

ALONG THE TRAILS

Ranger-Naturalist Jones reports having recently seen the tracks of Mountain Sheep both along the McKinnon Point Trail and near Cliff Springs on the North Rim.

Numerous reports of porcupines have been made of late by visitors to the Grandview section of the South Rim.

Two Western Crows (Corvus brachyrhynchos hesperis) were seen on Yavapai Point, September 10, by the Park Naturalist. Common as we generally consider these birds in other sections - Grand Canyon records show no former observations of this crow within the Park.

Bright Angel Point - several thousand feet above the stream bed and far from any standing water, seems a queer place for the Belted Kingfisher, yet Ranger Ed Laws reports having twice seen them in this locality during the latter part of August.

A Big Scaly Lizard (Sceloporus magister) was recently observed on Cedar Ridge - about a thousand feet from the rim on the Kaibab Trail. As far as known, these reptiles have not previously been recorded above the Inner Gorge of the Grand Canyon, though they are very abundant along the Colorado River and side creeks of this region.

The Mule deer on both sides of the Canyon began to lose their coats of tan and take on the winter grey about the end of August.

Mr. Vernon Bailey records four species of Hummingbirds from a single large patch of Cleome near Hull Tank - late August. These were the Rufous, Broad-tailed, Calliope, and Black-chinned.

A recent survey of the migrating birds of the Kaibab introduced some new and many interesting species for that region. Notable among these were the Brower Sparrow, Red-breasted Nuthatch, Rough-winged Swallow, White-rumped Shrike, Gadwell, Blue-winged Teal, and Wilson Phalarope.

THE YAVAPAI STATION

Dr. John C. Merriam, president of the Carnegie Institution of Washington, spent four days at the Grand Canyon this month in the interests of the development of the future educational program, principally as it relates to the use of Yavapai Station. After summarizing the results of several years study and consideration by a number of America's leading scientists, Dr. Merriam was prepared upon this occasion to set forth the general scheme for operation of the original plan as outlined. According to this plan the station is to serve as a unit in telling the main story of the Grand Canyon, but is not to be a museum in the usual sense of that word. The greater truths as demonstrated by this region - namely the power of erosion, the processes of sedimentation, the development of life during geological history, and the controlling factors of modern plant and animal species, are to be clearly demonstrated and emphasized at this station by means of specially directed telescopes, carefully selected specimens and appropriate photographic transparencies.

