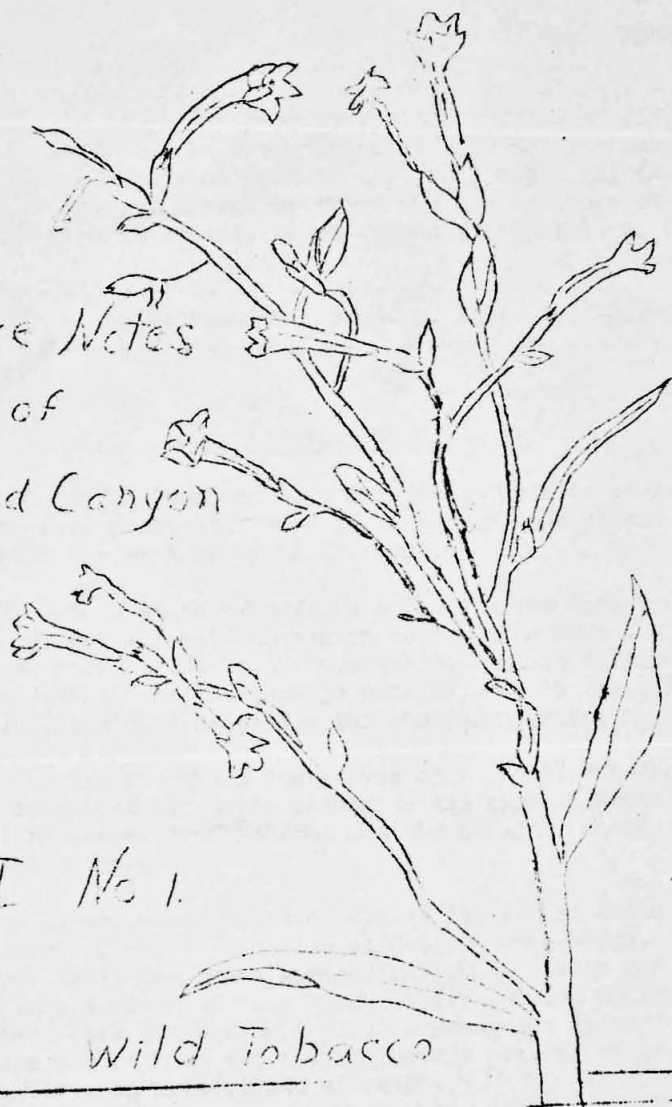


GRAND CANYON NATIONAL PARK

Nature Notes  
of  
Grand Canyon

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Wild Tobacco



U.S. DEPARTMENT OF THE INTERIOR  
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GRAND CANYON NATIONAL PARK

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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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NAVAJO MAKES RAIN.

The Grand Canyon is normally a dry town. When it is wet - in the sense of excessive precipitation - it is simply unusual and not at all in keeping with the weather man's forecast.

However, such a state of affairs existed a few days ago when it rained over one and one-half inches in twenty-four hours. Nothing more than the usual comments about the weather would have followed if it had not been for Navajo Charlie. Navajo Charlie, who is the silversmith at the Hopi House, claims full credit for the recent rain.

Navajo Charlie brought a few leaves of Wild tobacco (*Nicotiana attenuata*) common at the Grand Canyon to the park information office. He explained to Ranger Fred Johnson how the Navajos caused it to rain by smoking and talking.

Two days later, when the wild tobacco leaves had dried, Navajo Charlie returned to the information office to demonstrate. He crumpled the dry leaves until they were broken into small pieces and then rolled the tobacco into a piece of corn husk. While smoking he would make a circular motion with his head and body, blowing the smoke towards the various Navajo directions, and talking Navajo between puffs. He assured us that we would soon have "plenty of rain".

That night it rained hard with intermittent showers occurring the following day. Navajo Charlie returned to the information office between showers and pointed to the wet ground, threatening clouds,

chuckled and sauntered away with a beaming countenance.

#### FOX HOLDS UP PARTY.

An interesting incident occurred during Dr. John C. Merriam's recent visit to the Grand Canyon National Park.

Dr. Merriam was in the lead on the return trip up the Yaki Point section of the Walibab trail. "Rastus", a park mule on which he was seated, gradually slowed up. Continued urging failed to increase his pace. Rastus had his eyes and ears focussed on an object a few yards ahead. At last came a call from Dr. Merriam to "chase that fox up the trail so Rastus could continue." True enough, a gray fox with a mouse in his mouth, was setting a very slow pace up the trail. The fears of Rastus seemed wholly relieved when the fox left the trail a short distance ahead.

A pair of foxes has been sighted a number of times in the same vicinity during the past few months causing us to believe that their den was not a great distance away. That our supposition concerning the presence of the den was correct is evidenced by the report of the trail-maintenance man seeing the pair with two half-grown pups only a few days ago.

#### WHEN INSECTS WERE THE SIZE OF BIRDS.

That insects grew to the size of modern birds in the days when primitive man was unknown to this planet, is the information revealed by the discovery of three insect wings in the Hermit shale of Permian age.

Dr. David White, of the U.S. Geological Survey, and Dr. C. E. Gilmore, of the U.S. National Museum, who have been collecting numerous fossil ferns and animal tracks for the proposed trail-side museum at Yavapai Point, have lately uncovered three insect wings, that are beautifully preserved on the fresh broken rock. They are similar to the one collected last year by Dr. Gilmore, and are known as dragon fly-like insects. The largest single wing measures nearly four inches in length.

It is a curious fact that the seemingly fragile wing of an insect is relatively indestructible because it is composed of chitinous material similar to the finger nails of man. The wings, along with many ancient ferns and animal tracks, were buried under thousands of feet of sediment thereby assuring their preservation until the Hermit shale was exposed by the cutting of the Grand Canyon.

### GRAND CANYON VISITED BY LEADING GEOLOGISTS.

The Grand Canyon National Park recently served as the magnetic hub which drew several of the leading American geologists and paleontologists to study its natural phenomena.

The purpose of this delegation was to study the world's largest canyon in connection with the Yavapai Point trail-side museum and to prepare exhibits in place so as to present to the park visitor an impressive survey of the natural phenomena, interpreted by scientific minds, as disclosed by the various strata at the Grand Canyon.

Those on the delegation were: Dr. John G. Merriam, President of the Carnegie Institution of Washington and formerly Prof. of Vertebrate Paleontology at the University of California; Dr. Herbert Gregory, head of the department of geology at Yale University and Director of the Bishop Museum of Hawaii; Dr. David White, Senior Geologist of the U.S. Geological Survey and undoubtedly the best fossil plant authority in the United States; Dr. F. M. Matthes, of the U.S. Geological Survey, who performed the difficult feat of making a contour map of the Grand Canyon and who is now supervising the construction of a roller model of the Grand Canyon; and Dr. C. W. Gilmore, Curator of Vertebrate Paleontology of the U.S. National Museum and who had described sufficient animal tracks from the Grand Canyon to have this region described as "the best Permian animal track horizon in the world." Dr. F. L. Ransome, of the University of Arizona, was unable to take part in the conference due to pressing geological work in Mexico. Mr. Herbert Eiler, architect for the proposed museum, and Mr. Edwin McKee, who is making a model of the Grand Canyon were also present at the conference.

The Yavapai Point Museum will be unlike any in the United States. Instead of serving entirely as a structure to house exhibits, collections will be but one part of the museum. In addition to housing exhibits brought up from the Canyon, it will also serve as a locator of exhibits prepared in place in the formations along the new Yaki Point section of the Kaibab Trail. By this means it will be possible to point out one of the best geological sections in the world.

Incidental to the preparation of exhibits in place and completion of plans for the museum, was the collection of over 1500 pounds of fossil material for the U.S. Geological Survey and U.S. National Museum. This consisted primarily of ancient ferns and pre-historic animal tracks.

TRAILSIDE NOTES - Edwin McKee.

Recent observations have disclosed, very near to some of the well-populated trails of this vicinity, the presence of several nests of birds which are usually considered to be of a shy and retiring nature. These facts are particularly interesting when it is noted that a great many people, native populace as well as visitors, did not realize that such

species even existed in this region.

Probably the most seldom seen and yet the most readily accessible of these nests in mention, is that of a Black-throated Gray Warbler. This nest was located through the seemingly continuous call-notes of the parent birds as they flitted to and fro in the neighboring trees, apparently always searching for insects and always guarding their home. The choice of site in this case was extremely interesting for it was only about six feet from the ground in the branches of a low juniper, the immediate neighbor of the much frequented Yavapai trail; therefore liable to be attracted to the notice of any curious passerby with the least sound from the tappings of its three ever-hungry inmates.

Another nest quite worthy of mention is that tailor-made cradle of perfection created by the skillful Little Warbling Vireo. One of the structures was found recently in the forked branch of an evergreen quite overhanging the road leading to the Park Service Camp. The material in this case appeared to be dried grasses which were very cleverly interwoven with lichens and small mosses. Again the close companionship of a bird usually believed quite seclusive is brought to notice.

The White-throated Swift, though hardly considered a timid bird, may be cited as still another example of wild life coming into contact with man. Its nests have recently been observed on the overhanging cliffs of the Redwall Limestone directly above the Rock Point section of the Kaibab Trail. These queer structures are quite similar to the nests of the Chimney Swifts, so common to our large cities. Likewise they are extremely interesting in construction since they were built of twigs and feathers cemented with fluids from the birds' mouths.