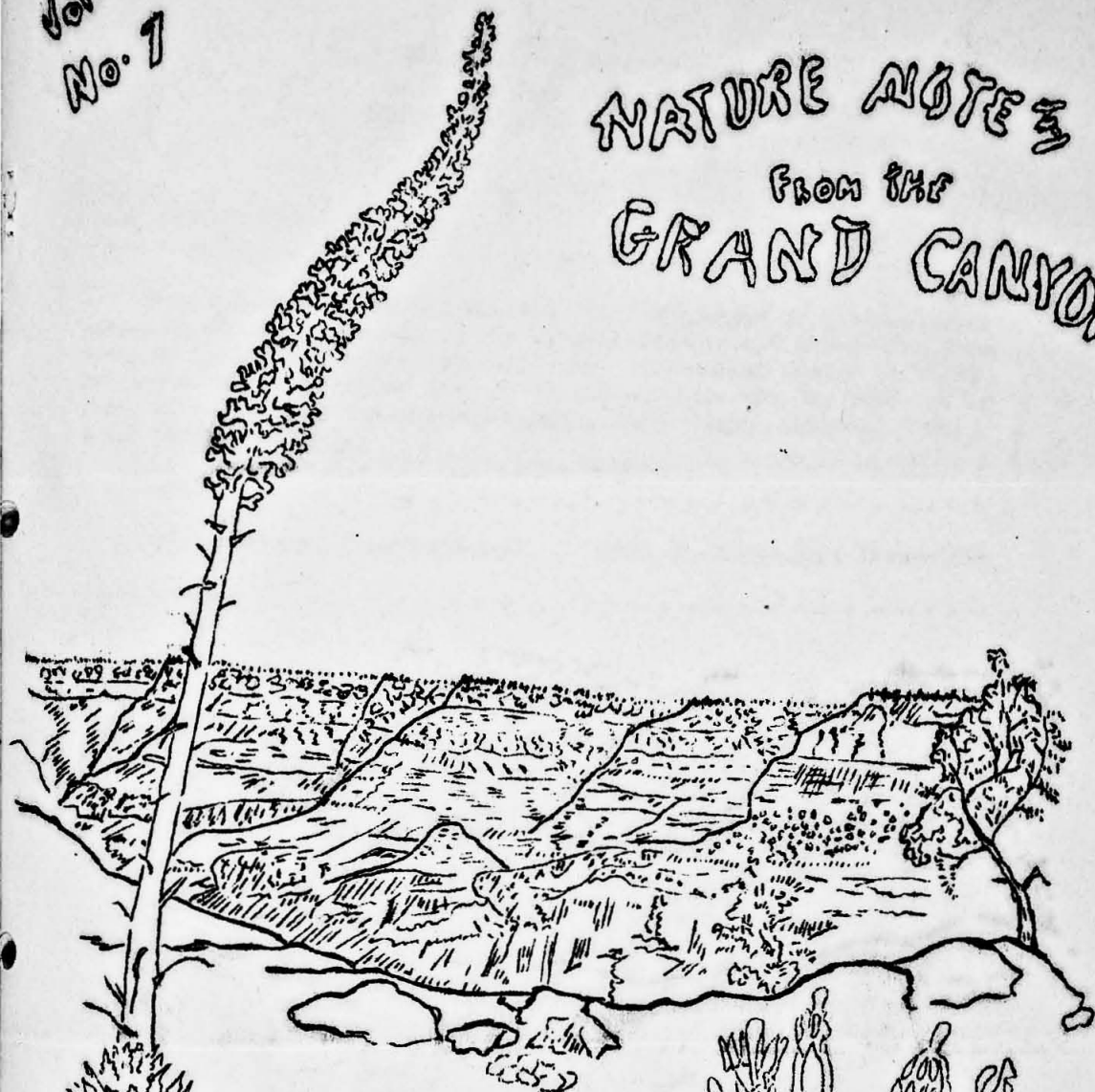


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No. 7

NATURE NOTE
FROM THE
GRAND CANYON



AGAVE UTAHENSIS



FLOWER AND POD OF AGAVE UTAHENSIS

E.W.C.

U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
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.

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

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SCIENTIFIC EXPEDITION TO THE NANKOWEAP

On May 19th two well-known scientists, Dr. C.E. Resser, curator of the U.S. National Museum, and Dr. A.A. Steyanow, professor of paleontology of the University of Arizona, departed from here by saddle and pack train en route to the isolated and little-known Nankoweap basin country on a two weeks' scientific research expedition. Their route will be over the Kaibab Trail to the North Rim, overland to South Canyon, and thence down the old historic trail built by Major J.W. Powell in 1882, into the Nankoweap basin in the extreme northeastern part of the Grand Canyon. Ernest Appling, guide and packer, and H.H. Childers, assistant, accompany the expedition to take care of the supplies, stock, and the camp.

The expedition has been arranged by the Carnegie Institution of Washington, under the direction of Dr. David White, research associate. On account of the educational value of the expedition to the Park, the National Park Service is cooperating to the extent of furnishing the animals and a packer.

The purpose of the expedition is to make studies and to collect specimens of the fossil life of the old Algonkian rocks which are exposed in that vicinity. These rocks represent the second era in geological history and are expected to contain the oldest definite traces of animal life. Several types of plants have already been described from these strata but as yet no positive remains of animal life have been discovered. If the object is attained the first definite evidence of animal life that existed prior to that of the trilobite and associated forms of marine life will be established. It is expected also to add to the existing meager knowledge of the earliest forms of plant life. Most of the materials collected will be sent to the U.S. National Museum for study, but typical specimens will be retained by the National Park Service for exhibit at the Grand Canyon geological museum.

The last scientific work to be carried on in the Nankoweap area was conducted by the late Dr. C.D. Walcott, of the Smithsonian Institution and a director of the U.S. Geological Survey, who spent a considerable amount of time there in the early 90s. Within recent years Dr. David White has carried on studies of the plant life in rocks of closely related age in other parts of the Grand Canyon. When the results of all these studies are published it is hoped that much light will be thrown upon the earliest plant and animal life known in geological history.

THE REFERENCE LIBRARY

The establishment of a much-needed reference library at Grand Canyon has been started in earnest this season. This library is to contain literature dealing with various scientific subjects, natural history, history, and the Grand Canyon region in general. It is hoped that in time a complete collection of all literature dealing with this region will be obtained. The library is located in the Naturalist's office at the Park Service administration building and now contains 270 volumes. These were obtained entirely through the generous contributions of interested private individuals and of various scientific institutions. The Carnegie Institution, the Smithsonian Institution, the U.S. Geological Survey and the U.S. Biological Survey have been especially helpful in this work.

It is planned to have the library books available for use without charge at all times as a part of the educational program of Grand Canyon National Park. Anyone may avail himself of the privileges of this library.

Any contributions of books, scientific magazines or other literature of any appropriate nature will be greatly appreciated, especially at this period of establishment.

OH CEDAR!

By Ranger-naturalist S.B. Jones

"There are nine and sixty ways
of constructing tribal lays,
And every blooming one of them is right."
Kipling.

Somewhat the same might be said of Grand Canyon cedars. Often the ranger-naturalist on the North Rim is asked about a certain tree, and says, "That's a cedar." Then his informee replies, "Oh, I thought it was a juniper." Had the ranger-naturalist answered, as he often does, "That's a juniper," the questioner would have almost certainly replied, "Oh, I thought it was a cedar." So an explanation is in order.

Strictly speaking, there are no cedars in America. If there is such a thing as a "true cedar" it is the cedar of the Old World, the Cedar of Lebanon. This is not native to America, but we have done our best to cover the deficiency by bestowing on at least a dozen trees the common name of cedar. In the northeast there is the arborvitae, known all over the country as the most common of ornamental trees. In the far northwest there is a giant cedar, a tree rivalling the redwood in size and graceful lines. Shingles of this "western red cedar" are sold all over the country, and to anyone who has seen one of these magnificent trees the sight of a "western red cedar shingle" advertisement produces a sickening sensation, and makes him wish that all roofs were slate or tile.

The Pacific Coast has so many trees peculiar to it that the English language has been stretched considerably to cover them. Here we have the "Alaska Yellow Cedar," the "Port Oxford Cedar," the "incense cedar," and a number of trees called cedar or cypress interchangeably. In this welter of names it is surprising that the sequoia has not been dubbed some kind of a cedar, and how the Douglas fir, which has been called "Oregon Pine," "Douglas spruce," "Douglas fir," and "false hemlock" at various times, ever escaped being called a cedar, passeth understanding. "What's in a name?" wrote Shakespeare, "A cedar by any other name will keep away moths," but the writer cannot help digressing to point out that, while trees with distinctive names, like the redwood and sequoia, have become famous and have been protected, the equally distinctive and remarkable tree, commonplacely called "western red cedar" is still being cut down and slashed up into shingles.

None of the aforementioned cedars occurs in Grand Canyon National Park. Our cedars are akin to those of much of the eastern United States. They are characterized by having berries. To the botanist they are junipers. In the forest of the Coconino Plateau, on the South Rim of the Canyon, is an abundance of "Utah Juniper." This drought-resisting tree grows far down into the Canyon, to the Redwall at least. On the North Rim, due to the greater altitude and consequent cooler, moister climate, Utah Juniper is found only rarely, in such low places as Point Sublime, and down in the tributary canyons. Another juniper, the "Rocky Mountain Red Cedar," takes its place as a forest tree, occurring along the rim of the Canyon, and in considerable abundance in the vicinity of Grand Canyon Lodge. To distinguish these two junipers is not easy, and the writer is not certain he can make the difference clear in words. The Rocky Mountain red cedar has finer foliage than the Utah juniper, a deeper, shaggier bark, a juicier berry (with several seeds, while that of the Utah juniper has only one) and grows at higher altitudes in this region.

There is another juniper in the park that, as far as the writer knows, has never been called a cedar. It has, however, been called "ground pine," "ground hemlock," and one thing or another. This is the trailing juniper, never more than a shrub, with needles like those of a spruce but with the typical berries of a juniper. It is abundant on the Kaibab Plateau, but does not, as far as the writer knows, occur in the Canyon or on the South Rim.

WILD BURROS OF THE GRAND CANYON

By Asst. Supt. P.P. Patraw

The bands of wild burros making their homes on the Tonto Platform and up side canyons of the Grand Canyon, developed from the animals lost or abandoned by prospectors many years ago. While conditions were far from favorable for existence, the burros demonstrated their hardihood and adaptability by prolific reproduction until they overpopulated the range and had practically denuded the plateau of all

vegetation save burro-brush . Even cactus, with its protective bristling barbs and swords, was not proof against the demand of the burro for food and was uprooted and eaten.

Classing the burro as an undesirable tenant because he did not belong to the Canyon originally in Nature's scheme and was destroying the range properly belonging to native forms of wild life, particularly the mountain sheep and the antelope, the National Park Service began a campaign of extermination on the south side of the river seven years ago. Each spring ranger parties were sent into the Canyon to hunt the burros. The campaign was started at the Bright Angel Trail and worked west to Hermit Canyon and east to Tanner Canyon. In the spring of this year the hunt was conducted from Hermit Canyon west to Apache Point. It is estimated that there are not more than twenty burros remaining in this area, and the campaign is considered finished.

On the sections which have been freed from burros for a period of four or more years the range has recovered to such an extent as to furnish good grazing. Mountain sheep, while still scarce, are seen more frequently; also more deer are ranging the plateau in the winter time. Two years after the extermination program was put into effect wild flowers appeared that had not been seen for many years.

On account of inbreeding and unfavorable conditions of existence the Canyon burro has become considerably dwarfed; it is seldom one is seen standing higher than four and one-half feet and the average height is estimated at four feet. They are wonderful trail makers. Except where conditions prohibit, their trails are kept on an even, almost perfect level. They will round a point by a half-mile trail rather than climb and descend a saddle a hundred feet high or a wash of that depth, but when they are forced to climb or descend they do so in the shortest possible distance. A band usually consists of one jack and one to several jennies, accompanied by such colts born to the jennies as have not been weaned.

The mule, sired by jack and born by mare, has a distinct fondness for horses but an apparently intense dislike for burros and at sight of one will rush and fight it. This peculiar confliction was another justification for the extermination of the burros, particularly near canyon trails, for the protection of trail parties. It was decidedly disconcerting - often times dangerous - to a visitor to have the mule he was riding take off across the rough plateau in chase of a burro.

On a recent hunt we came within view of one burro standing high upon a saddle extending from a point or promontory rising above the Tonto. When he caught sight of us he stamped and pawed and snorted, and when we took a shot at him he left his post and disappeared down the other side of the saddle. We rounded the point and on the other side camp upon a band of six, one of which was the sentinel. On our return trip we climbed to the saddle where we had first seen him, and from it observed that it commanded a perfect view of all approaches to the point. The incident

may have been only a coincidence, but circumstances pointed to a conclusion that the burro was posted there as a lookout for the band grazing on the plateau beneath. Such a conclusion is not highly improbable. Bands of wild horses are known to post lookouts of sentinels. However, the Canyon burros have only to fear the occasional bobcat and the extremely infrequent cougar as its natural enemy, and it is improbable that a bobcat would attack a burro. Coyotes are not known to range the inner canyon.

THE NAVAJO SILVERSMITH

By Ranger-naturalist E.W. Count

"Under the roof of cedar-beams
The Navajo smithystands,"

or sits, rather, turning Mexican pesos into ornaments for the paleface sightseers. A sack of charcoal; a forge; a bellows; a short length of rail for an anvil, clamped to a block of wood buried in dirt in a dilapidated barrel - of such come the paper-cutters and spoons, the turquoise-set bracelets, rings and boxes that form his repertoire.

Between repeated beatings of the pesos, the Navajo smith hammers them out into shapes to suit the end in view. With his shears he may then slice the sheet into strips to form rings; or, by bending the edges with hammer on anvil, shape the cover of a box. If he wants to make a setting for the turquoise to a ring, he bends a small strip of silver into a smaller ring and, by beating over his charcoals and using a blow-pipe to intensify the beat against the ring, he welds the little setting onto the main, larger ring. It happens often that, for some reason or other, his weldings are not immediately successful; and it is here where practice and not observation alone determine the time and place to strike. The trinket may have to be reheated and plied further. His turquoise he clips with shears, then wet-polishes them on a hone. He has made himself a set of dies by filing small designs on the tapering ends of short bars of iron; with these he will hammer you out a synthetic pattern.

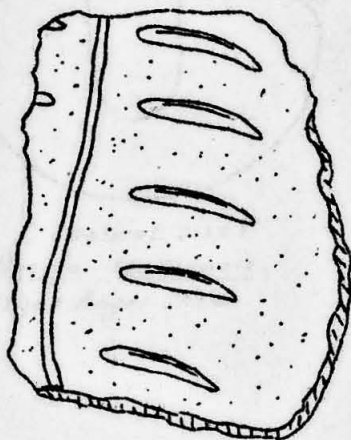
When it finally issues forth, the trinket is a dingy object indeed; so now the smith gives it a cleaning with alum-water. Behold your souvenir ready for sale.

Whence did the Navajos learn their silversmithing? From the south assuredly. But why did our Amer-indians seek copper and silver, use even copper-gold and copper-lead alloys - yet restrict their use to ornaments while they tooled and fought with stone? When, where, and how did the Navajo finally learn the harder task of iron-working? Was it vanity that taught the Navajo the trade of silversmithing, while he refused to develop the more useful and homely art of pottery?

PAGES IN CAMBRIAN HISTORY

By Park Naturalist

Geological picks in hand, we were examining the green shales of the Tonto Platform in the lower part of the Grand Canyon. A fascinating pastime this, for while investigating the flat slabby layers of that level, we were actually exploring the muds and fine sands which long ages ago were accumulating on an ocean bottom, and over which various primitive forms of life crawled and swam. To the geologist these rocks represent a period of history known as the Cambrian. The forms of life preserved in these rocks include the oldest definite traces of animals.



*Sandstone Slab with
Trilobite Tracks.*

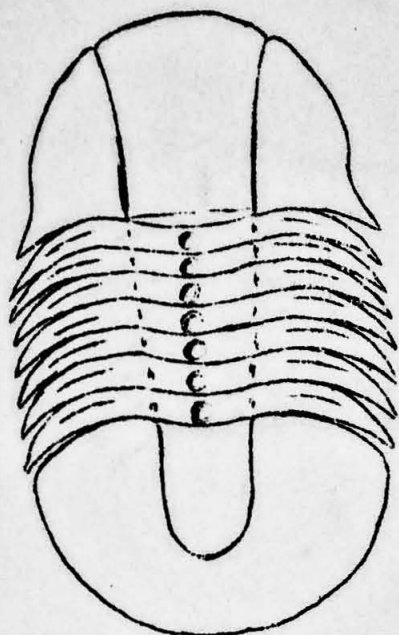
Several months ago while on the Tonto Platform I had chanced upon some tracks - successions of claw-marks with the impressions of a dragging tail between. Upon other occasions I had noted small fossil seashells in the same formation. On this particular day, however, we planned to read this chapter of history page by page. Starting at the top of a ledge we pried loose several layers of thin shale. Only a minute's work was required before a beautifully preserved claw was exposed as it lay impressed in what was once soft mud. This gave us a real thrill and the incentive to read more in the pages of history. Excitedly we lifted some more slabs and under them fossils of various descriptions were brought to light.

During the
Cambrian Period
crab-like animals



Claw of Trilobite

known as the Trilobites were masters of the sea. Even at this early date they were remarkably highly developed in structure and apparently abounded in vast numbers in ocean bodies throughout the world. In the shales which we examined on the Tonto Platform these Trilobites were the predominating forms of life. They varied in size from a few millimeters to several inches from head to tail. In some layers they were intact and perfectly preserved; in others they appeared to have been disintegrated before being buried, for heads, tails, and appendages were found separated, widely scattered, and often mutilated. With the Trilobites were numerous small sea shells of the group known as Brachiopods and also some structures suggestive of worms.



(Natural Size)
Anoria tontoensis
Bright Angel Shale

It is interesting to note that the ancient and once world-ruling race of Trilobites made their debut in seas of Cambrian Age, some of whose outlines are now represented by rocks of the Tonto Platform of Grand Canyon. It is further noteworthy that the Trilobites made their last appearance among the sands and limes of the Permian Period, some of which were later changed to the rocks now forming the Grand Canyon rim. The dwarfed Trilobites which are found there in the Kaibab Limestone may be considered a part of the last stand of the race preceding its total extinction. In brief, the rocks exposed in the walls of the Grand Canyon tell the story of both the rise and the fall of the oldest group of animals to have left distinct records for modern men.



(Tail from Kaibab Limestone)
Griffithides scitulus
One of the last of the Trilobites.

LEFT-OVERS

On the evening of May 15th, a porcupine was seen ascending the Bright Angel Trail about a hundred feet below the rim. He seemed very much out of place but did not appear to be half so tired as most of the tourist hikers.

* * *

Mr. William Dowling reports having found several inky-cap mushrooms on the South Rim within a foot of a snowbank, March 14th.

* * *

A heavy snowfall covered the trees and ground at Grand Canyon during most of the week ended May 9th. According to Mrs. Emery Kolb this was the first occurrence of this nature since 25 years ago. An additional snow came on May 17th.