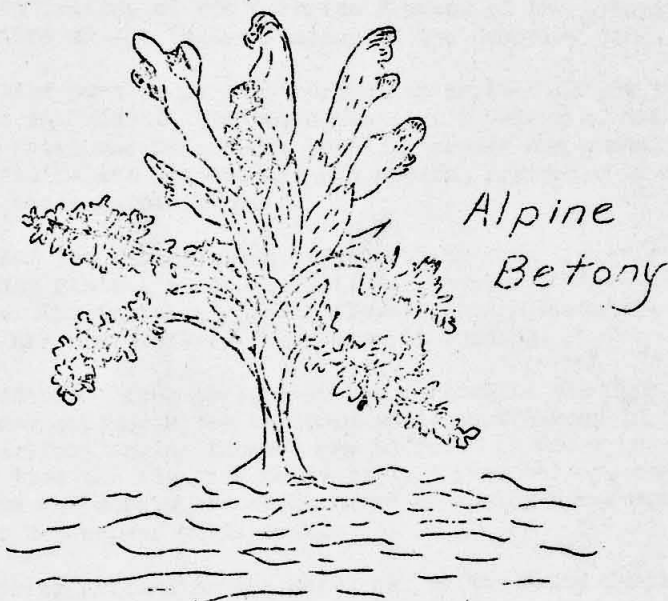


Nature Notes
of
Grand Canyon



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VOL. 2.
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. By - G. E. Sturdevant, Park Naturalist.

SPRINGTIME AT THE GRAND CANYON.

Although most parts of the country have springtime but once a year, the Grand Canyon National Park is blessed with a series of springs or a springtime for each successive higher elevation. We have springtime of the Inner Gorge of the lower sonoran zone, springtime of the Tonto platform of the upper sonoran zone, springtime of the Coconino Plateau of the transition zone, and finally springtime of the Kaibab Plateau of the Canadian zone.

By the latter part of January spring has arrived at the Inner Gorge at an elevation of 2500 feet. *Thamnosma montana*, a member of the rue family, is in full bloom. Mariposa tulips are pushing through the ground. Red stem filicee is spreading out its verdure and showing a promise of soon unfolding a multitude of small purple flowers.

By March 1st the invigorating effects of the sun's warm rays may be seen on the Tonto Plateau at an elevation of nearly 4,000 feet. Cottonwood is leafing out. The incipient purple flowers that precede the leaves on Arizona redbud are now visible. Cats claw is budding.

By the middle of March springtime has arrived in the upper walls of the Canyon. In sunny exposures may be found mountain mahogany in full bloom and a few of the earliest spring flowers may be found in bloom on the south rim. At the present time one may find candy tuft, Alpine betony, and easter daisies in bloom. These are merely the forerunners of spring for a much larger host of flowers does not appear until April.

At last spring arrives on the north rim of the Grand Canyon. There, in the Canadian zone at an elevation of over 8,000 feet, must one await until May before spring really comes.

CHAMPION BARKER?

What animal is the champion barker? Perhaps in answering one might wish to consider quality and volume. If these were considered negligible

factors, the Gila Chipmunk would probably be a strong favorite to win first honors.

Recently one posted himself on a dead branch outside of the door and started to bark very rapidly. Until the source of disturbance was located one might have been led to believe from the penetrating character of the monotonous tones that they came from a young bird. As time dragged on and the chipmunk failed to ease up in his calls, I was curious to know how many he emitted per minute. During three separated minutes his barks numbered 172, 146, and 162 respectively. As he remained in his position a little more than one-half hour and there was no noticeable change in barks, he must have barked in the neighborhood of 5,800 times in thirty minutes. Each bark was accompanied by a twitch of the tail.

An engineer has suggested that if one knew the weight of the animal and the weight of the tail along with other data it might be possible to figure how many foot pounds of work were performed by the chipmunk in thirty minutes time.

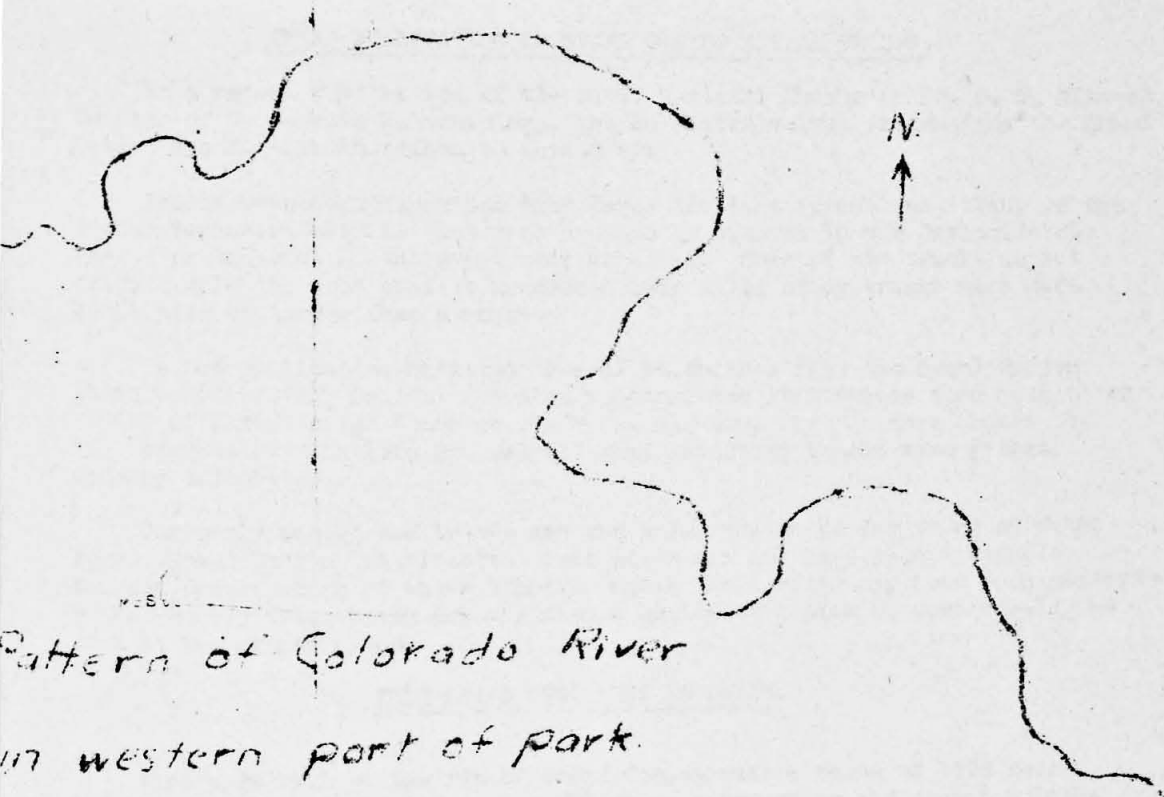
REJUVENATION.

"An old stream clothed in the garments of youth" best describes the Colorado River in the vicinity of Grand Canyon National Park.

As one studies the pattered made by the Colorado as it follows its meandering mile-deep chasm, he is amazed at seeing a pattern typical of an old valley rather than a youthful valley. Since geologists point to the Grand Canyon as the best example of a youthful valley and since the Colorado River is considered very old, it seems impossible at first to adjust the facts of the case to meet the situation. To the layman it would seem that a youthful valley should have a youthful stream flowing through it, but to the geologist the contrary facts in this case are clear and can be explained very readily to the layman.

The present canyon walls represent but a small part of the total sediment deposited in this region. In fact sedimentation proceeded almost continuously through the great Mesozoic period or the time when the giant dinosaurs were to the dominant creatures of the earth. Sedimentation even continued into the Tertiary or the time when the primitive mammals were becoming dominant. This area had been below sea level most of the time when an uplift occurred. The sediments that had piled up thousands of feet and consolidated into stratified rock were then subjected to the low disintegrating forces of nature. Streams, of which the present Colorado River was one, carried the disintegrated rock particles to a lower level to build stratified rocks of the future. This process continued for a long time until the 6,000 feet or more of sediment which once rested on the top-most wall of the Canyon was removed. The country had been reduced to a peneplain or base level. Whenever such a stage of erosion has been reached the drainage system is made up of sluggish streams. The streams follow a very low gradient to their mouths. They have performed their tasks of

reducing the country to base level. The country is then said to have arrived at old age or the age of senility. When such a stage has been reached the rivers become meandering streams. Such a stage was reached at the Grand Canyon for then the Colorado River was a sluggish, meandering stream, capable of carrying but little rock material to a lower level. Such a stage may be seen in southern Russia at the present time. When an area has arrived at such a stage it may sink lower and be built up by receiving sediments or again the area may be uplifted and rejuvenated. If the latter is the case erosion is renewed. Such a thing happened at the Grand Canyon about eight or nine million years ago. As the drainage system was already established the uplift merely caused the river to start anew its work of reducing the surrounding country while remaining in its old channel. As the uplift continued the river



Pattern of Colorado River
in western part of park.

with sediments as its tools cut deeper. Melted snows on the western side of the Rocky Mountains furnished water in such volume that the river's progress in carrying away the rock particles was rapid. The prevalence of a semi-arid climate in this area whereby the Canyon walls would recede but little and with the land being high there was but one inevitable result - the mighty chasm of the Grand Canyon of the Colorado River in northern Arizona.

Ponce de Leon seeking the mythical fountain of youth and modern exponents of gland treatments might take lessons from the Colorado River which is still young despite an estimated service of eight or nine million years.

MOUNTAIN SHEEP LEADS WAY UP THE TRAIL.

A party of park visitors recently had the pleasant experience of riding up the Bright Angel trail behind a mountain sheep.

The party had been down the trail to the river and were about 700 feet from the head of the trail on the return journey when a mountain sheep was sighted on the trail in front of them. The mountain sheep remained about one zig zag ahead of the party. Arriving at the head of the trail, the mountain sheep stood aside near Kolb Bros. Studio while the party passed and then descended into the Canyon.

THIRD PUBLICATION ON GRAND CANYON ANIMAL TRACKS.

In a recent publication of the U. S. National Museum by Dr. C. W. Gilmore, Curator of Vertebrate Paleontology, the described animal tracks from the Grand Canyon are further increased to thirty six.

Tracks have been described from three distinct formations. Many of the tracks represent animals that were previously unknown in the Carboniferous Period or the time of the great coal deposits. Some of the tracks depict animals weighing four or five hundred pounds while other tracks were made by animals no larger than a mouse.

In the publication entitled "Fossil Footprints from the Grand Canyon Third Contribution" Dr. Gilmore also mentions and illustrates some much older tracks of Cambrian age found on the Tomba Plateau. Dr. Gilmore shares the view advanced by the late Dr. Walcott that the older tracks were probably made by trilobites.

Curiously enough the tracks are the sole remains so far found of these former Grand Canyon inhabitants. Conditions may not have been favorable for the preservation of their bones or again their bones may have been preserved and merely await being exposed when a geologist's pick is struck into the rock at the proper place.

DEER LEAPS 1700 FEET TO DEATH.

Apparapkt well on the rim of Grand Canyon with a space of 1700 feet below, and an excited pet fawn are the facts surrounding the recent suicide of a pet deer at Yavapai Point.

Eight pet fawns -- a familiar sight at Grand Canyon -- had strolled east to Yavapai Point. They entered and wandered around in the unfinished trail-side observation station. Seven of them departed through the doorway while the eighth remained a few minutes longer. At last the fawn discovered his comrades gone and started to join them. Failing to find a door, the fawn saw the parapet wall and leaped over it and fell through space until he landed in the debris more than one-fourth mile below.