

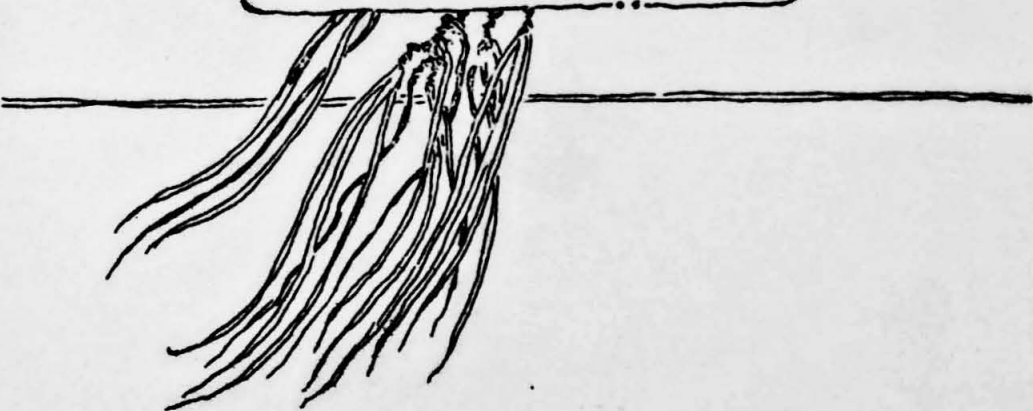
Grand Canyon Nature Notes



IN THE pages of Grand Canyon Nature Notes are expressed, above all, the ideals of many who seek to live in usefulness by disseminating a continuous flow of interesting and valuable facts of Nature recorded while privileged to closely associate their minds and hearts with such significant and inspiring truth as this great canyon offers.

As the moving spirit of this usefulness is public service so does it reflect the lessons of Peace on Earth, Good Will to Man, in faith of which we thus express ourselves in this, our Christmas issue.

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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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DRAGON-FLIES AT GRAND CANYON

By Clyde C. Searl, Ranger Naturalist

DURING the latter part of August, on the North Rim of the Grand Canyon, great numbers of a fairly large insect were seen flying rapidly, darting hither and thither, with no apparent object to their flight. These insects were dragon-flies. To the casual observer there was nothing peculiar in their presence, but to one familiar with the habits of insects, their presence was interesting. Dragon-flies must spend most of their lives in water, yet there are no streams or large lakes on the Kaibab Plateau. There are some isolated muddy pools which are havens to a few insects, but close examination has revealed no dragon-fly larvae in these places. Without any question, the dragon-flies seen on the rim had flown up from Bright Angel Creek several thousand feet below.

There is much superstition about members of the dragon-fly group. They are commonly known as snake doctors and snake feeders. They are called devil's burning needles, and are supposed to sew up the ears of little boys who wade in creeks. They are also known as horse stingers and mule killers, but they are as harmless as hummingbirds.

As a matter of fact, in carrying out the metaphor, dragon-flies are often spoken of as the swallows or hawks of the insect world. The dragon-fly catches and eats much of its food on the wing, and it eats nothing but flying creatures smaller than itself. It hunts its game over ditches and swamps, sloughs and bogs, where insects of many sorts breed by the millions. When an insect of fair size is caught, all six legs are formed into a basket-like cradle, until the two front legs can secure a good grip on the prey.

Several kinds and varieties of dragon-flies and their relatives, the damsel-flies, are found in the Grand Canyon region. Along Bright Angel Creek they are especially numerous and many have been collected below Grand Canyon village at Indian Gardens where there is a small stream suitable for life in the immature form. They have long, slender and very stiff bodies of metallic colors, as steel blue, purple, green, bronze, copper and silver white. Their four long silver gauze wings are beautifully veined, and are often spotted with white or amber or ruby colored patches. Their eyes are literally like jewels, and stand out in front of their weird faces.

Some groups of dragon-flies are disturbed by the slightest breeze and will quickly seek shelter upon the occasion of a disturbance, while others apparently like to frolic in the wind. Some will even fly close to the white capped waves at the seashore. If food is scarce over water, dragon-flies will wing their way to orchard or meadow in search of coddling

roths, weevils, or other insects. These dragon-flies seen on the Kaibab Plateau evidently had found in the air a plentiful source of food, judging from their numbers and the lengths of time they remained around the rim. The weather was calm during the entire period of their visit.



Dragon-flies are easily distinguished from damsel-flies by their position when at rest. The former keep their wings outspread, while the latter fold theirs down their backs as though wishing not to be noticed. Their name comes from the French word "demoiselle" which means "young lady". One damsel-fly is so gray and modest that it is called the Marsh Nun.

All of the dragon-flies are insect feeders, both in the adult and larval stages. The eggs are laid on the water in small masses, or in the stems of plants along the stream. The damsel-fly splits a stem with the ovipositor and places the eggs inside the stem for protection. The dragon-fly darts to a bed of water, inserts the end of the body beneath the surface and deposits a few eggs and then darts away to repeat the process over and over. The larvae of many of both of these insects have been observed in Bright Angel Creek, and in the quieter and smaller streams leading into it. Manzanita Creek opposite the Roaring Springs Power Plant, and Wall Creek below Cottonwood Camp are exceptionally good breeding places for these insects.

The larvae of dragon-flies are not worms or grubs, as are the larvae of beetles, moths, and butterflies, but they are imperfect insects similar to the younger stages of the grasshopper. They are called nymphs, and they live in the mud of streams, clinging to the roots of plants, and feeding upon mosquito larvae, tadpoles, caddis worms, Mayfly larvae, and countless other denizens of stream and pond beds.

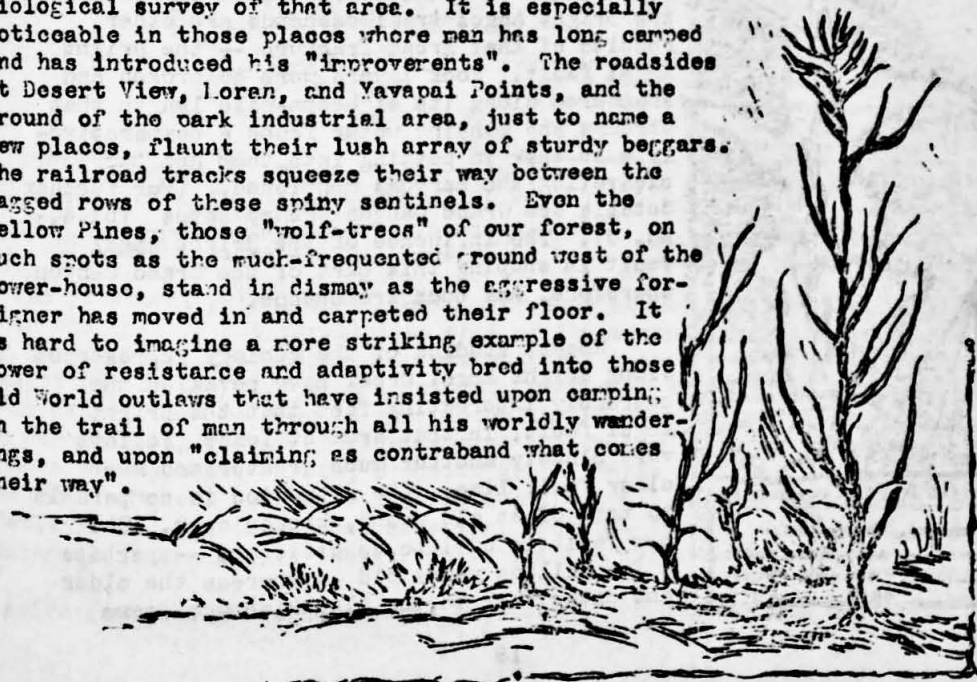


WING OF DRAGON-FLY

RUSSIAN THISTLE

By Earl W. Count, Ranger Naturalist

EVEN a place set aside by the American people to be kept in its virgin state for the benefit of all future generations somehow does not escape the invasion of the immigrant weed. The Old World exotic apparently does the same thing to the native American plant as the white man has done to the original American. The many places in the Park where this pest has gotten firm hold could be enumerated only in a biological survey of that area. It is especially noticeable in those places where man has long camped and has introduced his "improvements". The roadsides at Desert View, Loran, and Yavapai Points, and the ground of the park industrial area, just to name a few places, flaunt their lush array of sturdy beggars. The railroad tracks squeeze their way between the ragged rows of these spiny sentinels. Even the Yellow Pines, those "wolf-trees" of our forest, on such spots as the much-frequented ground west of the power-house, stand in dismay as the aggressive foreigner has moved in and carpeted their floor. It is hard to imagine a more striking example of the power of resistance and adaptivity bred into those Old World outlaws that have insisted upon camping on the trail of man through all his worldly wanderings, and upon "claiming" as contraband what comes their way".



The ORIGIN OF BRIGHT ANGEL CANYON

By Edwin D. McKee, Park Naturalist

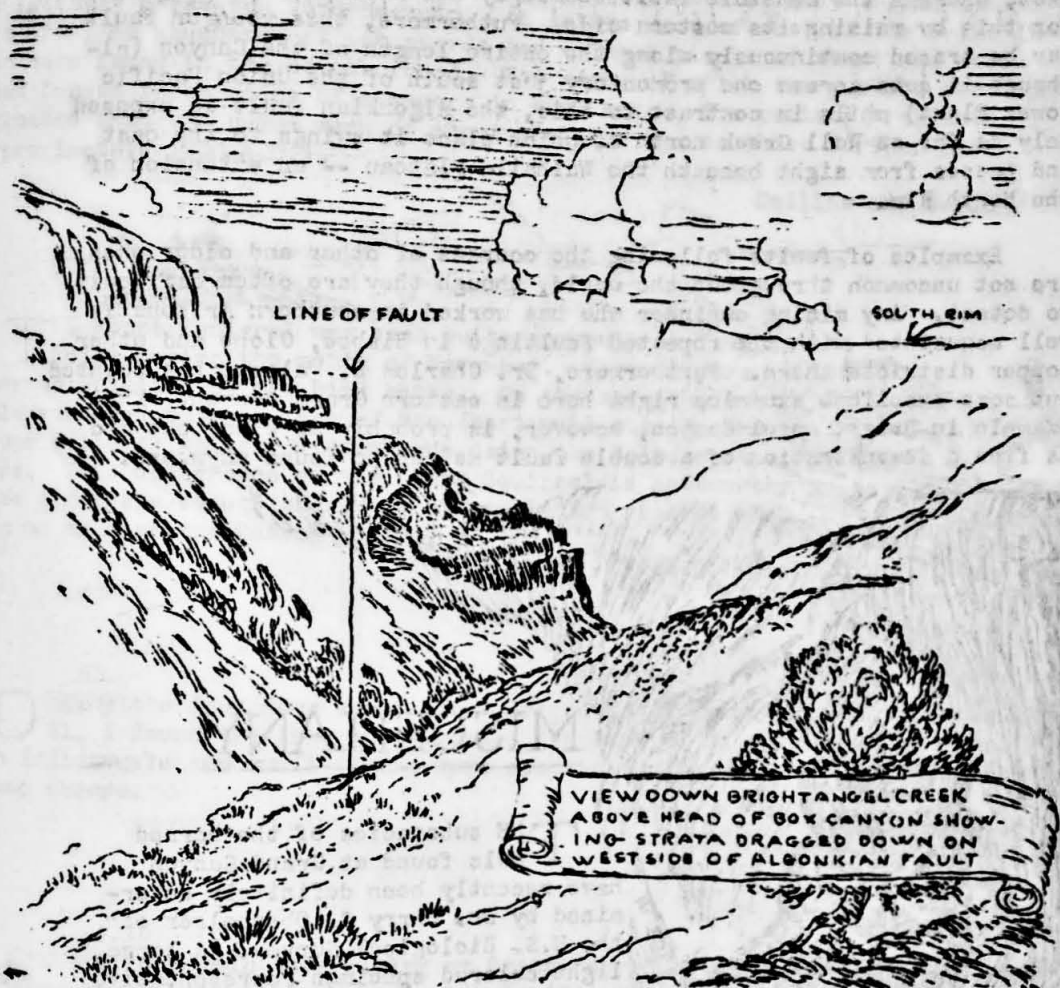


THE length, depth, and straightness of the tributary canyon through which flows Bright Angel Creek, make that gorge one of the outstanding and most striking features of the central Grand Canyon area. Nor have its dimensions and shape become emphasized to such an extent by mere accident. On the contrary, they are the results of a great fault or break in the earth's crust which occurred not far back in geological history. The rocks to the west of Bright Angel Creek were raised with respect to those to the east as can be seen in the present upper levels of the canyon sides. This particular break resulting from crustal movement -- from the vertical slipping of one rock mass past another -- is known as the Bright Angel fault.

The valley up which the Santa Fe train travels in approaching the South Rim of Grand Canyon, and also the steep-walled canyon which the Bright Angel trail descends are other results of that great fracture -- the Bright Angel fault. Rock layers were so broken and shattered along its eighteen-mile length that streams and running water found a comparatively easy task in cutting into them and thereby excavating the canyons mentioned. (For further details see Grand Canyon Nature Notes Vol. 4, No. 3). The influence of the Bright Angel fault in shaping this part of the Grand Canyon, therefore, has been tremendous.

Recent studies of the geology represented along Bright Angel Creek have revealed the extremely interesting fact that the Bright Angel fault, in that area at least, follows very closely another much greater and much older fault line. The situation is comparable to that of an old wound, broken open. The new fault is of late Cenozoic age -- perhaps a few million years old -- whereas the older one dates back to the Algonkian age, some

hundreds of millions of years ago. The more recent one consisted of a maximum movement of 180 feet; the other involved a vertical displacement of nearly a thousand feet.

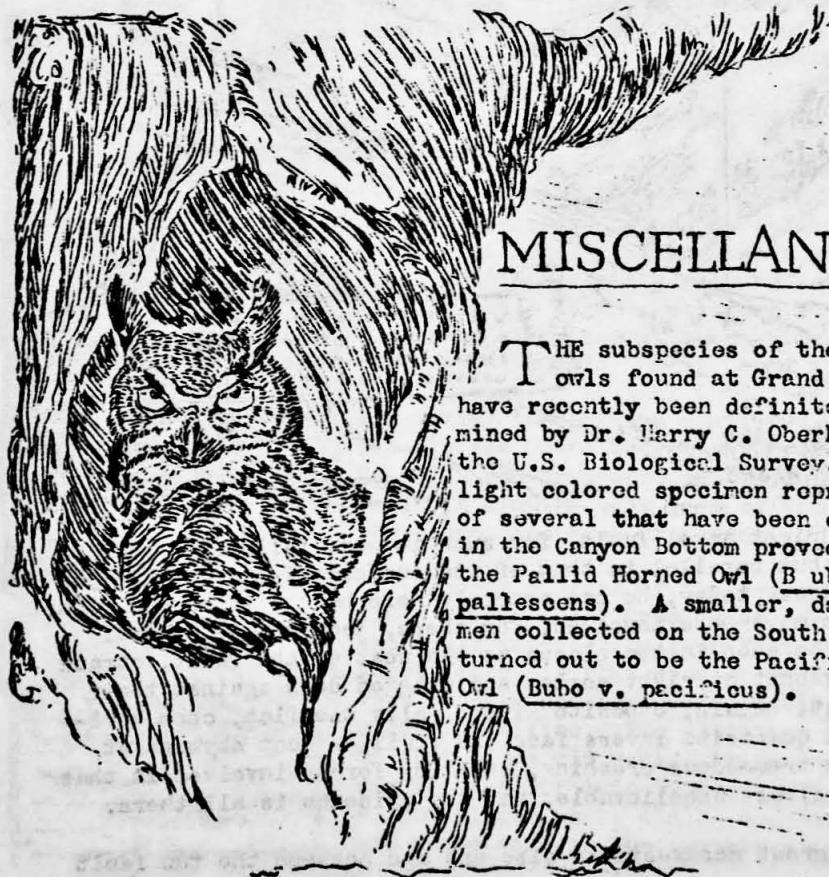


The ancestral Bright Angel fault, for such it was, followed a course just to the east of but parallel to that of its successor. As one travels along Bright Angel Creek today, he can scarcely help but be impressed with the magnitude of the movements involved, for there, just at the head of the Box Canyon, can be seen in two places to the west of the fault, strata which were literally bent at right angles and dragged down against their neighbors to the east. Again, opposite Ribbon Falls the flat, once horizontal tops of great quartzite layers face the trail -- bent skyward at the fault line. The tremendous crushing, breaking forces involved in that Alconkian fault are almost unbelievable, yet the evidence is all there.

Aside from the great contrasts in size and age between the two fault

lines which are followed by Bright Angel Canyon, there are also other striking differences. The older fault has its elevated side to the east, whereas the Cenozoic fault seemingly has attempted to compensate for this by raising its western side. Furthermore, this younger fault may be traced continuously along the entire length of the Canyon (although it cuts across one promontory just south of the Union Pacific Power Plant) while in contrast to this, the Algonkian fault is exposed only as far as Wall Creek north of which place it swings to the east and passes from sight beneath the Walhalla Plateau -- an extension of the North Rim.

Examples of faults following the courses of other and older ones are not uncommon throughout the world, though they are often difficult to detect. Any mining engineer who has worked in southern Arizona is well acquainted with the repeated faultings in Bisbee, Globe and other copper districts there. Furthermore, Dr. Charles D. Walcott has pointed out some excellent examples right here in eastern Grand Canyon. The example in Bright Angel Canyon, however, is probably as clear cut and as fine a demonstration of a double fault as can be found anywhere.



MISCELLANY

THE subspecies of the horned owls found at Grand Canyon have recently been definitely determined by Dr. Harry C. Oberholser of the U.S. Biological Survey. A large, light colored specimen representative of several that have been collected in the Canyon Bottom proved to be the Pallid Horned Owl (Bubo v. pallescens). A smaller, dark specimen collected on the South Rim turned out to be the Pacific Horned Owl (Bubo v. pacificus).

THREE interesting pueblo ruins were found this past month near the end of the Great Thumb Point in the extreme western part of the Park. They were exceptionally large, one at least being considerably larger than the recently excavated Tusayan ruin. As in the case of most of the ruins in this area, an abundance of pot sherds and chipped pieces of chert and obsidian were found in the neighborhood. The rooms of which the pueblos were composed formed three sides of a square in each case. The pottery fragments suggested that the ruins were of about the same age as those further east (approximately 1200 A.D.).

Collins and McKee

THE Abert Squirrel was seen quite commonly at Yavapai Point during the month of November. Several were observed drinking at the bird baths. On the seventh, one adult ventured onto the top of the short wall outside the museum building while a visitor was using the telescopes there. This occurrence of the Abert Squirrel is noteworthy since strangely enough there are extremely few records of them on or near the Canyon rim.

Clyde C. Searl

DURING the four days spent along Bright Angel Creek between November 17 and 21, I found the Ashy Ruby-crowned Kinglets to be extremely numerous. Both individuals and small flocks were seen in the trees and shrubs all along the stream course.

E.D. McKee

SOME of the mule deer living at Grand Canyon seem to have developed very strange tastes. One morning early this November I found a doe upon my front porch calmly eating from a long string of red peppers which had been recently purchased from a Mexican. Apparently the chili was not too hot to perturb her peace of mind.

Barbara H. McKee

