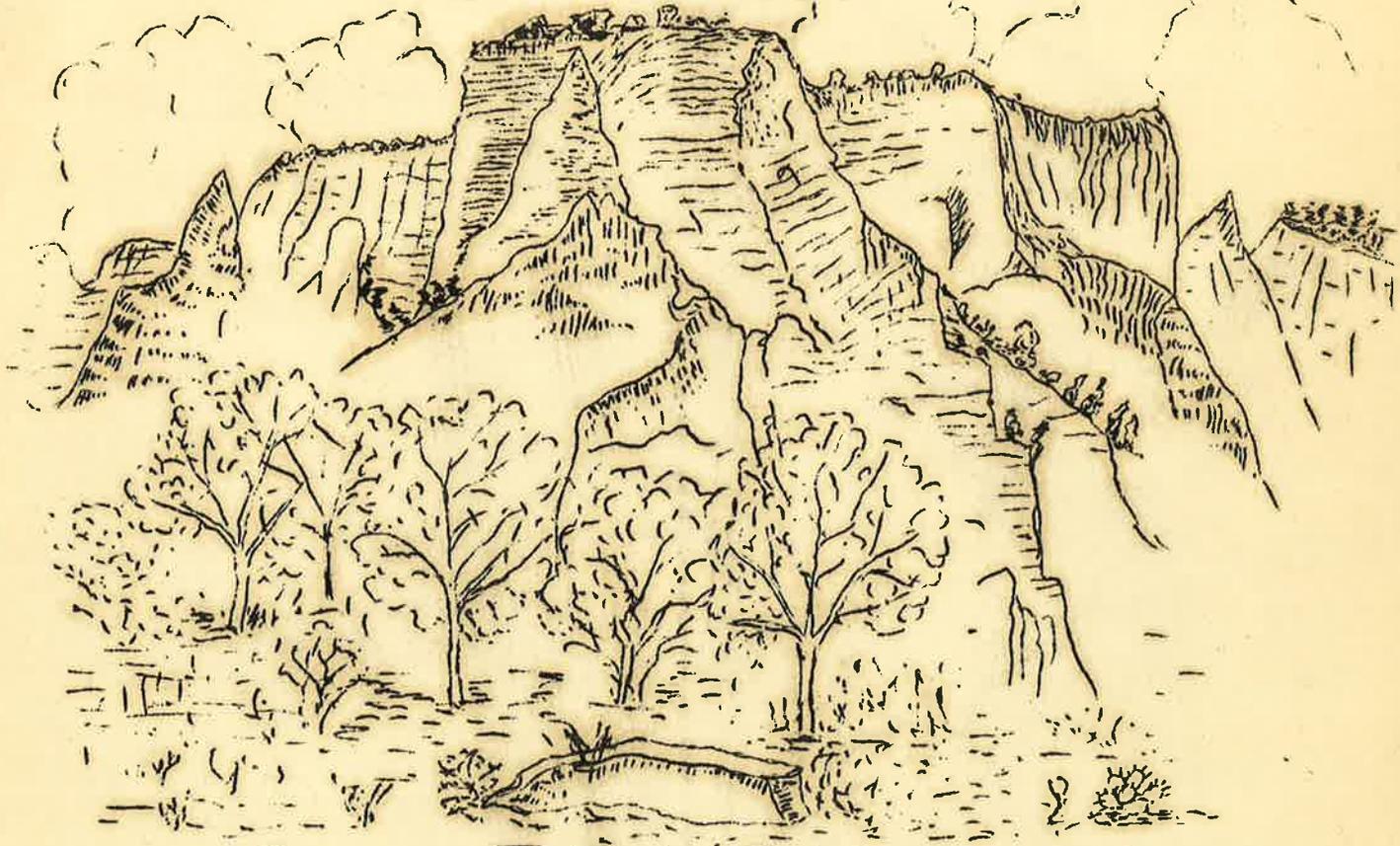


# ZION - BRYCE.

Nature Notes.

Vol. IV no. 1.



The Summit of West Temple.

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U. S. DEPARTMENT OF THE INTERIOR  
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ZION AND BRYCE CANYON NATIONAL PARKS, UTAH.

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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 Zion and Bryce Canyon National Parks. Additional copies of these bulletins may be obtained free of charge by those who can make use of them by addressing the Superintendent, Zion National Park, Utah. PUBLICATIONS USING THESE NOTES SHOULD GIVE CREDIT TO ZION-BRYCE NATURE NOTES.

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P. P. Patraw, Superintendent

John Gray, Park Naturalist

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#### WEST TEMPLE

The summits of West Temple greet the visitor long before his actual entry into Zion National Park. This is a huge mass of Navajo sandstone towering to a height of 7,795 feet, the highest point in the park. The sketch shows only the central portion and was made on the floor of the canyon near the river. The face of this great mass is precipitous and cut by several huge fractures. At the foot is a beautiful weeping rock from whence comes the head waters of Oak Creek. As far as the writer can determine, no one has so far scaled the summits of West Temple.

#### THE JURASSIC PERIOD IN ZION

Toward the close of the Triassic period, a great plain existed over the region now occupied by southern Utah. Rivers and streams were continually grading its surface, carrying to lower levels the sediments deposited during previous ages. Many plants and even large pine trees had developed over the higher portions of this region. Streams slowly uprooted huge trees and washed them out on to this gravelly plain, and covered them gradually with layers of sand, mud and gravel. Ages then passed, erosion played its part again, and the same trees were exposed to the view of modern man. On the mesas above Rockville may still be seen many of these trees, long petrified, now in varying degrees of perfection. These, the weapons of Shivarava, the Wolf-God of the Indians, lie where they were deposited, millions of years ago.

At the opening of the Jurassic era this great plain had sunk in part again below the level of the sea and shallow water prevailed and low lying plains. On the sea bottom and on its shores were formed beautiful colored shales, clays and sandstones. In it were deposited fossil fish, reptilian tracks and many other prehistoric forms. A layer now known as the Chinle was thus formed and its colorful strata attract the visitor at Springdale, just below the entrance to the Park.

Then lofty block mountains were formed to the west and south and the east-travelling winds could no longer carry their moisture into southern Utah. A vast desert developed east of these mountains, and moisture accumulating in the mountains washed sediments into this arid basin. Gradually the Jurassic winds lifted the sand from the stream banks and piled it into huge sand dunes. A vast Sahara was thus formed with sands to a depth of from 2,000 to 3,000 feet.

Time, with the aid of pressure and cementing substances, hardened the sand into rock, in huge stratified and curious cross-bedded layers, visible now in the walls of Zion Canyon. In this great desert of Jurassic times was formed the Vermillion Cliffs and White Cliffs of Navajo sandstone that form the walls of Zion Canyon and out of which is carved the Rainbow Natural Bridge.

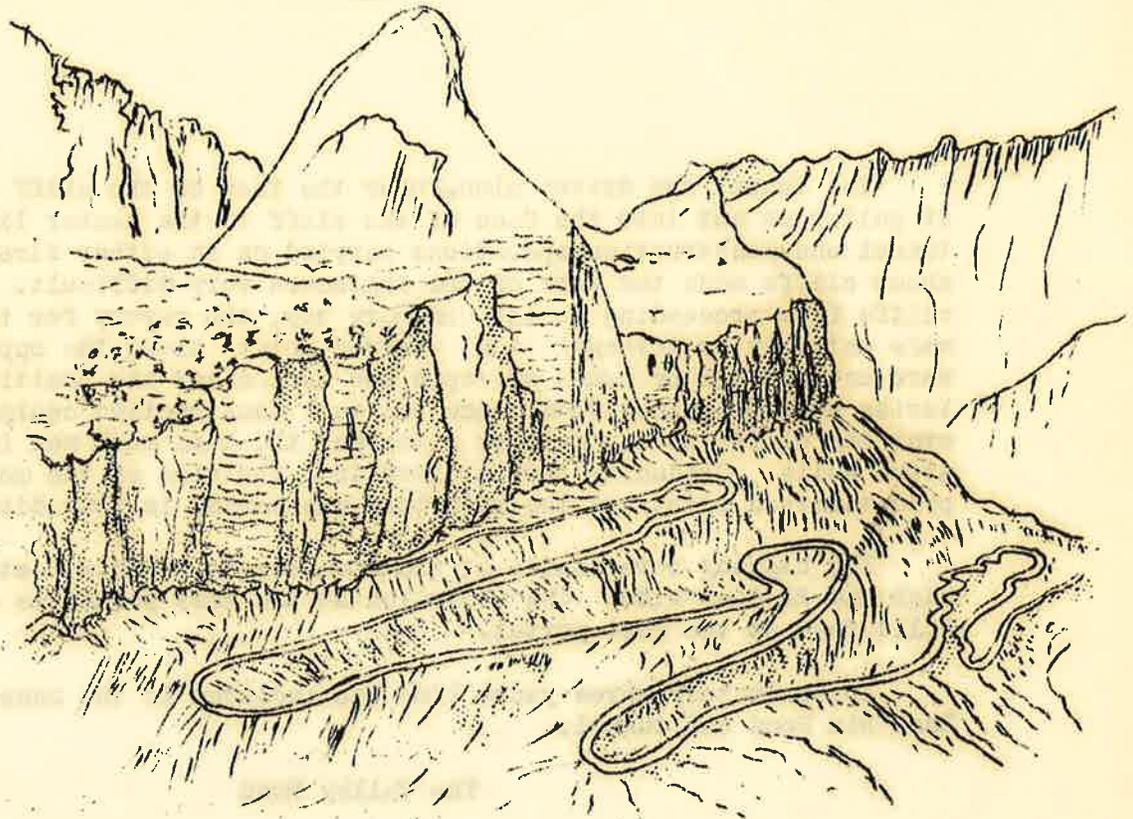
#### WHAT IS THE JURASSIC PERIOD?

The Jurassic is the middle period during the Ages of Reptiles, (Mesozoic era) and is named because of the excellent development of the strata of this period in the Jura Mountains. It was preceded by the Triassic Period, which receives its name from Germany where it was first studied and because of a three-fold development in the strata.

The Jurassic was followed by the Cretaceous Period, which is usually divided into an Upper and Lower period. The word comes from the Latin Creta meaning chalk, and the period receives its name because of the great thickness of chalk that was deposited during this period in England and France.

More about these periods next time, and how they apply to Zion and Bryce.

Zion-  
Mt. Carmel  
Highway



THE ROADS OF ZION  
Asst. Supt. T. C. Parker

In the last four years there have been sixteen miles of new modern highway constructed in Zion National Park, at a total cost of approximately \$1,750,000.

The East Rim Road

The East Rim Road (Zion-Mt. Carmel Highway) was constructed from the administrative area in Zion up Pine Creek Canyon, through the tunnel approximately one mile long, and then over the top of the East Rim to the old eastern park boundary. The completed road is 8.5 miles in length, with an additional 2.6 miles built by the State of Utah, which is now included within the present park boundary. The section below the tunnel, which is 3.5 miles in length, is a series of switchbacks, six in number, which are so located along the talus slopes that there are 3.5 miles of highway located and constructed in an area of less than one quarter square mile.

This is a very spectacular road project and has been called one of the boldest pieces of engineering work that has been attempted in highway construction.

The tunnel was driven along near the face of the cliff and a series of galleries cut into the face of the cliff to the center line of the tunnel and construction operations carried on in either direction. The sheer cliffs made the work of the engineers very difficult. Barred by these cliffs from proceeding in the ordinary way, the survey for the tunnel was made entirely by triangulation. Survey points along the opposite cliffs were established by means of ropes and cables and the position of the galleries was determined from these points. Construction equipment was carried over the cliffs to the gallery sites and the hard rock men invaded the sandstone walls. Gradually they drifted into the side of the mountain to a predetermined point and the main bore was worked in both directions.

The highway bore inside of the mountain, is 5,613.2 feet long, 16 feet high and 22 feet wide. The elevation at the west portal is 4,834 feet, and 5,115 feet at the east portal.

Approximately three years time was included in the construction of the East Rim Road and tunnel.

#### The Valley Road

The Floor of the Valley Road, beginning at the bridge near headquarters area, traverses the main Zion Canyon to the Temple of Sinawava. Zion Canyon is a very narrow gorge above the Temple and the gorge will not lend itself very readily to road construction past its present terminus.

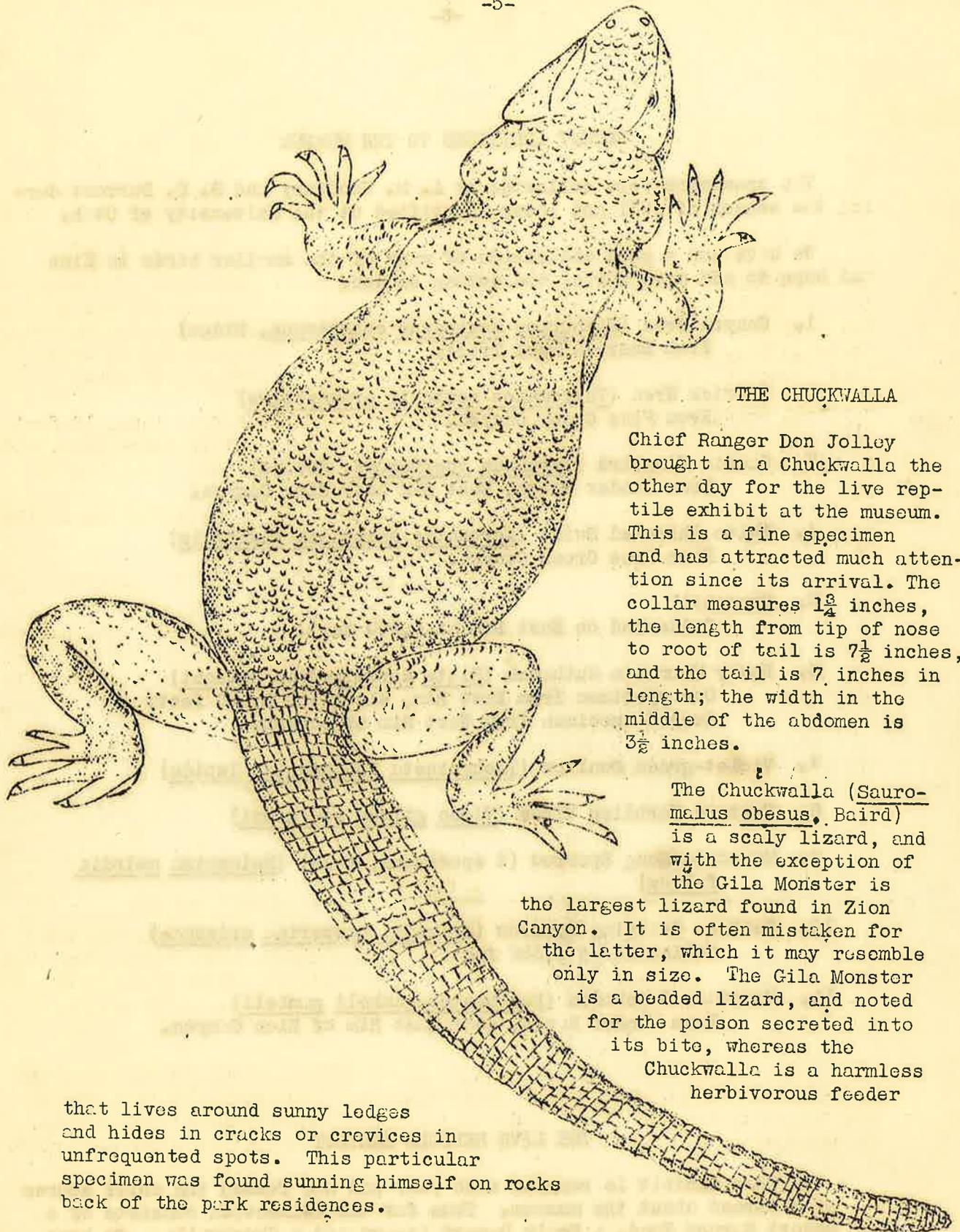
This road has no outstanding features but it carries the tourist on a delightful trip through the scenic part of Zion.

#### JERRY

Jerry is doing fine and is the pet of the Park. She is a young Mule Deer which was found injured in the canyon last fall. Mrs. Parker took the little one in hand and her injuries were soon healed. Jerry has the freedom of the canyon and wanders between the upper and lower flats seeking a handout of sugar or cakes.

The call of the wild, however, is still strong in her blood and every now and then Jerry takes French leave from the dwellings, but in a day or two she returns, just as friendly as ever. One must approach her easily, as quick movements or strange faces will send her scurrying into the brush.

Zion has other deer that can be seen nightly feeding in the canyon or up on the slopes. Often they stand and watch the lights of a car, but at the slightest disturbance they are off into the timber. Zion needs more deer like Jerry.



THE CHUCKWALLA

Chief Ranger Don Jolley brought in a Chuckwalla the other day for the live reptile exhibit at the museum. This is a fine specimen and has attracted much attention since its arrival. The collar measures  $1\frac{3}{4}$  inches, the length from tip of nose to root of tail is  $7\frac{1}{2}$  inches, and the tail is 7 inches in length; the width in the middle of the abdomen is  $3\frac{1}{2}$  inches.

The Chuckwalla (Sauromalus obesus, Baird) is a scaly lizard, and with the exception of the Gila Monster is the largest lizard found in Zion Canyon. It is often mistaken for the latter, which it may resemble only in size. The Gila Monster is a beaded lizard, and noted for the poison secreted into its bite, whereas the Chuckwalla is a harmless herbivorous feeder

that lives around sunny ledges and hides in cracks or crevices in unfrequented spots. This particular specimen was found sunning himself on rocks back of the park residences.

RECENT ADDITIONS TO THE MUSEUM

The specimens were collected by A. M. Woodbury and S. D. Durrant during the season of 1931 and later identified at the University of Utah.

We have now a good collection of many of the smaller birds in Zion and hope to add more during the coming season.

1. Canyon Wren (Catherpes mexicanus conspersus, Ridgw)  
From Emerald Pool Trail.
2. Berwick Wren (Thryomanes bewickii eremophilus)  
From Pine Creek Canyon.
3. Cassin Kingbird (Tyrannus vociferans, Swains)  
From Winder Ranch, East Rim near Zion Canyon.
4. White Throated Swift (Aeronatis saxatilis saxatilis)  
From Pine Creek Canyon.
5. Crossbill  
Collected on East Rim at 6,500 feet.
6. Rocky Mountain Nuthatch (Sitta carolinensis nelsoni)  
One specimen from East Rim, elevation 6,500 feet;  
second specimen from West Rim of canyon.
7. Violet-green Swallow (Tachycineta thalassina lepida)
8. Western Warbling Vireo (Vireo gilvus swainsoni)
9. Mountain Song Sparrow (2 specimens, male) (Melospiza melodia fallox)
10. Western Chirping Sparrow (Spizella passerina arizonae)  
Collected at 4,300 feet.
11. Mountain Chickadee (Parus gambeli gambeli)  
From Winder Ranch, near East Rim of Zion Canyon.

THE LIVE REPTILE EXHIBIT

This exhibit is renewed each year and has formed the chief source of interest about the museum. Thus far the collection consists of a Desert Horned Toad, a Scaly Desert Lizard and a Chuckwalla. We hope to add several snakes in the near future.

Pistillate  
Catkin of the  
Willow.



THE WILLOW FAMILY IN ZION

No one can visit Zion without remarking about the beautiful deciduous forest that extends along the floor of the canyon. Poplars and willows make up the principal trees of this flora, and contribute vastly to the beauty, color and restfulness of the landscape.

Water willows hem the river and flood lands and protect the soil from the agents of erosion. Huge cottonwoods dot the shore, surround the dwellings and cover the roadways; smaller ones grace the campgrounds and offer shade and shelter to the hot and weary camper.

The willows bear their anthers on some trees or bushes in beautiful catkins which are first silvery, then yellowish to golden in color. Their bright color and sweet scent attract bees and other flower insects that are capable of carrying pollen. Nectar is found in both staminate and pistillate flowers. The greenish catkins bearing stigmas develop at the same time and each scale bears at its base a pistil with a Y-shaped stigma, but no stamens.

Bees and other insects seeking pollen and nectar carry the pollen from the anthers to the stigmas and bring about fertilization.



Staminate  
Catkin of  
the Willow

The poplars also have their flowers in catkins; the staminate and pistillate catkins on different trees. The pistillate catkins look like a string of green beads. Slight breezes shake the poplar trees and clouds of dusty pollen float for long distances. An excess of pollen is always produced so as to insure some of it reaching the pistillate flowers.



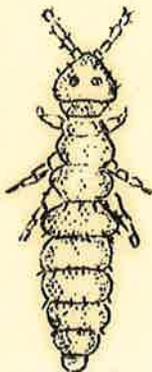
Pistillate  
Flowers of  
the Poplar

Poplars are generally found on forest borders or in open fields. They have been called the "ghosts of forest fires" because they are the first to spring up in forest land devastated by fire.

In Zion National Park the willow family (Salicaceae) is represented by the following members:

1. Rocky Mountain Aspen (Populus aurea Tridestrom). This species is found above the pinon and white pine belts and is distinguished from *P. tremuloides* by lighter colored bark.
2. Fremont Cottonwood (Populus fremontii, S. wats) This species is common along the floor of the canyons and is commonly in Covillea (Creosote Brush) and Artemisia (Sagebrush) belts of Utah and Arizona.
3. Narrow-leaved or Black Cottonwood (Populus angustifolia, James) This species is not found in the Park, but is common in the adjacent Pine Valley Mountains and on Cedar Mountain.
4. Water Willow or Sandbar Willow (Salix exigua, Nutt) This is the common willow found along the river and flood lands of Zion Canyon. It forms a shrub or small tree.
5. Narrow-leaf Black Willow (Salix candata, Nutt) This is a member of the yellow pine and aspen belt association.
6. Salix scouleriana, Barratt. This species is found along the streams and in canyons associated with yellow pine and aspen.
7. Wide-leaved Black Willow (Salix lasiolepis, Benth)
8. Salix laevigata, Bebb.
9. Peach-leaved Willow or Black Willow (Salix amygdaliodes, Anders) Specimens are found on the floor of the canyon near the swimming pool.

THE SNOW FLEA  
Ranger Maurice Cope



One warm day last fall just after the first heavy snowfall I walked through the snow for about one mile. Upon my return by the same route I noticed in my tracks thousands and perhaps millions of Snow Fleas (Achorutes nivicola.)

They seemed to be living in the snow. Further investigation proved that much of our drinking water was full of snow fleas. During the remainder of the winter I was careful to strain all water used so as to separate out the fleas. When warm spring days came they disappeared to take up a new home in rotten logs, under damp and decayed leaves, and in soil, where the immature could be protected from light.

These insects are vegetarians in feeding habits; they feed on tender plants, planted seeds and decaying organic material.

MISCELLANEOUS NOTES

Events at Bryce, as told by Ranger Cope to Asst. Supt. Parker.

Bryce has had a cold winter, with lots of snow. The lowest temperature reached was -4 degrees, on March 12, with a six-inch snowfall for March. A total of 134 inches of snow is recorded for the winter.

At this date (April 16) the snow is melting fast and the state and county roads are open, as well as the drive to the lodge, although the trails into the canyon are still closed. There has been a great accumulation of moisture in the region and the old timers are all predicting a beautiful spring with an abundance of wild flowers.

Ranger Cope saw three mule-tail deer in Campbell Canyon in March. He states that it is very unusual to see them here at this time of year, or in fact at any time.

A few raven flew over Bryce during March, but no other birds were seen.

Dr. John Gray has recently been appointed Park Naturalist of Zion and Bryce Canyon National Parks. He comes to the National Park Service from the Bureau of Entomology of the Department of Agriculture. Dr. Gray has had much experience in research and teaching in biological and educational work in several states and before entering the Government service was a professor at the University of Florida.

Dr. A. M. Woodbury, his predecessor as park naturalist, who has decided to continue his educational work at the University of Utah during school periods, will serve on the park's educational staff as ranger-naturalist during summer seasons.