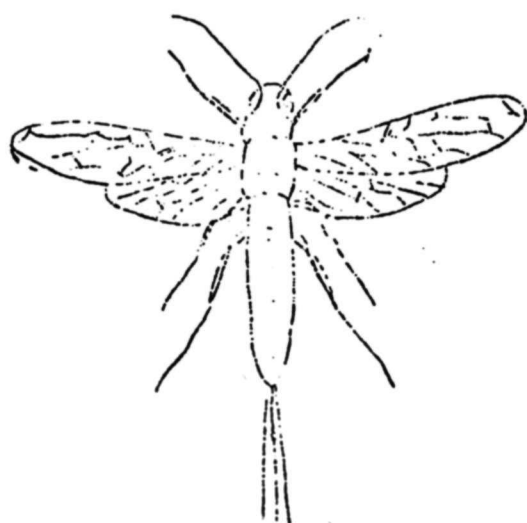


NATURE NOTES



California Hornbill.

From
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DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

CRATER LAKE NATIONAL PARK

OREGON

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This is one of a series of bulletins issued monthly during the summer season, by the staff of the Educational Division to give information on subjects of interest concerning the Natural History of Crater Lake. It is supplemental to the lectures and field trips conducted by the staff.

BUMBLEBEES OF CRATER LAKE NATIONAL PARK

The bumblebees of any section present a very interesting study as one watches the workers going from flower to flower in their efforts to provide the necessary nectar and pollen for the colony needs at home in some deserted mouse nest.

If the individual bumblebees are watched more closely, it will be observed that there are apparently several different kinds, as in fact, there are. Some have conspicuous bands of red or brown on the abdomen, some are black and yellow, while others are marked with a white tip on the end of the abdomen.

There are in fact no less than five or six species of bumblebees found frequenting our alpine and subalpine flora. The two most common forms seen are the Occidental (Bremus occidentalis) and the near-artic bumblebees (Bremus biforius nearticus). The former is more often seen on the Lewis Mimulus, while the latter has been more often taken on rabbit brush in the Canadian Zone.

It may be recalled here that the bumblebee colony maintains itself only through the short summer months. In late summer all of the individuals of the colony die except the young queens, which retire to some protected spot, and hibernate during the winter months. When the snow melts and spring flowers appear, the young queens come out, and start feeding on such early plants as the willow and maple. After a brief period of aimless wondering, they start to look for a suitable nesting place. In the early stages of brooding, the young queen does all the work of wax secreting, food gathering, brooding, and so on, until the first batch of young workers appears. These are also females, but of small size. The queen from then on remains in the nest. Additional small female workers are produced, and these assume the field duties of the queen, and assist in caring for the brood. By late July as a rule, males or "drones" appear. Soon young queens are produced which resemble the workers in all respect except size, they being much larger. After mating, the young queens retire for the winter, and the yearly cycle is complete.

It might be of interest to know that a colony of yellow jackets passes through the same yearly cycle. The outstanding difference being that yellow-jackets feed their young on animal matter while the young bumblebees are fed on nectar and pollen from flowers.

--- H. A. Scullen,
Ranger Naturalist.

HUNTING WASPS.

Hunting Wasps are so called because they go about capturing other insects which they use for food for their young.

There are many different species adapted to different habitats, and each, as a rule, has his own idea about the best food for baby wasps. Some use only flies, some refuse everything but beetles, while others take only spiders or caterpillars.

There are many different species of these hunting or solitary wasps, as they are also called, in Crater Lake National Park.

Probably the most interesting species of hunting wasp is the *Ammophila*, which can be recognized by its long, slender abdomen, mostly red, but with a black posterior end. The adult may often be seen on flowers where it feeds on pollen. As a rule, however, she can be seen lying about among the leaves looking for caterpillars. When one is found which meets her requirements she grabs it about the neck with her strong jaws, and inserts her stinger into the underside at several points. This paralyzes the worm, but as a rule, does not kill it. The supply of fresh meat is then carried to a little hole in the ground, which the mother wasp has previously made. An egg is then laid on the paralyzed worm, the hole covered, and forgotten about. In due time the egg hatches, the young wasp feeds on the living, but not active flesh, but does not emerge as an adult until the next year.

All of our solitary, or hunting wasps, have similar habits. They differ only in the kind of food they use, and the place they build their nests. Some use the small holes made by various wood-boring insects. Some build small mud nests in protected places. In fact the kind of nest and its location differs among the species as much as does the food they use.

----- H. A. Scullen,
Ranger Naturalist.

THE CALIFORNIA TORTOISE SHELL BUTTERFLY.

Many visitors to Crater Lake National Park during the past month have had their attention brought to the large number of butterflies flying in and through the park, and often becoming troublesome on the radiators of automobiles.

The California tortoise shell (*Vanessa californica* Behr.) is the name applied to the species which is most commonly seen. They may be seen in great numbers from the Transitional Zone to the highest points in the Hudsonian Zone where they are most common about moist places, but are often seen flying by the thousand in one direction, apparently heading for a definite place. The following day, or even later in the same day, they are found moving in the opposite direction. The larvae of this species feed on several of the wild shrubs of the mountains, and often do considerable damage in this way.

----- H. A. Scullen,
Ranger Naturalist.

Bugs Part III

In 1929 a sum of approximately \$17,500 was expended in the work of control. This included a deficiency appropriation. An item of great expense was that of transportation. It was necessary to transfer all supplies from trucks to caterpillar tractors some twenty to thirty from the actual scene of work. This was greatly reduced in 1930, since snow plows had been acquired and the roads were kept clear, and supplies brought directly to the work on trucks.

In 1929 twenty-three thousand five hundred forty-four trees were treated. These covered an area of six thousand fifty-five acres, or an average of approximately four trees per acre. The work for that year covered the period from May 10 to July 8. This in itself indicates the intensity with which the work must be advanced. Beetles may by that date be observed in the forest, and since the object of the process is to destroy them before they have matured in the trees, any further work is useless.

In 1930 the appropriation was \$7,500. As mentioned, less was expended for the formidable item of transportation. This year 9850 trees were cut over an area of four thousand three hundred acres. This gives an average of 2.28 trees per acre. The period of work was May 13 to July 9 when again mature beetles were found, and the operations of necessity suspended.

An interesting fact developed when the final figures were studied. Due to various factors, including lack of time and funds, an area (denoted as area "N") was not treated in 1929. In 1930 the percentage of infected trees in all areas excluding area "N" was 26%, and these were scattered. In area "N" the percentage of infected trees was found to be 65%. This accidental check on conditions gives a rather encouraging indication that the work is succeeding.

The average number of trees cut by a Falling crew per working day is 43. A competition developed between several crews this year and individual days cuts mounted until an almost unbelievable high record was established by one crew, of 137 trees cut in one day. This might well be included in "Believe it or Not" by Ripley.

National Park areas are preserved in as far as possible in their natural conditions. An infestation of any kind might be considered as a natural condition to be allowed to run its course. A forest fire due to lightening is also a natural condition, yet the argument would hardly be presented, that a forest fire due to any cause should be allowed to destroy our forests. A tree attacked by the mountain pine beetle in 90% of instances, is a dead tree in time. Therefore if by destroying that tree all others may be preserved, the effort and sums expended are justified. If by destroying thousands of trees, all trees in this and other states are preserved, with their scenic and commercial value considered, then the sacrifice is unquestionably justified and the success of the method developed in Crater Lake National Park is of importance far beyond the possibility of calculation.

E. Homuth

C O N E S

It is not often that the Mountain Hemlock trees about the Rim of Crater Lake bear a large crop of cones. It has happened that for several years scarcely a cone has been produced, but this season the trees are virtually loaded down with maturing seed-cones. We have seen many branches that have been broken by their weight.

The White Bark Pine is another tree that often fails to produce cones for several years at a time, but like the Mountain Hemlock, it is heavily loaded this season.

The same heavy crop of cones is also seen in the Shasta Red Fir and the Noble Fir.

It has been said that some conifers bear a large crop of cones every six years, this probably being due to some cyclic change in the physiological condition of the tree. The fact that every species of conifer in the Park is bearing an unusually heavy crop of cones would seem to disprove this theory. It would be a remarkable coincidence, indeed, if all of the coniferous trees of Crater Lake should have the fertile peak of their physiological cycle the same year.

The season at Crater Lake was very much earlier and warmer than in most years. The snowfall was very light. Is it not reasonable to suppose that the early, warm spring was the important factor in the large seed production of our conifers, rather than some independent physiological change in the tree?

--- F. Lyle Wynd,
Acting Park Naturalist.

HOW BEES CARRY POLLEN

If we watch the many kinds of bees which visit the flowers of Crater Lake National Park, we will sooner or later see a very busy little bee about a half-inch long with its abdomen stuck up at right angles to the remainder of its body. On the exposed surface of the abdomen will be seen a bright yellow mass of pollen embedded in the bristles. This is one of the leaf cutting bees (*Megachile*), if she is gray color. If she is bright green or blue, she is an *Osmia*. Both are common in the park. The family of bees to which both of these belong are of special interest, because of their habit of carrying pollen on the abdomen rather than on the legs as do most other bees.

---- H. A. Scullen,
Ranger Naturalist

THE DEVIL'S BACKBONE

On the western slope of Mount Mazama is a jagged ridge of rock, the mute product of the original Mount Mazama, and the object of a fascinating story.

Mount Mazama has been gradually built up by the outpouring of lava from the crater, and its slopes. Beneath it once lay a heated body of rock, ever waiting for a chance to come to the surface. Occasionally this mass became unusually restive, and once the mountain could no longer withstand its attacks. Long cracks formed down the slopes of the old volcano. The eager lava quickly filled them, - the first stage in the formation of the Devil's Backbone was over.

The lava cooled, ages passed, and the mountain lay dormant. No longer did lava flow down its summit. Instead, glaciers carved its slopes, and gradually wore them down. The wind, the ice, and the rain have all attacked the lava which filled the crack; but more resistant, the newer lava has steadily resisted, and today stands out from the Rim, clearly perceptible from the Lodge.

--- Robert L. Myers.

INSECTS ATTRACTED TO NEW BURNS

For some strange reason some wood-boring insects are attracted to new burns. Possibly this is due to the fact that their young live in dying trees. Probably the most interesting case is that of the Horntails (Siricidae). These are so frequently seen about forest fires that they often attract the attention of the fire fighters.

They are reported as having been seen laying their eggs in the trees still hot from the forest fire. The California Horntail (Urocetus californicus (Mort.) was recently taken about a new burn near Red Cone. A smaller undetermined species was also taken.

---- H. A. Scullen,
Ranger Naturalist.
