

THE LEPIDOPTERISTS' NEWS

Volume 11

1957

Numbers 4-5

PRESIDENTIAL ADDRESS TO THE SEVENTH ANNUAL MEETING OF THE LEPIDOPTERISTS' SOCIETY

Mr. Chairman, members and guests of the Lepidopterists' Society:

You have given me great honor by selecting me as your President for this year. I am pleased to be able to address you personally, to bring you greetings, and to send our best wishes to lepidopterists all over the world, many of whom we may have met for the first time at the Tenth International Congress of Entomology held in Montreal, Canada, last August.

In this address, I should like to indicate some of the problems that confront us in a taxonomic study of many groups of lepidopterous leaf-miners. As examples of these problems, I shall deal with some of the species of the gelechiid genus *Recurvaria*, particularly those that mine the needles of conifers.

A few years ago, I was assigned the task of identifying a species of the genus *Recurvaria* that had a two-year life cycle and was mining the needles of the Lodgepole Pine, *Pinus contorta* Dougl., in Alberta and British Columbia. The larvæ were so abundant that they caused considerable alarm for the safety of the large stands of that tree. The species had been called *R. milleri* Bsk., which was described from the Yosemite region of California, where it is a pest of *Pinus contorta murryana* Balf. and has a similar two-year cycle. Specimens from Western Canada had not been submitted to me for identification, and no specimens of *milleri* from California were in the Canadian National Collection. It was therefore essential to obtain material, and on request, many hundreds of specimens were obtained.

I wish here to acknowledge the kind assistance given by Dr. J. F. GATES CLARKE, United States National Museum, Washington, D.C., the recognized authority on the Gelechiidæ, and Dr. A. B. KLOTS, American Museum of Natural History, New York, for information on type specimens and the loan of typical material. The co-operation of various officers of the Forest Biology Division, Canada Department of Agriculture, is also gratefully acknowledged.

What had been called *milleri* in Western Canada consisted of at least six species belonging to five genera and three families—all small, dark-gray or blackish moths, superficially somewhat alike. Early in the study it became apparent that *milleri* did not occur in Canada, or at least was not involved in the outbreak. The fore wings of the Californian *milleri* are mainly white with small black dashes, whereas those of the Canadian specimens are dark-gray to black with small white dots or dashes. It was thought from the literature that some of the specimens might be *R. moreonella* Heinr., a

species that feeds on Ponderosa Pine, *Pinus scopulorum* (Engelm.) Lemmon, in Colorado. However, *moreonella* proved to be a small, black species, with a white, mid-longitudinal streak through the fore wing. Apart from the other families and genera in the Alberta and B. C. material, that were only incidental and not a significant factor in the outbreak, two main undescribed species of *Recurvaria* were involved, one in the Banff, Alberta, region, having a two-year life cycle, and the other a few miles away in eastern British Columbia with a one-year life cycle. They resemble one another in wing pattern but have very different male genitalia. The genitalia of the Banff species, of *milleri*, and of *moreonella* are almost identical, but the wing patterns are dissimilar as mentioned above.

Another group of these miners occurs in Eastern Canada. They mine in the needles of spruce, hemlock, Eastern White Cedar, Balsam Fir, and juniper. Some also mine in the cones of spruce and some in the staminate flowers of pine. The genitalia of all these eastern needle mining species appear to be identical. Some of them have only slight differences in the maculation of the fore wing and their specificity has not been established. Tests for oviposition preference, when given a choice of food plant, failed because I was unable to induce egg-laying in captivity on any host plant, even though many of the females were ovipositing in nature just before being confined in a cage. A detailed study of mine types and larval habits will no doubt help to clarify the relationships of these forms. It is notable that the color and maculation of the hemlock feeder, *R. apicitripunctella* Clem., are very close to those of *R. eryngiella* Bott., a species that feeds on *Eryngium aquaticum* Linn., an umbelliferous plant that grows in the bayou region of the Gulf of Mexico. However, in this case, the male genitalia are very different.

Two of the described eastern species feed on juniper; one, *R. gibsonella* Kft. on *Juniperus communis* L., the Common Juniper, and the other, *R. juniperella* Kft. on *Juniperus virginiana* L., the Red Cedar. *R. gibsonella*, an ochreous-colored species, occurs as a pest on juniper in Eastern Canada. *R. juniperella*, a light gray species, occurs in the Carolinian zone where the Red Cedar grows. Having no specimens of this species, I therefore searched on the Red Cedar in southern Ontario, where the Carolinian zone extends as a narrow belt along the north shore of Lake Erie. The larvæ were abundant and mining the needles in mid May. In July the moths emerged, but instead of being light gray as is *juniperella*, they were coal black, apparently another undescribed species.

One of the officers of the Forest Biology Division, Science Service, Canada Department of Agriculture, reared a few specimens of a *Recurvaria* species from the cones of spruce near Ottawa, Ontario. The adults emerged in late July. The next spring, my assistant Mr. GEORGE LEWIS and I visited the same area, in fact the same trees, and collected a few hundred cones. Adult specimens emerged, not in late July but in June, and were not of the same species that had emerged from the spruce cones the previous summer.

The male genitalia of the conifer-feeding species are very complex and asymmetrical, making comparison between species, and often between indi-

viduals, difficult. For example, the left clasper is very much aborted, and this condition is apparently counter-balanced by a lateral extension of the left side of the tegumen. This peculiar asymmetry is not present in *Recurvaria nanella* Hbn., the type species. Furthermore, the larva of *nanella* makes, at first, a digitate mine in the upper surfaces of leaves of apple and hawthorn in early autumn, hibernates during the winter, and bores into the buds in the early spring. The needle miners mine throughout the larval period, moving from one needle to another under the cover of a small silken tube. These differences strongly suggest that the needle miners are not congeneric with *nanella*.

Another species, *R. alnifruetella* Bsk., feeds in the male catkins of alder, *Alnus* spp. The feeding of the larva, as the catkin develops, causes the catkin to bend rather sharply near the apex, or to curve gradually and assume a hooklike appearance. We are attempting to rear this species at the present time, and it is possible that the larvæ leave the catkins in late fall and hibernate or pupate in the soil. If this is the case, they may require flooding or very wet soil in the spring, because, as a rule, the stream beds in low land where alder grows, are flooded for a considerable period each spring.

As previously mentioned, problems of this sort are common in many groups of leaf-mining Lepidoptera. It is probable that well over 25 per cent of the North American species remains to be discovered and described. This huge task will require many workers. Each of us can assist by rearing adults from mines that may be found in the garden, vacant lot, park, or woodland. It is advisable to make careful and complete records of the type of mine, food plant, and larval habits, because some part of the behavior is the most certain criterion for the recognition of any species.

T. N. FREEMAN,
Insect Systematics and Biological Control Unit, Entomology Division,
Canada Department of Agriculture, Ottawa, Ont., CANADA

EARLY STAGES OF *EUTACHYPTERA PSIDII* (LASIOCAMPIDÆ),
A RARE MOTH FROM SOUTHERN ARIZONA

by JOHN ADAMS COMSTOCK

In midsummer of 1956 the Division of Entomology of the Los Angeles County Museum organized a field trip in which the writer was included. One of our objectives was to make collections of Lepidoptera and obtain life history material in high elevations of the Chiricahua Mountains of southern Arizona before the advent of the summer rains.