with, and the other a yellowish ichneumonid, the pupa of which was included in a delicate white silken cocoon.

It seems probable that where clover is regularly cut in early summer and again in fall this insect will not increase to any alarming extent; but where this is neglected, or where there is much waste clover, it may do considerable damage.

We append a more extended description of the larva.

**Lanaria mozardi.**

*Larva.*—Length 8 mm.; color light yellow; tips of mandibles and anal horns brown. Subcylindrical in shape, the anal segment only being narrower than the preceding joint. Average width, 3 mm. Thoracic legs long and stout; only one prop leg, which is under the anal segment. The anal segment is armed upon its dorso-posterior border with two upward-curved acute hooks placed close together. The head is broad, somewhat flattened dorso-ventrally. Antennae prominent, 4-jointed, 3d joint longest, 4th joint slender. Labrum broad, rounded, with a row of small piliferos tubercles at its anterior border. Mandibles, 3 toothed. Maxillary palpi, 3 jointed. Labial palpi 2-jointed, stout.

**The Clover Oscinis.**

*(Oscinis trifolii, Burgess [n. sp.].)*

Order *Diptera*; family *Oscinidae.*

Mining the upper surface of the leaves of *Trifolium repens* (white clover); small, greenish-white maggots, transforming under ground, and ultimately becoming active, minute, two-winged flies, yellow and black in color.

If the leaves of white clover (*Trifolium repens*) in the District of Columbia and vicinity (we are not aware that it will be the case elsewhere) be examined some time during the month of June, many of them will be found to be mined under the upper membrane in a curious and irregular manner. With some leaves the whole upper surface will seem to have been separated and the parenchyma eaten out; with others the mine will not occupy more than a third of the surface. The mined portion of the leaf has a greenish-white color, while the lines of black excrement plainly marking the course of the inhabitant of the mine can be easily seen, and add very much to the peculiar appearance of the leaf. Removing the upper cuticle, the miner is found to be a very small, rather slender, greenish-white maggot, 1.7 mm. (.068 inch) in length, tapering toward the head. The head and first segment taken together resemble much, when highly magnified and viewed from the side, the head of a fat pig, the prothoracic spiracular tubercles appearing like ears. The last joint of the body is prolonged above into two rather large conical tubercles, each of which is at its extremity divided into three quite prominent downward-curved lobes. Besides these dorsal tubercles the anal segment has also a pair of postero-lateral tubercles and a pair of ventral ones. The three thoracic segments also have each a pair of small ventral tubercles which assist in locomotion, and may be rudimentary legs.

Toward the latter part of June these larvae break through the upper leaf skin and fall to the ground, where they work their way for a short distance beneath the surface and transform in an hour within oval, yellowish-brown puparia, about which there is nothing sufficiently characteristic to merit description.

In somewhat less than two weeks the perfect flies begin to make their appearance. They are very small, about 1.3 mm. (.05 inch) in length, stout,
rather hairy, yellow in general color, with brownish backs and red-brown eyes. They belong to the family Osciinidae, and are quite closely related to the wheat, rye, and barley flies belonging to the genera Meromyza, Chlorops, and Oscinis.

There are certainly two, and probably three, broods of this insect in the course of a year, judging from the rapidity of the development of those studied the past season; and the insect probably winters in the pupa state underground.

Specimens of the flies were sent to Mr. Edward Burgess, who pronounced them to be a new species of the genus Oscinis, for which he proposed the specific name of trifolii, and submits the following characterization:

**Osciinis trifolii**, Burgess, sp. nov.

Yellow: Occiput, ocellar triangle, dorsum of the thorax and abdomen, spot on coxae and on each side of scutellum, black. Scutellum with four black bristles. Front face, cheeks, and orbits of the eyes yellow; occiput and ocellar triangle black. Antennae yellow; bristle black, pubescent. Dorsum of thorax black, rest yellow. Scutellum yellow with a narrow blackish spot on each side, extending to the base. Bristles four, black. Dorsum of the abdomen black, margin and venter yellow. Tip brownish. Wings transparent, veins brownish, at base yellow, 3d and 4th longitudinals slightly divergent at tip. Halteres golden yellow. Legs pale yellow, tarsi infuscated at tip; hind tarsi more so. Hind tibiae with a darker streak above. Coxae with a dark spot on outside.

Length of body, 11 mm.; of wing, 11 mm. Habitat, District of Columbia. Larva mines white clover leaves.—[Professor Comstock.

**THE MALLOW OSCINIS.**

*(Osciinis malvae, Burgess [n. sp.]*.)

**Order Diptera; family Oscinidae.**

Making an irregular linear mine, first above the under, afterwards beneath the upper surface of the leaves of *Malva rotundifolia*; a minute, greenish white larva, which leaves the mine to transform, and eventually becomes a small, bristly, black fly.

Quite closely allied to the clover Oscinis is another species of the same genus, which has been studied the past season for the first time. The eggs of the adult fly are laid singly upon the under surface of the leaves of common mallow (*Malva rotundifolia*) which the larva mine. The mine is at first visible only from the under side of the leaf, as the larva keeps close to the under skin. It is then so delicate as hardly to be perceptible to the naked eye. In form it is linear and waving, increasing in diameter as it progresses. When the larva is somewhat less than half-grown it changes suddenly from the under to the upper side of the leaf, or from just above the under skin to just beneath the upper, so that the mine is no longer visible from the under surface. From the upper surface, however, it soon presents a most fantastical appearance, especially upon the smaller leaves, where it is looped and knotted and twisted until it is hard to distinguish beginning from end. The color of the mine upon the upper surface is nearly white, while upon the lower surface it is bluish green. A close examination shows an almost continuous string of black excrement through the center of the mine.

When full grown the larva is found in an enlargement of the mine beneath the upper surface. When ready to transform, it cuts a slit through the bottom of the mine and drops to the ground from the under side of the leaf. The full-grown larva is 2.5 mm. (0.097 inch) in length, and resembles much in form that of the clover Oscinis. It is greenish-yellow in
color. The anterior end of the body is nearly pointed and the posterior end is truncate. At the juncture of the segments is a somewhat elevated, broad ridge, which carries several rows of minute, backward-directed teeth. The last segment has its spiracles mounted upon a pair of quite long, slender tubercles, directed backward and curved inward, and the prothoracic spiracles are also mounted on similar, though smaller, projections.

The puparia are 1.3 mm (.07 inch) in length, dark-brown in color, and oval in shape. From each end of the body projects a pair of slender, diverging, conical tubercles, which are the prothoracic and anal spiracular tubercles mentioned in the description of the larva. There are only ten segments of the body distinguishable, each well marked and rounded.

The mines of this insect were not noticed until October 23, although there probably was one if not more earlier broods. The flies from the mines, collected on the date mentioned, began to issue November 14. They were stout, active, hairy, little black flies, resembling the closer Oscinis in general form, differing, however, in color and in being somewhat larger. Specimens were forwarded to Mr. Burgess, who deemed it necessary to found a new species for them, and sent the following description for publication:

**Oscinis Malvæ, Burg., sp. nov.**

- Black; face, lateral stripes on thorax, and halteres bright yellow. Scutellum with six bristles. Front yellow, borders on each side, above, dusky; ocular triangle and antennae black; bristle with fine pubescence; face and cheeks yellow. Thorax black, a broad, bright-yellow, longitudinal stripe on either side, which includes the base of the wings. Scutellum black, with six long bristles. Abdomen bristly, black. Wings slightly clouded, roots yellow, veins, except the costal, pale, darker towards the tips. Third and fourth longitudinalis nearly parallel. Halteres bright yellow. Legs brownish-black, knees of the first pair paler. Length of body, 1.5 mm; of wing, less than 2 mm.

- Habitat, District of Columbia; larva mines leaves of _Malva rotundifolia._ [Prof. J. H. Comstock]

### INSECTS INJURIOUS TO ORANGE TREES.

The production of oranges has become a very important industry in the more southern parts of the United States, especially in Florida, Louisiana, and California, and the number of orange groves under cultivation is increasing with marvelous rapidity. It seems probable that in the near future a very large proportion of the oranges consumed in this country will be produced from our own soil. The fact that imported oranges cannot compete in delicacy of flavor with those grown in some parts of the United States renders this more certain, provided the trees can be kept free from the various diseases to which they are subject.

The importance of guarding against the ravages of insects seems to be appreciated by many orange-growers. Excepting cotton, there is no crop respecting the insect enemies of which we have received more inquiries during the past year than that of oranges. And so little has the subject been studied by entomologists that in many cases we have been obliged to answer the inquiries by a confession of ignorance. Finally, it was concluded to undertake a thorough investigation of the insect enemies of the citrus fruits grown in the United States. To this end a trip was made through the State of Florida during the months of January and February, 1890. The object of this journey was simply to make a reconnaissance, so that the investigation could be conducted intelligently and economically. During the trip, however, we carefully collected specimens of all the insects found infesting trees of the genus _Citrus_, and as full notes made upon their habits as was possible in the limited time at our disposal. Living specimens were forwarded to Wash-
REPORT

OF THE

COMMISSIONER OF AGRICULTURE

FOR

THE YEAR 1879.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1880.
# TABLE OF CONTENTS

| Report of the Commissioner                      | 5 |
| Report of the Chemist                           | 35 |
| Report of the Statistician                      | 127 |
| Report of the Entomologist                     | 185 |
| Report of the Botanist on Grasses               | 349 |
| Report of the Superintendent of Gardens and Grounds | 359 |
| Report of Dr. H. J. Detmers on Swine Plague     | 355 |
| Report of Dr. James Law on Swine Fever          | 420 |

**Miscellaneous Papers:**
- Contagious Pleuro-pneumonia of Cattle          | 436 |
- Contagious Pleuro-pneumonia—Extent of its Prevalence | 456 |
- Cattle Plague, or Kinderpest                   | 473 |
- Experiments with Department Seeds              | 494 |
- Vegetable Fibers in the Collection of the Department | 497 |