

remain in this from twelve to fourteen days. The short resting period gives them great value for school illustration.

The adult forms of late summer and fall hibernate during the winter, and come out in

In captivity they will feed on a thick solution of sugar or the juice of a freshly cut apple.

Compare the life history of this insect with that of the grasshopper. Note that young grasshoppers hatch from the eggs in forms quite similar to the adult, and gradually reach the adult size and form through a series of molts, remaining active all the while. Such a gradual change of form as this, without a resting stage, is known as *incomplete metamorphosis*, while the changes outlined in the life history of the butterfly, with its resting pupal stage, constitute *complete metamorphosis*.

THE BUD MOTH.

Many of the opening buds of apple trees will be found more or less gnawed, and pierced by small worm holes. These are the marks of the bud moth. Look for the larvae in curled or rolled leaves near the buds.

This larva is a small cylindrical, naked worm, from one-half to three-quarters of an inch long, and of a pale dull, brownish, color, and with a black head. Note its nervous activity when the leaves are unrolled from around it. Collect several and preserve in 70% alcohol.

About the last of June these larvae are full grown, and pass into the pupal stage. Collect several pupae and preserve in alcohol. Others on the twig fasten securely small bags made of cheese cloth in order to secure the moths when they escape in July.

Caged moths will deposit eggs on apple twigs. This makes all the stages of this animal complete — eggs, larvae (the chief feeding stage) pupae (the resting stage) and the moth (the reproductive stage).

Study the economic importance of this and other insect pests, and learn how the farmer keeps them in check. At what time would you advise spraying for the bud moth?

There are many other forms that can be worked out more easily than this particular one, and afford quite as good biological training, but this insect was selected mainly because of its small size, and the fact that its extensive depredations often pass over quite unnoticed.

The following forms are recommended for additional study: Tent-Caterpillars, Canker-worm The Fall Web worm, Plant-Lice or Aphids, Scale Insects, Coddling Moth, Borers, etc., etc.

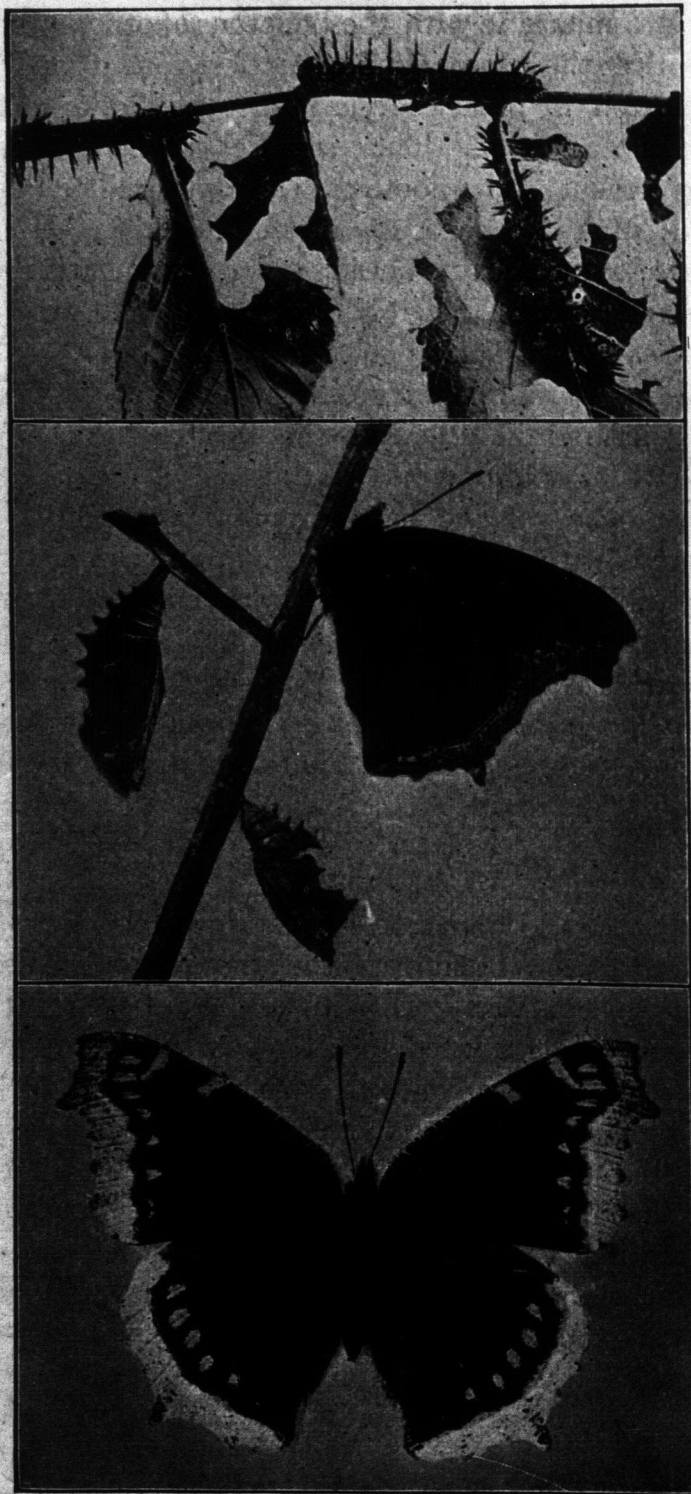


PLATE III.
THE SPRING ELM CATERPILLAR, OR MOURNING CLOAK BUTTERFLY.
[Slightly reduced]

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early spring, the earliest even while the snow is yet on the ground. On warm days they may be seen sipping with their long tongues the sweet sap of the maple at cut twigs and stumps. By biting the young maples for sap the red squirrel unwittingly provides many a feast for these butterflies.