

Nature Study of Animals.

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The Cabbage Butterfly.

The Cabbage Butterfly is one of the easiest of the butterflies to capture and rear in confinement. It varies from a white to a slight yellowish above, and is yellowish below. Both sexes have, as a rule, black tips on the anterior wings; the male has a round black spot near the border of each wing, while the female has two spots on each anterior wing. Watch the female laying eggs in cabbage leaves and other cruciferous plants; gather some of the leaves and watch the caterpillars (larvæ) come out of the eggs; feed the larvæ till full grown, note their moltings, and their change to the pupal state (chrysalids); keep the chrysalids till the butterflies appear. Describe all the changes and note the dates of all moltings and transformations. You then have the life history of this butterfly.

Comstock says this butterfly "is, without doubt, the most injurious to agriculture of all the species of butterflies." He speaks of it as three-brooded in the north, and perhaps more in the south. It is present nearly the entire season, so that it needs to be fought constantly. It winters in the pupal state, the chrysalids being attached to sheltered parts of buildings, fences, etc. It is important in fighting this insect to thoroughly subdue the spring and summer broods, so that most of the work can be done before the cabbages begin to head. For this purpose kerosene emulsion has been recommended.

The life-history of this insect, in common with all butterflies and moths, may be represented as follows:

Egg; wingless form, caterpillar (larva); Resting or pupal stage (chrysalids or pupa); Winged form, butterfly (imago).

Note that most of the destruction is done in the wingless stage, as it is the time of intensive feeding; while the distribution is chiefly confined to the winged stage.

This butterfly is not a native of America, but was introduced, by accident, from Europe about the year 1860. It illustrates, very well, the danger of the spread and pest of introduced species of animals.

A Good Breeding Cage.

A good breeding cage for insects is made from an empty chalk box, fitted with a cover of wire cloth, of close mesh, such as is used in window-screens; the cloth mosquito-bar is a good substitute.

Place the box on end and fill with moist earth to the depth of about two inches, (keep earth moist); place a few sticks upright, slanting, in the box. Some insects like to attach their pupa to such supports. Provide a separate box for each species.

Collect all the caterpillars (larvæ) you can find, feed each frequently with fresh plants of the kind on which you found it, removing all remnants of the previous meal.

In the work of the more advanced pupils, each larva should be carefully described and drawn, and its general habits noted, the date of pupation and other changes given. In drawing a larva, name the anterior and posterior ends, the dorsal and ventral sides, the true-legs, and other particulars, markings, etc. The effect of fright or irritation should be noted. The larva of the sphinx moth is often found assuming a characteristic attitude—the fore part of the body raised in the air, in which position they have been fancied to resemble the Egyptian sphinx, hence their name. The larvæ of the Swallowtail Butterflies protrude two long yellowish horns from the head-regions when touched, even lightly, with a pencil. Notice, also, that some larvæ are covered more or less thickly with stiff, mostly short bristles or hairs, *e. g.*, the Woolly Bear (larva of the Isabella Tiger Moth), the Yellow Bear, and the larva of the Tussock Moth. Others have no such covering, and are said to be naked; *e. g.*, larva of Sphinx Moth and some of the Swallowtails. Is the larva of the Cabbage Butterfly naked or covered?

Most of our moths and butterflies pass the winter in the pupal state, but a few hibernate in the winged form.

The Mourning Cloak.

The Mourning Cloak or Yellow Edge is one of our best examples of a hibernating butterfly. It has been found flying among the trees as early as the last week of March, in the vicinity of Fredericton, N. B. It remains with us all summer, and is common during September and October.

It is readily detected by its size, and the colouration of its wings, being about two inches or more from tip to tip and of a dark-brown colour, edged with a yellowish border from $\frac{1}{8}$ to $\frac{1}{4}$ of an inch wide, and in the hand shows blue spots in the darkest part of the brown, next the yellowish edge.

Notice that its first pair of legs are greatly undeveloped, so that it has a strong claim to a place in the family of the so-called "Four-footed Butter-