

INSECT DEVELOPMENT.

Strange and Interesting Transformations Recorded by Naturalists.

The best way to learn about the development of insects is to observe the process for oneself, says a writer in the *Country Gentleman*. This can easily be done in the case of one of our common butterflies, and it would be difficult to name any simple study in natural history of so much interest and instruction.

It is best to begin with the egg stage, and, therefore, the first thing to be done is to find the eggs of butterflies. They can usually be found by careful looking attached to the under sides of the leaves of plants upon which larval butterflies feed. These larval butterflies are commonly called "worms;" every one has noticed such so-called worms upon the leaves of cabbage, tomato and milk-weed plants. If then, for example, the leaves of cabbage plants be carefully examined in early summer there will be found upon them clusters of eggs destined to hatch and develop into the common cabbage butterfly. The eggs are oval in shape, of a yellow color, and have rigid, running lengthwise, their appearance, as a whole, being somewhat like ears of yellow corn.

A leaf with eggs attached should be pulled off and placed in a box with a glass cover, such a cover both admitting light and enabling the observer to watch the process of development. A wooden box, like a school chalk-box, the sliding cover of which has been replaced by a piece of glass like size, is a convenient form of box to use, but any tin or wooden box with a piece of window glass for cover will answer.

The leaves of the cabbage-plant being thick and hardy, they will probably not wither, if kept in a shady place, until the eggs have hatched. Each egg produces a small green and white worm. The worm should at once be supplied with fresh cabbage leaves; it will be found to have no lack of appetite. It grows with surprising rapidity, attaining within a week or ten days its full size, its length an inch or inch and a half. It attaches itself along the edge of a leaf, and, with its sharp-biting mouth-parts, devours its bit by bit until it is entirely eaten, when it greedily attacks another. Its body swells by its constant gorging. The truth is that it is to pass into a resting condition, when it takes no food, and it must now improve its time so as to gather strength to last it in its period of abstinence.

At the end of ten or twelve days the worm is ready to pass into this resting stage—what is called the pupa stage. At this time it will be seen to abandon its leaf and crawl about the box, somewhat eagerly, as if searching for something. This uneasy activity may continue for some time, but finally, if having found a suitable place, it proceeds to spin a net or web, in which it may suspend itself during the approaching period of inactivity. This net is not a cocoon, such as the larva of some insects spin, but a slight web serving merely to suspend the pupa. The extreme appearance now changes. The bright green color becomes dull, and several rings into which the skin of the worm is thrown become less distinct, and finally it assumes the characteristic pupa form—an oblong, angular body, more pointed at one end than the other. What has taken place in the meantime is the fact, that the skin is separated from the body and becomes simply a firm, hard case in which the living insect is contained.

In this pupa stage—now often called a chrysalis—it remains for ten or twelve days. Of course all the while important changes are going on within; the energy stored up during its period of hungry activity now serves to carry on these vital processes that made the dull and seemingly lifeless pupa succeed by the sprightly, handsome butterfly. These changes affect the entire structure of the animal, internal scarcely less than external; the butterfly has a different nervous, digestive, circulatory, etc., system than the larva.

At last the butterfly emerges from the pupa, the wall of the latter breaking away at one end, probably by the growth and movements of the insects within. It is one of our plain yellow butterflies; yet one can imagine that it has quite a triumphant bearing as it emerges from its confinement. It soon extends its wings, and after a few flutterings, if allowed to escape, soars away.

Such is an outline of the development of insects, in which the metamorphosis is completed—that is, insects which, besides the egg stage, pass through three states, named successively, the larva, pupa and imago, or perfect insect. But in many insects the transformation is incomplete—that is to say, the metamorphosis is not so marked—the several states are not so distinct.

Take, for instance, the grasshopper. Its insect both the larva and pupa resemble the perfect insect in form, walking and feeding in the same manner, and differing chiefly in the absence of wings, though even the wings are present, in rudimentary form, in the pupa. And there are groups of insects in which there is no metamorphosis at all. These are of the lower orders, and include the insects unfavorably known as lice. In these orders the insect, when it emerges from the egg, is quite like the full-grown specimen, except in size.

After all, the development of the butterfly and the other insects of complete metamorphosis is no more wonderful than that of other animals. The transformations through which the insect passes are in no essential respects different from those through which other animals pass in their development. The chief difference is that in the insects these transformations take place after the egg-stage, while in many other animals—the birds and most reptiles—they take place within the egg. In the insects the egg is very small, and there is not enough food matter contained in it for the growing embryo. It therefore breaks through the egg, and is able to seek food for itself. But in the birds the egg is large, and has a supply of food sufficient for the nourishment of the embryo until it has attained full structural development. Hence it goes through its transformations within the egg. In the insect the development is for a time arrested, so that the larva can gather a supply of food, both for its immediate wants and for gaining a store of energy for the next stage in its life-history. In the birds and most other animals the development proceeds without interruption until the young is brought forth.

An Imperial Abbess. Archduchess Marguerite Sophie, daughter of Archduke Charles Louis, of Austria, has been installed at Prague as the abbess of a community of noble ladies of the Hradachin. The new abbess is only eighteen years old and she enjoyed the ceremony of retiring from the world. She was robed in black, with an ermine mantle, and the ring and insignia of her rank were turned over to her with any amount of pomp and ceremony. If she gets tired of seclusion there will be a chance to change her mind, as the rules of this convent are not of the strictest. It was founded under Maria Theresa as a retreat for noble unmarried ladies, and they can go away if they get tired, or see a prospective husband who pleases them. The mother of the King of Spain was abbess there from 1876 to the time she married.

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PROBATE NOTICE.

State of Nebraska, Webster County. In the county court of our said county of Webster, in the matter of the estate of Joseph T. Norris, deceased, now on the 3rd day of June 1889 came Willie W. Norris, executor in this matter, praying a final settlement and allowance of account, and that she be discharged from this trust, and that a distribution of said estate be made to the persons by law entitled thereto. It is therefore ordered that July 1st 1889, at ten o'clock in the forenoon, at my office in Red Cloud be fixed as the time and place for examining and allowing such account. The heirs of said deceased and all persons interested in this estate are required to appear and show cause if such exists, why said account should not be allowed. It is further ordered that the executor in said estate by having a copy of this order to be published in the Red Cloud CHIEF a newspaper printed and in general circulation in said county for three successive weeks prior to the day set for the hearing. Witness my official signature, and the seal of said county court of said county of Webster, this 3d day of June 1889. (SEAL) 4531 County Judge.

SHERIFF'S SALE.

Notice is hereby given that under and by virtue of an order of sale issued out of the district court of the 9th judicial district in and for Webster county, Nebraska, upon a decree in an action pending in said court wherein Howell Bros. are plaintiffs and Rufus Miksch, Mary S. Miksch, A. W. H. and Wm. J. Misch are defendants, I shall offer for sale at public vendue for cash in hand at the east door of the court-house in Red Cloud in said county, (that being the place where the last term of said court was held) on the 9th day of July, 1889 at 2 o'clock P. M., the following described property, to-wit: Lots 7 and 8, block 4 in Lutz's addition to the town (now city) of Red Cloud, Webster County, Nebraska.

LEGAL NOTICE.

State of Nebraska, Webster County. In the district court of the eighth judicial district. The Nebraska Loan and Trust Co., Plaintiff. James Wall, Rosella Wall his wife, James C. Stoddard, Frederick Krug, Defendants. Plaintiff, first name unknown, and Charles H. Potter, defendants. The above named defendants Frederick Krug and James Wall, whose first name is not known to the plaintiff, are hereby notified that the above named court has granted their petition and the defendants, James Wall, Rosella Wall and others, the object and prayer of which petition are to foreclose a mortgage bearing date December 1, 1887, executed by the said defendants James Wall Rosella Wall his wife, to the plaintiff on the north-west 1/4 of section thirty-three (33) in township one (1) north and range eleven (11) west of the sixth (6) principal meridian in said Webster county, and to have said real estate appraised, advertised and sold to pay off and discharge the debt with interest and costs which said mortgage was given to secure. You are further notified that you are hereby required to appear and answer said petition on or before Monday, the 5th day of August, 1889. THE NEBRASKA LOAN & TRUST CO. J. H. Egan, Plaintiff's Atty. 4532

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