

will speedily defoliate a tree. As they attack many ornamental shade trees as well as those in the forest and sometimes extend their ravages to fruit trees, they should be ruthlessly exterminated wherever they are met with.

We have now remarked upon some of our most common insect pests, and have endeavoured to furnish the reader with the most approved modes of dealing with them. We shall feel very thankful to any one who tries any of these remedies if he will be good enough to let us know how far they have proved successful. The experience will be of much value to us and we shall probably be able to make it of service to others.

A TRIP TO NEPIGON.

SOME NOTES UPON COLLECTING AND BREEDING BUTTERFLIES FROM THE EGG.

BY JAMES FLETCHER, OTTAWA.

It is a recognized fact in Economic Entomology that the most important investigations are those by which the life-histories of insects are made out, in order that the most appropriate remedies may be adopted for injurious species. In Scientific Entomology these investigations are no less important, but are undertaken with different objects in view. For the accurate determination and separation of closely related species, it is frequently necessary to know an insect in all its stages from the egg to the perfect form. In no branch of Natural History is this more necessary than with some of our Diurnal Lepidoptera—the butterflies—those living flowers which flitting from blossom to blossom add such an unspeakable charm to the summer landscape. In the North American insect fauna we have some very large genera, as the Fritillaries (*Argynnis*) and the Clouded Yellows (*Coliades*). These contain many closely allied species, and it would actually be difficult in all cases to identify with certainty the perfect insects, without a knowledge of the preparatory stages, and some have only been shown to be distinct by breeding from the egg, and noting carefully the points upon which they constantly differ in their various stages of growth. Whilst, in the first case, the exact scientific identification of the insect, its classification, name and specific value are of little interest, so that so much of its habits can be discovered as will enable us to put a stop to, or prevent a recurrence of its ravages; in the other case, the exact identification and correct classification are the important points aimed at. Sometimes, as in the well-known cases of *Papilio Ajax*, *Colias Eurytheme* and *Grapta Interrogationis*, several apparently very different varieties have been shown to be merely varietal forms of one species, and the interesting discovery has been made that one or other of these forms preponderates at certain seasons of the year. These discoveries are chiefly due to the constant and untiring labours of Mr. W. H. Edwards, of West Virginia, who not only himself patiently and persistently perseveres in his studies, but has also taken great pains to induce others to help in the work. His kindness and prompt attention in advising and helping others cannot be too highly spoken of. In the *Canadian Entomologist*, for 1885, appeared some admirable articles upon breeding from the egg, in which the results of his long experience were given. These have been of great assistance to those who have taken up this most interesting branch of entomology, and the writer acknowledges with gratitude his own indebtedness. Those who have never caught a butterfly and caged it to obtain its eggs, and then bred these to maturity, cannot form the slightest idea of the all-absorbing interest and pleasure that attend these observations. Moreover, their utility, as teaching what to observe, how to observe it, and then how to record what is seen, so that it may be of use to others, cannot be over-estimated. At first, of course, there are some difficulties, but with a little practice these can be overcome. This fact is particularly manifest in drawing or describing the young caterpillars at the different moults. All caterpillars change their skins four or five times after they leave the egg, so as to allow for the rapid increase in size of their growing bodies. At all these moults, important changes in the structure and in the markings of the skin take place, and for this reason they

should be carefully noted at each moult. This is not at all a new idea that great value is derived from females by mere observation. *Pieris Napi*, *P. napi* eggs hatch after a few days in a receptacle which is better they may be placed in, and much valuable information may be obtained by watching the egg-laying, will be a student by the day, the food of allied species.

The field, to the merest tyro may seem a vast field, sent paper to give S. H. Scudder, of then gained and have not yet taken.

Our trip to Nepigon and back picturesquely situated waters from the into Nepigon Bay, Superior. It is water into the lake, other river in Canada, summer there is their luck with lake.

The village and two stores, half a mile from Red Rock, now remembers anyone advice and assistance approach it by the which spans the the view. Awa Nepigon Bay with river gradually banks. A glimpse and the rest of the top with trees and has cut out in height. Look sheet of water, and bounded on wooded banks to of the two, and ving at Nepigon most clean and once with our net.

It may not to Nepigon in part.