

THE CURCULIO.

The PRESIDENT.—Mr. Billups will now read to us his paper on the Curculio.

Mr. BILLUPS.—I have not had at my disposal sufficient time in which to prepare such a paper as I would have desired to read before this Association, but I will endeavor in a few words to give a brief outline of the curculio family. I may say, in the first place, that the curculio is distinguished from other coleoptera by having the head prolonged in all cases into a snout of greater or less extent; in some cases that snout extends three or four times the length of the whole insect, while in others it is scarcely noticeable. The curculio in fact is a very hard family to define; it is hard to say where the true curculio begins and ends. I have upon the table here a fair representation of all the different genera of the curculio known throughout the globe. I think it would perhaps be well to give a brief outline of the life history of the insect, and in doing so I do not think I shall be far wrong in taking the familiar plum curculio as an example, it being I believe a fairly typical species of the great family Curculionidæ. So infinitely small are many members of this family that it is difficult to give to one unaccustomed to them any idea of the differences which exist in the different genera, but to the eye of one accustomed to handling such small insects the difference is vast. In the diagram before you you see in No. 1 the larva of the curculio. No. 2 shows the next stage, the chrysalis, and No. 3 the perfect insect. I have in a bottle here the egg of the plum curculio. This curculio bites and destroys a great variety of fruit; the cherry, the plum, the peach, and I believe in some instances the grape. It lays its eggs early in the spring upon the plum. The female commences by working a small puncture in the skin of the plum, as represented in No. 4, and deposits the egg, and makes a semi-circular bite around the spot on which the egg has been laid. This causes the skin of the plum to wither and dry up, and affords food for the young grub. When first hatched I have generally noticed that this grub, after spending a short time in the exact locality of its hatching place, moves in a circuitous manner around the skin of the plum, and finally ends up very near the stem. This causes the plum to weaken and rot around the stem, and either by its own weight or by the first windstorm it is caused to fall to the ground. The larva, which during the time the plum rotted had a sufficient period in which to gather strength, after a certain lapse of time disappears into the ground and changes to the chrysalis state, No. 2. I am sorry to say I have no specimens of the chrysalis, but I have a number of specimens of the larvæ in different stages of advancement. Now, as regards the methods of destroying the curculio, which I suppose is the most important thing to this meeting, as far as my experience goes the only true way to get rid of them is to gather up the fallen plums. I think it is almost impossible to do anything by waging war against the perfect insect, as the perfect insect eats very little. Nearly all the feeding in insects of every order, I may say, takes place when it is in the larval state. The object of the full grown insect is chiefly to find a resting place for its egg, and that done its usefulness is over, and it dies. I think the plum curculio lays from thirty to as high as fifty eggs. Of course that means if there are twenty or thirty curculios on one tree that not much of the fruit is going to escape. The curculios are all vegetable feeders, some of them live upon the seeds of plants, some upon the stems, and a great many upon the fruit. It is generally supposed there are only a few injurious curculios, which I suppose is owing to the want of taking sufficient interest in the masses of vegetation by which we are surrounded, but there are very few plants in this or any other country but what have their own special curculio. I think there is no just idea formed of the vast number of curculios that exist upon the earth. The best catalogue we have, the Munich catalogue, which is five years old, enumerates 10,000 distinct species, but I think that in the past two or three years there have been some hundred or more specimens discovered new to America. I think Prof. Brodie, of Toronto—I am not certain in making this statement—told me he had fifteen or twenty undetermined species that he had found in Canada. If that is correct, and every entomologist has done as much as he has, though he has not made a specialty of curculionidæ—if they have all taken five or six undescribed specimens, there must have been an immense swelling of that Munich catalogue. I have here one of the larger curculio, which attacks the sugar cane. It is one of about the largest size that exists. From

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