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The Apple Curculio

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another summer. Any information concerning the presence of this insect and its ravages in different parts of the state will be gladly received and will help me in my work.

THE APPLE CURCULIO.

*(Anthonomus 4-gibbus Say.)*

C. P. GILLETTE.

A number of inquiries have been received at the station concerning the Apple Curculio, and I therefore give the following information concerning it.

The Beetle varies much in size. The largest specimen in the station collection measures 3-16 of an inch. The beetles are often mistaken for the plum curculio, but they are easily distinguished from that species by the long, slender, somewhat curved beak and by the two prominent humps on the posterior portion of each wing-cover where the color is rust-red.

*Egg Laying:* I am not aware that anyone has published actual observations on the method of oviposition of this insect. On the 13th of last June I was fortunate enough to see a female perform the entire operation, which was done as follows: First a cavity (Fig 3. b) was eaten in the apple as deep as the beak was long, the bottom being much enlarged and sub-triangular in outline. The walls of the cavity converge to the opening, which is only large enough to admit the slender beak. When first noticed the beetle had begun her work and it was 30 minutes before the egg-cavity was completed. The beetle, almost immediately after withdrawing her beak, turned about and applied the tip of her abdomen to the small opening into the egg-cavity. After remaining in this position for about five minutes she walked away without turning about to inspect the work that she had done. I at once plucked the apple and examined closely the identical spot where the beetle had been at work and was surprised to find that there was no puncture to be seen in the skin of the apple, but only a minute brown speck. I found that the beetle had plugged the little opening with what appeared to be a bit of pomace, probably excrement, and she

*This portion of this article was read before the Iowa Academy of Science, September, 1890.*
had done the work so nicely that I think no one would have suspected that this little speck marked the place of oviposition of this insect unless he had seen such specks before and knew what they signify. With a sharp knife a section was made through this egg-chamber, which I have endeavored to represent natural size, at Fig. 3, b, with the egg at the bottom.

![Fig. 3. A, apple infested by the Apple Curculio; b, egg-cavity, natural size, c, egg very much enlarged. Original.](image)

Although it is almost impossible to distinguish newly stung fruit from external appearances, it becomes very easy after a few days when the infested apples become gnarly and ill-shapen, as shown in Fig. 3, A.

The beetles began appearing in my breeding cages on July 22. On August 16 I cut into 14 infested apples and found 13 larvae and 2 pupae of this insect, and as late as August 7, I cut into an apple that contained a pupa of the apple curculio, which shows that with this insect, as with the plum curculio, egg-laying is distributed through a long period. Oviposition begins in this part of the state about the first of June and continues until late in July, and the beetles are probably not all out of the fruit until late in August.

Very few varieties of apples were seriously attacked in the college orchard by this insect last summer. The worst attacked fruit was that of a tree labeled Mountain Beet. I estimated as closely as I could without actually counting all of the fruit that 75 per cent. of the apples upon this tree were infested by the apple curculio.

Mr. J. Miller of Oakville, Iowa, wrote me in July that these beetles were very numerous in his orchard, and a number of the mature insects were reared from a box of haws, which were sent for inspection.

The native thorns and crabs were the original food of this insect, and it appears that it has not long infested the cultivated apple. Mr. Riley, in his Third Missouri Report (1871) p. 30, quotes Mr. W. Saunders, of London, Ont., as saying
that this insect, though abundant on thorn in his locality, had not yet learned to breed in the apple.

**Remedies.**

Where orchards are regularly treated with the arsenites for the destruction of the codling moth, it is quite probable that this insect will also be kept in check, otherwise jarring the trees and collecting the beetles on a large sheet, or gathering and destroying infested fruit, will be the most practical remedies. If hogs or sheep are allowed to run in the orchard, they will pick up all wind-falls and do much to keep this insect, and the codling moth as well, in check.

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**A NEW Currant Borer.**

(*Hyperplatys aspersus* Say.)

C. P. Gillette.

I can not find that *Hyperplatys aspersus* (Fig. 3), usually spoken of as the Cottonwood Borer, has ever been mentioned as infesting the currant. While examining the currant-bushes on the college grounds at this place last spring, I noticed that there were many dead stems infested by borers. A handful of these stems were taken to the laboratory and from them were reared several specimens of the above named beetle, and also of the American Currant-borer, *Psenocerus supernotatus* Say, shown at Fig. 4. These insects are shown enlarged in the engravings. The actual length in either case is about $\frac{3}{16}$ of an inch.

The longer antennæ and the numerous black dots on the wing-covers of *H. aspersus* render it easily distinguishable from *P. supernotatus* with the prominent hump and conspicuous white spot on either wing-cover.

All of the infected stems were dead. Whether killed by the borers or not, I am unable to say.

The beetles appeared in the breeding-cage before the 8th of June, at which time they were found already dead.
Remedy.

The remedy for either of these borers, as well as for the Imported Currant-borer, *Sesia tiputiformis*, which does so much harm in states farther east, is to trim out infested stems and burn them during the winter or early spring. This remedy if faithfully attended to once a year, will prove effectual unless there are negligent neighbors who are breeding the pests year by year, to restock your bushes, in which case it will be necessary to induce them to join you in your efforts to keep these enemies of the currant under control.

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KEROSENE EMULSION AS A SHEEP DIP

and as a Destroyer of Parasites upon Domestic Animals.

C. P. GILLETTE.

It should not be necessary for me to urge upon him who owns sheep the importance of ridding his flock of ticks or other parasitic insects that annoy them. There seems to be a common but mistaken opinion that only poor unprofitable animals will get “lousy.” There are many insects, those that feed upon plants as well as animals, that seem to have decided individual preferences. It is not uncommon to see a tree or plant seriously injured year after year by some insect that does little or no harm to other trees or plants of the same species growing near. The same is true in the case of animal parasites. Certain individuals in a flock or herd, on account of a tender skin, or other peculiarities are preferred by the ticks or lice, as the case may be, and in consequence, they congregate upon these animals in large numbers, constantly biting them and sucking their blood, causing them to become poor even with the best of care. The first step necessary to be taken to get such an animal in good condition is to free it of parasites. This can be so cheaply and easily done by the use of kerosene emulsion, a mixture of kerosene, soap and water, substances that are always at hand, that it seems entirely inexcusable for a man to allow his domestic animals and his pocket book as well to suffer from these causes.