

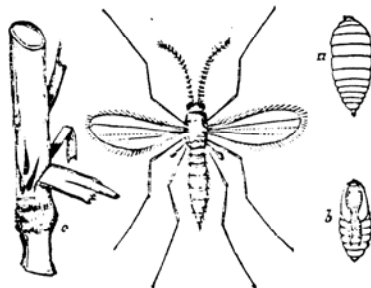
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THE HESSIAN FLY,

ITS RAVAGES, HABITS, ENEMIES, AND MEANS OF
PREVENTING ITS INCREASE.



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in 1811, and the few years preceding, has been the case in Michigan, according to Mr. F. S. Sleeper, of Galesburg, Mich., who writes us that the Hessian Fly was nearly exterminated in Kalamazoo County by *Semiotellus destructor*, nearly all the "flaxseeds" in the crop of 1877 having been destroyed by this friendly parasite. He writes us that in the autumn of 1877 he found these parasites in the wheat-fields in countless numbers, and that the perfect Hessian Fly was difficult to find.

No one since Herrick recorded his observations has made very careful observations on the habits of these parasites. He states that:

It pierces the sheath of the stalk (making a hole too small to be detected by a powerful microscope), and deposits an egg in the pupa within. This is done chiefly in June. The perfect insect is evolved in the summer and autumn succeeding, eating its way through the puparium and the sheath of the leaf.

Herrick also states that a second parasite, very similar to the *Semiotellus destructor*, "but with mere rudiments of wings, is sometimes evolved from the pupae of the Hessian Fly. I am in doubt whether it should be considered a distinct species or only a variety."

A third parasite was reared by Herrick in Connecticut. It is an insect of the tribe *Chalcidix*, whose genus he did not determine. Its habits were like those of *Semiotellus*, and wingless females of this species were also found.

A fourth parasite, noticed by Herrick, belongs to Latreille's tribe *Oxypti*, but the genus was not determined. In habits it agreed with the foregoing parasites, but it was evolved later in the year. Herrick adds that all the parasites mentioned "are likewise evolved in the spring from the Hessian Fly pupae of the summer previous."

The fifth parasite has quite different habits. It lays its eggs in those of the Hessian Fly. Herrick, its first discoverer, thus speaks of it:

The insect is abundant in the autumn. I first saw it September 23, 1833, in the act of depositing its eggs in the eggs of the Hessian Fly. From subsequent observations it appears that four or five eggs are laid in a single egg of the Hessian Fly. The latter egg hatches, and the animal advances to the pupa state as usual, but from the puparium no Hessian Fly ever comes forth. This parasite forms within the puparium a silky cocoon of a brownish color.

It is probable that it is the species first discovered by Herrick in Connecticut which Professor Cook has detected ovipositing in the eggs of the Hessian Fly.

It is black and look; not unlike a tiny goat. The female feels for the egg with her antennae, and when found intrudes the fatal egg, which, I find, takes three-fourths of a minute; full three times as long as if takes the Hessian Fly. The little parasite is much longer, too, in finding the eggs than is the fly in laying them. I find that each egg receives one, two, or three of the parasite's eggs. The eggs of these latter are tardy in hatching, so that the larva of the parasite may feed on the maggot of the Hessian Fly, not her eggs. These pupate in the puparium of the fly."

Platygaster error Fitch ?.—Having received one of these egg-parasites from Professor Cook, I find it to be so much like the *Platygaster error* of Fitch (Fig. 1) that I refer it to that species, though with a doubt. This is probably also the parasite referred to by Mr. Herrick.

It is shining black; the head is finely punctured, rounded, and slightly broader than long, being about as wide as the thorax. The antennæ are about as long as the head and thorax; they are slender, but apparently a little stouter than in *P. error*, the penultimate joints being a little broader and squarer than he represents (and they are very different from *Platygaster tipula*), these joints not being "twice as long as thick," but only $\frac{1}{2}$ to $\frac{2}{3}$ longer, much as represented by Fitch in his figure;² the terminal joint is long, oval, not so wide as those just behind it, and it tapers to a rounded point. The thorax is rounded ovate, but little longer than broad, black, with the scutellum high, rounded and pitted. The abdomen is flattened, oval, twice as long as wide, being a little longer than the thorax, but not quite so wide. The legs are pitchy black on the femora; the tibiæ dull reddish brown, darker towards the end; the tarsi are 5-jointed, dark brown, hairy, with the basal joint reddish at the base. (Fitch says the legs of *P. error* are pitchy black; but in the specimen before me they have a decided reddish tinge.) The wings are veinless, clear transparent, irised. Length $1\frac{1}{2}$ millimeters, being a little larger than Fitch's *P. error*, which was .05 inch long. I am disposed to refer this specimen to Fitch's species, but should it be found to be quite distinct, it may receive the name *Platygaster herriekii*. It seems to be a genuine *Platygaster*.

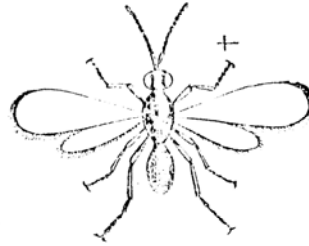


FIG. 1.—Egg parasite of the Hessian Fly.

Fitch states that *Platygaster error* is seen in company with the wheat midge (*Diplosis tritici*) on the wheat ears in New York, and is very numerous some years, but he thinks it doubtful whether it preys upon the midge.

REMEDIES, PREVENTIVE AND GENERAL.

Having become familiar with the habits of this insect, which can be readily observed by farmers, it is not difficult to apply such remedies as the experience of wheat raisers of the past century in different parts of the wheat region of the United States has nearly universally found serviceable. Remembering that the first brood of flies appear in August and continue to hover over the fields until late in September, as if waiting for the fall-sown wheat to appear, it is evident that by delaying the date of sowing until after a frost cold enough to kill the flies, they may be circumvented; for if the wheat is sown later than the 20th of September in nearly all the Middle and Northern States, the early frosts will destroy these delicate insects. Late sowing, then, is the most general, important, and easily applied preventive remedy.

Late sowing of most of the wheat seed.—All writers, both entomological and agricultural, concur in recommending this easily-applied remedy;

² Sixth report on the noxious and other insects of the State of New York, by Asa Fitch, M. D. Pl. 1, fig. 1, a, b. The figure is from Packard's Guide to the Study of Insects.