

FARM INSECTS:

BEING THE

NATURAL HISTORY AND ECONOMY OF THE

INSECTS INJURIOUS TO THE FIELD CROPS

OF

GREAT BRITAIN AND IRELAND,

AND ALSO THOSE WHICH

INFEST BARNs AND GRANARIES.

WITH SUGGESTIONS FOR THEIR DESTRUCTION.

By JOHN CURTIS, F.L.S.,

HONORARY MEMBER OF THE ASHMOLEAN SOCIETY OF OXFORD, AND OF THE ENTOMOLOGICAL SOCIETY OF FRANCE;
CORRESPONDING MEMBER OF THE IMPERIAL AND ROYAL GEORGOFILI SOCIETY OF FLORENCE, OF
THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, ETC.

ILLUSTRATED WITH NUMEROUS ENGRAVINGS.



BLACKIE AND SON:

FREDERICK STREET, GLASGOW; SOUTH COLLEGE STREET, EDINBURGH;
AND WARWICK SQUARE, LONDON.

MDCCCLX.

upon a sheet of white paper at no great distance from each other, and then set an ichneumon down in the midst of them. She began immediately to march about, vibrating her antennæ very briskly. A larva was soon discovered, upon which she fixed herself, the vibratory motion of her antennæ increasing to an intense degree; then, bending her body obliquely under her breast, she applied her anus to the larva, and during the insertion of her *aculeus* and the depositing of the egg, her antennæ became perfectly still and motionless. Whilst this operation was performing, the larva appeared to feel a momentary sensation of pain, for it gave a violent wriggle. When all was finished, the little ichneumon marched off to seek for a second, which was obliged to undergo the same operation; and so on to as many as it could find in which no egg had been before deposited, for it commits only a single egg to each larva. I have seen it frequently mount one which had been pricked before, but it soon discovered its mistake and left it. The size of it is so near that of the *Tipula* that I imagine the larva of the latter could not support more than one of the former, and therefore instinct directs it to deposit only a single egg in each; besides, by this means one ichneumon will destroy an infinite number of larvæ."

These parasites are all included in the order HYMENOPTERA, and the family ICHNEUMONIDES ADSCITI. The species I am about to notice is comprised in the genus PLATYGASTER.* It has been named by Mr. Kirby *Ichneumon tipulæ*, and is now described as the—

1. *P. tipulæ* (Plate J, fig. 1; *a*, the natural size).—*Female* pitch-coloured, shining; antennæ nearly as long as the body, inserted at the lower part of the face, slender, clavate, geniculated or angulated, as if broken, slightly pubescent, ochreous, and ten-jointed, the four terminal joints brown and obovate, the apical one conical; basal joint long, curved, and clavate; second and third subovate, the latter very slender; fourth a little longer; fifth and sixth minute (fig. *b*): head black, subglobose, thickly and finely punctured, with a minute tooth between the base of the antennæ; eyes oval and lateral, ocelli large, and placed nearly in a straight line across the crown: thorax somewhat globose, with minute pale pubescence; scutellum horizontal, long, conical, and mucronated: the spine ferruginous: abdomen small, scarcely larger than the thorax, slightly depressed, obovate, black and very shining, attached by a short stout pedicel, which is ferruginous at the base; the second segment forms a convex shield, which nearly covers the back, with three or four rings towards the apex; the flexible tip is armed with a very long curved ovipositor, like a hair, which is concealed in the abdomen when at rest: the four

* So named from some of the larger ones having broad bodies.

wings transparent, iridescent, pubescent, and ciliated, destitute of nervures, the superior much the largest, the apex quite round: legs strong, bright ochreous; thighs thickened at their extremities; tibiæ spurred at the apex, very clavate; hinder with the knob sometimes fuscous; tarsi slender and five-jointed. "*Male* black, shining, very smooth, sparingly clothed with short pubescence: head excessively finely punctured, slightly shining: eyes and ocelli pitchy black: antennæ pitchy, first to fifth joints reddish: apex of scutellum fuscous; metathorax and first abdominal segment rough, obscure, pilose: abdomen smooth, shining; second segment with two little pits at the base: legs pale reddish; hinder tibiæ and apex of tarsi pitchy: wings somewhat transparent: scales pitchy."

It seems that the males do not differ, except in a trifling degree, in the structure of the horns, in which, I believe, the fourth joint is larger, and the tenth longer and more pointed; but it is very remarkable, that whilst the females occasionally swarm, so little is known of the habits of the opposite sex that I have not yet been able to meet with a specimen. The only one I ever saw was captured by Mr. Haliday on a rose tree; and the above characters are translated from Mr. F. Walker's paper upon the genus *Platygaster*.* This is such an extensive group that he has described ninety-nine species which inhabit this country; and amongst them is one named *P. tritici* by Mr. Haliday, who found it on corn and willows in England and Ireland, and from its specific name it is evident that talented naturalist considered it to be connected with our wheat fields. †

The second species described by Mr. Kirby he has named *Ichneumon inserens*: it is apparently a *Platygaster*; ‡ but as I have not been able to find the specimen in his collection, I must be satisfied in transcribing his account, and copying his figures. He says, "Upon the 7th of June, I observed a very minute ichneumon exceedingly busy upon the ears of wheat, which, at first, I took for *Ichneumon tipulæ*; but upon a closer examination, I found it to be a species entirely distinct, as will appear when I come to describe it. As soon as I was convinced of this, and observed that it pierced the florets at a time when no larvæ had made their appearance, I conjectured that it must lay its eggs in the eggs of the *Tipula*." "This insect is furnished with an aculeus three or four times its own length (fig. c), which is finer than a hair, and nearly as flexile. This is commonly concealed within the abdomen; but when the animal is engaged in laying its eggs it is exerted. One day it

* *Entomological Magazine*, vol. iii. p. 220.

† Curtis's *British Entomology*, fol. 309; and *Guide*, Genus 585, where 108 species are recorded.

‡ I have included it in the genus *Inostenma* in the *Guide*, a genus which has been formed out of *Platygaster*. It is the *I. scrutator* of Walker.

gave me a full opportunity of examining this process. It inserts its aculeus between the valvules of the corolla near the top of the floret; its antennæ are then nearly doubled and motionless, its thorax is elevated, and its head and abdomen depressed; the latter, when it withdraws the aculeus, is moved frequently from side to side before it can extricate it. This insect has allowed me to examine its operations under a lens for six or seven minutes. Upon opening the floret into which it had introduced its aculeus, I could find neither egg nor larva of the *Tipula*; but upon examining it very closely under three glasses, I discovered, scattered over one of the valvules of the corolla, a number of globular eggs extremely minute, evidently not those of that insect. It is possible that there were in this floret eggs of the latter, which might be destroyed upon opening it, or escape my observation. At other times I have found eggs of the *Tipula tritici*, and once some larvæ, in florets upon which I had observed this ichneumon busy." "From the time in which it first makes its appearance, ten days before the hatching of the first larvæ, I am inclined to adopt my original conjecture, that the eggs are its prey; and yet there seems not to be a sufficient disproportion between the size of the one and the other for this purpose—at least, it must take more than one to nourish a larva of the ichneumon to its proper size."*

2. *Platygaster* (?) *inserens*, Kirby.—"Very black; antennæ clubbed; abdomen lance-shaped, shining:"† (fig. 2; *e*, the natural size). *Female*, body very black: antennæ bent as if broken, and clubbed; basal joint long, stout, rigid, and clavate, reverse heart-shaped, cleft at the apex viewed laterally; second joint stout, oval; four following globular and extremely minute, the remainder forming a compact, ovate conic club of four joints (fig. *d*): head and thorax somewhat dull in surface: abdomen sessile, lanceolate, excessively black and glossy, very acute, furnished with a very long, flexile, slender ovipositor, which is exerted (fig. *c*): wings transparent, nerveless, longer than the body; superior with a black line leading from the base towards the middle, terminated by a black dot: legs blackish; thighs deep black, somewhat clavate: length less than a line.

The third parasite detected by Mr. Kirby appeared on the same day that the *Platygaster tipulæ* came forth in great numbers. He states that, "On the 22d of June I observed another ichneumon, not uncommon, piercing the florets of the wheat (figs. 3 and 4). This species did not appear to insert its aculeus between the valvules of the corolla, but to pierce the glumes of the calyx, to effect which purpose it is armed with a very short one sub-exserted. Of this I found both the sexes. The male was distinguished from the female by

* *Transactions of the Linnæan Society*, vol. v. p. 102.

† *Ibid.* p. 107.

its large eyes, placed very near each other, with reticulations unusually visible. I presume this to lay its eggs in the larvæ, but have not been able positively to ascertain the fact."*

This singular species has been characterized as the genus *Macroglenes* by Mr. Westwood; and I am happy in being able to give drawings from nature of the sexes, as the figure in the *Linnean Transactions* is not sufficiently correct to identify it.† Mr. Westwood, however, has examined Mr. Kirby's original specimen of *Ichneumon penetrans*, and informs me that it is identical with his genus *Macroglenes*, which is comprised in the family *Chalcididae*, a parasitic group of immense extent as to amount of species, and scarcely yielding in numbers to any of the insect tribes as to aggregate masses. I have already described and figured several species of *Chalcididae*. They frequently inhabit and feed upon the parasitic larvæ of *Hymenoptera*, to keep them within due bounds.

3. *Macroglenes penetrans*.—The *male* is dark blue green, sometimes slightly tinged with violet, shining; antennæ not so long as the head and thorax, geniculated and clavate, ten-jointed; basal joint long; second as stout, oval; three following very minute and saucer-shaped; sixth and seventh stout, cup-shaped; the remainder forming a compact, black, ovate conic club: head large and transverse, face orbicular, including the eyes, which are very large, lateral, reddish brown, orbicular, coarsely reticulated and approaching each other on the crown: ocelli three, forming a long triangle, prominent and larger than usual, especially the apical one: thorax oval, as broad as the head; the sutures deep, forming four very convex protuberances: abdomen very much compressed, not longer than the thorax, and somewhat elliptical viewed laterally, with six distinct segments, and a short exerted slender process at the apex: wings ample, very transparent, iridescent; superior with a subcostal nervure reaching nearly to the middle, where it unites with the costa, and a little beyond it forms a short branch, terminated by a minute dot: legs simple and slender: tarsi five-jointed, dirty white, darker at the tips (fig. 3; *f*, the natural size): length $\frac{3}{4}$ line, expanse $1\frac{3}{4}$ line. The *female* is scarcely so large, and differs, I think, in having shorter antennæ, with a more abrupt club; the face is very concave, forming a broad deep groove; the three ocelli are placed in a transverse line at the back of the crown; the eyes are not large, but brown, oval, and remote; the abdomen is very much compressed, the back forming a sharp edge, and it is very deep

* *Transactions of the Linnean Society*, vol. v. p. 104.

† Mr. Haliday presented me with a male; for the loan of the other sex I am indebted to Mr. F. Walker.