
XVII. *Of the Insect called OISTROS by the Ancients, and of the true Species intended by them under this Appellation : in reply to the Observations of W. S. MacLeay, Esq., and the French Naturalists. To which is added, A Description of a new Species of CUTEREBRA. By Bracy Clark, F.L.S., and Foreign Member of the Royal Academy of Sciences of Paris.*

Read November 19, 1826, and February 20, 1827.

IN the 14th volume of the *Transactions of the Linnean Society*, is a communication written by my friend W. S. MacLeay, Esq., intended to prove that the fly, intitled *Oistros* by the ancients, was not the insect so named by Linnæus, but that it probably belonged to the present Linnean genus *Tabanus*.

Being of a contrary opinion, I am led once more to address this learned Society, to lay before them the grounds on which it is founded, that naturalists may not incautiously and too hastily adopt the above conclusion, and that they may avoid the confusion which change of names and counter changes always produce in science. I am also led to this undertaking in order to vindicate Linnæus himself, our great master, and such distinguished naturalists as Vallisneri and Reaumur, with whose views on this subject I wholly concur. Nor is the justification of myself wanting as a motive to induce me to re-examine the subject, having formerly sent to this Society a dissertation of some extent on the genus *Æstrus*, unfolding some curious discoveries

coveries in the characters and natural habits of this singular race of insects*.

Disputations about the meaning of the ancients, and identifying their descriptions with the modern species of natural history, would perhaps, in a general way, be better avoided in the valuable volumes of this Society, as leading to much desultory and unsatisfactory discussion: practical subjects and didactic facts would perhaps better maintain their reputation. As, however, the Society have in this instance already admitted the discussion, it is but fair and just to allow the reply in the same channel, that the impression, if erroneous, may be removed.

W. S. MacLeay, in the paper alluded to, insists that the *οἶστρος* of the ancients, and the *Brize* or *Breeze* of the old English poets, is not the *Æstrus* of the moderns; and he infers this from the anatomical characters which some of the ancient authors have left us of their insect. Now, besides the anatomical descriptions to be found in the works of philosophers, there is another mode of identifying the insect; and that is, by the description of the effects it produces upon cattle, and which are so singular, that they have afforded incidents to most rural poets, ancient and modern: and the truth seems to be, that the poets in describing these effects have been true to nature; while the philosophers, being presented with a wrong insect, have only involved the subject in error.

That it is an Italian insect we have the authority of Vallisneri of Padua, who appears to have been the first naturalist who bred the true *Æstrus Bovis* from the grubs found in the backs of the cattle; and for the first time, as far as we possess any record of the subject, saw with certainty the identical object that created so much commotion among them. He applied

* Published in the 3rd volume of the Society's *Transactions*.

correctly enough the passages of the ancients which he thought had allusion to this insect. Reaumur followed Vallisneri in these researches, and bred with great difficulty one imperfect specimen of the true *Æstrus Bovis*. Linnæus next followed; but not having ever seen the insect, and not daring to describe from figures merely, or the descriptions of others, he took the large Horse Bot for it,—the *Æstrus Equi* of my enumeration. This error is continued through all the editions of the *Systema Naturæ*, intending all the while, and referring to Vallisneri and Reaumur for, the true *Æstrus Bovis*. Thus, like some of the ancients, he also described a spotted-winged insect for the *Æstrus Bovis*; whereas the true insect has perfectly spotless wings. The true fly cannot be caught in the act of oviposition, from the violent running of the cattle, and the terror they are in at the approach of their enemy.

This makes it more than probable, nay, almost certain, that if Aristotle, Ælian or Pliny described an insect with spotted wings, or with a trunk or proboscis, &c., they knew nothing about the true *Æ. Bovis*, and had been deceived as to the real object of their research. It was indeed much more easy for them to have been presented with one of the numerous host of flies that infest the backs of cattle and lodge on them, than the true *Æ. Bovis*. Their fly may have been a *Tabanus* or an *Asilus*, a *Conops*, or a *Culex*, or any other with spotted wings; for as the true fly cannot be caught in the act of oviposition, it was next to impossible they should have discovered, or been made acquainted with, the true object of such disturbance. Indeed, during these commotions it would be dangerous to approach the cattle, or to remove any thing from their back; and if an insect was caught under any other circumstance, how could it be known that it was the genuine cause of this agitation?

It is in vain now to inquire what precise fly these ancient philosophers

losophers might have been presented with, as their testimonies are various, and militate against each other; but none are descriptive of the true fly, which we now fully know. Surely such a conclusion is more natural and just, than to suppose these conflicting descriptions true, and that the poets and common observers were false witnesses.

I now proceed to give what Virgil says respecting the name of it among the ancients, and the tumult it occasions; and of which no sweat-sucking *Tabanus*, *Conops*, or modern *Asilus*, can in any way be the cause.

“ Est lucos Silari circa, ilicibusque virentem
Plurimus Alburnum volitans, cui nomen Asilo
Romanum est, *Æstron* Graii vertère vocantes :
Asper, acerba sonans : quo tota exterrita sylvis
Diffugiunt armenta, furit mugitibus *Æther*
Concussus, sylvæque, et sicci ripa Tanagri.”

GEORG. lib. iii. v. 146.

From this admirable description, it is clearly manifest that *Asilus* was the Roman name for the fly which agitates the cattle; and it is equally clear that *Æstros* was the Greek name for it.

Not much weight is due to the observation, that Homer's insect was not the modern *Æstrus*, because he mentions the spring as the season of its appearance, since he also adds, in the same line, *ὅτε τ' ἡμέραι μακρὰ πέλονται*, “when the days are long;” nor that Shakespeare did not use the word *Brize* for the same insect, merely because he has assigned its appearance to the month of June, when it more often appears now in July. Indeed the alteration of style will account for this difference. But the same poet uses the word in another place, where the allusion is too distinct to be mistaken :

“ The herd hath more annoyance by the Brize,
Than by the Tiger.”

Troilus and Cressida.

And

And again in an old Play, quoted by Archdeacon Nares in his Glossary, the following use of the word occurs,

“I will put the Brize in’s tail, shall set him gadding presently.”

Now if MacLeay or Latreille, who entertains a similar opinion, had ever been as much among cattle on the heaths, as my pursuits have led me, they would have long since obtained a practical acquaintance with the effects produced by these insects, and would not have been led to suppose that the *Tabani*, *Conopses*, or *Culices*, were the object of poetic description, or have made any mistake between the effects of one and the other. When the *Tabani* and *Conopses* have come and settled in great numbers on the back and sides of the animal, he would, as I have often witnessed, scarcely regard them. A toss of the head, perhaps, towards the part, if they sucked a little too vigorously; or, if they were still more importunate, a lash of the tail, was in general all the notice he would condescend to take of them. But if an *Æstrus* approached, the consternation was indescribable, and the agitation most remarkable; and the object attacked, however lazily he might be disposed from the heat of the weather, or a full belly, would become suddenly as agile as a young deer, and canter away, holding out his tail, and running with a sort of undulatory movement of the back (thereby endeavouring, perhaps, to disappoint the touch and designs of his enemy), till he had obtained his accustomed retreat in the water, or the fly had quitted him,—

..... Tossing the foam
They scorn the keeper’s voice, and scour the plain,
Through all the bright serenity of noon;
While from their labouring breasts a hollow moan
Proceeding, runs, low-bellowing, round the hills.

THOMSON.

Assuredly no *Tabanus* can produce any effects like these. Un-
able

able to account for this extraordinary agitation, I had formerly given way to the notion of some very painful infliction by the *Æstrus*: but I am now led to question this opinion, inasmuch as I can discover no instrument by which this effect can be produced. The shrill sharp sound, which Virgil describes, was, I dare say, not stated without some real ground; and a friend of mine actually informed me, that he was standing in a farm-yard one day near some cattle, when one of these flies entered and approached them, and that he distinctly heard this shrill sound. In confirmation of this account we may remark, that the wing-scale, covering the *halteres*, which has been supposed by Keller to be the organ of sound, is particularly large in this insect; but further than this we dare not assert, but leave the point for future investigation. We know from Linnæus's own account, that the *Æstrus Tarandi*, or Rein-deer Bot, very similar in all respects to the *Æ. Bovis*, makes no sound while depositing its egg; which again brings me into doubt upon this matter.

We next have to observe, in confirmation of the peculiar effects of these insects upon the animals they infest, that those of the *Æstrus* of the Rein-deer, are equally singular and remarkable; and this fact we have from the indefatigable researches of our immortal leader, Linnæus himself. He says, speaking of the *Æ. Tarandi*, in his Lapland Tour, that as he was in bed early one morning, he perceived a very ungrateful smell, and when day-light appeared, "there were standing about the cot a thousand of these Rein-deer, driven by old men, boys, dogs, and women, who milked these animals. They appeared to be under the apprehension of some invisible attack: the animals carried their heads aloft, their ears pricked up and extended, beating the ground, and kicking in the air with their

feet, as though by enchantment. Then for a while they would be quiet; then, again, they were seen most furious, and this with so general and regular a movement, that no army would have surpassed their exercises in uniformity."

Linnæus further states, in the *Lachesis Lapponica*, respecting the effects produced by this sort of *Æstrus*, that in passing afterwards into the Lapland alps he observed a Rein-deer, which was loaded with his own package, frequently to stop short and become perfectly quiet and motionless as a pillar of stone, or one suddenly struck with catalepsy; the head held straight out, the ears upright, the eyes fixed; nor could he by any ill treatment be induced to proceed; but in a little while he would again resume his march. Where, I would ask, is the *Tabanus*, or *Conops*, that could produce effects like these? or what naturalist, at all acquainted with the operations of Nature herself, could confound the dissimilar effects produced by these several insects?

Linnæus further says, that in the Rein-deer fly he saw the egg held out "like a white mustard-seed" at the end of the abdomen, which, if true, fully confirms the supposition that there can be no infliction.

The *Æstrus hæmorrhoidalis* and *Æstrus Ovis*, in performing their office of ovi-deposit, are also equally irritating and peculiar, as I have shown in the paper above alluded to, in the 3rd volume of the Society's *Transactions*.

I avail myself of this opportunity in conclusion, to state, in addition to my former remarks on this genus, that it appears to me, as there is no *aculeus* or weapon of infliction at the end of the abdomen of the female of the *Æstrus Bovis*, that the egg is simply thrust down among the hair, till it meets the skin, and that then it is affixed to it by a glutinous liquor secreted at the
same

same time ; and that the egg being hatched, the young grub insinuates itself into, and finally through the skin, forming an abscess beneath it. In a somewhat similar manner it is that the ichneumon flies deposit their eggs on the sides of living caterpillars of the *Lepidoptera*, and hatching, perforate their skins, and entering within, live on the parenchyma or pulp of their bodies till matured and fully grown, when they make their way out again and change to the chrysalis.

I may also remark of the *Æstri*, that they appear to be wonderfully kept from such an increase as would be fatal to the animals they feed upon, by the difficulties and imminent hazards they are exposed to in the act of depositing their eggs. The teeth of the horse must destroy, one should imagine, nine-tenths of the *Æ. Equi*, *hæmorrhoidalis*, and *salutiferus*. The *Æstri* seem however, in the hands of Providence, to make a double recompense for the sufferings they occasion ; first, by keeping the animals on the alert during hot weather, when they would be often too idly disposed for their welfare ; while the few larvæ which succeed in getting into their bodies, appear to benefit them by their local irritations, stimulating the stomach to a quicker digestion of their watery food, and diverting diseases by their counter irritations of the skin and frontal cavities,—thus producing the effect of issues or vesicatories, which are powerful remedies in relieving and in preventing diseases.

I apprehend that I have now sufficiently shown that the *Æstrus* of the ancients could have been no *Tabanus*, and that it is clear Olivier, who appears to have originated this notion, and who was followed by Latreille, was mistaken.

A very extensive enumeration of this genus is seen in a late ingenious publication, the *Systematische Beschreibung* of J. W. Meigen. It is however in some instances not correct ; for on carefully examining the *Æstrus lineatus* of this writer, intro-

duced from Villers, it would appear to be that stumbling-block of systematists in entomology, the *Æ. Bovis* of my enumeration*, and not of Linnæus, as he states, who, as we have repeatedly said, described the *Æ. Equi* for this species. The *Æ. pictus* of this author, beautifully figured by Curtis in the *British Entomology*, no. xxvi. t. 106, I rather suspect to be the faucial bot of the Stag†.

As the species of the new genus *Cuterebra* were taken for *Æstri* till I separated them, and are closely allied to them in their habits, I have ventured at the close of this paper to communicate to the Society a new and undescribed species lately received from America, along with some other insects sent me by my nephew, Joseph Clark, from the Illinois.

CUTEREBRA FONTINELLA.

C. thorace atro, lateribus albis; abdomine violaceo, ultimis segmentis albis, nigro-punctatis.

White-tailed *Cuterebra*, or Blue Rabbit Fly.

Habitat in Illinoe Americæ Septentrionalis, cuniculos infestans.

DESCR. *Cuterebrâ Cuniculi* dimidio minor; atra, subcylindrica, cum capite parùm latior. *Frons* insuper atra et circa oculos lucida, infra albida, pilosa, utrinque puncto elevato atro. *Oculi* picei. *Thorax* insuper ater, latè per

* The lines on the thorax, and the figure of Villers, undoubtedly confirm it. Meigen's *Æ. Bovis* is the *Æ. Bovis* of my enumeration, under which this should have come as a synonym.

† I may here observe, that a few days since, in visiting the British Museum, I was shown the insect Dr. Leach has called *Æstrus Clarkii*, and find it only a variety, and scarcely that, of the *Æstrus veterinus* of my enumeration.

medium et ad latera pilosus, albus, punctis tribus nigris utrinque notatus. *Alæ* obscurè nigro-fuscæ, sulcis valdè puculatæ et rugosæ, corpore longiores; ad basin squamulâ foliaceâ erectâ, magnâ: tympanum halterem tegens magnum, convexum, marginatum. *Abdomen* breve, atrum, lucidum, supernè violaceo resplendens; segmentis duobus postremis hirtis, albidis, punctisque variis atris elevatis, glabris. *Anus* utrinque quasi forcipe prehensorio armatus. *Pedes* atri.



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