

Observations on the Cicindela Volans, or Flying Glow-worm, with the figure thereof made, and Designed by Richard Waller Esq. F. of the R. S.

THE *Cicindela volans*, tho' it hath bin pretty well described by several writers that treat of Insects, yet I think has bin by none mentioned to be found in England, and indeed it is very rare, but I have happened to catch twice of them at Northaw in Hertfordshire; first about Midsummer 1680, and for a fortnight in June the last year 1684. they flew about the candle as soon as it grew dark; at both which times the weather was very hot, and it may be it shines only at such seasons, tho' the Animal be easy enough to be met withall winged when it shines not, and without wings shin'ing which is the common Glow-worm.

By *Ulysses Aldrovandus* Lib: 4. cap. 8. it is thus described. *Cicindela pennata* pennas habet in vaginis fuscis inclusas, Caput à superna parte ceu Cucullo quodam clypei inversi, & incumbentis formam habente totum contegitur, fusci ut vaginæ coloris. Capitulum ei parvum nigerrimum, in duo tubercula dispartitum, ceu gagatis splendore ocellos. Alvum habet annulosam multis segmentis divisam in cujus extremo guttulæ duæ ignis instar pellucidæ, sed è lucido igneo ad viride seu subcæruleum tendentes, qualis nonnunquam flammæ est ex sulphure incenso color. Conspiciuntur tunc maxime cum alvo compressa humor ille Diaphanus ad extremum alvi vergit, &c:

I have been the larger in transcribing this Description, because it agrees very well with the Animal whose figure I here present to the Society; as touching its Generation, *Aldrovandus* ib. affirms ovis quæ

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parit

parit *Cicindela*, Erucam quandam fieri, & ex hac tandem alatam gigni, &c. It is much to the same purpose described by ^a *Moufet*, and ^b *Thomas Bartholin* in his Treatise *De luce Animalium*. Save that they both I think mistake in allowing the Male only to have wings, whereas they both fly alike, as we may conclude was known to *Julius Scaliger* Exer. 191. from a place it seems not regarded tho' cited by *Moufet*, where he says *Cicindelam Volantem cum suo Mari in coitu deprehendi*, &c. The same which happened to me, for I once caught the Male, and Female coupled, and could observe no Difference between them, except in Size, the Female being a little the larger, for they both shined alike. Its Light was very vivid so as to be seen plainly when a Candle was in the Room, but the vibrations thereof were unequal, and the Colour greenish like that of the creeping Glow-worm. The luminous part was two small specks on the under side of the Tail at its End. The shining continued for a little while after the Tail was cut off, tho' it sensibly decayed, till at last it went quite out. Whether it shined longer then the Life remained in that part (which will live for a considerable time in all Insects after it has been severed from the body,) I much doubt; and *Moufet* says *Clarissimum istum splendorem una cum spiritu vitali prorsus evanescere*. Possibly the use of this light is to be a Lantern to the Insect in catching its prey, and to direct its course by in the Night, which is made probable by the Position of it on the under part of the Tail, so that by bending the same downward (as I always observed it to do,) it gives a light forward upon the Prey, or object: the Luminous Rayes in the mean time not being at all incommodious to its sight, as they would have bin, if this Torch had been carryed before it. This conjecture is also favoured by the placing of the Eyes, which are on the under Part of the head, not on the Top. I obser-

^a Cap. 15. p. 108. ^b Lib. 2, c. 12.

ved also that it could and did by some contrivance cover its Light, and make a kind of dark Lantern. I should have been very glad to have given some account of this Light from Experiments that might have bin made thereon but not having the opportunity of doing it whilst the Flyes lived which was not above a day after they were taken, and wanting my Microscope in the Country to examin it more nicely while shining, I must be contented with offering a Draught of the Insect such as I could then make, and a larger representation of it as the Microscope shewed it being laid on its back, when it had been some time dead.

The 3d. Figure shews the Insect upon its feet, with the back upwards, where it appears to be of the *Beetle kind*; it is of a dark Brown colour unpolisht, when the case wings are opened, it extends two very large membranous wings, fastened to the upper part of the Thorax; Its head is covered as it were with a shield or broad-brim'd Hat.

The 4th Figure represents it laid on the Back, to shew the two Eyes under the broad covering, they are black, and very large, making almost the whole head; there being little else to be seen: these are movable, so that the Animal can thrust them forward to the Edge of its hat. From between these are discovered the two hairy feelers, or perhaps Brushes to cleanse the Eyes. Between these Eyes and the Thorax lyes the Mouth: on the Thorax are 6 Legs almost all of a length. The Tail is made of 7 shelly Rings, at the last of which are visible the two shining points.

The 5th Figure shews the Insect on its back as it was seen through a Microscope when dead; where

AA. Represents the two Horns, feelers, or Brushes consisting of 10 roundish joynts, besides the first, which is as long as two of the Rest, they are all hairy, and like those of some Butterflies, for all have them not.

BB. The broad covering, or Hat over the head which shewed of a speckled brown and yellowish colour, like Tortois shell.

CC. The two Eyes composed of innumerable small glassy Hemispheres in rows as hath been observed by the Ingenious Mr. *Hook* in his Micrography to be the make of insects Eyes, so to supply the defect of motion in their Eyes, by the number of Pupilla's. I have seen these spherical bodys in the Eyes of some Butterflies set in circles not Rows; with long hairs growing out of each space left by the connexion of three Hemispheres.

D. D. D. D. D. D. The Legs of a shelly-make like Lobsters, and so joynted. As well in this as other Flys they are covered with many stiff hairs, tho' not so full as those of the Blew fly, as may be seen by comparing Mr. *Hook's* (Microgr. Schem. 26,) curious Figure of that Insect with this here. The Mechanisms of the feet, as I take it, are much the same, only what is there called the Pattens, were here wanting (if not broken off as I believe they were not,) and their use supplied by the Gibbous part represented by d. d. d. The Talons e. e. e. e. e. e. of the feet were shining, and very sharp pointed. The Legs were of two long joynts, and the feet of four more, beside that which was armed with the Talons. These seemed to be joynted one into another, and were all thick beset with haire, or Bristles.

E. The Thorax of but one shell, of a Polisht copper colour, stuck full of tapering Bristles, a small dent being discernable in the shell wherein each grew.

F. The Taile consisting of 7 Rings, of the same brownish colour, without hairs except on their Edges, which were set with them like a thin fringe, as the Tails of Lobsters, &c. are. These Rings were of an unequal shining shel-cover.

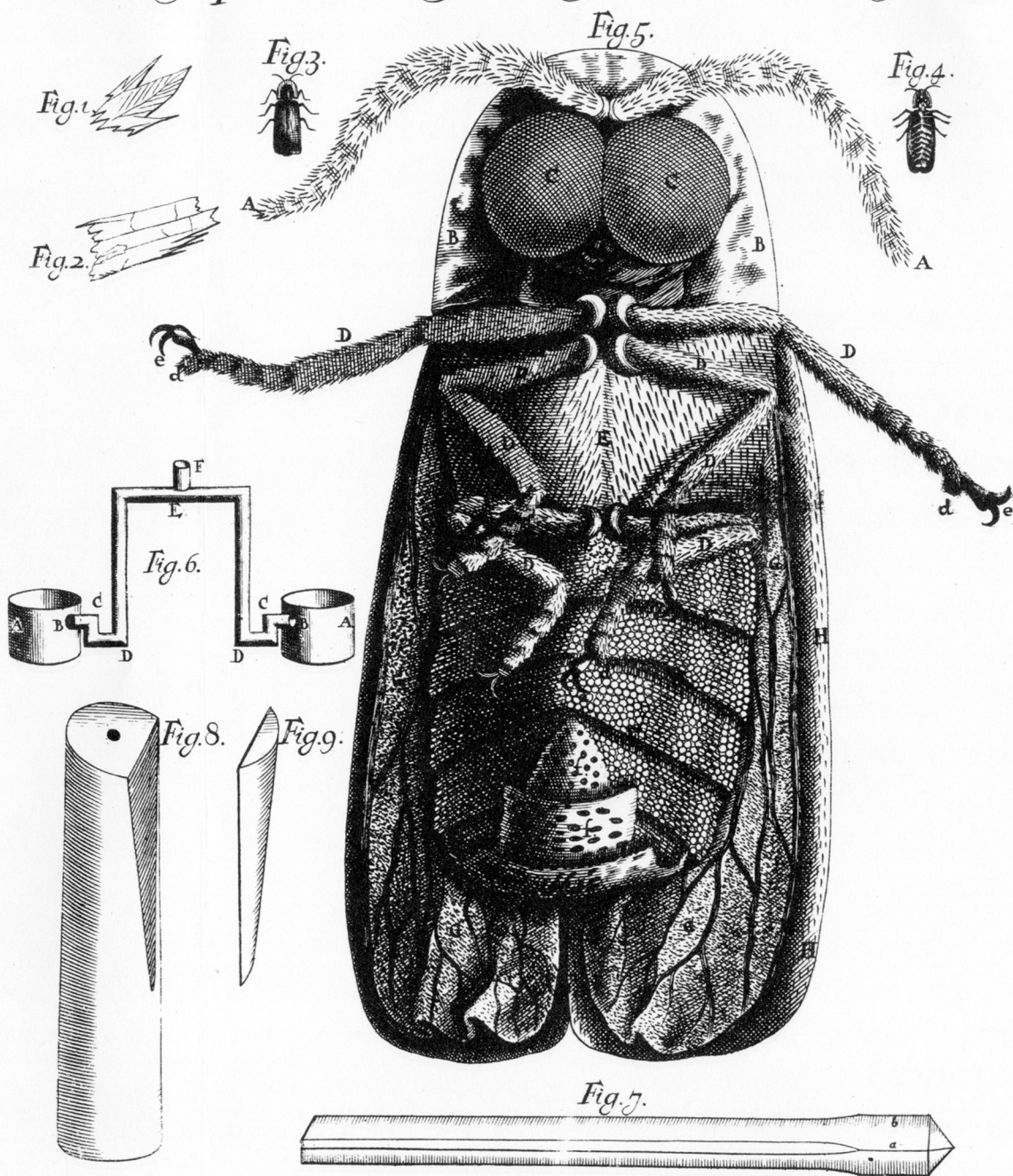
f. f. The back, or upper part of two or three Rings of the

the Taile, turned up to shew the work of the shell on that side. On the Inside of the last of these was the light placed, tho' there was now nothing to be seen except that part being a little lighter coloured then the rest of the Taile.

g. g. g. g. The Membranous Wings in every particular like those of the Blew Fly, with hairs upon the veins, or quilly Parts.

h. h. h. h. The insides of the Case wings, which were hairy, pointing all downwards. The outside of these Cases is also very Bristly.

Philosoph. Transact. Number, 167.



MBurghers sculp.