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XXXIII. *Notice on the Larvæ of Diptera.* By WILLIAM SHARP MACLEAY, Esq., F.L.S.

To Richard Taylor, Esq.

NO order of insects affords greater proof of the necessity of generalizing, than that of *Diptera*. We often hear of the last joint of the antennæ in this order terminating in a bristle, or being furnished with a lateral one; whereas this bristle is essentially part of the antennæ, being in fact articulated, and composed of as many joints as with the thicker ones will make up the proper number that characterizes the family. The true description therefore of the antennæ in *Musca vomitoria* is, that the last three joints compose a seta, or bristle inserted laterally at the extremity of the third joint.

Owing moreover to the rarity of generalization in this science, I find on looking over the various entomological works that have been hitherto published, that whenever the larvæ of *Diptera* fall under consideration, they are altogether erroneously described. The head of each species when fully exerted is not of a variable but of a constant form, and like that of other insects is provided with two articulated antennæ. These antennæ are simple and triarticulate in the larvæ of the *Muscidæ*, and under a high power are to be seen situated on that bimammillary frons which was known to Reaumur, but owing probably to the minuteness of the object has been always badly figured, and was not at all understood by him. (See *Mémoires pour Hist. des Ins.* vol. iv. pl. 34. fig. 3, *dd.*) Degeer has represented them as minute tubercles (vol. vi. pl. 3. fig. 12); but either from not accurately investigating them or from not using a high power, and above all from not generalizing, he also remained ignorant of their articulated structure and of their being true antennæ. This is the more extraordinary, as the antennæ of those larvæ of *Diptera*, such as the *Culicidæ*, &c. which have not a retractile head have been long known and figured, and in some cases (as Degeer, vol. vi. pl. 18. p. 8), are so like the antennæ in the larvæ of *Muscidæ*, that it surprises one not a little that these last should have been so long imagined to be destitute of antennæ.

What have been by some entomologists termed the singular anterior prolegs of *Tanytus maculatus*, will be found on accurate examination to be the two anterior pedunculated spiracula, which, from the insect being aquatic, necessarily take a branchial form. The posterior "*prolegs*" are also pedunculated branchial spiracula of the same kind. All those organs, whether retractile or not, which are called *anterior prolegs*, and *tentacula* in *Chironomus*, *Tanytus*, &c. are the anterior

terior spiracula. So far as the word *proleg* may signify a process of the body in *Annulosa*, it may be an admissible term; but the utility of the expression may be questioned, as it scarcely ever adds to our knowledge of the physiology and real use of the organ. In dipterous larvæ generally, whether terrestrial or aquatic, it is extremely common to see the stigmata supported on peduncles.

It is worth remarking that although, in these larvæ, until we arrive at the extremes of the order, there are no stigmata along the sides, except the first or humeral pair; yet on dissecting a common flesh-maggot,—in which, by the bye, the tracheæ form a most beautiful microscopical object,—we may observe that the longitudinal trunks of these send off at equal distances lateral branches just as if there were spiracula to correspond with them. Nay more, in several species of dipterous larvæ we may observe the place of the deficient stigmata marked out as tubercles along the sides of the body, and they become very distinct in the pupa. The prolegs, as they have been termed, of the larva of *Elophilus pendulus* give a curious instance of these abortive stigmata in a high state of development, and what have been described in this insect as the anterior pair of feet, are no other than the usual palmated stigmata which occur on the humerus of the larvæ of *Muscidæ*, only they are here somewhat pedunculated.

Reaumur and Degeer afford us mines of information; but in the present state of the science, these most valuable authors must be read with the insects before us, else they will only serve to lead into error.

Having thrown out these few hints, in order to show the value of generalization in natural history, I conclude, Sir, with stating myself,

Your very obedient servant,

Havana, June 20, 1827.

W. S. MACLEAY.

XXXIV. *Reply to Mr. W. Phillips's Remarks on the Crystalline Form of the Hyalosiderite.* By Dr. WALCHNER, Professor of Chemistry, Carlsruhe.

To the Editors of the Philosophical Magazine and Annals.

Gentlemen,

THE Philosophical Magazine and Annals of Philosophy, Number 3, contains some observations of Mr. W. Phillips, on the crystalline form of the hyalosiderite, which I described*, four years ago, as a new mineral substance. As I

* *Disquisitio Mineralogico-chemica de Hyalosiderite.* Friburgi 1822; and Schweigger's *Neues Journal* 1823.—[See also Phil. Mag. vol. lxiii. p. 181.—
EDIT.]