by a membranous ligament from within, may not be the true mentum rather than an integral portion of the head, in which case the organ itself would form the labium; but the point may be open to controversy, and a careful examination of a species of *Platypus* while in a recent state, with due regard to the trophi of other allied genera, would appear to form the safest guide to a correct conclusion in the matter.

The labial palpi in *Platypus cylindrus* are of equal thickness to the base; but in *Pl. insignis* the basal joints are much the thickest, and the terminal joints shorter in proportion.

From all these various circumstances, and more especially from the very marked peculiarity in the antennæ, this insect appears to deserve the rank of a distinct subgenus; and at the suggestion of Mr. Westwood, I would propose for it the name of *Tesseroцерus*, as not inapposite with reference to the curious formation of the antennæ.

XXXIII. On the Earwig. By J. O. WESTWOOD, F.L.S., &c.

[Read October 6, 1834.]

It has been considered by some authors that those species of insects which subsist upon plants which are not natives of this country ought not to be regarded as indigenous although occurring in the greatest plenty. This opinion needs however to be received with much restriction, since if adopted in its full extent it would necessarily lead to the supposition that so strict a connexion exists between the plant and the insect that the latter is not found to attack any other plant.

But any person at all acquainted with floriculture knows well that many imported plants afford the most congenial food to our strictly native insects; for instance, the flowers of the dahlia * are gnawed, almost as soon as they have burst the calyx, in a very unsightly manner, but it is to the snails that the greatest portion of the damage must be laid. The earwig however has not an inconsiderable share in the mischief, feeding upon the corollas by night, and hiding itself between them by day. In fact these insects are great enemies of the florist and fruiterer, feeding upon ripe and decayed fruits, and

* In like manner I have observed that the hollyhock is attacked by *Apion radiolum*, which undergoes its transformations in the stem, although its ordinary habitat is *Malva sylvestris*.

other vegetable substances. It does not indeed appear to be naturally carnivorous, though if kept without proper nourishment it will, like many other animals, occasionally attack and devour even its own species. Sometimes also it appears in vast numbers, indeed it is noted in the Historical Chronicle of the Gentleman's Magazine, on the 19th Aug. 1755, under the head of "Stroud," that at that time there were such quantities of earwigs in that vicinity that they destroyed not only the flowers and fruits, but the cabbages were they ever so large. The houses, especially the old wooden buildings were swarming with them. The cracks and crevices were surprisingly full, they dropped out in such multitudes that the floors were covered; the linen, of which they are very fond, was likewise full, as was also the furniture, and it was with caution that people eat their provisions, for the cupboards and safes were plentifully stocked with the disagreeable intruders.

These circumstances, together with the not very gainly appearance of the insect, and united with the supposition that it creeps into the ears of sleeping persons, have rendered the earwig one of the most despised and abhorred amongst insects; although from the impossibility of any mischief arising (beyond fright) in case it should happen to attempt to enter the ear, as well as from the interesting circumstances which have been observed by different authors relative to the maternal solicitude of the females towards their eggs and young, this comparatively harmless insect is not less worthy of attention than many of its more showy brethren.

But it is in the organization of the earwig that we find the most striking peculiarities. Thus we may in the first place notice the very beautiful structure of the wings, which although exhibiting a most elegant disposition of nervures when expanded, are capable of being folded up into a very small space so as to be nearly concealed by the minute tegmina.

But the whole structure of the insect is so peculiar that entomologists are not yet decided as to the order to which it belongs. The early authors considered it coleopterous, more recent ones orthopterous, and others, including some of the most celebrated entomologists—De Geer, Kirby, MacLeay, Leach, and Dufour—consider it as the type of a distinct order. Into the question of the situation of these insects I forbear to enter in this place, since my chief object in calling attention to this group is to detail some remarkable peculiarities of structure hitherto unnoticed by the distinguished authors who have treated at length upon this subject*.

* With the exception of Messrs. Gené (*Saggio da una Monografia di Forficule*)

In a short note published in the 19th Number of the Zoological Journal, when speaking of the instability of the decapod annulose theory proposed in the 'Horæ Entomologicæ', the thorax being typically supposed to be composed of five and the abdomen of seven segments, the wings being regarded as two pairs of modified legs, I observed that the earwig was sufficient to disprove its correctness, the abdomen of that insect being in fact composed of nine distinct segments, the last of which is furnished, in addition to the caudal pincers, with an exerted anal apparatus; the thirteen segments of which the body of an annulose animal is typically composed being here fully and nearly equally developed in the perfect state, a circumstance of very rare occurrence, as some or one of the abdominal segments, although fully developed in the larva, are generally lost in the perfect state.

And in a second short communication in the 20th Number of the same work I have stated that being anxious to ascertain the situation of the spiracles along the body of an insect in which all the thirteen segments were thus fully developed in the perfect state, (in the hopes of discovering a clue to the solution of the remarkable question raised by French entomologists relative to the structure of the hymenopterous thorax, the hinder part of which is regarded by them as composed of the basal abdominal segment,) I had discovered upon examining some more specimens, that although the abdomen of the male was 9-jointed that of the female possessed only 7 segments; adding that this circumstance was very worthy of investigation as a clue to the solution of the question respecting the loss of the abdominal segments in those insects which have fewer than 9 joints in that part of the body.

The occurrence therefore of the insects in considerable numbers in the flowers of the dahlia and nasturtium (for they are very fond of creeping during the daytime into the attenuated spur of the latter flower as far as they can penetrate, leaving the abdomen sticking up in the midst of the pistil and stamens,) has afforded me an opportunity of making the requisite investigations for attaining an accurate acquaintance with the various particulars.

The abdomen of the female, as already stated, apparently consists but of seven segments, of nearly equal size, above; but when seen from beneath there appear to be only six unless the insect throws up its tail; the 6th ventral plate being much produced and conceal-

and Brullé (*Hist. Nat. des Insectes*, vol. ix. p. 21.), who have noticed the difference in the number of abdominal segments, without ascertaining that this difference was apparent and not real, as subsequently shown.

ing a pair of lateral triangular plates, which have the angles brought into contact at the extremity of the body when at rest, but which when opened form the anal passage: besides this the pair of large terminal forceps and a small corneous central appendage are to be noticed.

On distending the abdomen of the female however, with a view to the discovery of the two lost segments which exist in the male, no trace can be observed of them from beneath, but from above there are to be perceived at the base of the last, or as it appears the 7th, abdominal segment two slight transverse impressions, which, on being observed laterally, are found to terminate in two ventral membranes. These therefore, it cannot be questioned, are the traces of the two segments (the 7th and 8th), which in the males are as fully developed as any of the others; but the situation of the spiracles or breathing pores most fully confirm the opinion.

M. Leon Dufour, in his '*Recherches Anatomiques sur les Labidoures ou Perce-oreilles*,' published in the *Annales des Sciences Naturelles* for April 1828, has observed in his chapter upon the respiratory apparatus that the spiracles of the *Labidoura* (which term he proposed for the order of the earwigs) are extremely difficult to be observed, on account of their extreme minuteness, and because they are entirely hidden, either behind the scapular plates of the prothorax or the imbricated portion of the abdominal segments; in fact, in the ordinary state of the insect no one of them is to be observed. M. Dufour however only notices the prothoracic and the abdominal spiracles. Those of the mesothorax and metathorax which I have discovered he has overlooked, and the number of the abdominal spiracles he has not given.

The prothoracic spiracles are placed, as M. Dufour has described, beneath the epimera of the prothorax, in fact between the base of the first pair of legs and the posterior angles of the dorsum of the prothorax, being hidden from view by the free posterior margin of the epimera.

The mesothoracic spiracles are placed in a similar situation between the base of the legs and the posterior part of the place of insertion of the tegmina, hidden as in the former pair by the epimera mesothoracica; but the metathoracic pair of spiracles are very differently situated, being in fact dorsal, and placed near the posterior angles of the mesothorax, but concealed from view by the produced internal angle of the lower wings.

Not content however with discovering externally the four minute oval organs, which although having the appearance of spiracles might not be such in reality, I dissected the several portions of the

thorax, and found that what I had regarded as mesothoracic and metathoracic spiracles were really such, giving rise to numerous tracheæ.

Thus each of the three thoracic segments is proved to be furnished with a pair of spiracles; and thus the argument of Latreille and Audouin, that the terminal part of the hymenopterous thorax must in reality be the basal segment of the abdomen because it is furnished with a spiracle, "*caractère qui ne permet pas de confondre le segment avec le métathorax propre, puisque celui-ci en est dépourvu,*" is found to be unstable, at least if we may be permitted to judge from the analogy offered in this instance.

By considerably distending the abdomen of a female earwig the spiracles are brought into view. They are, as M. L. Dufour observes, "*d'une petitesse microscopique,*" and it is only by holding the insect in certain positions that they can be observed at all even with a lens of high power. They are placed at the frontal angles of the recurved sides of the ventral plates, the angle itself being slightly excised. The first 6 segments are thus furnished, and a 7th pair is observed at the extremity of the first of the two rudimental joints, that is the seventh abdominal segment. There is none however on the side of the second rudimental joint (the 8th abdominal segment), nor can any be seen upon the terminal or 9th segment. For the purpose however of ascertaining beyond a question whether this 7th spiracle served for the supply of air to the 8th and 9th segments, I examined the internal structure of the extremity of the body, and by that means clearly perceived that this 7th pair of spiracles gave rise to a large trachea running towards the head, and another slightly ramified one which extended not only over the 8th and 9th segments but also ran into the caudal forceps.

Now from the rudimental structure of the 7th and 8th abdominal segments in the female it is not surprising that the 7th spiracle should extend to the extremity of the body, because as the 7th, 8th, and 9th segments are soldered together they are to be regarded as a single joint, and consequently as furnished only with a single pair of spiracles: but in the male the case is different; the 7th, 8th, and 9th segments are here equally developed, and each has its separate movements. I was therefore anxious to ascertain whether the 8th and 9th segments of the abdomen of the male were furnished with spiracles as well as the 7th, because if such were the case we might be led to expect the rudiments of such additional spiracles ought to be found in the female. On the most careful examination, however, I could find no external trace in the male of spiracles after the 7th abdominal segment, and upon dissecting this sex I ascertained that

the 7th spiracle gave rise to a much more developed and ramified trachea than in the female, and which extended as in that sex to the caudal forceps.

Thus in this insect there are ten consecutive segments, including the three thoracic ones, each of which bears a pair of spiracles.

The structure of the thorax in this insect is also worthy of observation. The insect is a very good walker and its legs are of equal size, it is essential therefore that the sternum of each of the three thoracic segments should be nearly equally developed, and such is the case. The insect is also a flyer, but its posterior wings only are capable of assisting in aerial action, its minute tegmina being apparently incapable of rendering it any assistance. The tergum of the mesothorax is therefore very short, whilst that of the metathorax is large and nearly square; it is divided into two parts in a curious manner, the interior angles of the lower wings being produced internally in a narrow band until they meet in the middle of the back, and are extended backwards in a point. I know no other instance in which this character is to be observed. In the *Diptera* indeed the inner basal angle of the wings is internally produced behind at the sides, forming the alulæ; but in that order it is the anterior wings which are thus dilated, whilst in the earwig it is the posterior wings, a material point, and one which tends to show that where one organ in one group assumes the offices of another organ in a distinct group, the peculiarities of the former may be observed in the latter.

DESCRIPTION OF THE FIGURES.

- Fig. 1. The three thoracic and two abdominal segments seen laterally, the limbs removed.
- Fig. 2. The meso- and meta-thorax seen from above, the dorsal metathoracic spiracle (*a*) on one side being observed by the removal of the extremity of the anal lobe of the wing (*b*).
- Fig. 3. The mesothorax alone seen laterally.
- Fig. 4. The metathorax alone seen laterally.
- Fig. 5. The mesothoracic spiracle, with the base of the several tracheæ to which it internally gives rise.
- Fig. 6. The abdomen of the male seen laterally, the segments numbered 1 to 9, and the spiracles lettered *a* to *g*.
- Fig. 7. The three terminal segments of the abdomen of the male opened laterally, showing the development of the trachea arising from the seventh spiracle, the central tracheæ being truncated.
- Fig. 8. Representing the part of this trachea which was removed, and which extended to the caudal forceps.
- Fig. 9. The abdomen of the female seen laterally and distended: *a*, the anus; *b*, one of the anal triangular plates.

- Fig. 10. The thorax and abdomen of the female seen from beneath, in the natural position.
Fig. 11. The extremity of the abdomen of the female seen from beneath distended.
Fig. 12. One of the seventh pair of spiracles.
Fig. 13. The extremity of the abdomen of the female seen laterally distended.
Fig. 14. The dorsal portion of the three terminal abdominal segments of the female, showing the relative length of the tracheæ arising from the seventh abdominal spiracle.
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XXXIV. *Observations on the Economy of the Strepsiptera, with the Description of Stylops Spencii, a new British Species recently discovered. By W. B. PICKERING, Esq., M.E.S.*

[Read 5th January, 1835.]

OF the value and necessity of recording observations which fall under our notice, even should they merely relate to the most common insects, there can, I apprehend, be but one opinion, since so many interesting particulars remain unknown in the economy of almost every species, serving either as rewards for those who are willing to search for them, or as the means of confirmation of what is already known. If this be admitted in respect to well-known species, of how much more importance is it that publicity should be given to facts concerning those of remarkable structure and singular economy, concerning which, although they may have excited the attention of entomologists of all countries, we still remain, as regards many of their more important features, in a state of uncertainty and doubt, and where mere conjecture has endeavoured to supply many points relative to their economy! Of such insects perhaps the most remarkable are the species composing the order *Strepsiptera*, and I deem myself extremely fortunate in having made some recent observations on the genus *Stylops* which are likely to enable us (with the help of future inquiry) to elucidate its history. Previous however to detailing these facts, I will cite the opinions of the different authors who have written on this order as far as regards its natural history.

Rossi was the first entomologist to describe one of these remarkable insects; he was of opinion that the egg of the *Xenos* was deposited in the larva of the wasp previous to the closing of its cell; his words are: "Cui vespæ larva antequam cellulæ clauderentur forte incunabula dedisse videtur." Our much-esteemed Honorary