

back and notched at the apex. The species are 1. *Systella Rafflesi*, which is of a yellowish green colour, the fore wings being green, and marked with a large ocellus in the costal area; the expansion of the wings is $34\frac{1}{2}$ lines. A single specimen (probably from Sumatra) is in the cabinet of the Zoological Society, presented by Sir Stamford Raffles; a second, destined for the British Museum, was collected by Mr. Cuming in the Philippine Islands. (Id. i. 12, tab. iv. figs. 1 and 2).

The second species, *Systella Hopei* of Westwood, is brown, the fore wings being variegated with brown, yellow and whitish, and narrower than in the preceding species; the notch at the apex is not conspicuous; the expansion of the fore wings is 35 lines. This species is Chinese, and unique in the cabinet of the Rev. F. W. Hope. (Id. i. 12, tab. iv. fig. 3).

The remainder of the number is occupied by entomological chit-chat. The removal of Mr. Samouelle from the British Museum: the projected Encyclopædia of generic names: Mr. Paterson's pamphlet on Natural History as a branch of education: Mr. Cuming's Philippine Island insects: the Entomological Society of London: and Dr. Royle's hypothesis that silk is a modification of caoutchouc.

EDWARD NEWMAN.

ART. XXII.—On the AULACIDÆ, a family of *Hymenoptera pupivora*; and that *Trigonalys* is one of its components: with the description of a British species of this genus, and incidental remarks upon their collateral affinities. By W. E. SHUCKARD, Lib. R.S.

My Dear Sir,

Chelsea, May 6, 1841.

It affords me much pleasure that my first contribution to the 'Entomologist,' is for the purpose of introducing to your readers a new native insect that must greatly interest British entomologists, belonging as it does to a genus, the affinities of which seem to have perplexed, without any reason, an English entomologist of some repute, and of which genus this specimen is the first recorded European representative. I shall make no apology for not limiting myself to a bare indication of the genus and a description of the species, but if you can spare me room, I will add descriptions of some new species of the typical genus, and a new North American genus closely proximate to *Trigonalys*; with remarks upon the affinities of *Megalyra*.

When Mr. Westwood described the genus *Trigonalys*, he made the following observations upon it. "Genus anomalum familiæ dubiæ.

Caput et antennæ Lydæ, abdomen Mutillæ. Alarum nervi ut in Myrmosa dispositi.”* He here, however, assigns no situation to it; and in 1840, in his ‘Introduction to the Modern Classification of Insects,’ he says, towards the end of his remarks on the Mutillidæ,† “I may here mention another anomalous genus, which I have described under the name of Trigonals, having somewhat of the aspect of a male Mutilla, but with the head flattened and the antennæ longer, very slender at the tips, and composed of twenty-three or twenty-four joints, very like those of Lyda; the legs are simple, and the abdomen punctured. The veins of the wings are nearly as in Myrmosa and Mutilla Europæa, mas. The type, T. melanoleuca, is from the Brazils.”

Mr. Westwood should not have been long in doubt as to the affinities of the genus in question, as the antennæ, in the first place, ought to have told him that its position could not be near Mutilla and Myrmosa, for although the aculeated Hymenoptera have sometimes apparently fewer than the normal number of joints, that is, twelve in the female and thirteen in the male, no instance is yet known, I believe, of their *exceeding* that number. Presenting thus, therefore, at once, this almost insuperable objection to the situation he assigned it, he might have looked further into its structure, and he would then have found that the trochanters are two-jointed,—a peculiarity not yet known to occur in the aculeated Hymenoptera, and presenting itself exclusively in Latreille’s Pupivora. And here, a moment’s reflection would have told him sufficiently, that the only genus yet described in this division with two recurrent nervures and a closed first submarginal cell, is Aulacus; and having arrived here, other very proximate affinities must have immediately exhibited themselves, namely, in the form of the head, and its attachment by a neck to the prothorax, the insertion of the antennæ, and the structure of the mandibles and palpi. All this is still further confirmed by the insertion of the abdomen in the new genus I shall describe below, which, although not placed upon so long a projection of the metathorax as in Aulacus, the projection is still longer than the posterior coxæ. I therefore, without any hesitation, place it next to it, and conjunctively form of them a family, the designation of which I derive from the genus first described, although perhaps it is not normally its type; this however is in strict adherence to the law of priority. That Aulacus should be removed from the Evaniadæ, there can be no doubt; for the insertion of the

* Proceedings of the Zoological Society. April, 14, 1835, No. 28, p. 53.

† Introd. to Mod. Class. Vol. ii. p. 215.

abdomen in the latter is so very different, besides their having but one recurrent nervure, their differently formed head, mandibles, and palpi &c. present characters which it would be incongruous to associate together, and I presume Latreille united them because he knew but the single genus *Aulacus*, in which, it is true, some points of structure apparently agreed, but wherein there were certainly more, and more peculiar ones, that disagreed; but I expect he was unwilling to construct a family of a single genus.

Having thus given my reasons for what I am about to do, I will proceed to the matter in hand, namely, in the first place, to some collateral affinities.

Family. — *EVANIADÆ*, as restricted by Shuckard.

Abdomen usually inserted closely to the scutellum and compressed, and springing abruptly from the surface of the metathorax. Superior wings with either a closed first submarginal cell, which receives the single recurrent nervure, or without any, but some of the ordinary basal nervures.

Superior wings with

a complete marginal and submarginal cell :

abdomen attached by means of an abrupt petiole. 1. *EVANIA*.

abdomen increasing gradually from its insertion. 4. *FÆNUS*.

neither marginal nor submarginal cells :

basal cells completely enclosed.....2. *BRACHYGASTER*.

basal cells unenclosed.....3. *HYPTIAM*.

The preceding genera constitute, according to my views, all that truly pertain, as far as I know the Hymenoptera, to the *Evaniadæ*, which, from the mode of attachment of the abdomen, forms so peculiar and insulated a group in the Hymenoptera.

The careful investigation of affinities, in obscure groups, being a subject always replete with interest, and the most instructive perhaps in the study of the natural sciences, as it necessarily involves an intimate and comprehensive knowledge of structure; I shall make no apology for incidentally introducing here my views as to the true position of Mr. Westwood's genus, *Megalyra*, included by that Entomologist, together with *Aulacus* and *Pelecinius*, in the family *Evaniadæ*, but from which it is as distinct, and especially from the latter, as are *Stephanus* and *Paxylomma*.

We invariably see that where nature leaves one normal type of form to assume another distinct one, in her struggle to divest herself of the old relations, new, abnormal, and insulated forms are generated, and

these we usually find extremely limited in the number of species; for being but a transitory passage from one group to another, we may assume that in the route she has not had leisure to look around her, and create connate creatures, but has hurried on, to speak metaphorically, until, having again settled in a new domicile, we find radiating from this centre, and variously ramifying from the several branches, a host of allied forms, all participating in some predominant characteristic with the radical type. At first the progress is gradual, but having reached the extreme verge of the quitted group, and proximate to the renewed-transformation the throes are convulsive, and the structure becomes most eccentric, exhibiting frequently affinities to several points. The present group admirably illustrates these opinions. Thus in the transition from the Tenthredinidæ to the Ichneumonidæ, we find the progress at first gradual, by means of the remarkable genus *Xyela*, if this be its true place, although it has, in so many respects, an intimate affinity with the former family, yet fewer with the subsequent *Cephus*; and here the first jump is made to *Sirex*, which by means of *Xyphidria* is connected with *Oryssus*, but from each of these steps however there is a leap. Having arrived at the limit of the group in *Oryssus*, the contortion is very violent, for in this eccentric genus, with all its anomalies of structure in the antennæ and anterior tarsi of the female, differing from everything else and peculiar to itself, we find conjunctively a triple series of affinities, namely, one in a divergent course by means of its ovipositor to *Cynips*, and two in a regular line, forming the connection, through *Megalyra*, between the Tenthredinidæ and Ichneumonidæ: and that this, in a family by itself, is the true position of the genus *Megalyra*, the following brief summary of connecting resemblances will sufficiently show. In the first place, the neuration of the superior wings in *Oryssus* and *Megalyra* is very nearly identical; in the next place, in both genera we find a channel for the reception of the scape of the antennæ running obliquely downwards from their insertion, past the base of the mandibles, and which occurs nowhere proximately on the Ichneumon side of affinities; the specific character of a fascia across the superior wings, is also subsidiary to their corroboration: and then, the greatest transition having to be made from a cylindrical sessile abdomen to a petiolated one, what could we find so aptly executing this as in *Megalyra*, where we observe an elongated metathorax embracing the base of the abdomen, which is also cylindrical, a form nowhere found amongst the normal Ichneumons, and the ventral plates likewise are of a firmer consistence than in these, thus resembling those of the cognate Aulacidæ,

possession, of two of the genera of Evaniadæ, and shall then go on with the Aulacidæ.

Section I. Petiole of abdomen abrupt, and inserted at the superior extremity of metathorax; claws with a tooth beneath.

Genus 1.—EVANIA, *Fab.*

Type. *Sphex appendigaster*, Linn. Many species known.

Genus 2.—BRACHYGASTER, *Leach.*

Type. *Evania minuta*, Oliv.

As a brief generic characteristic in addition to that contained in the table above, and which the accompanying wood-cut illustrates, it may be observed that the face is more prone than in the following genus, the metathorax less gibbous, and the antennæ filiform.



1. *Br. minuta.*

Evania minuta, Oliv. 'Ency. Méthod.' vi. 453.

Inhabits Northern Europe. There are English specimens in my own collection.

2. *Br. Xanthops.* Nigra: facie, genis, antennarum articulo primo subtùs, pedibusque quatuor anticis flavis. Mas. Long. $2\frac{1}{2}$ lin. Inhabits Brazil. In my own collection.

Genus 3.—HYPTIAM, *Illiger.*

Type. *Evania petiolata*, Fabr.

The annexed wood-cut shows the character mentioned in the table, to which may be added that the antennæ are slightly subclavate, head vertical, and metathorax disproportionately large and very abruptly truncated. The chief sexual distinction appears to be a slight difference in the length of the scape of the antennæ, and their being rather more clavate in the female.



1. *Hyp. petiolatum*, Illig. in Rossi 'Fauna Etrusca' ii. 82, 8vo. *Evania petiolata*, Fab. 'Sup. Ent. Syst.' 242.

2. *Hyp. thoracicum.* Atrum: thorace rufo, varioloso. Mas. Long. $2\frac{1}{4}$ lin.

Inhabits North Carolina. In my own collection.

Var. thorace dorso tantùm rufo. Mas. Long. $2\frac{1}{2}$ lin.

Inhabits North Carolina. In the cabinet of the Entomological Club.

3. *Hyp. ruficeps*. Nigrum: capite, antennarum scapo, prothorace subtùs, pedibusque quatuor anticis rufis: metathorace posteriore densè sericato. Mas et Fem. Long. $2\frac{1}{4}$ lin.

Inhabits Brazil. In my own collection.

I am acquainted with other species.

Section II. Abdomen originating gradually from metathorax, and inserted closely beneath the postdorsolum: claws simple.

Genus 4.—FÆNUS, *Fabr.*

Type. *Ichneumon jaculator*, Linn.

I have several species of this genus, but there is not room to describe them at present here.

Family.—AULACIDÆ, *Shuckard.*

Head usually large and subglobose or flattened above, and attached to the prothorax by a distinct neck. Antennæ elongate, usually slender and tapering to the extremity, inserted above the clypeus near the middle of the face, and 14- or 24-jointed. Mandibles robust, with three regular teeth, the external one the largest and the most acute. Max. palpi with 6 and lab. palpi with 4 joints, the terminal ones of the former slender, and of the latter subsecuriform. Superior wings with three or four submarginal cells and two recurrent nervures. Abdomen attached to the metathorax by an elongation of the latter, always projecting beyond the posterior coxæ, the former either elliptical or subfusiform, slightly clavate. Four posterior tibiæ with two calcaria at the extremity of each, and tarsal claws small, and either serrated or bifid.

Superior wings with

Four submarginal cells and claws bifid;

Ventral segments plane1. TRIGONALYS.

Second ventral segment produced posteriorly beneath2. LYCOGASTER.

Three submarginal cells and claws serrated3. AULACUS.

Genus 1.—TRIGONALYS, *Westw.*

Type. *Trig. Melanoleuca*, Westw.

In addition to the brief generic character given by Mr. Westwood,



I may add that in the type the second submarginal cell is sometimes petiolated, and that the first submarginal cell receives the first recurrent and the third the second. In the English species described beneath, these nervures inosculate with the transverse ones which separate the first from the second and the third from the fourth cells, and in the British species also the antennæ are inserted on the external side of two small central facial processes. To exhibit the most striking differences between this and the next genus, the woodcut to each shows the anterior wing and the profile of the abdomen.

1. *Trig. melanoleuca*, Westwood, 'Proceed. Zool. Soc.' April 14, 1835, No. 28, p. 53. Long. $4\frac{1}{4}$ lin. Alar. Exp. $8\frac{1}{2}$ lin.

Inhabits Brazil. In my own and the Brit. Mus. collections.

2. *Trig. Anglicana*. Atra, nitida: thorace punctulato: alis hyalinis, fasciâ subapicali brunneâ. Long. 4. lin. Alar. exp. 8 lin.

Inhabits the west of England. There is a specimen in my own collection. Entirely of a deep black, brilliantly glossy on the head and abdomen. Antennæ inserted on the external side of a couple of small flat facial processes. Thorax densely punctulate, making it subopaque; metathorax rugose, with a central longitudinal carina and two lateral, curving and divergent. Wings hyaline, with a dark cloud covering the basal half of the marginal cell and the apical half of the first and the entire second and third submarginal cells.

This species, which is the first European representative of the genus to which it belongs, and also the first recorded British specimen of the family to which I assign it, was taken either at Bristol or Swansea, as I am informed by Mr. Thwaites, by the late Mr. Millard, in whose collection it was purchased by Mr. Walton, who, with his accustomed liberality, knowing the interest I take in the order, kindly presented it to me. It may or may not have been imported with plants from America, but until the identical species be known as a native of that continent, I cannot see any reason to doubt the possibility of this being indigenous with us, particularly as the West of England abounds in many extraordinary Hymenoptera. The antennæ in this insect are mutilated; on the longest side only fourteen joints are left, but they hence even appear not to have that gradual inflation in the middle found in the type, and even more conspicuously in the next genus.

Genus 2.—LYCOGASTER, *Shuckard.*Type. *Lyc. pullatus*, Shk.

Head large, square above and somewhat flattened; eyes lateral, prominent, ovate, ocelli placed in an obtuse triangle. Antennæ inserted near the middle of the face, setaceous, gradually tapering to the slender extremity, with twenty-four joints, the scape the most robust, the second small, the third rather longer than the scape, the remainder gradually decreasing in length. Clypeus slightly emarginate. Mandibles tridentate, the teeth subequal, the external being the largest. Max. palpi filiform, longer than the labial, 6-jointed, the three first rather robust, the second longer than the preceding, the third subobconic, short, the following slender and subequal, the fourth the longest and as long as the second. Labial palpi with the first joint short, the second the longest, subobconic, the third and fourth subsecuriform. Head attached by a short neck to the prothorax. The thorax oval, prothorax short, but embracing it laterally as far as the insertion of the superior wings; mesothorax with three longitudinal furrows, the external ones slightly curving; scutellum broad, quadrate, divided by a channel in the centre; metathorax rounded, obtuse, with a slight furrow down the middle. Superior wings with one marginal and four submarginal cells, the first and fourth largest, the latter extending to the apex, the second triangular, the transverse separating nervure curving into the first, the second receives the first recurrent at its commencement, the third cell nearly square, and receiving the second recurrent in its centre. Legs slender; two calcaria to the four posterior tibiæ: tarsi having their terminal claws bifid. Abdomen inserted upon a projection of the metathorax, extending beyond the posterior coxæ, elliptical, much narrowed at both extremities, with seven apparent segments, and curving downwards from its third; the first short and small, the second very large, broad and subdepressed above, but the ventral portion projecting backwards in a spine, the remainder decreasing in length and width, the terminal one with two acute longitudinal carinæ, between which there is a deep channel, and recurving to meet the ventral projection of the second. Ovipositor not exposed. The cut exhibits the abdomen in profile.

This genus is named from *λυκος* a hook, and *γαστήρ* the belly, in allusion to the projection of the second ventral segment. It is to be observed that the projection of the metathorax upon which the abdomen is inserted, is greater here than in the preceding genus, whence the affinity with *Aulacus* is closer.

Lycog. pullatus. Atra, subnitida, subpunctulata: alis hyalinis, nebulâ subapicali signatis: tibiis externé plantisque basi et abdominis segmentis 2—4 maculâ lateralitèr albidis. Long. $4\frac{3}{4}$ lin. Expans. al. 9 lin.

Inhabits North Carolina. I am indebted for a specimen of this interesting insect to the kindness of E. Doubleday, Esq. who captured it. In addition to the above description it may be observed that the upper part of the head, the face, the scutellum and the abdomen slightly shine, that the metathorax is rugose, and that of the lateral white spots upon the abdomen, the first is the largest.

Genus 3.—AULACUS, Jurine.

Type. *Aulacus striatus*, Jurine.

In addition to the generic characters already given by Jurine, Latreille (Genera, tom. iv. pp. 385, 6) and St. Fargeau (Ency. Met. tom. x. p. 30), I may observe that the posterior coxæ have always an acute tooth within, and that the tarsal claws are serrated.

Sect. 1. The first and second cells receiving each a recurrent nervure.

1. *Aul. striatus*, Jurine, 'Hymenop.' p. 90, pl. 7, gen. 3.
Long. $3\frac{1}{4}$ lin. Inhabits Switzerland.
2. *Aul. Patrati*, Serville, 'Ann. Soc. Ent. de France,' t. 7. vii. 413.
Long. 5 lin. Inhabits Touraine, South of France.
3. *Aul. fasciatus*, Say, 'Contrib. Macl. Inst.' vol. i. p. 67.
Long. 6 lin. Inhabits Ohio, N. America.
4. *Aul. Latreilleanus*, Nees von Esenbeck, 'Monog. Evania.' 304.
Long. $5\frac{1}{4}$ lin. Inhabits central Germany.
5. *Aul. flagellatus*, Dahl. Nees, ib. p. 305.
Long. $5\frac{1}{4}$ lin. Inhabits Austria.
6. *Aul. niger*. Totus niger: alis hyalinis, maculâ ad stigma et nebulâ apicali brunneis. Corp. long. $7\frac{1}{2}$ lin. Exp. alar. 12 lin.
Var. Segmento primo rufo, basi tantùm nigro.
Inhabits North America. My own collection.
7. *Aul. signatus*. Niger: scapo antennarum pedibusque 4 anticis rufo-testaceis: alis hyalinis, maculâ ad stigma brunneâ. Long. $5\frac{1}{2}$ lin. Exp. alar. $9\frac{1}{2}$ lin.

Inhabits Ceylon. My own collection.

8. *Aul. lateritius*. Lateritius: abdominis et alarum basi, antennarum apice nigris, articulisque 7 et 8 flavo-albidis. Long. $8\frac{1}{2}$ lin. Exp. alar. 16 lin.

Inhabits New Holland. A specimen from Sydney is in my own collection. Besides the above character this fine insect has a small brown spot at the apex of its wings, and only the two terminal segments of the abdomen above, and the four terminal laterally, reddish chesnut, the posterior tibiæ and tarsi are externally brownish, its face and mouth also slightly inclined to yellow. The antennæ are less slender than in the preceding species.

9. *Aul. variegatus*. Niger: thoracis dorso rufo, abdominis segmento primo fasciâ flavâ: pedibus rufo-flavis variegatis: antennarum scapo rufo, et apice flavo-albidis, alis hyalinis apice brunneo. Long. 5 lin. Exp. alar. 11 lin.

Inhabits New Holland. A specimen from Sydney is in my own collection. This pretty insect differs from its congeners in having its antennæ porrect, shorter, and more robust; its abdomen is shorter and more clavate; and its ovipositor curves upwards over the back, with an inclination to resemble that of *Leucopsis*.

Sect. 2. The second submarginal cell receiving both the recurrent nervures.

10. *Aul. compressus*, Spin. 'Ins. Lig.' vol. ii. fas. 2. p. 48, No. 39. Inhabits Northern Italy. In the collection of the Marquis Spinola.

I have been accidentally led wider than I intended upon commencing this paper, which I am afraid, upon comparing its contents with its title, will be charged with treating "de omnibus rebus et quibusdam aliis."

Yours very truly,

W. E. SHUCKARD.

To the Editor of 'The Entomologist.'

ART. XXIII.—*Varieties by Various Contributors.*

1. *Mosquiro*. English colonists generally misname the gnat of the tropics, mosquito. The mosquito, a small fly, as its name bespeaks,