

II. *The Characters of Otiocerus and Anotia, two new Genera of Hemipterous Insects belonging to the Family of Cicadiadæ : with a Description of several Species. By the Rev. William Kirby, M.A. F.R.S. and L.S.*

Read March 2, 1819.

THE extensive family of *Cicadiadæ*, consisting of the two Linnean Hemipterous genera of *Fulgora* and *Cicada*, although my learned friend M. Latreille has done much towards reducing it to order, is by no means in a state of arrangement so perfect as to preclude further improvement. Considering the great beauty of some species, the almost incredibly singular and grotesque form of others*, and the celebrity which, from the earliest ages, has been attached to a third tribe of them†, it is wonderful that this family has not been more attentively studied, and its genera more accurately distinguished and defined.

The characters afforded by these animals for such distinction are numerous and striking. Not to mention the *promuscis*‡; the situation, length, and composition of the antennæ; the presence or absence of the *stemma* or *ocelli*, and their number and position; the shape and place of the eyes; the *genæ*; the front and *clypeus*, or rather *nasus*; the shape of the thorax; the figure, veining, and substance of the elytra and wings; and, to name no more, the anal apparatus of the sexes, furnish a variety of excel-

* See Stoll's *Cigales*, Plate XXI. fig. 115; and XXVIII. fig. 165, 164, 169.

† The *Tettix* of the Greeks, and *Cicada* of the Latins.

‡ By this name the rostrum of *Hemiptera* will be distinguished in the *Introduction to Entomology* of Kirby and Spence.

lent diagnostic marks by which the natural genera may be readily ascertained. Amongst the insects of this family, which I purchased at the sale of the late Mr. Francillon's Museum, I found several that would not well arrange under any of M. Latreille's present genera; but I was particularly struck by a set collected in Georgia, and admirably displayed by that expert collector, accurate delineator and painter, and most intelligent observer of natural objects, Mr. Abbot. Upon examining these attentively, I found that they clearly formed two nondescript and very distinct genera belonging to the subfamily of *Fulgorellæ* of the great entomologist before alluded to.

I now beg leave to lay before the Linnean Society the characters of these two genera, with a description of the species in my cabinet.

○ OTIOCERUS.

CHARACTER ESSENTIALIS.

Antennæ suboculares, elongatæ, basi appendiculatæ.

CHARACTER ARTIFICIALIS.

Antennæ suboculares, elongatæ, exarticulatæ, multiannulatæ, apice setigeræ, basi appendiculatæ: appendiculis antenniformibus, elongatis, tortuosis.

Oculi reniformes.

Ocelli obsoleti aut nulli.

Caput compressum, subtriangulare, supra et infra bicarinatum: fronte subrostrata; rostro sæpius subascendenti.

CHARACTER NATURALIS.

CORPUS oblongum, immarginatum, parvum, agile: cute subcornea.

CAPUT magnum, valde compressum, subtriangulare*, supra

* TAB. I. fig. 1.

et

et infra bicarinatum*: carinis approximatis, inferioribus præcipue, plus minus ascendentibus, superioribus interdum rectis. *Promuscis* inflexa, filiformis, biarticulata: articulo extimo brevissimo, ad basin pedum posticorum attingens. *Labrum* dimidiato-conicum a naso subdistinctum, promuscidis basin obtegens. *Nasus*[†] elevatus, compressus. *Genæ* angustæ, lineares, ad nasum adjacentes. *Oculi*[‡] laterales, postici, reniformes. *Stemmata*, s. *Ocelli*, obsoleta vix cernenda. *Antennæ*[§] inter oculos et nasum, ex processu oblongo tympaniformi membrana obtecta||, prodeuntes, filiformes aut subclavatæ, elongatae, subflexuosæ, exarticulatæ, multiannulatæ: apice umbilicato setigero; seta tenuissima, basi appendiculatæ: appendiculis unica vel duabus, antennarum fere longitudine et forma, multiannulatis, tortuosis, apice muticis.

TRUNCUS subglobosus. *Thorax* brevissimus, postice bifidus: lobis** divergentibus, utrinque deflexus: lateribus dilatatis rotundatis. *Scutellum* cum *dorsolo*^{††}, a quo vix distinctum, subrhomboidale. *Postscutellum*^{††} triangulare. *Lumbale*^{††} utrinque spiraculo pertusum. *Pedes* longitudinaliter angulati: posticis saltatoriis. *Coxæ* quatuor anteriores elongatae, lineares: posticis brevioribus, magnis, incrassatis. *Trochanteres* anteriores parvi dimidiato-ovati femorum basi subitus adnexi: posticis duobus magnis femorum basin excipientibus. *Femora* filiformia. *Tibiæ* filiformes, apice calcaratæ: calcaribus minutissimis. *Tarsi* triarticu-

* TAB. I. fig. 2. *aa*, *bb*. † Ibid. fig. 1. *b*. ‡ Ibid. fig. 1. *c*.

§ Ibid. fig. 1. *d*; and fig. 8. *b*. || Ibid. fig. 1. *f*; and fig. 8. *a*. ** Ibid. fig. 3.

†† *Dorsolum*, *Postscutellum*, *Lumbale*. The reader will find these terms explained in the 11th volume of these *Transactions*, part i. p. 105.

lati:

lati : anterioribus quatuor articulo extimo brevissimo ; posticis articulo primo sequentibus longiori, secundo extimo breviori, omnibus spinulis semicoronatis, quod non in tarsis anterioribus obtinet. *Tarsi* omnes biunguiculati : unguiculis simplicibus. *Elytra* cuneiformia, corpore duplo longiora, membranaceo-pergamenea*, neurosa† ; areolis plurimis ; basalibus linearibus, apicalibus parallelogrammicis. *Alæ* dimidiato-cordatae, pergameno-membranaceæ, elytris breviores et latiores.

ABDOMEN subtrigonum : carina dorsali ; segmentis dorsalibus sex, ventralibus quinque ultimo reliquis majori in medio lobato : lobo rotundato‡ ; ano *femineo* apparatu sextuplici : laminis duabus inferioribus sinu magno supra excisis§, lateralibus oblongis||, superioribus triangularibus basi intus rectangulis** ; ano *masculo* supra stylo elongato linearri basi incrassato††, subtus forcipe e laminis duabus foliiformibus oblongis concavis sursum arcuatis intus inferius sinuatis‡‡ instructo.

This genus is related both to *Fulgora* and *Delphax*; from the former it borrows its rostrated front, and from the latter its reniform eyes and elongate antennæ. It is however distinguished by many peculiar characters, some of which are very singular. Of this description are its compressed head with a double edge both above and below, and its exarticulate multiannular antennæ, furnished at their base with one or two long tortuous

* The term *pergameneus*, in *The Introduction to Entomology*, is used to signify a substance between *coriaceus* and *membranaceus*, somewhat resembling *parchment*.

† For the explanation of this term, see *Introduction to Entomology*, 2d ed. ii. 347.

‡ TAB. I. fig. 7. c. § Ibid. aa. || Ibid. b b.

** Ibid. fig. 6. a a. †† Ibid. fig. 4. a. ‡‡ Ibid. b b; and fig. 5. a a.

append-

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appendages or auricles. Circumstances to be met with in none of the present genera of this or the other tribes of the *Cicadiadæ*. The absence of the *ocelli*, which are very visible in *Fulgora* and *Delphax*, and the different composition of the anal apparatus of the sexes, furnish further striking distinctions that satisfactorily establish the claim of *Otiocerus* to stand *per se* as a genus.

I possess no less than eight species, all from Georgia, belonging to this genus, which I shall now describe.

- */Degeerii.* 1. *O. rubescens*, elytris virescente-punctatis : vasis roseis ; apice summo pollinoso-niveo.

	♀	♂
Long. corp. lin.	$3\frac{1}{2}$	3.
Expans. alar. lin.	$10\frac{1}{4}$	$8\frac{1}{2}$.

Corpus rubrum, supra dilutius. *Caput* longius rostratum : carinis niveis ; superioribus undulatis immaculatis, inferioribus nigro transverse striatulis. *Antennæ* in nostris speciminiibus desunt. *Elytra* apice dilatata, albida : neuris roseis ; intersticiis punctis rotundis nigro-virescentibus irroratis. *Elytri* summus apex in medio ex pulvere niveus. *Alæ* albæ : vasis roseis. *Pedes* pallidi.

Mas femina minor : stylo ani inflexo, foliolis intus sinibus tribus.

- */Stollii.* 2. *O. rufescens*, elytris alisque nigricantibus : vasis roseis, illis apice macula albida.

	♂
Long. corp. lin.	3.
Expans. alar. lin.	$8\frac{1}{4}$.

Corpus pallide rufum. *Caput* magnum, pallidum. *Antennæ* sensim paulo crassiores, capite breviores, fuscescentes, basi appendiculis

pendiculis duabus antenna brevioribus. *Elytra* cum alis nigricantia: vasis rubescentibus, apice macula rotundata albida. Apicem versus margine anteriori elytra rosea sunt: punctis sex nigricantibus. *Pedes* albidi.

o ✓*Abbotii.* 3. O. rufescens, alis lacteis, elytris pallidis nigro punctatis.

♂ & ♀

Long. corp. lin. 2.

Expans. alar. lin. 7.

Corpus pallide rufum. *Caput* carinis niveis. *Antennæ* breves, subclavatae, rufescentes, basi appendicula unica antenna longiori. *Elytra* luteo-alba, nigro sparse punctata, sed basis ipsa immaculata est. *Alæ* lacteæ, iricolores. *Pedes* pallidi.

Mas vix femina minor, antennis capitis fere longitudine: appendiculis duabus antenna longioribus valde tortuosis.

o o *Var. β.* Elytris magis luteis.

o o *Francilloni.* 4. O. pallidus, alis lacteis, elytris nigro punctatis et fasciatis, ab domine utrinque punctis nigris.

♀

Long. corp. lin. $3\frac{1}{2}$.

Expans. alar. lin. $8\frac{1}{2}$.

Simillimus præcedenti, sed major: *corpore* pallido, nullo modo rufescente; *capite* nigro nebuloso: carinis inferioribus nigro punctatis, *antennis* nigricantibus: appendicula alba: *Elytris* totis nigro punctatis, nec basi immaculatis: fascia insuper obliqua, indistincta, interrupta, ex punctis et maculis nigris conflata, maculis item tribus nigricantibus in margine postico. *Alæ* prope basin intus puncto nigricanti notatæ. *Abdomen* segmentis ventralibus utrinque puncto nigro.

Coquebertii. 5. O. pallidus, elytris vitta apice furcata, punctaque sanguineis.

TAB. I. FIG. 14.

♀

Long. corp. lin. 3.

Expans. alar. lin. 8 $\frac{3}{4}$.

Corpus pallidum. Caput utrinque vitta lata sanguinea. Antennæ breves, clavatæ, cum appendicula antenna paulo longiori, rufescentes. Elytra pallida: vitta ante apicem furcata; furca magna, lineolaque intermedia, pallide sanguineis. Alæ lacteæ.

Reaumurii. 6. O. rufescente-pallidus, elytris vitta abbreviata apice dilatata punctisque quinque nigricantibus.

♀

Long. corp. lin. 2 $\frac{1}{2}$.

Expans. alar. lin. 7.

Corpus pallidum rufo dilutius tinctum. Caput carinis superioribus rectis niveis. Oculi subaurati. Antennæ in nostro specimine desunt. Elytra vitta lata subarcuata apice dilatata, punctisque insuper quinque, tribus in ipsa vitta, nigricantibus. Neuræ rufescentes. Alæ sublacteæ, iricolores.

Schellenbergii. 7. O. pallidus, capite sanguineo, elytris alisque vasis roseis.

♀

Long. corp. lin. 2.

Expans. alar. lin. 7 $\frac{1}{4}$.

Corpus pallidum. Caput oblongum, sanguineum: rostro obtusiori vix ascendentí; carinis superioribus approximatis niveis, inferioribus

inferioribus fere coalitis albis. *Antennæ* cum appendicula sanguineæ. *Elytra* lutescentia: neuris, costaque apud apicem, roseis. *Alæ* lacteæ: neuris roseis.

♂ *Wolfii.* 8. *O. pallidus*, elytris luteolis: vitta fracta punctisque sparsis nigricantibus.

	♀	♂
Long. corp. lin.	$2\frac{3}{4}$.	$2\frac{1}{2}$.
Expans. alar. lin.	$8\frac{1}{2}$.	$7\frac{3}{4}$.

Corpus pallidum. *Caput* vitta obscuriuscula sanguinea lineola nigra in rostri apice terminata: carinis superioribus rectis. *Antennæ* clavatæ, rufescentes: appendicula pallida antenna tenuiori longiori. *Elytra* luteola: vitta obscuriuscula in medio fracta, vel primum a basi ad marginem posticum et dein ad marginem anticum oblique duceta, punctisque quibusdam sparsis nigricantibus. *Alæ* lacteæ.

Mas femina minor: antennis appendicula item unica sed longiori. *Oculi* subaurati.

Two of the other males above described, *viz.* of *O. Stollii* and *Abbotii*, have *two* appendages at the base of their antennæ, but in *O. Wolfii* they have only *one*; so that the genus seems divisible into two sections, **Antennis masculis appendiculis duabus*, ***Antennis masculis appendicula unica*. I would not thus arrange the species here described, because I possess the males of only three of them, and in one of these (*O. Degeerii*) the antennæ and appendages are broken off.

ANOTIA.

CHARACTER ESSENTIALIS.

Antennæ suboculares, biarticulatæ : articulo primo brevissimo, extimo elongato infra apicem setigero.

CHARACTER ARTIFICIALIS.

Antennæ suboculares, biarticulatæ : articulo primo brevissimo, extimo elongato paulo infra apicem setigero.

Oculi prominuli, semilunati.

Ocelli obsoleti aut nulli.

Caput compressum, subtriangulare, supra et infra bicarinatum : fronte subrostrata ; rostro recto.

Obs. *Character Naturalis* fere ut in genere præcedenti : sed *Caput* rostro haud ascendentæ : carinis superioribus thoracem versus divergentibus, inferioribus approximatis pectus versus convergentibus et demum coalitis. *Promuscis* brevissima vix basin pedum intermediorum attingens. *Nasus* capitis fere longitudine*. *Oculi* prominentes, semilunati†. *Antennæ* capite longiores, biarticulatæ : articulo primo brevissimo et viñ ullo‡, secundo elongato, sublineari, compresso, subannulato, sursum apice oblique truncato et subemarginato, ex emarginatura paulo infra apicem summum setigero§. *Thorax* lobis subfractis, apice subemarginatis||. *Elytra* basi antice dente prominulo reflexo, neurosa : areolis intermediis difformibus, apicalibus triangularibus. *Alæ* dimidiato-ellipticæ.

This genus is intermediate between *Otiocerus* and *Delphax*, but distinguished from both by peculiar characters. From the

* Tab. I. fig. 9. b.

† Ibid. c.

‡ Ibid. e.

§ Ibid. d. and fig. 10. a b.

|| Ibid. fig. 11.

former,

former, by wanting the appendages at the base of the antennæ; by the comparative shortness of its promuscis; by its very prominent semilunar eyes; by the greater length of its nasus; by the difference observable in the veining of its elytra; and the angular tooth at their anterior base:—and from the latter, by its compressed, bicarinate, subrostrated head; by the comparative length of the joints of its antennæ, the first joint in *Delphax* being very long*; by the absence of the remarkable spur which arms the posterior tibiæ of the latter genus; by its differently-shaped and veined elytra; by the absence of *ocelli*; and by its anal appendages, which in *Delphax* come nearer to those of *Cicada* Latr.† I possess only a single individual of this genus, which is a female, with an anal apparatus similar to that of *Otiocerus*.

○ *Bonnetii.* 1. A.

TAB. I. FIG. 15.

Long. corp. lin. $1\frac{1}{4}$.

Expans. alar. lin. $5\frac{1}{4}$.

Corpus pallidum. Caput triangulare: linea aurantiaca ab oculis ad rostri apicem ducta. Oculi pallidi. Antennæ capite longiores. Elytra lutescentia: maculis hyalinis; neura obliqua in disco apici propiori, nigra; costa apicem versus sanguineo transverse lineatula. In apice ipso puncta quatuor nigricantia notanda. Alæ subhyalinae: neura disci transversa anteriori nigricanti.

In my specimen of this insect the head is in the vertical position represented in the sketch‡; but this is most likely the direction the animal gives it, when it prepares to use its promuscis: when at rest and unemployed, the head probably assumes a horizontal direction.

* Tab. I. fig. 12. a.

† Ibid. fig. 13.

‡ Ibid. fig. 9.

These

These two genera, though they belong to the sub-family of *Fulgorellæ* Latr., distinguished by subocular antennæ, require to be placed in a subdivision of it by themselves, on account of their want of *ocelli*.

EXPLANATION OF TAB. I.

Details of *Otiocerus*.

- Fig. 1. The Head. *a*. The Rostrum. *b*. The Nasus. *c*. The Eye. *d*. The Antenna. *ee*. The Appendages. *f*. The Process from which the Antenna and Appendages proceed.
- 2. A lateral view of part of the Head to show the Carinæ. *aa*. The upper Carinæ. *bb*. The lower Ditto.
- 3. Part of the Thorax. *a*. One of the Lobes of Ditto.
- 4. Lateral view of the Anus of the Male. *a*. The styliform Process. *bb*. The foliiform Ditto.
- 5. Under view of Ditto. *aa*. The foliiform Processes. *b*. The Male Organ?
- 6. The upper side of the Anal Apparatus of the Female. *aa*. The upper pair of Laminæ. *bb*. Part of the lateral Ditto.
- 7. The under side of the same Apparatus. *aa*. The lower pair of Laminæ. *bb*. The lateral Ditto. *c*. The last ventral Segment of the Abdomen.
- 8. Part of the Head of another Species, the Antenna of which has only one Appendage. *a*. The Process from which the Antennæ, &c. proceed. *b*. The Antenna. *c*. The Appendage.

Details

