

VI. *On the Family Fulgoridæ, with a Monograph of the Genus Fulgora of Linnæus.* By JOHN O. WESTWOOD, Esq., F.L.S., &c.

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AMONGST the insect tribes, the order *Homoptera* must be admitted to contain the most extraordinarily formed creatures to be met with in this class of beings. In some the thorax is armed with balls and spines, crescents, sabres, and other mimic instruments of war: in others the same part is transformed into a singularly dilated globe, concealing the rest of the body, or swelled out into an enormous casket which would be far too heavy to bear were it not quite hollow. In others again, the head is produced into an elongated and swollen rostrum of the most singular construction, varying in the different species, which is occasionally armed with spines or saws, and sometimes bent over the back. Of the use of these curious modifications it is difficult to form any idea. We are not indeed to suppose that aught has been made in vain; but when we find such an endless variety of form in the same organ, we must be led to conclude either that the use for which it is bestowed upon the creature is always modified in accordance with the modifications in its structure, or that the production of so many extraordinary variations in organs not having a material influence upon the habits of the animals must be considered as a manifestation of Divine power; in which point of view the contemplation of such productions is not without use.

Of these insects some of the most curious are the species of which Linnæus composed his genus *Fulgora*, but which has become so much augmented by the addition of new species as to have been raised to the rank of a separate family, named *Fulgoridæ* by Dr. Leach and *Fulgorellæ* by Latreille. It is in the most conspicuous of these insects composing the modern restricted genus *Fulgora*, that the head exhibits those curious modifications of form already noticed, and to which an additional interest attaches from the circumstance of these insects having long been regarded as possessing the power of emitting a strong light from the anterior produced part of the head. Such

opinion, however, originating in an account given by Madame Merian of the *Fulgora Laternaria*, appears at the present time to be regarded as fabulous, no other traveller of any authority or credit having since observed the least traces of luminosity, although the insect is by no means rare in South America. The reader will find an amusing fictitious discussion upon this subject in the third volume of the Entomological Magazine, wherein the contrary opinion appears to prevail; M. Lacordaire, M. Richard, Dr. Hancock, Dr. Burmeister and M. Guérin, however are in favour of the non-luminosity of these insects, which was also personally confirmed to me by the late lamented Prince Maximilian of Neuwied\*.

In the original separation of this group of insects from the great division composing the Linnæan genus *Cicada*, Linnæus appears to have had in view chiefly the form of the head, his characters being "Caput fronte producta, inani. Antennæ infra oculos: articulis 2; exteriore globoso majore. Rostrum inflexum. Pedes gressorii." (*Syst. Nat.* 2, 703.) Nine species were described by Linnæus, all of which are subsequently noticed in this memoir. Fabricius in like manner evidently regarded the structure of the head as of primary importance, since, although his characters are simply "os rostro elongato; vagina 4-articulata, antennæ breves, capitatae," we find in his detailed description the character "Capitis fronte porrecta, elongata, adscendente, cylindrica, retusa." And amongst the species introduced by him into the genus, we accordingly find species which agree with the true *Fulgoræ* in no other character than that of the form of the head, belonging in fact to a distinct family as subsequently noticed. By Fabricius also and by Latreille other genera were established; being chiefly separated from the Linnæan *Cicadæ*, but having in the majority of their structural characters a nearer relation with *Fulgora*. The chief of these were *Flata*, *Lystra*, *Derbe*, *Delphax*, and *Issus* by Fabricius, and *Pæciloptera*, *Cixius*, and *Asiraca* by Latreille. All these genera were united together into a separate family by Latreille under the name of *Fulgorellæ*, changed by Dr. Leach to *Fulgoridæ*, and from time to time others have been added by more recent authors, as Germar, Guérin, Laporte, Burmeister, Kirby, &c.

\* M. Wesmael has recently communicated to the Academy of Brussels, a reassertion of the luminous powers in *F. Laternaria*, on the authority of a friend who had witnessed an insect alive in South America (*Ann. Soc. Ent. de France*, 1837, p. lxxvii.).

In the year 1830, Dr. Germar published a memoir upon these insects in the second volume of Dr. Thon's *Entomologisches Archiv*, in which he gave the following characters of the family, and its distribution into genera.

## FULGORELLÆ.

Antennæ biarticulatae, articulo secundo papilloso setigero. Oculi laterales, genis perpendicularibus inserti, earumque margine circumsepti. Ocellum utrinque solitarium aut nullum. Tibiæ posticæ apice spinis ciliatæ, tarsorum articulo 1mo elongato.

## I. Margo costalis elytrorum lævis aut irregulariter striatus.

## A. Antennæ oculis breviores, capitulo incrassato.

1. Clypeus a fronte disjunctus . . . . . *Fulgora*.

2. Clypeus cum fronte conjunctus facie elliptica.

## a. Oculis sessilibus.

α. Ocellum utrinque conspicuum . . . . . *Flata*.

## β. Ocelli nulli.

\*. Elytris fornicatis . . . . . *Issus*.

\*\* . Elytris perpendiculariter decumbentibus . . . . . *Amphiscepa*.

b. Oculis saltem in inferiore parte pedunculatis, clypei margine laterali involutis. . . . . *Lystra*.

## B. Antennæ oculos superantes, capitulo cylindrico.

1. Tibiæ posticæ apice appendice gladiiformi instructæ.

a. Capitulum articulo basilari longius . . . . . *Delphax*.

b. Capitulum articulo basilari brevius . . . . . *Asiraca*.

2. Tibiæ posticæ muticæ.

a. Palpis nullis . . . . . *Anotia*.

b. Palpis quatuor . . . . . *Otiocerus*.

## II. Margo costalis elytrorum striis parallelis transversis percussus.

A. Alæ perpendiculariter deflexæ . . . . . *Pæciloptera*.

B. Alæ incumbentes . . . . . *Ricania*.

By this arrangement nine species only were comprehended in the genus *Fulgora*, several being here first described, so that the major part of the Lin-

nean and Fabrician *Fulgoræ*, including the well-known Chinese species *Fulgora Candalaria*, the European *Fulgora europæa*, &c. were placed in the genus *Flata*. The character, however, upon which this separation was founded cannot be maintained, since in *F. Candalaria* and its allies the separation between the forehead and the clypeus is strongly marked, and even in *F. tenebrosa* the line of separation may be clearly perceived.

M. Guérin in his description of the insects collected in the "Voyage de Belanger," gave another classification of the family, consisting of seventeen genera; amongst which *Flata* and its allies are separated from *Fulgora* and its allies, by the size of the prothorax, which is much narrower than the mesothorax, and deeply notched behind; whereas in the latter the prothorax is "presque aussi large que le mesothorax, et très peu échancré en arrière." This last section consists of the following genera, thus tabularized:

Second joint of the antennæ globose.	{	Forehead prolonged into a rostrum . . . . .	<i>Fulgora</i> .
		Forehead not prolonged . . . . .	<i>Eumallia</i> .
			( <i>Phenax</i> , Germar.)
Second joint of the antennæ oval	{	Forehead longitudinal . . . . .	<i>Aphæna</i> .
			( <i>Aphana</i> , Burm.)
		Forehead transverse . . . . .	<i>Lystra</i> .

By this arrangement, the character derived from the produced anterior part of the head is made secondary to that of the form of the antennæ; and consequently we find that some of the species of *Aphana*, (*A. discolor*, *A. fuscata*, Guér., *A. nigro-maculata*, Gray,) have the head produced into a recurved horn, as is also the case with *Fulgora recurva*, which ought also to be considered, according to this arrangement, as an *Aphana*. Burmeister has, however, given another arrangement of these allied genera, which in some degree alters the limits of the genus *Fulgora*, and which is as follows:

a. Front of the head not rostrated.	
§	Second joint of the antennæ elongate-ovate.
	Forehead broader than long . . . . . <i>Poecocera</i> .
	Forehead longer than broad or quadrate . . . . . <i>Aphana</i> .
§	Second joint of antennæ globular.
	Forehead without elevated central carinæ . . . . . <i>Lystra</i> .

- Forehead with elevated central carinæ . . . . . *Phenax*.  
 (Eumallia, Guér.)  
 b. Front of the head rostrated . . . . . *Fulgora*.

The last-named genus is thus made to comprise not only the old species *F. Laternaria*, *Candelaria*, and their allies, but also *F. recurva*, *tuba*, and *tuberculata*, together with *Flata hæmoptera* of Perty; in which last two species the head cannot be said to be rostrated, and in the first two the rostrum is small and recurved, and the second joint of the antennæ oval, whence they ought not to be separated from *Aphana discolor*, *fuscata*, &c.; although from the general habit of the insects, and even the colouring of the wings, *F. recurva* and its allies as well as *F. platyrhina* are perhaps too closely related to *F. diadema* to warrant their absolute removal from the genus. The species, however, are so closely connected together that it is impossible to draw the line of distinction. Germar has also, in a memoir upon this tribe of insects, published in the fourth number of Silbermann's *Revue Entomologique*, separated *Fulgora europæa*, *hyalinata*, *fenestrata*, &c. under the generic name of *Dictyophora*, with the character, "Elytra apice reticulata, clypeus oblongo-ovatus, caput conico-elevatum." In consequence of this generic name being previously employed, Dr. Burmeister has changed it in the second volume of his "*Handbuch*," p. 159, to *Pseudaphana*.

As restricted above, the genus *Fulgora* may be thus characterized:

*Corpus* oblongum, subdepressum. *Caput* fronte in rostrum vel tubulum plùs minùsve elongatum, porrectum, (nec recurvum,) productâ; nec conico-elevatum. *Antennæ* articulo 2ndo globoso, hemispherico, granuloso, setâ e medio ejus apicis exeunte, articulo minutissimo ad basin setæ. *Ocelli* 2 inter oculos et antennas vel potiùs paullò ante antennas positi. *Promuscis* 3-articulata, ad usque vel ultra basin pedum posteriorum extensa. *Clypeus* trigonus basi truncatus. *Labrum* apice acutum. *Prothoracis dorsum* mesothorace paullò minus, posticè submarginatum. *Hemelytra* alis minora, latitudine multò longiora, apice crebrè venosa et reticulata.

#### Species 1. FULGORA LATERNARIA.

*F.* capite porrecto, ovato, thorace majori, longitudine vix ejus latitudinem

duplò superante; hemelytris brunneo-rufescentibus, ad apicem nigro-variis, punctisque albo-farinosis, posticis apicem versus ocellatis.

*Habitat* in Americâ meridionali. Cayenne, Surinam.

*Fulgora Laternaria.* *Linn. Syst. Nat.* 2. 703, 1. *Stoll, Cigales,* t. 1, f. 1. *Roesel, Ins.* 2. *Gryll.* t. 28, 29. *Reaumur, Mem. Ins.* v. t. 20, f. 6, 7. *Fabr. Syst. Rhyng.* p. 1. *Germar in Thon's Arch.* ii. 2. p. 46. *Guérin Voy. de Belanger.* *Mag. de Zool.* pl. 174. f. 1, 2. *Burmeister, Handb.* ii. 169. *Palis. Beauv. Ins. d'Afr. et Amer. Hem.* pl. xix. f. 1.

#### Species 2. FULGORA CASTRESII.

*F. lutea*; fronte rostratâ subcylindricâ, rectâ, thorace angustiore, longitudine ejus latitudinem plùs duplò superante; hemelytris luteo-virescentibus, nigro-variegatis; alis brunneis, nigro-variegatis, apice ocellatis.

*Habitat* in Mexico.

*Fulgora Castresii.* *Guérin, Mag. Zool.* pl. 173. 174. f. 3. 4.

#### Species 3. FULGORA LUCIFERA.

*F. capite porrecto, cylindrico*; alis lividis, nigro-variis.

*Habitat* in Brasiliâ.

*Fulgora lucifera.* *Germar, Magaz. der Entomol.* iv. 100. *Thon's Archiv.* ii. 46. *Brullé, Hist. Nat. Ins.* Tom. x. pl. 4. f. b?

"Simillima *F. Laternariæ* et forsan ejus varietas." *Germar.*

#### Species 4. FULGORA CANDELARIA.

*F. fronte rostratâ adscendente*; hemelytris viridibus, luteo-maculatis; alis flavis, apice nigris.

*Habitat* in Chinâ.

*Fulgora Candelaria.* *Linn. Syst. Nat.* ii. 703. 3. *Act. Holm.* 1746. p. 63. t. 1. f. 5. 6. *Fabr. Ent. Syst.* iv. 2. 4. *Syst. Rhyng.* f. 2. *Roesel, Ins.* 2. *Gryll.* 189. t. 30. *Stoll, Cigal.* t. 10. f. 46. *Burmeister, Handb.* ii. 168. *Donovan, Ins. China,* pl. 14. *Germar in Thon's Arch.* ii. 2. 46. (Flata C.) *Pal. Beauv. Ins. d'Afr. et Amer. Hem.* pl. xix. f. 2.

Species 5. FULGORA LATHBURIÆ.

F. fronte rostratâ adscendente; hemelytris viridibus, albo flavoque ocellatis; alis luteis, apice nigris; rostro suprâ nigro apice tantùm rufo.

*Habitat* in Indiâ orientali.

*Fulgora Lathburii*. Kirby in *Linn. Trans.* xii. p. 450. Guérin, *Icon. R. An. Ins.* pl. 58. f. 2. Germar in *Thon's Arch.* ii. 2. p. 46. (Flata L.)

Species 6. FULGORA PYRRORHINA.

F. fronte rostratâ adscendente, apice rubro incrassato; hemelytris fuscis, pallidè glauco maculatis, fasciâque pallidiori; alis nigris basi viridibus.

*F. Candelariâ* paullò major.

*Habitat* in Indiâ interiori. In Mus. D. Hope.

*Fulgora pyrorhynchus*. Donovan, *Ins. India*, pl. 7. f. 1. 1.

*Fulgora pyrorhina*. West. in ditto, second edition, p. 13.

Species 7. FULGORA CLAVATA, Westw.

TAB. XII. fig. 1.

F. rostro corporis dimidii longitudine, piceo, apice in globum subrotundum testaceum terminato; hemelytris basi subalbidis, fusco-maculatis, apice fusco, albido ocellatis et maculatis.

Long. corp. cum rostr. lin. 16. Expans. hemelytr. lin. 36.

*Habitat* in Indiâ orientali. Assam.

In Mus. Dom. Hope et Cantor.

*F. pyrorhinæ* affinis. Rostrum cum capite piceum, albo-farinosum, corporis dimidii longitudine, e basi sensim attenuatum, dorso tricarinato, apiceque adscendente, et in globum subrotundum, subpellucidum, lætè testaceum terminato. Thorax luteus, prothorace punctis duobus minutis discoïdalibus minutis nigris; mesothorax maculis quatuor basalibus, alterisque duabus obliquis lateralibus. Abdomen subtùs fulvum, suprâ obscurum, albo-farinosum, segmentorum apicibus luteis anoque nigro. Hemelytra dimidio basali subalbido, maculis numerosis, irregularibus, fuscis; dimidio apicali fusco, maculis numerosis, albidis, rotundatis, magnitudine maximè variis, majoribus ocellatis. Alæ subalbidæ, apice latè fusco. Pedes nigri. Clypeus luteus. Promuscis nigra.

## Species 8. FULGORA MACULATA.

F. capite rostrato adscendente, nigro, apice graciliori; nigra, hemelytris glauco-maculatis; alis basi cœruleis.

*Habitat* in Indiâ orientali.

Syn. Fulgora maculata. *Olivier, Enc. Méth.* vi. 568. 5. *Stoll, Cigal. f.* 143. *Burmeister, Handb.* ii. p. 169. *Germer in Thon's Archiv.* ii. 2. 46. (Flata m.)

## Species 9. FULGORA ANNULARIS.

F. capite rostrato adscendente, apice subclavato, basi spinoso; fusca; alis nigris albo-maculatis (Præcedentibus paullò minor.).

*Habitat* in Surinam.

Fulgora annularis. *Oliv. Enc. Méth.* vi. 568. 6. *Stoll, Cigal. fig.* 69. *Germer in Thon's Arch.* ii. 2. 47. (Flata a.)

Species 10. FULGORA HORSFIELDII, *Westw.*

## TAB. XII. fig. 2.

F. rostro breviori, recto, apice truncato; pallidè griseo-lutea; hemelytris fusco-irroratis; alis albo-farinosis, apice nigro, maculis albis.

Long. corp. cum rostr. 1 unc. Expans. hemelytr.  $2\frac{1}{8}$  unc.

*Habitat* in Javâ. Dom. Horsfield.

In Mus. Soc. mercat. Ind. orient. Londin.

*F. annulari* affinis, at colore alarum abundè diversa. Rostrum cum capite, longitudine pro- et mesothoracis, rectum, tenue, crassitudine æquale, apice truncato (mutilato), griseo-luteum, utrinque carinâ minutâ elevatâ. Pro- et mesothorax lutei, nigro-punctati. Abdomen sordidè brunneo-luteum. Hemelytra fusco-reticulata, maculisque nonnullis minutis subapicalibus luteis, albo-farinoso cinctis, costâ maculis 5 irregularibus fusco-reticulatis æquidistantibus, nubilâque majori reticulatâ fuscâ, paullò pone medium hemelytrorum. Alæ albæ, farinosæ, apice nigro, maculis rotundatis, albis. Pedes fulvo-lutei, tibiis 4 anticis totis apiceque 2 posticarum, tarsisque omnibus nigris.



Species 11. FULGORA APICALIS.

Tab. XII. Fig. 3.

F. fronte rostratâ thoracis longitudine, gracili; fulvo-fuscescens; hemelytris fulvis, apice hyalinis, fusco-maculatis; alis hyalinis, basi fusco et miniato variis.

Long. corp. cum rostro, lin. 12. Long. rostr. lin.  $3\frac{1}{2}$ . Expans. alar. lin. 20.  
*Habitat* in Manilâ. D. Cuming.

Præcedentibus minor. Caput anticè productum in tubulum gracilem porrectum thoracis longitudine, apice paullò incrassatum. Caput et prothorax luteo-fulva, nigro-punctata; mesothorax obscurior, carinâ mediâ, maculisque nonnullis ad basin nigris. Abdomen magnum, subdepressum, luteo-fuscum, apice obscuriore. Hemelytra angusta, luteo-fulva, disco paullò obscuriora, marginibus antico et postico nigro-punctatis, apice hyalino punctis nigris plùs minùsve confluentibus. Alæ posticæ, subangustæ, hyalinæ, nervis nigris, dimidio basali fusco et miniato variegatis, margine antico magis obscuro. Pedes quatuor antici lutei, nigro-fasciati, tarsi nigris. Pedes 2 postici lutei, femoribus, nisi ad apicem, nigricantibus.

Species 12. FULGORA DECORATA.

Tab. XII. Fig. 4.

F. fronte rostratâ adscendente, corporis ferè longitudine; capite thoraceque viridibus; metathorace, abdomine, alisque sanguineis, his apice nigris; hemelytris ferrugineis, apice fuscis.

Long. corp. cum rostro, lin.  $12\frac{1}{2}$ . Long. rostr. lin.  $5\frac{1}{2}$ . Expans. alar. lin. 21.  
*Habitat* in Javâ. In Mus. Reg. Paris.

A præcedente rostro longiori corporeque majori differt. Caput in rostrum valdè elongatum, gracile, adscendens productum, viride, maculâ parvâ utrinque ante oculos pigrâ; basi suprâ carinatâ. Prothorax viridis, maculis 4 nigris. Mesothorax etiam viridis, basi punctis 4 intermediis, 2 majoribus, lateribusque etiam punctis duobus nigris; metathorax cum abdomine sanguineus. Hemelytra ferruginea, punctis numerosissimis, nigris, inter

nervos dispositis ; apice sensim magis infuscatis, nervis sanguineis, punctisque circiter 12 parvis miniatis duplici serie transversâ dispositis. Alæ sanguineæ ; margine exteriori nigro. Pedes virides, apice tibiæ tarsisque fuscis.

Species 13. FULGORA OCULATA.

TAB. XII. Fig. 5.

F. fronte rostratâ adscendente, corporis longitudine ; griseo-fulvescens ; hemelytris ocellis fulvis ; alis albis, basi viridibus, margineque antico roseo tinctis.

Long. corp. cum rostro, lin. 16½. Expans. alar. lin. 30.

*Habitat* in Indiâ Orientali. In Mus. Reg. Paris.

Caput in rostrum gracile, adscendens, corporis longitudine productum. Pallidè griseo-fulva, abdomine alisque albo-farinosis. Mesothorax magis fulvescens. Hemelytra griseo-fulva, pallida, maculis ocellatis circiter 24 fulvis annulis albidis cinctis. Alæ albo-farinosæ, basi pallidè virescentes, margineque antico in medio plagâ magnâ roseâ, maculâ fuscâ terminatâ, alterâque minori medium versus. Pedes pallidè griseo-lutei, tibiis tarsisque 4 anticis, cum tarsis posticis nigris.

Species 14. FULGORA TENEBROSA.

F. capite rostrato breviori, apice truncato ; hemelytris griseis nigro-scabris ; alis fusco-nigris.

*Habitat* in Guineâ.

Syn. Fulgora tenebrosa. *Fabr. Sp. Ins.* ii. p. 314. No. 9. *Syst. Rhyng.* p. 3. *Stoll, Cigal.* t. 2. f. 7. *Burmeister, Handb.* ii. 169. *Germar in Thon's Archiv,* ii. 2. 47. (Flata t.)

Fulgora Laternaria fusca. *De Geer, Mem.* iii. 200. t. 32. f. 1.

Fulgora africana. *Pal. Beauv. Ins. d'Afrique, &c. Hem. pl.* xix. f. 3.

*Obs.* Individuum in Mus. Banksiano (nunc in Mus. Soc. Linn. Lond.) à Fabricio descriptum, alas possedit pallidiores quàm in individuis recentioribus.

## Species 15. FULGORA FLAMMEA.

F. " fronte rostrata adscendente, tereti, truncata ; tota superius sordide ferrugineo-cinerascens ; elytra ad apices a pagina superiore punctis obscurioribus, tota striæ obliquæ secant ut in serpentum cute." Linn. Am. Acad. " Alæ inferiores fuscæ." Linn. Syst. Nat. " Minor Cicada Candelaria." " *Habitat* — ? De Geer." Linn. Amœn. Acad. " In America," Linn. Syst. Nat. " In America meridionali," Fabr.

Syn. *Fulgora flammea*. Linn. Amœn. Acad. vi. 399. 39. Syst. Nat. ii. 704. 7. Fabr. Ent. Syst. iv. 3. 8. Syst. Rhyng. p. 3. (Excl. Syn. Stollii ?)

Obs. It is perhaps impossible to determine precisely this species at the present day. Linnæus, indeed, says it is smaller than the common Chinese species, and in the *Systema Naturæ* he, as well as Fabricius subsequently, gives America as the habitat ; so that it cannot be *Fulgora tenebrosa*, as cited by the latter author, which is as large as *Candelaria*, and an inhabitant of Africa. On the other hand, the description of the spotting of the hemelytra and the colouring of the hind wings, together with the circumstance that Linnæus refers to De Geer's collection for the species, that author having subsequently figured an insect of unknown locality (and being in all probability the identical specimen examined by Linnæus,) agreeing with *Fulgora tenebrosa*, seem to prove that the Linnæan *F. flammea* is identical with the Fabrician *F. tenebrosa*. Olivier (*Enc. Méth.* vi. 170.) is certainly in error in giving Stoll's fig. 29. (which is the *Raphirhinus fasciatus*,) as this insect.

## Species 16. FULGORA PUNCTATA.

F. capite rostrato corporis ferè longitudine, recto, apice truncato ; grisea, nigro-punctata ; elytris griseo-hyalinis, punctis numerosis nigris adpersis ; alis albis venis fuscis ; abdomine griseo.

*Habitat* in Guineâ.

Syn. *Fulgora punctata*. Oliv. Enc. Méth. vi. 569. Stoll, Cigal. fig. 28. Germar. in Thon's Arch. ii. 2. 47. (Flata p.)

Præcedente minor et gracilior.

## Species 17. FULGORA MARGINATA.

*F.* capite rostrato corpore dimidio breviori, recto, apice truncato; grisea, nigro-punctata; elytris griseo-hyalinis, nigro-punctatis; alis albis venis nigris; abdomine nigro; segmentorum marginibus luteis.

Long. corp. cum rostro, lin. 9. Expans. alar. lin.  $14\frac{1}{2}$ .

*Habitat* in Promontorio Bonæ Spei. In Mus. D. Hope.

Syn. *Fulgora punctata*. *G. R. Gray in Griff. An. K. Ins. pl. 90. f. 1.* (nec Oliv. Germ.) *Burmeister, Handb. der Ent. ii. p. 398.*

Præcedentibus duabus multò minor, et pro magnitudine robustior. Caput, pro- et mesothorax, et hemelytra pallidè griseo-lutea, punctis minutis nigris adpersa, margineque antico hemelytrorum parùm fulvescente, his etiam punctis nonnullis majoribus nigris notatis. Rostrum dimidii corporis longitudine, rectum, sensim attenuatum, apice obliquè truncato, lateribus punctis minutis fulvis, apiceque ejus et mesothoracis fulvescenti. Hemelytra angusta. Alæ albo-hyalinæ, venis nigris. Abdomen segmento basali fulvo, in medio nigro, reliquis nigris, margine postico tenui albido. Pèdes luteo-grisei, fulvo nigroque punctati; tibiæ posticæ breviores.

## Species 18. FULGORA AFFINIS.

TAB. XII. Fig. 6.

*F.* fronte rostratâ ferè corporis longitudine, apice truncato; luteo-grisea; thorace pedibus et hemelytris punctis nigris adpersis; abdomine suprâ nigro; alis albis, venis pallidis.

Long. corp. cum rostro, lin. 16. Expans. alar. lin. 26.

*Habitat* in Nepaliâ. D. Hardwicke. In Mus. D. Hope.

*F. tenebrosâ* paullò minor, hemelytris multò pallidioribus, absque colore ferrugineo, punctisque nigris in venas distinctioribus. Caput cum rostro, pro- et mesothorax et hemelytra pallidè lutea, punctis nigris, magnitudine variis, adpersa; rostrum ferè corporis longitudine, porrectum, ferè rectum, subcylindricum, apice obliquè truncato, fusco-luteo, punctis scabro, apice pallidiori. Puncta nigra hemelytrorum in venas longitudinalitèr disposita; alæ albæ, subopacæ, apicem versùs paullò infuscatæ, venis nisi ad basin pallidioribus. Abdomen nigrum, margine segmentorum tenui,

luteo. Pedes breves, lutei; femoribus, annulo subapicali; tibiis annulis tribus nigris.

*Obs.* This species is represented amongst General Hardwicke's collection of drawings of the haustellated insects of Nepaul, now in the library of the British Museum.

Species 19. *FULGORA COGNATA.*

*F. griseo-fulvescens*; abdomine concolori; hemelytris pallidioribus, nigropunctatis; alis albis, venis pallidis.

Expans. alar. lin. 14.

*Habitat* —? In Mus. D. Hope.

Affinis *F. punctatæ*, at magnitudine *F. marginatæ* æqualis. Individuum unicum, pro descriptione nimis mutilatum, tantùm vidi.

Species 20. *FULGORA OBSCURATA.*

TAB. XII. Fig. 7.

*F. fronte* rostratâ rectâ, truncatâ; hemelytris latis, luteo-cinereis, nigromaculatis et punctatis; alis hyalinis; clypeo maximo.

Long. corp. cum rostro, lin.  $8\frac{1}{2}$ . Expans. alar. lin. 15.

*Habitat* in Novâ Hollandiâ. In Mus. Soc. Linn. Lond. (olim Banks.).

Syn. *Fulgora obscurata*. *Fabr. Sp. Ins.* ii. 315. 10. *Syst. Rhyng.* p. 3. (excl. syn. *Stollii*). *Germar in Thon's Arch.* ii. 2. 47. (Flata o.).

*F. dilatatæ* affinis, statura ejusdem, at paullò minor, rostro crassiori, punctis subocellatis hemelytrorum nullis. Luteo-cinerea, fusco-variegata. Caput oculis prominulis, clypeo maximo, fusco et albido transverse strigosa. Rostrum corporis dimidii longitudine, rectum, apice truncatum, ante apicem suturâ elevatâ, et carinis duabus elevatis longitudinalibus. Prothorax in lobum rotundatum anticè productus, fusco-varius. Hemelytra lata, luteo-cinerea, atomis fuscis in venas dispositis, punctis nonnullis majoribus interdùm longitudinalitèr confluentibus, plagas longitudinales aut lanceolatas efficientibus; costâ externè punctatâ; alæ hyalinæ, venis fuscis. Pedes pallidi, fusco-annulati, breves; postici serrati. Abdomen suprâ obscurè fulvum, latum.

There are two specimens of this species preserved in the Banksian cabinet in the Museum of the Linnean Society, which afforded Fabricius the original description. They vary in the size of the dark marks upon the hemelytra, but are otherwise identical. My figure is taken from the darker individual.

Species 21. *FULGORA DILATATA.*

TAB. XII. Fig. 8. & 9.

*F. capite rostrato, rostro dimidii corporis longitudine, apice attenuato; griseo-fuscens; abdomine fulvo, apice segmentorum nigris; hemelytris pallidè cinereis, venis nigris et roseis, in singulo ocellis 12 roseis et nigris.*

Long. corp. cum rostro, lin. 8.; long. rostri, lin. 3. Expans. alar. lin. 17.

*Habitat* in Novâ Hollandiâ ad "Swan River." In Mus. D. Hope.

*F. obscuratæ, Fab. valdè affinis, et ejusdem statura, at paullò major, rostro magis gracili, hemelytris subocellatis. Corpus deplanatum. Caput et thorax fulvo-fusca, nigro-punctata, rostro dimidii corporis longitudine, apice attenuato, margine suprâ subserrato (fig. 8a.) subtùs 3-carinato. Oculi pallidè fusci; prothorax in lobum rotundatum inter oculos (in medio submarginatum) productus; mesothorax 3-carinatus; metathorax suprâ ocello transverso, ovali, membranâ tecto instructus. Abdomen depressum, fulvum, margine postico segmentorum nigro. Hemelytra ad costam dilatata, pallidè cinerea, venis nigro et roseo variis, punctisque, in singulo 12 nigris, anticè roseis; alæ albæ, hyalinæ, venis fusco-roseis. Pedes albo-tomentosi, pallidè luteo-fulvi; tibiis 4 anticis fusco-annulatis.*

Species 22. *FULGORA NOBILIS?*

TAB. XII. Fig. 10.

*F. capite rostrato, rostro ferè corporis longitudine recto, tuberculis acutis nigris in lineas 6 dispositis; grisea, virescenti-tincta, nigro-punctatissima; hemelytris punctis fulvis; alis albis.*

Long. corp. cum rostro, lin. 30. Long. rostr. lin. 12. Expans. alar. lin. 55.

*Habitat* in Malaccâ. In Mus. D. Hope.

Species perinsignis, *F. serratæ* affinis quoad rostrum serratum, et *F. punctatæ* et affinibus, corpore et hemelytris nigro-punctatissimis. Caput in rostrum

rectum, sensim attenuatum, apice obliquè truncatum productum, tuberculis nigris acutis, in lineis sex longitudinalitè dispositis, scil. 2 suprâ, 2 lateralitè, et 2 subtùs; oculi pallidè fusci, tuberculo pallido, acuto, pone oculos. Antennæ pallidæ. Caput pro- et mesothorax et hemelytra luteo-grisea, virescenti parùm tincta, punctis minutis nigris adpersa. Metathorax et abdomen fulvo-fusca, hoc maculis transversis nigris. Hemelytra punctis numerosis majoribus fulvis etiam ornantur. Alæ albæ, subopacæ, venis pallidis, virescenti-tinctis. Pedes concolores, nigro-fasciati; tibiis posticis intùs immaculatis, externè nigro-punctatis; tarsis luteis; unguibus nigris. Promuscis pedes posticos vix attingit.

## Species 23. FULGORA SERRATA.

F. capite rostrato adscendente, quadrifariàm serrato; fusco-grisea; alis posticis cœruleis, maculâ ocellari flava.

*Habitat* in Americâ Meridionali. In Mus. Soc. Ent. Lond. (olim Kirby).

Syn. Fulgora serrata. *Fabr. Sp. Ins.* ii. 313. 2. *Syst. Rhyng.* p. 2. *Lindenberg in Naturforsch.* xiii. p. 19. t. 3. f. 1. 2. *Stoll, Cigal.* t. 29. f. 170. *Germar in Thon's Arch.* ii. fig. 46.

## Species 24. FULGORA DIADEMA.

F. capite rostrato muricato, apice trifido; hemelytris viridi, flavo, fuscoque marmoratis; alis nigris, basi sanguineo-variegatis.

*Habitat* in Americâ Meridionali. "In India." (Linn. errore).

Syn. Fulgora Diadema. *Linn. Syst. Nat.* ii. 703. 2. *Lindenberg in Naturforsch.* xiii. p. 20. t. 3. f. 3. *Stoll, Cigal.* i. t. 5. f. 22. *Fabr. Ent. Syst.* iv. 2. 3. *Syst. Rhyng.* p. 2. *Germar in Thon's Arch.* ii. 46. *Burmeister, Handb.* ii. p. 109. *Westw. in Drury Ill.* 2nd edit. p. 78. *Donovan, Nat. Repos.* vol. v. fol. 145.

*Fulgora armata.* *Drury, Ill.* 1st edit. App. vol. iii. pl. 50. f. 4.

*Obs.* Pedes postici haud serrati.

## Species 25. FULGORA LINEATA.

F. capite rostrato adscendente, corporis dimidii longitudine; pallidè griseo-lutea; hemelytris elongatis, angustis, punctis nigris, in lineas ad marginem internum et ad costam apicis dispositis.

Long. corp. cum rostro (alis clausis), lin. 6.

*Habitat* in Indiâ Orientali. In Mus. Britann.

Syn. *Fulgora lineata*. *Donov. Ins. Ind. pl. 8. f. 1.*

*Fulgora pallida*. *G. R. Gray in Griff. An. K. Ins. pl. 90. f. 2. p. 260.*

Species minuta, et pro magnitudine gracillima. Pallidè testaceo- vel fulvo- albida. Pro- et mesothorax lineis rufescentibus. Caput anticè rostratum, rostro adscendente, dimidii corporis longitudine, gracili, ad apicem parùm incrassato. Hemelytra angusta, elongata, albida, punctis nigricantibus in lineas dispositis versus marginem internum et externum partis posticæ hemelytrorum, lineâ etiam tenui nigrâ basin costæ versus. Rostrum et pedes nigro-punctata; femoribus posticis ad apicem tarsisque latis.

*Obs.* In figurâ Donovanianâ puncta nigra hemelytrorum confluentia videntur, lineas duas formantia, et totam longitudinem hemelytrorum percurrentia.

Species 26. FULGORA PLATYRHINA.

TAB. XII. Fig. 11.

F. capite producto plano, parallelipipedo; grisea; abdomine testaceo; hemelytris lineâ basali maculâque costali fuscis; alis roseis, apice hyalinis.

Long. corp. cum rostro, lin. 13. Expans. alar. lin. 30.

*Habitat* in Brasiliâ. In Mus. Soc. Ent. Lond. (olim Kirby). D. Hope. D. Winthem.

Syn. *Fulgora platyrhina*. *Germar in Thon's Arch. ii. 2. p. 46.*

Species 27. FULGORA ? ENSIFERA.

F. capite rostrato compresso, adscendente; lurida; abdomine sanguineo; hemelytris hyalinis, fusco-maculatis, punctis duobus costalibus albis.

*Habitat* in Brasiliâ. Mus. D. Winthem.

Syn. *Germar in Thon's Arch. ii. 2. 47. (Flata e.)*.

*Obs.* An *Fulgora*? an potius *Aphana*? *A. hæmopteræ* vel *tuberculatæ* affinior?



Species *Fulgoridarum* ad genus *APHANA*, Burm. (*Aphæna*, Guérin) amandandæ.

1. *Fulgora festiva*, Fab. Sp. Ins. ii. 315. Syst. Rhyng. p. 4. 17. Donovan. Ins. Ind. pl. 7. f. 2.

*Habitat* in Coromandeliâ. Mus. Soc. Linn. & Soc. Ent. Lond.

2. *Fulgora hæmorrhoidalis*. Oliv. Enc. Méth. vi. 569. Germar in Thon's Arch. ii. 247. (Flata h.). Stoll, Cigal. fig. 148.

*Habitat* ad Caput Bonæ Spei.

*Obs.* Facies *F. festivæ*.

3. *Fulgora recurva*. Oliv. Enc. Méth. vi. 569. Germar in Thon's Arch. ii. 2. 46. Stoll, fig. 44. Burm. ii. 169.

*Habitat* in Brasiliâ. In Mus. nostr.

*Obs.* Antennam hujus speciei in tab. xii. fig. 12. depinxi.

4. *Fulgora Tuba*. Germar (Thon) ii. 2. p. 46. Burm.? 169. (exclus. Syn. Burm.) ii. p. 398.

*Habitat* in Brasiliâ.

*Obs.* Facies *F. recurvæ*.

5. *Fulgora tuberculata*. Oliv. Enc. vi. 569. Germar in Thon's Arch. ii. 2. 46. Stoll, fig. 122. Burm. ii. 169.

*Habitat* in Surinam.

6. *Flata hæmoptera*. Perty, Del. An. art. Bras. tab. 35. f. 3. Burm. ii. 398. (Fulgora h.)

*Habitat* in Brasiliâ. In Mus. nostr.

*Obs.* Antennam hujus speciei in tab. xii. fig. 13. depinxi.

7. *Flata cicatricosa*. Germar in Thon's Arch. ii. 2. 47.

*Habitat* in Brasiliâ.

*Obs.* Caput suprâ planum, marginatum, trigonum, parùm productum, obtusè trigonum, anticè ferè rotundatum; elytra sordidè viridia, apice fusco-maculata. Alæ hyalinæ.

8. *Fulgora nigro-maculata*. G. R. Gray in Griff. An. K. Ins. pl. 90. f. 6. Burm. ii. 398. (*Aphana* n.) Guérin, Voy. Du Belanger.

*Habitat* in Chinâ. In Mus. D. Hope.

9. *Fulgora variegata*. (Oliv. Enc. Méth. vi. 573. Germar in Thon's Arch. ii. 2. 46. Stoll, fig. 45.). GENUS PHÆNAX (Germ. in Silberm. Rev. Ent. EUMALLIA, Guérin. Voy. Belanger) constituit.  
*Habitat* in Brasiliâ.

Species *Fulgoridarum* ad genus *Pseudaphana*, Burm. (*Dictyophora*, Germar.) removendæ.

1. *Fulgora Europæa*. Linn. Syst. Nat. ii. 704. 9. Stoll, Cig. f. 51. Germar in Thon's Arch. ii. 2. 47. (Flata E.). Burmeister, ii. p. 160. (*Pseudaphana* E.).  
*Habitat* in Europâ.
2. *Fulgora hyalinata*. Fabr. Sp. Ins. ii. 315. Syst. Rhyng. p. 4. Germar in Thon's Arch. ii. 2. 47. (Flata h.). Burm. ii. 160. Donovan, Ins. Ind. pl. 7. f. 3.  
*Habitat* in Bengaliâ.
3. *Fulgora pallida*. Donovan, Ins. Ind. pl. 8. f. 2.  
*Habitat* in Indiâ Orientali.
4. *Flata pungens*. Germar in Thon's Arch. ii. 2. 47. Burm. Handb. ii. 160. (*Pseudaph.* p.).  
*Habitat* in Americâ Septentrionali.
5. *Flata pannonica*. Creutzer. Germar in Thon's Arch. ii. 2. 47.  
*Habitat* in Hungariâ.
6. *Fulgora vivida*. Fabr. Ent. Syst. Suppl. 519. 10. (Flata v.). Syst. Rhyng. p. 5. (*Fulgora* v.). Germar in Thon's Arch. ii. 47. (Flata v.). Stoll, fig. 64? *Fulgora conica*. Oliv. Enc. Méth. vi. 571.? Burm. Handb. ii. 160. (*Pseudaphana* v.)  
*Habitat* in Americæ insulis.
7. *Fulgora tænia*. Fabr. Syst. Rhyng. p. 5.  
*Habitat* in Guineâ. ("Statura *F. fenestratæ*," Fabr.).
8. *Fulgora fenestrata*. Fabr. Ent. Syst. iv. 6. 18. Germar (Thon.) ii. 2. 48. (Flata f.). Palis. Beauv. Ins. d'Afrique, &c., Hém. pl. xix. f. 4.

*Habitat* in Africâ Æquinoctiali. In Mus. Soc. Linn. Lond. (olim Banks.)  
*Obs.* Magnitudo *Ps. Europææ*.  
 Individuum vidi in Mus. Fabr. Kiliæ conserv. magnitudine *F. europææ*, at  
 angustior rostroque parùm longiori.

9. *Fulgora virescens*. Fabr. Syst. Rhyng. p. 4. Germar in Thon's Arch. ii. 2. 47.  
 (Flata v.). Stoll, Cigal. fig. 18.

*Habitat* in Americâ Meridionali.

10. *Fulgora graminea*. Fabr. Syst. Rhyng. p. 4. Germar in Thon's Arch. ii.  
 2. 47. (Flata g.). Burm. ii. 160. (Pseudaphana g.)

*Habitat* in Indiâ Orientali.

11. *Flata lyrata*. Germar in Thon's Arch. ii. 2. 47. Burm. Handb. ii. 160.  
 (Pseud. l.).

*Habitat* in Bengaliâ.

12. *Fulgora noctivida*. Linn. Syst. Nat. ii. 704. 5. Fabr. Syst. Rhyng. p. 3.  
 Burm. ii. 160. (Pseudaph. n.). *Cicada conirostris*. De Geer, Ins. t. 3.  
 p. 202. pl. 32. fig. 4, 5.

*Habitat* in Surinam.

13. *Flata splendens*. Wiedemann. Germar in Thon's Arch. ii. 2. 48.

*Habitat* in Javâ.

Species *Fulgoridarum* ad genus *Pæciloptera*, Latr. revocandæ.

1. *Fulgora truncata*. Linn. Syst. Nat. ii. 704. 8.

“*Habitat* in Java; in America,” Linn. In Mus. Soc. Linn. Lond. (olim  
 Linn.).

2. *Fulgora folium*. De Geer, Ins. iii. 204. f. 32. f. 7. Gmelin, Ann. p. 2092.

*Habitat* in Americâ.

3. *Fulgora Bonellii*. Latr. Gen. Crust., &c. iii. p. 166.; ad genus *Eurybra-*  
*chis* pertinet. (Burm. Handb. ii. 150.)

*Habitat* in Europâ Australiori.

Species ad familiam *Cercopidarum* pertinentes olim *Fulgoræ* ab auctoribus adscriptæ.

1. *Fulgora fasciata*. Fabr. Ent. Syst. iv. 4. 12. Syst. Rhyng. p. 4. Stoll, Cigales, fig. 29. Burm. Handb. ii. 120. (*Tettigonia* f.)

*Raphirhinus obliquatus*. Laporte, Ann. Soc. France, i. 415. 3.

*Habitat* in Cayennâ, Brasiliâ.

*Obs.* Ad genus *Tettigonia*, et subgenus *Raphirhinus*, Laporte, pertinet.

2. *Fulgora phosphorea*. Linn. Syst. Nat. ii. 704. 4. Fabr. Ent. Syst. iv. 3. 5.

Syst. Rhyng. p. 2. Burm. Handb. ii. 120. (*Tettigonia* p.). Stoll, Cig. f. 42, 43.

*Cicada filirostris*. De Geer, Mem. iii. p. 201. t. 32. f. 6.

3. *Fulgora adscendens*. Fabr. Ent. Syst. 4. 4. 11. Syst. Rhyng. p. 3. 11.

*Habitat* in Surinam, Brasiliâ.

*Obs.* Ad genus et subgenus eadem cum præcedente.

4. *Fulgora parva*. Donovan. MS. New Holl. pl. 9. f. 2. fortè congener præcedentium.

5. *Fulgora lucernaria*. Linn. Syst. Nat. ii. 704. 6. Burmeister, Handb. ii. 120. (*Tettigonia* l.).

*Fulgora lucernea*. Fabr. Ent. Syst. iv. 3. 7. Syst. Rhyng. p. 3.

*Cicada breviostris*. De Geer, Mem. iii. p. 202. t. 32. f. 6.

*Habitat* in Surinam.

*Obs.* Ad *Tettigoniam* pertinet.

Species subsequentes ad eandem familiam pertinent, et genus novum, *Eupelici* affine, forsân constituunt.

1. *Fulgora plana*. Fabr. Mant. Ins. ii. 26. Syst. Rhyng. p. 65. 21. (*Cicada* p.).

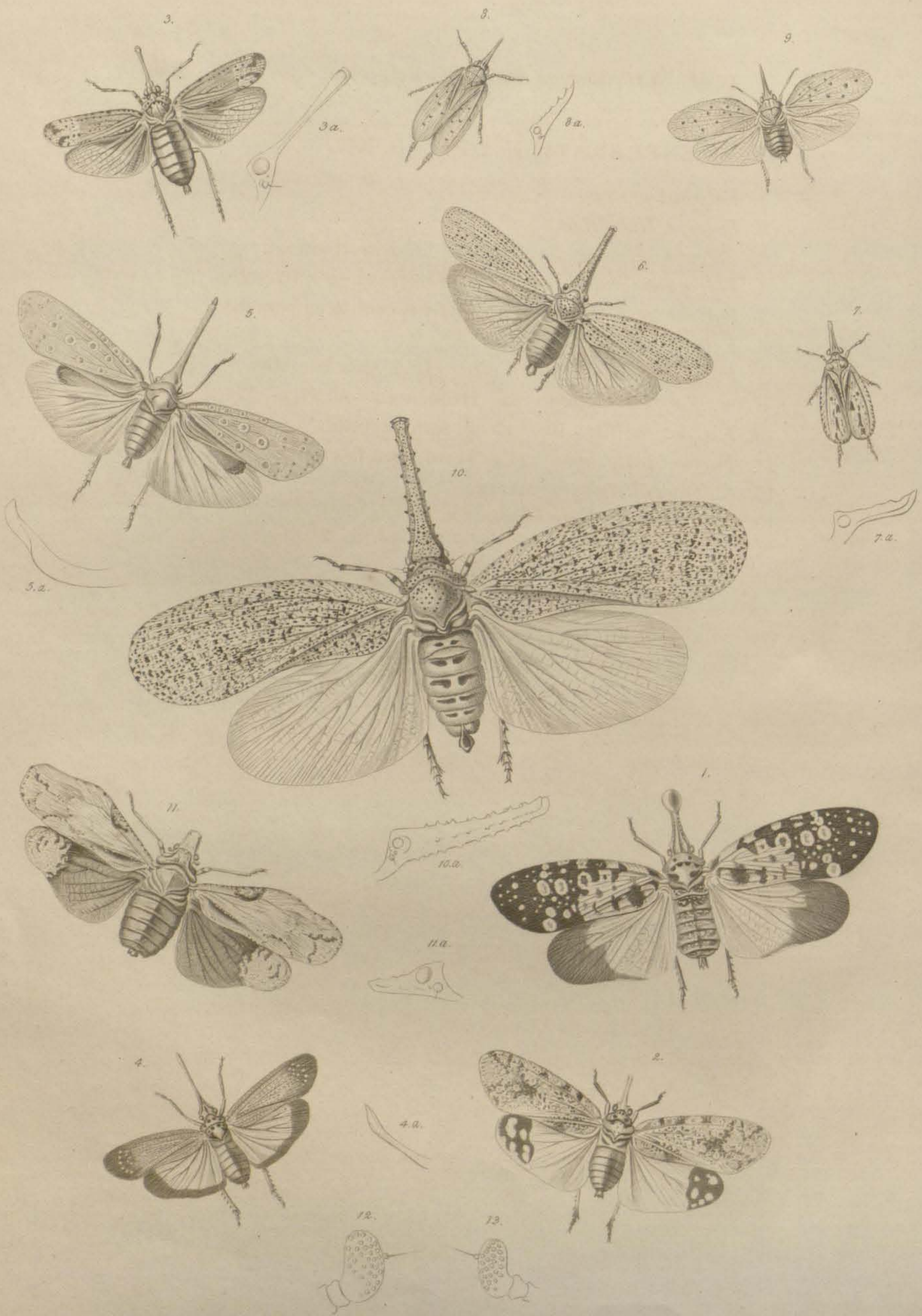
*Habitat* in Guianâ.

2. *Fulgora pallipes*. Fabr. Mant. Ins. ii. 261. Syst. Rhyng. p. 66. 22. (*Cicada* p.).

*Habitat* in Guianâ.

3. *Fulgora planirostris*. Donovan. Ins. New Holl. pl. 9. f. 1.

*Habitat* in Novâ Hollandiâ.



EXPLANATION OF TAB. XII.

- Fig. 1. *Fulgora clavata*.  
2. *Fulgora Horsfieldii*.  
3. *Fulgora apicalis*. 3a. Front of head, seen laterally.  
4. *Fulgora decorata*. 4a. Apex of rostrum, seen laterally.  
5. *Fulgora aculeata*. 5a. Apex of rostrum, seen laterally.  
6. *Fulgora affinis*.  
7. *Fulgora obscurata*, Fabr. 7a. Head, seen laterally.  
8 & 9. *Fulgora dilatata*. 8a. Head, seen laterally.  
10. *Fulgora nobilis*. 10a. Head, seen laterally.  
11. *Fulgora platyrhina*. 11a. Head, seen laterally.  
12. Antenna of *Aphana recurva*.  
13. Antenna of *Aphana hæmoptera*.

