

segment with ferruginous pubescence; beneath naked, finely punctured and shining, with the apical margins of the segments pale testaceous.

Hab. Makassar.

Gen. APIS, *Linn.*

1. APIS NIGRO-CINCTA. *A. capite thoraceque nigris; abdomine pallide ferrugineo, segmentis fasciis nigris; scutello pedibusque pallidis.*

Worker. Length 5 lines. Head and thorax black; the scape of the antennæ, the clypeus, labrum, and mandibles pale ferruginous. Thorax: the scutellum and legs pale ferruginous, with the tibiæ and tarsi fuscous, the intermediate and posterior tibiæ pale in the middle; wings hyaline, the nervures ferruginous. Abdomen pale ferruginous, with the apical margins of the segments dark fuscous; beneath entirely pale.

Hab. Makassar.

This species most closely resembles the *A. socialis* of Latreille, but it is quite distinct, as I have ascertained by a comparison with and an examination of the typical specimen in Mr. Westwood's possession.

Catalogue of Hymenopterous Insects collected by Mr. A. R. WALLACE in the Islands of Bachian, Kaisaa, Amboyna, Gilolo, and at Dory in New Guinea. By FREDERICK SMITH, Esq., Assistant in the Zoological Department, British Museum. Communicated by W. W. SAUNDERS, Esq., V.P.L.S.

[Read May 3, 1860.]

OF the various collections of *Hymenoptera* which Mr. Wallace has formed in the Indian Archipelago, none has exceeded that whose contents are described in the present paper, in the beauty and variety of the species, as well as in the interest attached to their geographical distribution. Amongst the *Formicidæ* many new and remarkable forms are both described and figured. I would particularly call attention to the two forms of the *worker* of *Pheidole notabilis*. Though convinced that nothing is created in vain, and that every modification of form has its design, adapting it to the fulfilment of conditions necessary in the economy of the particular species, I feel quite unable even to conjecture the purpose of the enormously enlarged head of the *worker major* of that species.

Another very interesting Ant is a new species of Erichson's genus *Amblyopone*; the previously described species are either from Tasmania or Australia; that here described is from Bachian.

Two remarkable species are added to the *Cryptoeridæ*, and a new genus described, which has partly the characters of *Cryptocerus*, and partly those of *Ponera*.

The most interesting insect, in a geographical point of view, is undoubtedly a species of *Thynnus* from Bachian; this is the most northern range of the genus from its metropolis, Australia, with which I am acquainted. Amongst the *Apidæ*, however, will be found the gem of the collections; this is a species of *Megachile*. Not only is it equal in size to the largest known species of *Xylocopa*, but it is twice the size of the largest previously known species of the genus to which it belongs, and ten times the size of the smallest. This is certainly the finest addition which Mr. Wallace has made to our knowledge of the family *Apidæ*.

In this paper 191 species are enumerated, of which 132 are new to science, and 59 have been previously described. This fine collection of *Hymenoptera* is the property of William Wilson Saunders, Esq.

Fam. FORMICIDÆ, *Leach*.

Gen. FORMICA, *Linn*.

1. *Formica lævissima*, *Smith, Proc. Linn. Soc.* 1859, ii. 138.
Hab. Bachian; Aru.

2. *Formica pallida*, *Smith, Proc. Linn. Soc.* 1857, ii. 57.
Hab. Bachian, Borneo, Sumatra.

3. FORMICA SUBTILIS. Capite, thorace, pedibusque rufo-testaceis; abdomine nigro. (*Worker major*) pallide testacea lævis nitida; pedibus elongatis (*Worker minor*).

Worker major. Length $3\frac{1}{2}$ lines. Head rather darker than the thorax and legs; wider than the abdomen, elongate-ovate and shining; the mandibles stout, their inner edge with short acute blackish teeth. The thorax much compressed and narrowed behind. Abdomen ovate, black with an æneous tinge, and sprinkled with pale glittering hairs; the scale of the peduncle narrow, with its upper margin rounded.

Worker minor. Length 2 lines. Of a paler colour than the preceding; the antennæ very slender, and longer than the body; the legs very long, the posterior pair nearly twice the length of the body; the scale of the peduncle conical.

Hab. Bachian.

4. FORMICA VITREA. *F. nigra*, nitida; mandibulis tarsisque rufopallidis; squama quadrata.

Worker. Length 2 lines. Jet black, smooth and shining; head a little wider than the thorax; eyes ovate, placed rather high on the sides of the head; the antennæ longer than the thorax, the flagellum slightly thickened towards the apex; the mandibles pale rufo-testaceous. Thorax narrow, compressed behind and strangulated at the base of the metathorax; the scale of the abdomen compressed, quadrate, and

slightly notched above. Abdomen wider than the head, subglobose ; the apical margins of the segments narrowly pale testaceous.

Hab. Bachian.

This species is found on trees, running in numbers up and down the trunks, probably in search of Aphides.

5. *FORMICA CRUDA.* *F.* pallide testacea, lævis, nitida, sparse pilosa ; abdomine fusco.

Worker. Length 2 lines. The head, thorax, scale of the peduncle, and the legs pale testaceous yellow ; the mandibles and head anteriorly sometimes of a slight ferruginous colour ; the abdomen fuscous or fusco-testaceous, and covered with a fine thin short silky pubescence ; the head heart-shaped ; the eyes black, round, and placed forwards and inwards ; the mandibles stout and triangular, their inner margin with a row of acute ferruginous teeth. Thorax much narrower than the head, strangulated at the base of the metathorax, which is oblique behind. Abdomen wider than the thorax, but not so wide as the head.

Hab. Bachian.

This insect varies in size, but the form and colouring is the same in all the workers, the smallest of which is about one line long. "Found beneath bark and about fern-roots."

6. *FORMICA LACTARIA.* *F.* nigra ; antennis pedibusque pallide ferrugineis.

Worker. Length $1\frac{1}{2}$ line. Black ; the head and abdomen smooth and shining, the thorax rugose ; the antennæ and legs rufo-testaceous, the apical joints of the tarsi palest ; the mandibles pale ferruginous ; the head ovate. The thorax narrow, compressed behind, deeply strangulated between the meso- and metathorax, the latter abruptly truncate behind ; the abdomen ovate, the scale of the peduncle ovate.

Hab. Bachian.

This species varies in colour ; some specimens are obscurely ferruginous, having the appearance of immaturity. Mr. Wallace says of this insect, "Found in numbers, milking Aphides on blades of grass."

7. *FORMICA INCURSOR.* *F.* nigra ; capite antice obscure ferrugineo ; squama ovata.

Worker. Length 2 lines. Black, smooth and shining ; the head sub-ovate, narrowed anteriorly, the margin of the vertex rounded ; the eyes rather large, ovate, and placed high on the sides of the head ; before the insertion of the antennæ obscurely ferruginous ; the mandibles and apical joints of the tarsi rufo-testaceous. The thorax narrowed behind, with a deep strangulation between the meso- and metathorax. Abdomen ovate and thinly sprinkled with pale glittering hairs ; the scale of the peduncle ovate, rounded above.

Hab. Bachian.

8. *FORMICA RUFIFRONS.* *F.* nigra ; capite oblongo, antice ferrugineo ; antennis tarsisque rufo-ferrugineis.

Female. Length $3\frac{1}{4}$ lines. Black, smooth and shining; the head obliquely truncate before the insertion of the antennæ; the truncated portion, the mandibles and head beneath, obscurely ferruginous; the eyes ovate, placed high on the sides of the head; the ocelli in a triangle wide apart on the vertex; the flagellum fusco-ferruginous. The thorax oblong-ovate, the metathorax truncate, the margins of the truncation rounded; the legs obscure rufo-fuscous, with the tips of the tarsi paler; the wings fuscous. Abdomen ovate; the scale of the peduncle narrow, thickened and obtusely rounded above.

Worker. Length $2\frac{3}{4}$ lines. Closely resembling the female, but the head not shining; ferruginous before the eyes and rugose; the antennæ ferruginous, with the apex of the scape and first joint of the flagellum blackish. Thorax and abdomen smooth and shining, the former compressed behind; the anterior tibiæ in front and the apical joints of all the tarsi rufo-testaceous. Abdomen ovate; the scale of the peduncle narrow, its superior margin rounded.

Hab. Bachian.

This species, although bearing a close resemblance to *F. mutilata* from Aru, and also to the *F. truncata* of Europe, is quite distinct from both those species.

9. FORMICA PAVIDA. *F. nigerrima*, mandibulis tarsorumque articulo apicali ferrugineis; alis fulvo-hyalinis.

Female. Length 4 lines. Jet black, smooth and shining; the head oblong-quadrate; the antennæ fusco-ferruginous, the base of the scape and of the flagellum paler; the mandibles and anterior margin of the clypeus ferruginous; the inner edge of the mandibles with four or five acute teeth. The thorax oblong-ovate; the metathorax with a central smooth longitudinal channel; the wings fulvo-hyaline, the nervures ferruginous; the apical joints of the tarsi ferruginous. Abdomen oblong-ovate; the scale of the peduncle incrassate and obtuse above.

Hab. Bachian.

10. FORMICA FAMILIARIS. *F. pallide testacea*; capite thoraceque postice fusco-nigris.

Worker. Length $\frac{3}{4}$ line. Pale testaceous, semi-transparent; the thorax at the sides, and behind, more or less dusky; the head dark fuscous, with the mandibles white.

Hab. Bachian.

This minute Ant is found in houses. Mr. Wallace says that, when living, its body, legs, and antennæ are transparent.

11. FORMICA DORYCUS. *F. nigra*, elongata et gracilis; capite postice in collum angustato; pedibus elongatis; abdominis nodo supra acuto.

Worker. Length 6 lines. Black, smooth and shining; head elongate, widest in front, slightly narrowed towards the eyes, and abruptly so behind them, forming a sort of neck; the scape of the antennæ fus-

cous, the flagellum pale rufo-testaceous; the tips of the mandibles ferruginous, their inner margin with three or four short acute teeth, their apex forming a long stout acute tooth. Thorax elongate, narrowest behind and slightly compressed; the legs elongate, slender, ferruginous and slightly pubescent. Abdomen ovate, the apical margins of the segments rufo-piceous; the node of the peduncle wedge-shaped and pointed above.

Hab. Dory.

This species resembles the *worker* of *F. gigas*, which is found in India, Malacca, Singapor, Borneo, &c., but the head is different in form, the colour is different, and the form of the scale of the peduncle differs too much, I think, for the insect to be considered as a form of *F. gigas*; it must, however, be one of the largest known species of the *Formicidæ*.

12. FORMICA DESECTA. *F. nigra nitida*; capite antice truncato.

Female. Length $4\frac{1}{4}$ lines. Jet black, shining; the head wider than the thorax, truncate anteriorly; the truncation and sides of the head rugose; the mandibles rugose; the ocelli placed wide apart in a triangle, the posterior pair situated on the hinder margin of the vertex; the eyes ovate, placed very high on the sides of the head; the antennæ reaching to the insertion of the wings, the flagellum rufo-testaceous. Thorax, oblong-ovate, very smooth and shining; the wings hyaline and iridescent, the nervures pale rufo-testaceous. Abdomen oblong-ovate; the node of the peduncle incrassate, truncate above.

Hab. Dory.

GEN. TAPINOMA, *Foerst.*

1. TAPINOMA PRATENSIS. *T. capite*, thorace, pedibusque pallide ferrugineis; abdomine fusco-nigro.

Worker. Length $1\frac{1}{4}$ line. Head and thorax pale ferruginous, smooth and shining; the antennæ and legs pale testaceous. Abdomen dark fuscous and sub-opaque; the scale of the peduncle ovate, hidden beneath the base of the abdomen.

Hab. Bachian.

GEN. POLYRHACHIS, *Smith.*

1. Polyrhachis bihamatus, *Drury, Ins. ii. pl. 33. f. 8. ♀.*

Hab. India; Borneo; Sumatra; Bachian.

The curved spines or hooks with which this remarkable species is armed vary greatly in different individuals, not only in being more or less curved or elongate, but the two spines which rise from the peduncle of the abdomen, on a short base, are sometimes widely divergent; in other individuals, they are continued nearly parallel, only curving apart, outwardly, at their summit; in the specimens from Bachian the spines are shorter and stouter than in any I have previously examined,—but I can only regard this as a local variety of the Indian species.

2. *Polyrhachis marginatus*, *Smith, Proc. Linn. Soc.* 1859, iii. 139.
Hab. Aru; India; Philippine Islands; Bachian.
3. *Polyrhachis dives*, *Smith, Proc. Linn. Soc.* 1857, ii. 64.
Hab. Malacca; Bachian.
4. *Polyrhachis sericatus*, *Smith, Append. Cat. Form.* p. 200; *Proc. Linn. Soc.* iii. 139.
Formica sericata, *Guér. Voy. Coq. Zool.* ii. 203; *Atlas, Ins.* pl. 8. f. 2.
Hab. Dory; New Hebrides; Aru.
5. *Polyrhachis sexspinosus*, *Latr. Hist. Nat. Fourm.* p. 126. pl. 4. f. 21. ♀
Hab. Dory; Aru; Philippine Islands; Java.
6. **POLYRHACHIS CHARAXUS.** *P. capite thoraceque nigris; antennis pedibusque ferrugineis; abdomine castaneo-rufo; squama spinis duabus acutis armatis.*
Worker. Length $2\frac{1}{4}$ lines. Head and thorax black, the head shining, very finely and closely punctured; the clypeus anteriorly, the mandibles and antennæ ferruginous, the latter palest towards the apex. The thorax flattened and finely rugose above, the lateral margins raised; the metathorax obliquely truncate, with two minute acute spines at the verge of the truncation; the legs ferruginous, the apical joints of the tarsi palest. Abdomen globose, chestnut red; the scale of the peduncle armed with two acute spines. (Plate I. fig. 14.)
Hab. Bachian.
 Taken in a small ovate papery nest on the underside of a leaf.
7. **POLYRHACHIS BUSIRIS.** *P. niger, lævis, nitidusque; thorace inermi; petioli squamula quadrispinosa.*
Worker. Length 3 lines. Jet-black, smooth and shining. Thorax rounded above, obliquely truncate behind. Abdomen globose; the node of the peduncle armed with four short acute teeth. (Plate I. fig. 15.)
Hab. Dory; Bachian.
8. **POLYRHACHIS ACANTHA.** *P. niger, pube cinereo-sericea vestitus; thorace spinis acutis antice et postice armato; squama spinis duabus longis curvatis.*
Worker. Length $2\frac{3}{4}$ lines. Black: clothed with a thin silky cinereous pile; the disk of the thorax rounded; the spines in front short, stout, and acute; those on the metathorax long, divergent, and slightly curved inwards; the spines on the peduncle are stout, acute, and curved to the shape of the base of the abdomen. The abdomen globose. (Plate I. fig. 16.)
Hab. Bachian.
9. **POLYRHACHIS MEROPS.** *P. niger, lævis, nitidus; thorace antice spinis duabus longis acutis armato; femoribus et pedunculo ferrugineis.*
Worker. Length $3\frac{1}{2}$ lines. Black, smooth, shining and very thinly covered with a changeable pile; the mandibles shining black, longi-

tudinally striated and denticulate on their inner margin; the face covered with silvery white pubescence. Thorax flattened above and at the sides, armed anteriorly on each side with an acute spine; the metathorax truncate; the thorax, viewed laterally, is quadrate; the femora and scale of the peduncle ferruginous; the latter is emarginate above with the angles oblique, the angles of the emargination produced into short acute spines. Abdomen globose, the red colour of the femora reflecting on its changeable pile. (Plate I. fig. 17.)

Hab. Bachian.

10. POLYRHACHIS ITHONUS. *P. niger*, pube argentea vestitus, prothorace bispinoso; petioli squamula quadrispinosa, pedibus ferrugineis.

Female. Length 4 lines. Black, and covered with a glittering silvery pile; the mandibles shining black, longitudinally finely striated, and armed on their inner edge with a row of short acute teeth. The prothorax rounded and with a sharp spine at the lateral angles; the sides slightly rounded; the metathorax truncate; the legs ferruginous, with the tarsi black. Abdomen globose; the node of the peduncle slightly emarginate above, the lateral angles acute with a sharp spine outside. The *Worker* has the spines on the thorax longer and acute, the sides and disk of the thorax flattened, the divisions between the pro-, meso- and metathorax notched at the sides. The peduncular scale has the lateral angles of the emargination above produced into acute spines, the outer spines not being longer than in the female. (Plate I. fig. 18.)

Hab. Bachian.

11. POLYRHACHIS EUDORA. *P. niger et vestitus pube pallide aurea*; prothorace bispinoso; petioli squamula trispinosa.

Female. Length 4 lines. Black, and densely clothed with fine silky pale golden pile; the mandibles shining black, with four or five acute teeth on their inner edge. The thorax rounded anteriorly, with an acute spine at the lateral angles; the sides slightly rounded; the metathorax truncate behind, the lateral margin above, carinate; the legs and antennæ naked. The abdomen globose; the node of the peduncle has its superior margin rounded, with an acute spine at the lateral angles, and one in the centre. The *Worker* resembles the female, but has the sides of the thorax flat, the anterior spines longer, and has no ocelli, which are prominent in the female; the spines on the peduncular node are also longer. (Plate I. fig. 19.)

Hab. Bachian.

This species closely resembles *P. vigilans* from China, but differs in the form of the head and scale of the peduncle.

12. POLYRHACHIS METELLA. *P. niger et vestitus pube pallide aurea*; metathorax petiolique squamula bispinosis pedibus obscure ferrugineis.

Worker. Length 4 lines. Black, and thinly covered with a changeable golden pile; head nearly oblong-quadrate; the palpi elongate and

pale ferruginous; thorax flattened above, the margins acute and slightly elevated; the metathorax oblique and armed with two long acute spines, directed backwards; the femora ferruginous, the tibiæ and tarsi very obscurely so, not pubescent. Abdomen: ovate, the node of the peduncle with two acute spines, shorter than those on the metathorax; antennæ as long as the body. (Plate I. fig. 20-21.)

Hab. Dory.

Most of the species belonging to this genus are, when in fine condition, covered with glossy pile, but it is easily abraded. This is the case, I suspect, in the majority of specimens.

13. POLYRHACHIS ATROPOS. *P. niger*, capite thoraceque striatis; thorace spinis duabus acutis antice et duabus postice armato; abdominis squama bispinosa.

Worker. Length 2 lines. Black: the head longitudinally striated, very prominent in the middle before the eyes; the sides of the face depressed and flattened. The thorax flattened above, longitudinally striated, the lateral margins raised, the anterior angles short, stout, and acute, the division between the pro- and mesothorax deeply impressed; the metathorax obliquely truncate, armed with two acute spines which are directed backwards. Abdomen: globose and thinly clothed with short pale glittering pile; the peduncle has the node armed with two curved spines directed horizontally backwards round the base of the abdomen. (Plate I. fig. 22.)

Hab. Dory.

14. POLYRHACHIS ACASTA. *P. niger*, pube cinereo-sericea vestitus; thorace antice posticeque abdominisque squama spinis duabus longis acutis armatis; pedibus ferrugineis, femoribus apicis tarsisque nigris.

Worker. Length $3\frac{1}{4}$ lines. Black, and thinly clothed with silky cinereous pile. Thorax rounded above: the anterior spines are short, stout, and acute; those on the metathorax are twice as long, stout and slightly divergent; those on the peduncle are long, acute, and curved backward, corresponding to the form of the base of the abdomen; the tibiæ and femora ferruginous, the tips of the latter black. (Plate I. fig. 23.)

Hab. Bachian.

This insect, Mr. Wallace says, "constructs a coarse papery nest in a rolled leaf;" all the species of this genus, as far as I have ascertained, form small nests of some papyraceous material, affixing them to leaves: I have received such from Calcutta.

15. POLYRHACHIS ALPHENUS. *P. niger* pube cinereo-sericea vestitus; thorace spinis duabus minutis antice et postice armato; squama quadrata spinis duabus crassis acutis armata, flagello apice ferrugineo.

Female. Length 4 lines. Black, and thinly covered with cinereous pile. The mandibles, palpi, and six apical joints of the antennæ, ferruginous. Thorax subovate, with two minute spines in front and two rather

longer and stouter on the metathorax; the scale of the peduncle quadrate, armed above with two short spines; the abdomen globose. (Plate I. fig. 24.)

Hab. Bachian.

16. POLYRHACHIS LABELLA. *P. niger*; thorace spinis duabus acutis antice armato; abdominis squamula spinis duabus longis acutis armata; tibiis pallide ferrugineis.

Worker. Length 3 lines. Black: the head and thorax covered with fine silky cinereous pubescence; the thorax flattened above and longitudinally striated; the lateral margins raised and produced anteriorly into flat acute spines; the divisions between the pro-, meso-, and metathorax strongly impressed; the metathorax truncate behind; the tibiæ, except their extreme base, ferruginous; the claws of the tarsi ferruginous. The abdomen smooth and shining; the node of the peduncle with two long, stout, erect, slightly curved spines, with an acute angle outside their base. (Plate I. fig. 25.)

Hab. Bachian.

17. POLYRHACHIS FERVENS. *P. capite abdomineque nigris*, thorace femoribusque obscure ferrugineis; thorace quadrispinoso; petioli squamula bispinosa.

Worker. Length 3 lines. Head and antennæ black, the face thinly covered with short, glittering, pale pubescence; the thorax, peduncle, and femora obscure ferruginous, the tips of the latter black; the thorax flattened above, the margins acute and raised; the division between the pro- and mesothorax strongly impressed; the prothorax with two acute, stout, flattened spines; the metathorax has also two acute, bent spines, which are slightly divergent, their tips black; the spines on the node of the peduncle long, acute, and curved to the form of the base of the abdomen; the latter black, and covered with a thin silky changeable pile. (Plate I. fig. 26.)

Hab. Amboyna.

Gen. CECOPHYLLA, *Smith.*

Head small; *eyes* ovate, of moderate size, placed laterally about the middle of the head; *ocelli* three in a triangle in the males and females, obsolete in the workers; *antennæ* geniculated, filiform, as long as the head and thorax in the males and females, as long as the body in the workers: 12-jointed in the females and workers, 13-jointed in the males: mandibles porrect, acute, and crossing at their apex, their inner margin denticulate; *labial palpi*, 4-jointed, very minute, the basal joint a little longer than the two following, the apical one much shorter; *maxillary palpi* 5-jointed, stout, short, and having joints of nearly equal length, except the apical, which is minute. Thorax ovate in the males and females, elongate and very slender in the workers, which sex has the legs elongate and very slender; *wings* ample, having

one marginal and one submarginal cell; the discoidal cells obsolete. *Abdomen* ovate, the node of the peduncle incrassate and subquadrate in the females, in the workers forming a longish petiole clavate at the apex; females and workers furnished with a sting. (Details, Pl. I. figs. 11, 12, 13.)

The characters here given will show the propriety of separating this insect from the genus *Formica*, in which it has been hitherto included; in my general catalogue on the *Formicidæ* I suggested the probability of this being found necessary. There are apparently two species belonging to the genus,—one *F. smaragdina* of Fabricius, the second *F. virescens* of that author; the differences between them are slight, but permanent; the first species inhabits India, most of the islands in the Archipelago, and thence southward into the Moluccas; the second apparently distinct species is found in Australia and South Africa; these are the green Ants which build in trees. Their nest is formed by drawing together a number of green leaves, which they unite with a fine web. Some nests are a foot in diameter; they swarm, says Mr. Wallace, in billy forests in New Guinea; their sting is not very severe. This genus forms a link between the genera *Formica* and *Myrmica*; it agrees with the former in having a single node to the peduncle, and with the latter in having the ocelli obsolete in the workers, and in being furnished with a sting.

1. *Cecophylla smaragdina*, *Smith* (gen.).

Formica smaragdina, *Fabr. Syst. Prez.* p. 397.

Hab. Dory; Borneo; Aru; Celebes; Sumatra; Philippine Islands; India; Java.

Subfam. PONERIDÆ, *Smith*.

Gen. ODONTOMACHUS, *Latr.*

1. ODONTOMACHUS SÆVISSIMUS, *Smith*. *O. ferrugineus*, lævis, nitidus; capite antice longitudinaliter striato; thorace oblongo, transversim striato.

Female. Length 8 lines. Ferruginous: the head foveolate anteriorly and delicately striated longitudinally; the mandibles with two long stout, acute teeth at their apex, and with their inner margin serrated. Thorax elongate; the pro- and metathorax delicately striated transversely; legs elongate and slender. Abdomen ovate, very smooth and shining; of a rather deeper colour than the head and thorax. The *worker* differs in having the thorax transversely striated throughout its entire length, and narrowest in the middle; in the female it is widest. (Plate I. fig. 9.)

Hab. Badian; Ceram.

This species was first captured by Madame Ida Pfeiffer at Ceram; the female is here first described.

2. ODONTOMACHUS ANIMOSUS. *O. ferrugineus*; margine interno mandibulorum serrato; thorace transversim striato.

Worker. Length 5 lines. Ferruginous; the head very slightly narrowed posteriorly; the hinder portion of the sulcation of the head in front with divergent striæ opposite, and before the eyes it is smooth and shining; from the sulcation to the posterior margin of the head runs a deeply-impressed channel; the head is faintly striated obliquely behind the sulcation, there is also an oblique depression on each side; the mandibles with a row of short teeth on their inner margin, and terminating in two incurved long, stout, blunt teeth. Thorax very delicately and closely striated transversely. Abdomen smooth and shining; the node of the petiole with a long, acute, upright spine.

Hab. Dory.

3. *ODONTOMACHUS NIGRICEPS.* *O. ferrugineus*; capite nigro, supra longitudinaliter striato; lateribus lævibus nitidis, thorace transversim striato.

Worker. Length $6\frac{1}{2}$ lines. Ferruginous; the head black, smooth and shining; the anterior portion longitudinally striated, the striation terminating at the oblique smooth ridges behind the eyes, which meet in the middle of the head, whence a deep longitudinal channel runs to the hinder margin; the antennæ and mandibles ferruginous, the latter denticulate on their inner margin, and terminating in two long incurved blunt teeth, which have a minute tooth in the middle of their fork. The prothorax smooth and shining, with a slight transverse striation on its neck in front; the meso- and metathorax finely striated transversely. The node of the peduncle unispinose, and, as well as the abdomen, smooth and shining. (Pl. I. fig. 9.)

Hab. Dory.

Gen. PONERA, *Latr.*

1. *Ponera læviceps*, *Smith, Proc. Linn. Soc.* ii. 69.

Hab. Bachian; Borneo.

2. *PONERA SOLITARIA.* *P. pallide testacea*; antennis elongatis; alis hyalinis; capite postice angustato; abdominis nodo conico.

Male. Length $4\frac{3}{4}$ lines. Pale rufo-testaceous, smooth and shining; antennæ longer than the body; the legs elongate; the posterior tarsi longer than the tibiæ and femora; the wings hyaline, and brilliantly iridescent, the nervures ferruginous; the node of the peduncle conical; the abdomen constricted between the first and second segments.

Hab. Bachian.

3. *PONERA VAGANS.* *P. nigra*; capite, thorace, abdominisque basi striatis; antennis, capite antice, mandibulis pedibusque ferrugineis.

Worker. Length 4 lines. Black: the clypeus, mandibles, antennæ, and legs, ferruginous; the head finely striated longitudinally; eyes prominent and ovate. The prothorax with a rugose circular striation; the metathorax with an even oblique striation. The node of the peduncle has an even curved striation, and two acute spines behind; the basal segment of the abdomen with an irregular fine curved striation; the

apical margins of the third and fourth segments and the fifth entirely obscure ferruginous; the insect thinly covered with a silvery glittering pubescent pile, which is very bright on the femora and sides of the thorax.

Hab. Bachian.

4. *PONERA STRIATA*. *P. æneo-nigra*; capite, thorace, abdominisque basi profunde striatis; nodo spinis duabus acutis armato.

Worker. Length 6 lines. Black, with a bluish-green tinge; the head closely, deeply, and evenly, striated longitudinally; the mandibles shining black, their apex rufo-piceous, with their inner margins furnished with a row of short acute teeth. The prothorax with a circular striation, that on the metathorax being oblique; the tarsi and articulations of the legs rufo-piceous. The abdomen densely covered with a fine silky glittering white pubescence; the basal segment with an even curved transverse striation; the apical margins of the third and fourth segments, and the fifth entirely, ferruginous; the node of the peduncle with transverse grooved striæ, and armed behind with two acute spines; the insect has a scattered erect thin pale pubescence.

Hab. Bachian.

This species has a strong general resemblance to *P. geometrica* from Singapore, but is very distinct; in the latter species the grooving on the prothorax is transverse and straight; that on the metathorax is circular, and has its centre in the middle of its disk, and the head is much narrower behind the eyes, which is not the case in the present species.

5. *PONERA SIMILLIMA*. *P. nigra*; capite elongato aciculato; abdomine lævi nitido.

Worker. Length 3 lines. Black; head and thorax subopaque, the abdomen smooth and shining; the head oblong and longitudinally aciculate; the anterior margin of the clypeus, the mandibles, flagellum, tarsi, and articulations of the legs, rufo-testaceous. The thorax subrugose, with the oblique truncation of the metathorax transversely striated. The abdomen very smooth and shining with the apex obscurely rufo-piceous; the node of the peduncle quadrate.

Hab. Bachian.

This species very closely resembles *P. læviceps*, from Borneo.

6. *PONERA CUPREA*. *P. nigra*, cupreo variegata; capite, thorace, abdominisque basi profunde striatis, nodo spinis duabus acutis armato.

Worker. Length 5 lines. Black, with an obscure coppery tinge; the mandibles and legs obscurely ferruginous; the extreme apex of the flagellum pale rufo-testaceous. The head deeply striated, longitudinally, the clypeus and mandibles very finely so; the head narrowed behind the eyes. The thorax transversely striated, above the sides obliquely so; the legs slightly pubescent. Abdomen: the basal segment transversely striated, the striæ curved forwards; the node of

the peduncle incrassate, rounded anteriorly and truncate behind, with two acute upright spines; the striation curves round the node in front and is transverse behind; the apical margins of the second and following segments narrowly pale testaceous.

Hab. Dory.

This species resembles *P. geometrica*, but is very distinct. We are now acquainted with more than a dozen of these striated species of *Ponera*, all differing in the direction and depth of the striation, which is in each extremely beautiful.

7. *PONERA SIMILLIMA*. *P. fusco-brunnea*; capite postice fusco-nigro; oculis ovalibus, hirtulis; ocellis distinctis; alis hyalinis; abdomine elongato, apice pallide testaceo.

Worker. Length $1\frac{3}{8}$ line. Darkish brown, some individuals reddish-brown; the head dark fuscous and semi-opaque above the insertion of the antennæ; the head anteriorly, the mandibles, antennæ, and legs ferruginous; the eyes ovate, placed in the middle at the sides of the head. Thorax oblong-ovate, the metathorax obliquely truncate. Abdomen: the scale of the peduncle incrassate, vertical; its superior margin slightly emarginate; a constriction between the first and second segments; the apex pale testaceous.

Hab. Dory.

This minute species very closely resembles the *P. contracta* of Europe; it differs principally in having the eyes situated in the middle of the sides of the head, in the European insect they are smaller and placed forward at the base of the mandibles; the form of the scale is different, and the body is finely pubescent; there is a species from Brazil, *P. ruficornis*, very like it.

Gen. AMBLYOPONE, *Erichs.*

1. *AMBLYOPONE CASTANEUS*. *A. ferrugineus*, nitidus punctatus; capite antice longitudinaliter striato; margine interno mandibularum confertim dentato.

Worker. Length $4\frac{1}{2}$ lines. Ferruginous; head wider than the thorax, slightly rounded at the sides, and emarginate behind, finely and distinctly punctured above, anteriorly it is longitudinally striated; the anterior margin fuscous; the antennæ short and stout; the flagellum clavate; the mandibles with a row of short, stout, acute teeth on their inner margin; the head has a few scattered erect hairs. Thorax: the prothorax subglobose, strongly punctured in front; the mesothorax short and transverse; the metathorax oblong, parallel, and punctured; the apex transversely striated; the legs short, stout, and pubescent. Abdomen: the basal segment strongly punctured, the second and following segments delicately and very sparingly so; the first and second segments deeply constricted at their margins; the apex pointed and pubescent, the pubescence ferruginous. (Plate I. fig. 6.)

Hab. Bachian.

This insect, which I place in Erichson's genus *Amblyopone*, differs from the type in the antennæ being short and stout, with the flagellum club-shaped; in *A. australis* they are rather slender, and the flagellum is very slightly thickened at the apex; in every other particular they agree.

Gen. PSEUDOMYRMA, Guér.

1. PSEUDOMYRMA LÆVICEPS, *Smith, Proc. Linn. Soc.* iii. 145. ♂.

Hab. Dory; Arn.

2. PSEUDOMYRMA MODESTA. *P. rufo-pallida, lævis, nitida*; abdomen nigro.

Worker. Length $1\frac{3}{4}$ line. Pale rufo-testaceous; the head oblong; the eyes large and ovate; the flagellum clavate; the club three-jointed. Thorax oblong, narrowed posteriorly, with the metathorax compressed above; the legs short and stout. Abdomen black and ovate; the first node of the peduncle petiolated, the second pear-shaped, both of a pale rufo-testaceous colour.

Hab. Bachian.

3. PSEUDOMYRMA NITIDA. *P. nigra, nitidiuscula*; antennis, tibiis, tarsisque pallide testaceis.

Worker. Length $1\frac{3}{4}$ line. Jet-black, smooth and shining; eyes very large, ovate, and about half the length of the head; the antennæ and mandibles pale testaceous; a faintly-impressed line extends from the insertion of the antennæ to the vertex. The thorax narrowed posteriorly, and deeply strangulated between the pro-, meso-, and metathorax; the tibiæ and tarsi pale testaceous. Abdomen ovate: the first node of the peduncle petiolated, the second subglobose.

Hab. Bachian.

Gen. MESOXENA, *Smith.*

Head suborbiculate, a little wider than the thorax; *eyes* round, prominent, situated in the middle at the sides of the head; *ocelli* obsolete in the worker; *antennæ* geniculated, the scape one-third shorter than the flagellum; the flagellum 11-jointed, gradually increasing in thickness from the basal to the apical joint, the latter pointed at its apex; the *maxillary palpi* 6-jointed, the first joint minute, the rest elongate. *Thorax* oblong, the sides nearly parallel, the anterior and posterior margins slightly rounded; the divisions between the pro-, meso-, and metathorax not perceptible, or monomeric; legs of moderate length, the calcaria at the apex of the intermediate and posterior tibiæ very short. *Abdomen* subovate; the basal segment very large, nearly concealing the following ones; the peduncle with a single node, the node incrassate, nearly as wide as the thorax, truncate anteriorly and rounded behind.

The characters laid down for this remarkable genus are drawn

from a worker or neuter insect. I have been unable to trace the labial palpi, and had only a single individual for examination. It will be seen that *Mesoxena* partakes of the characters of two very distinct families, the *Poneridæ* and the *Cryptoceridæ*; of the former, in the character, or form of the head, thorax, and peduncular node; and of the latter, in the enlargement of the basal segment of the abdomen.

1. *MESOXENA MISTURA*. *M. nigra*; antennis apice, femoribus basi, et tarsis pallide ferrugineis.

Worker. Length 2 lines. Black, subopaque, smooth and impunctate; the antennæ nearly as long as the thorax; the apical half of the flagellum rufo-testaceous; the eyes very prominent. Thorax oblong, the sides very slightly contracted in the middle, slightly rounded in front and behind; the tip of the coxæ, the trochanters, the extreme base of the femora and tarsi, rufo-testaceous. Abdomen subovate; the node of the peduncle subglobose, truncate in front, and rounded behind. (Plate I. fig. 10.)

Hab. Bachian.

Fam. MYRMICIDÆ, *Smith*.

Gen. MYRMICA, *Latr*.

1. *MYRMICA OBLONGA*. *M. rufo-fusca*; abdomine fuscescente, apice pallido; metathorace declivi, mutico.

Worker. Length $1\frac{3}{4}$ line. Obscure ferruginous, with the antennæ, head anteriorly, mandibles, legs, and the apex of the abdomen, pale ferruginous. The head oblong and delicately striated; the eyes small and placed forward at the sides of the head. Thorax smooth and shining, with a few delicate scattered punctures anteriorly. Abdomen oblong-ovate, the apex pointed; thinly sprinkled with pale glittering hairs.

Hab. Bachian.

2. *MYRMICA PONEROIDES*. *M. fusco-nigra*, sparse pallide pilosula; mandibulis, antennis pedibusque ferrugineis; capite et thorace longitudinaliter striatim rugulosis.

Female. Length 2 lines. Dark fuscous, approaching blackness; the head and thorax subopaque, the nodes of the peduncle and the abdomen smooth and shining; the antennæ, clypeus, mandibles, and legs, ferruginous; the club of the flagellum three-jointed. The head and thorax covered with an irregular longitudinal rugose striation; a smooth shining line runs from the anterior sternum to the base of the clypeus, and a similar line divides the thorax down the middle. Abdomen oblong-ovate, the apex with glittering pale pubescence.

Hab. Bachian.

This species has the general appearance of a *Ponera*, and, were it not

that it has two nodes in the peduncle, would be mistaken for a species of that genus. I strongly suspect this to be the female of *M. oblonga*; they have a close specific resemblance.

3. *MYRMICA PUNCTATA*. *M. rufo-ferruginea*; capite thoraceque profunde punctatis; antennis pedibusque pallide ferrugineis.

Worker. Length $1\frac{1}{4}$ line. Reddish-brown, with the antennæ and legs pale rufo-testaceous; the antennæ nearly as long as the body; the head and thorax covered with large deep punctures; the metathorax with two slender acute spines; the abdomen globose, and very smooth and shining.

Hab. Bachian.

4. *MYRMICA MODESTA*. *M. rufo-pallida*; capite, thorace, et petiolo longitudinaliter punctato-striatis; metathorace spinis duabus acutis; abdomine fusciscente, basi pallido.

Worker. Length 2 lines. Pale rufous; the head, thorax, and nodes of the petiole, coarsely striated longitudinally, the striæ with regular, large shallow punctures; the mandibles, antennæ, and legs, rather paler than the thorax and head; the metathorax with two short acute spines. Abdomen ovate and fuscous, with the extreme base pale; slightly pubescent, and very smooth and shining.

Hab. Bachian.

5. *MYRMICA LÆVISSIMA*. *M. pallide flavescens, lævis, nitida*; antenarum clava flagelli biarticulata; metathorace mutico; abdomine nitido, apice fusciscente.

Worker. Length $1\frac{3}{4}$ line. Pale yellow, very smooth and shining; thinly sprinkled with erect pale hairs; the first node of the peduncle distinctly petiolated. Abdomen pale ferruginous, with the apical half fuscous.

Hab. Bachian.

Found in houses.

6. *MYRMICA POLITA*. *M. obscure ferruginea, lævis, tota nitidissima, nuda*; mandibulis, flagellis, pedibusque pallide ferrugineis.

Worker. Length $1\frac{1}{2}$ line. Obscurely ferruginous, entirely smooth, shining, and impunctate; the mandibles, flagellum, and legs rufo-testaceous; the scape of the antennæ fusco-ferruginous. The metathorax armed with two acute spines. Abdomen ovate, truncate at the base; the first node of the peduncle petiolated; both the nodes and the apex of the abdomen pale rufo-testaceous.

Hab. Bachian.

7. *MYRMICA CÆCA*. *M. pallide flavescens, lævis, nitida, clava flagelli triarticulata*; metathorace declivi, mutico.

Worker. Length $1\frac{3}{4}$ line. Pale yellow, entirely smooth and shining; the mandibles ferruginous; the antennæ a little longer than the head;

the eyes and ocelli obsolete; the thorax strangulated in the middle; the nodes of the peduncle transverse, rounded above; abdomen subovate, pointed at the apex.

Hab. Dory.

This small species, probably, is not a true *Myrmica*. I endeavoured to extract the palpi, but did not succeed; I must therefore retain it in the genus *Myrmica* until other specimens can be obtained for examination.

Gen. CREMATOGASTER, *Lund.*

1. CREMATOGASTER LABORIOSUS. *C.* pallide ferrugineus, lævis et nitidus; alis hyalinis iridescentibus; abdominis segmentorum marginibus fuscis.

Female. Length $3\frac{1}{2}$ lines. Pale ferruginous, smooth and shining; thorax oblong-ovate; the wings hyaline and iridescent, the nervures colourless. Abdomen oblong-ovate, with the apical margins of the segments fuscous; the nodes of the peduncle compressed and subovate.

Hab. Bachian.

2. CREMATOGASTER BICOLOR. *C.* pallide flavescens, lævis, nitidus; abdomine nigro.

Worker. Length $1\frac{1}{4}$ line. Honey-yellow; the abdomen black, the nodes of the peduncle yellow; very smooth and shining, the eyes black; the thorax flattened above; the metathorax with two acute spines. The abdomen heart-shaped, the peduncle attached to the basal segment above.

Hab. Bachian.

3. CREMATOGASTER OBSCURUS. *C.* pallide testaceus, lævis et nitidus; abdomine fusco.

Worker. Length $1\frac{1}{4}$ line. Pale testaceous, smooth and shining; the eyes black; the abdomen fuscous, slightly testaceous at the base; the thorax flattened above; the metathorax oblique, the lateral angles of the verge of the truncation subdentate. The abdomen heart-shaped, the apex pointed and recurved upwards.

Hab. Bachian.

4. CREMATOGASTER IRRITABILIS. *C.* castaneo-rufus, lævis nitidusque; abdomine nigerrimo, nitido; spinis metathoracis longis acutis.

Worker. Length 2 lines. Head, thorax, and legs chestnut-red; the metathorax, in some specimens blackish, very smooth and shining, with two stout, acute spines. Abdomen black, heart-shaped, pointed, recurved upwards at the apex; the first node of the peduncle petiolated, rather widest at the base and grooved in the middle, the second node subglobose.

Hab. Dory.

Gen. HEPTACONDYLUS, *Smith*.

1. HEPTACONDYLUS RUGOSUS. *H.* obscure fusco-ferrugineus; capite thoraceque longitudinaliter striatim rugulosis.

Worker. Length $2\frac{1}{4}$ lines. Dark fusco-ferruginous; the mandibles, flagellum, and apical joints of the tarsi paler. The head and thorax longitudinally striated, the former much more finely so than the latter; the flagellum six-jointed. The metathorax armed with two long acute spines; the legs pubescent. Abdomen ovate, smooth and shining, truncate at the base; the first node of the peduncle petiolated; both the nodes ovate and striated.

Hab. Bachian.

This species closely resembles *H. carinatus*, but the latter has the antennæ thicker and more pubescent, the head is smooth and shining, with a few irregular longitudinal carinæ; in the present species the head is closely striated.

Gen. PODOMYRMA, *Smith*.

1. Podomyrma basalis, *Smith, Proc. Linn. Soc.* iii. 147.

Hab. Amboyna; Aru; Dory.

2. PODOMYRMA NITIDA. *P.* obscure ferruginea, thorace abdomineque lævissimis lucidisque; capite longitudinaliter striato; femoribus medio incrassatis, basi tenuibus.

Worker. Length $2\frac{1}{2}$ lines. Obscurely ferruginous; the antennæ, mandibles, legs, and nodes of the peduncle clear ferruginous; the head longitudinally and delicately striated; the femora compressed and broadly dilated in the middle, very much attenuated at their base; the metathorax obliquely truncate, its sides longitudinally striated. Abdomen oblong-ovate, attenuated at the base and tapering to a point at the apex; the petiole elongate, the nodes oblong.

Hab. Dory.

3. PODOMYRMA SILVICOLA. *P.* ferruginea; capite thoraceque longitudinaliter striatim rugulosis; femoribus valde incrassatis, basi tenuissimis; abdomine nitido.

Worker. Length 4 lines. Rufo-ferruginous; the head and thorax with longitudinal grooves or striæ, those at the sides of the head punctured; the antennæ, mandibles, articulations of the legs and the tarsi pale ferruginous; the anterior margin of the thorax rounded, with the lateral angles produced into short spines; the femora incrassate in the middle, very much attenuated at the base. Abdomen with a beautiful silky gloss, caused by an extremely delicate aciculation, visible under a high magnifying power; the apical segments smooth and shining; the first node of the peduncle distinctly petiolated, with a small acute tooth above, the second node globose. (Plate 1. fig. 8.)

Hab. Bachian.

Found by Mr. Wallace running on trunks of trees in a dry forest.

4. *PODOMYRMA SIMILLIMA*. *P. fusco-ferruginea*; abdominis basi pallide testacea; femoribus medio valde incrassatis, basi tenuissimis.

Worker. Length $3\frac{1}{2}$ lines. Ferruginous; the head and thorax with coarse longitudinal grooves or striæ, those at the sides of the head punctured; the scape in front, the anterior tibiæ in front, and the intermediate and posterior tibiæ at their base in front pale ferruginous; the articulations of the legs and the apical joints of the tarsi bright ferruginous. The lateral margins of the thorax above raised; the anterior margin rounded, with the angles produced into short acute spines. Abdomen shining, the basal half pale testaceous, and very delicately longitudinally aciculate; the first node of the peduncle oblong, with a minute tooth at its base above, the second subovate.

Hab. Bachian.

This species very closely resembles *P. basalis* from Aru; it differs only in being larger, in having the legs dark, and the abdomen of a much more oblong form: it is probably a mere climatal variety.

Gen. PHEIDOLE, *Westw.*

1. *PHEIDOLE NOTABILIS*. *P. rufo-ferruginea*; capite maximo, in medio sulcato et punctato; metathorace spinis duabus acutis armato.

Worker major. Length 2 lines. Dark ferruginous; the head at least six times the size of the abdomen, subquadrate, with the angles rounded, strongly but not closely punctured, divided in the middle by a deeply-impressed longitudinal line; the mandibles very stout, curved, and edentate. The thorax hidden beneath the head; the metathorax with two acute long spines. Abdomen ovate, of a darker colour than the head.

Worker minor. Of the same colour as the worker major; the head of the ordinary size, and covered, as well as the thorax, with large semi-confluent punctures. The thorax armed with two long straight spines in front, and two curved ones on the metathorax. Abdomen rather narrower than the head, and very smooth and shining.

Hab. Bachian.

This is a most remarkable species: several are known to have workers with largely developed heads, but this surpasses every species, in that particular, with which I am acquainted; neither the large nor small workers have toothed mandibles; we have given a figure of each kind of worker. (Plate I. figs. 3, 4.)

2. *PHEIDOLE RUBRA*. *P. rufo-ferruginea*; capite maximo, longitudinaliter aciculato; antennis pedibusque pallide testaceis.

Worker major. Length 2 lines. Rufo-ferruginous, with the legs and antennæ pale testaceous; the head wider than the abdomen, longitudinally aciculate, the vertex transversely so; the eyes small and placed forward at the sides; the mandibles stout, with acute teeth on their inner margin; the club of the antennæ three-jointed. Thorax

short, narrowed behind, and deeply constricted in the middle. Abdomen much wider than the thorax.

Worker minor. Scarcely 1 line in length; of the same colour as the larger worker, entirely smooth and shining; the head much smaller in proportion than in the large worker, but still wider than the abdomen.

Hab. Bachian.

This species was found under rotten bark.

3. *PHEIDOLE PLAGIARIA.* *P. ferruginea*; capite maximo, in medio sulcato; abdomine apice fusco.

Worker major. Length 2 lines. Ferruginous, with the apical joints of the flagellum and the tarsi pale testaceous. Head very large, at least four times the size of the abdomen, longitudinally striated and deeply notched behind; the clypeus and mandibles smooth and shining. Thorax narrowest behind; the prothorax produced at the sides and subdentate; the femora incrassate in the middle, much narrowed at their base and apex; the metathorax armed with two short, acute spines. Abdomen fusco-ferruginous; with the extreme base pale.

Worker minor. One line in length, of the same colour as the large worker, but entirely smooth and shining; the antennæ and legs much more slender and elongate; the head much smaller in proportion; the eyes larger, and placed in the middle of the sides.

Hab. Bachian.

Found on a dead tree, pulling White Ants out of their holes, and carrying them away alive.

4. *PHEIDOLE PABULATOR.* *P. rufo-brunnea*; capite maximo, lævi et nitido; metathoracis spinis minutissimis; abdomine apice fusco.

Worker major. Length 3 lines. Reddish brown; the head very large, smooth, and shining, emarginate behind, with an impressed line in the centre running to the base of the clypeus; the face anteriorly and the mandibles pale ferruginous; the hinder portion of the head transversely striated, the anterior portion longitudinally so; the legs and antennæ paler than the body. The thorax narrowed behind, with two short, acute spines on the metathorax. Abdomen globose, in some specimens nearly black, smooth, and shining.

Worker minor. Length $1-1\frac{1}{2}$ line. Of the same colour as the *worker major*, but entirely smooth and shining; the head a little wider than the abdomen; the flagellum and legs pale ferruginous, and more elongate than in the large worker.

Hab. Bachian.

Taken crossing a pathway in the forest, the giant specimens surrounded by small ones, and often dragged along by them: the small ones sting.

5. *PHEIDOLE MEGACEPHALA.* *P. obscure ferruginea*; capite maximo in medio sulcato; metathorace bispinoso, abdomine ovato.

Worker. Length $6\frac{1}{2}$ lines. Dark ferruginous; head very large, sub-

quadrate, with the posterior angles rounded, deeply emarginate behind : a longitudinal channel runs from the emargination to the base of the clypeus, and in it, exactly opposite the eyes, is a single ocellus ; the head longitudinally striated anteriorly, not extending beyond the ocellus ; the hinder portion of the vertex is transversely striated, in front of which the head is delicately aciculate ; mandibles very stout, black at their margins, and armed with two stout teeth at their apex. Thorax transversely irregularly striated and rugose ; the scutellum prominent ; the metathorax with two acute spines. Abdomen ovate ; the apical half of the segments dark fusco-ferruginous.

Hab. Bachian.

Workers 4 lines long, apparently of this species, differ from the larger form in wanting the ocellus.

Gen. SOLENOPSIS, *Westw.*

1. *Solenopsis cephalotes*, *Smith, Proc. Linn. Soc.* iii. 149 (workers, major and minor).

All the sexes of this species were taken by Mr. Wallace from an underground nest. The large workers have the head enormously developed, and subquadrate ; their mandibles short, very stout, and curved, and their inner edge is perfectly smooth, without teeth ; the small workers have the head much smaller in proportion, being only a little wider than the abdomen ; their mandibles have a row of acute teeth. The female is of a pale ferruginous colour, with the head of the ordinary size, the mandibles toothed, the wings colourless. Thorax oblong-ovate ; the abdomen oblong-ovate, with the apical half fuscous. The club of the flagellum in this genus is composed of two joints ; the flagellum of the male tapering to a point.

Hab. Bachian.

This species, Mr. Wallace remarks, has a fiery sting.

Subfam. CRYPTOCERIDÆ, *Smith.*

Gen. ECHINOPLA, *Smith.*

1. *ECHINOPLA PRÆTEXTA*. *E. nigra* ; capite, thorace, et abdomine punctatis ; thorace oblongo, subquadrato ; pedunculo transverso ; mandibulis, antennis, pedibusque ferrugineis.

Worker. Length $2\frac{1}{2}$ lines. Black ; the head and abdomen shining, not so strongly punctured as the thorax, which is subopaque, and has a short, pale downy pubescence ; the head is also slightly pubescent on the vertex. The legs, antennæ, and mandibles ferruginous, the latter stout, and armed on their inner edge with acute teeth ; the antennæ longer than the thorax ; the scape two-thirds of the length of the flagellum, which is very slightly thickened towards the apex, the tip acute. The thorax oblong-quadrate, and as wide as the head ; the divisions between the pro-, meso-, and metathorax not discernible

above; the anterior angles acute, the posterior ones rounded. Abdomen ovate; the scale of the peduncle transverse, each extremity armed with four short teeth.

Hab. — ?

I place this very curious Ant in the genus *Echinopla* with some hesitation; it possesses, however, all the external characters of that genus, the form of the antennæ, mandibles, abdomen, and the scale of its peduncle resembling those of *Echinopla*. I have given a figure of this very interesting addition to the Cryptoceridæ. (Plate I. fig. 5.)

Gen. CATAULACUS, *Smith.*

1. CATAULACUS SETOSUS. *C. niger*; capite postice recto marginibus crenulatis; thorace aspere sculpto, spinis duabus acutis postice armato; abdomine ovato, basi emarginato.

Worker. Length 2 lines. Black; the head, thorax, and nodes of the peduncle rugose, the latter very coarsely so; the head with irregular longitudinal coarse striæ; the anterior margin of the clypeus widely but slightly emarginate, the lateral angles acute; the scape of the antennæ and tip of the flagellum rufo-testaceous. Thorax: the sides slightly narrowed to the base of the metathorax, and with a number of short acute denticulations; the two spines which arm the metathorax are stout, acute, and curved slightly inwards. Abdomen delicately shagreened, opaque, and sprinkled with short, erect, white setæ. The anterior tibiæ and tarsi, the intermediate tarsi, and apical joints of the posterior pair, rufo-testaceous; the femora rugose, and with a number of erect, short, rigid setæ. (Plate I. fig. 7.)

Hab. Bachian.

Gen. THYNNUS, *Fabr.*

1. THYNNUS ERRATICUS. *T. niger*, orbitis oculorum mandibulisque flavis; pedibus ferrugineis; alis fusco-hyalinis.

Male. Length 10 lines. Black; the head and thorax closely punctured; the scutellum and abdomen shining, and much more finely and distantly punctured; a line on the inner orbit of the eyes, a spot in the middle of the clypeus, and a V-shaped mark above it, yellow; the labrum and mandibles reddish-yellow; the clypeus truncate in front. Thorax: a widely interrupted yellow line on the collar; the mesothorax with four deeply-impressed longitudinal lines; the wings fusco-hyaline, darkest at their anterior margin and along the course of the nervures; the tibiæ, femora, and base of the anterior tarsi ferruginous. Abdomen conical, shining, and finely punctured.

Hab. Bachian.

Fam. MUTILLIDÆ, *Leach.*

1. *Mutilla suspiciosa*, *Smith*, *Linn. Proc. Soc.* ii. 84 ♂.

Hab. Borneo; Makassar; Amboyna; Bachian.

2. *MUTILLA MEROPS*. *M. capite abdomineque nigris; thorace rubro; abdominis segmento tertio fascia argenteo-pubescente ornato; maris alis cæruleo violaceoque splendide micantibus.*

Female. Length $6\frac{1}{2}$ lines. Black; the head rugose. Thorax oblong-quadrate, coarsely rugose; legs black, spinose, and thinly covered with pale glittering hairs, the tarsi most densely so. Abdomen intense velvety-black; the third segment covered above with short silvery-white hairs; the sides of the apical segment with a mixture of white and pale brownish hairs.

The *male* closely resembles the female, but has the eyes more deeply notched, the thorax shorter, and the wings dark fuscous with a violet lustre.

Hab. Bachian.

3. *MUTILLA IANTHEA*. *Fæmina.* *M. nigra; thorace rufo; abdominis segmentis argenteo pubescentibus, secundo maculis duabus albis signato, tertio fasciato.*

Mas. Thorace supra et abdomine rubris; alis fuscis, basi hyalinis.

Female. Length 4 lines. Black; the thorax blood-red, oblong-quadrate, closely and strongly punctured; the metathorax obliquely truncate; the mandibles ferruginous in the middle; the cheeks, legs, and sides with a glittering silvery-white pubescence. Abdomen covered with short black pubescence, the second segment with two minute snow-white spots, and the third with a basal band of the same colour.

Male. Length $7\frac{1}{4}$ lines. Black; the thorax above and the abdomen ferruginous; the wings brown, with their base hyaline; the three apical segments of the abdomen and the metathorax black.

Hab. Bachian.

4. *MUTILLA ANTHYLLA*. *M. nigra, pubescens; alis fuscis; abdomine ferrugineo, apice nigro.*

Male. Length 6 lines. Head, thorax, and legs black, coarsely punctured; the metathorax covered with large shallow punctures, with a groove in the centre of its base; the face covered with long cinereous pubescence; the tips of the mandibles ferruginous. The thorax and legs with a scattered cinereous pubescence; wings dark fuscous; the base of the posterior pair pale. Abdomen ferruginous and shining, with the apical margin of the fifth segment, and the sixth and seventh entirely, black.

Hab. Bachian.

5. *MUTILLA ZEBINA*. *M. capite abdomineque nigris; thorace sanguineo-rubro; abdominis segmenti secundi baseos maculis tribus ovatis fasciaque segmenti tertii albo pubescentibus.*

Female. Length $3\frac{1}{2}$ lines. Black; thorax and legs blood-red; the coxæ also red; the base of the mandibles and the tubercles at the insertion of the antennæ red. The head and thorax coarsely punctured, the latter oblong-quadrate; the antennæ, cheeks, and legs with

glittering silvery-white hairs. Abdomen: the base red; the second segment with three ovate maculæ, and the third with a fascia, of silvery-white pubescence; the fourth segment with a widely interrupted fascia; the apical segment shining and longitudinally striated.

Hab. Bachian.

6. *MUTILLA PENTHEUS*. *M.* capite abdomineque nigris; thorace pedibusque rubris, tibiis tarsisque fuscis; abdomine fascia argenteo-pubescente decorato.

Female. Length 3 lines. Head and abdomen black; the thorax and legs red; the coxæ, tips of the femora, tibiæ, and tarsi fuscous; the tubercles at the insertion of the antennæ, the apex of the scape, and the mandibles, rufo-testaceous; the head and thorax covered with deep, coarse, confluent punctures, and thinly sprinkled with pale glittering hairs; the thorax oblong-quadrate. Abdomen covered with short black pubescence; the third segment with a fascia of silvery-white pubescence; the apical segment longitudinally striated; the apex ferruginous.

Hab. Bachian.

7. *MUTILLA DORICHA*. *M.* nigra, pubescens; mandibulis pedibusque ferrugineis; abdominis segmenti secundi basi maculis duabus ovatis, tertii fasciaque argenteo-pubescentibus.

Female. Length 4 lines. Black: the legs ferruginous; the coxæ, tips of the femora, and apical joints of the tarsi black; the mandibles ferruginous at their base; the head and thorax covered with coarse confluent punctures, the latter oblong-quadrate; the hinder portion of the vertex thinly covered with short white pubescence. Abdomen: the second segment with an ovate spot of snow-white pubescence on each side at its base; the third segment with a fascia of the same colour; the apical segment longitudinally striated.

Hab. Dory.

Gen. *SCOLIA*, *Fabr.*

DIV. I. *The anterior wings with two submarginal cells, and one recurrent nervure.*

1. *Scolia quadriceps*, *Smith, Proc. Linn. Soc.* iii. 153.

Hab. Bachian; Aru.

2. *Scolia nitida*, *Smith, Proc. Linn. Soc.* iii. 152.

Hab. Bachian; Arn; Amboyua; Dory.

3. *Scolia fulgidipennis*, *Smith, Proc. Linn. Soc.* ii. 152.

Hab. Bachian; Aru.

4. *SCOLIA NIGERRIMA*. *S.* nitida, nigra; abdomine prismatico; alis fuscis violacco iridescentibus.

Female. Length 11 lines. Black; the head and thorax slightly shining;

the former punctured on the vertex and impunctate before the ocelli; the hinder margin of the vertex fringed with a mixture of fuscous and griseous hairs, the cheeks and sides of the face with whitish hair; the mandibles slightly rufo-piceous in the middle. The wings fuscous and with a violet iridescence, darkest along the anterior margin of the superior pair; the thorax is smooth above, except at the anterior margin of the mesothorax; the truncation of the metathorax covered with shining grey pile; the spine at the apex of the anterior tibiæ bent and pale testaceous, those on the posterior pair spatulate and pale at their apex; the legs very spinose. The abdomen very sparingly punctured, and with a beautiful blue and violet iridescence.

Hab. Dory.

5. *SCOLIA CULTA*. *S. nigra*, ferrugineo-hirta; alis flavo-hyalinis; tibiis tarsisque ferrugineis; abdomine fasciis tribus ochraceis.

Female. Length 13 lines. Black; the head and thorax strongly punctured. The scape, anterior margin of the clypeus, and the mandibles ferruginous, the latter with their margins and apex fuscous; the clypeus with several longitudinal impressions at its anterior margin; the head, thorax, and legs with long ferruginous pubescence. Thorax: the wings flavo-hyaline; the nervures ferruginous; the tegulæ rufo-testaceous; a slight fulvous cloud beyond the marginal cell; the tibiæ and tarsi ferruginous, strongly spinose; the inner spine at the apex of the posterior tibiæ spatulate; the posterior tibiæ black at their base beneath. Abdomen opaque: the first, second, and third segments with broad ochraceous fasciæ on their apical margins, that on the second widest, slightly emarginate in the middle, and with an indistinct fuscous spot on each side; the fourth segment has a narrow interrupted line on its apical margin, and the apical segment is entirely ochraceous; all the segments, except the basal one, fringed with rigid ferruginous pubescence; beneath shining, with a row of strong punctures near the apical margin of the segments, which are fringed with pale ferruginous pubescence.

Hab. Dory.

This fine species closely resembles *Tiphia radula* of Fabricius, with which probably *Elis Tasmaniensis* is synonymous, but those species belong to another division of the genus *Scolia*, in which the anterior wings have two recurrent nervures.

DIV. II. *The anterior wings with two submarginal cells and two recurrent nervures.*

6. *Scolia aureicollis*, *St. Farg. Hym.* iii. 499. ♀.

Hab. Bachian; Silhet; Ceylon; Philippine Islands.

7. *Scolia aurulenta*, *Smith, Cat. Hym. Ins.* pt. iii. 102. ♀.

Hab. Bachian; Philippine Islands; Celebes.

Div. III. *The anterior wings with three submarginal cells and one recurrent nervure.*

8. *SCOLIA MOROSA*. *S. nigra*, subnitida; abdomine nitido, alis fuscis viridi et violaceo micantibus.

Female. Length 15 lines. Black: the head and thorax subopaque, the head impunctate with the clypeus rugose, its anterior margin narrowly and obscurely rufo-piceous. The mesothorax sparingly punctured on the disk; wings very dark, and brilliantly adorned with prismatic colours; the legs covered with rigid spines. Abdomen: shining black, punctured, the middle of the segments very sparingly and finely so; the apical segment longitudinally strigose, the apical margin pale testaceous.

Hab. Amboyna.

9. *SCOLIA DUCALIS*. *S. nigra* nitida, capite supra basin antennarum flavo; alis nigris, violaceo micantibus.

Female. Length 14 lines. Shining, jet-black; the head, between the emargination of the eyes, and the posterior margin of the vertex, yellow: from the ocelli a small forked macula is directed forwards; the emargination of the eyes and the scapes of the antennæ shining and impunctate; the face and clypeus punctured and rugose; the scutellum and mesothorax not closely or strongly punctured, the latter with two impressed lines which run forward from the lateral angles of the scutellum, and terminate before reaching the anterior margin; a central line passes from the anterior margin and terminates at the middle of the disk, which is shining impunctate; the metathorax subopaque, closely punctured, and fringed laterally with black pubescence; the wings very dark and splendidly iridescent. Abdomen: the segments sparingly punctured in the middle, the apical margins fringed with black pubescence.

Hab. Kaisaa.

This species is closely allied to *S. Alecto* from Makassar, but is certainly a distinct species.

Div. IV. *The anterior wings with three submarginal cells and two recurrent nervures.*

10. *SCOLIA DIMIDIATA*, Guér. *Voy. Coq. Zool.* ii. pt. 2. p. 247. ♂.

Hab. Bachiou; Celebes; Amboyna; Isle of Bourou.

In this species the two recurrent nervures unite and pass in a single nervure into the second submarginal cell.

Gen. *TIPPIA*, Fabr.

1. *TIPPIA CARBONARIA*. *T. nitida* atra punctata, linea intermedia metathoracis lineam transversam excurrente; alis subhyalinis, stigmata atro.

Female. Length 7 lines. Jet-black and shining; the head strongly punctured; the face and cheek with a thin glittering silvery-white pubescence, the scape with a floccus of the same colour at the apex beneath; the mandibles dark ferruginous, with their apex black. The pro- and mesothorax strongly punctured; the metathorax smooth and shining, with three longitudinal carinæ, all of which extend from the base to the verge of the truncation; the latter opaque; the wings fusco-hyaline, with the nervures and stigma black. Abdomen: sparingly and delicately punctured, rather more strongly so towards the apex; the apical segment rugose, with the apical margin pale testaceous.

Hab. Bachian.

Fam. POMPILIDÆ, *Leach.*

Gen. POMPILUS, *Fabr.*

1. *Pompilus analis*, *Fabr. Syst. Piez.* p. 111. ♀.

Hab. Bachian; India; Java; Ceylon; Celebes.

2. *Pompilus Pelclerii*, *Guér. Voy. Coq. Zool.* ii. 257; *Atlas Ins.* no. 9. f. 2. ♀.

Hab. Amboyna.

3. POMPILUS DEPRÆDATOR. *P. niger*, vertice, tibiis tarsisque ferrugineis, alis flavo-hyalinis; abdominis segmento secundo et tertio fasciis basalibus ferrugineis.

Female. Length $8\frac{1}{2}$ lines. Black, the head above the insertion of the antennæ, the scape and two basal joints of the antennæ, the middle of the mandibles, and the palpi ferruginous; the vertex black. Thorax covered with very short black pubescence; the wings yellow, orange towards their base, the apical margins of the superior pair with a narrow fuscous border; the tibiæ, tarsi, and tips of the femora, ferruginous. Abdomen: the basal margins of the second and third segments, and a longitudinal stripe on the apical segment, ferruginous.

Male. Length $6\frac{1}{2}$ lines. Very closely resembles the female, but has the outer orbit of the eyes, the face and mandibles entirely yellow; the antennæ thicker with the joints sub-arcuate; the scutellum and postscutellum yellow; the collar yellow; the abdomen with an additional fascia and a yellow spot on the basal segment.

Hab. Bachian.

4. POMPILUS FULGIDIPENNIS. *P. cæruleo-niger*; abdomine iridescente; alis cæruleo violaccoque splendide micantibus.

Female. Length $8\frac{1}{4}$ lines. Blue-black, very bright in certain lights; the abdomen with changeable violet tints; the head with an impressed line running from the base of the clypeus to the anterior ocellus. The prothorax subquadrate, about the same length as the metathorax; the latter truncate, or slightly hollowed out behind to the form of the base

of the abdomen; the legs blue, the claw-joint of the tarsi black; wings very dark brown, with a splendid coppery and violet effulgence.

Hab. Bachian.

5. *POMPILUS OPULENTUS*. *P. ater*, capite, thorace, abdomineque argenteo maculatis; alis fuscis, apice nigro-fuscis.

Female. Length 5 lines. Black and shining; the face and cheeks covered with silvery pile; the mandibles rufo-piceous. Thorax: a spot on each side before the wings, another behind them, a line on each side of the metathorax, the pectus, trochanters beneath, and a spot on the sides beneath the wings, covered with a bright silvery pile; the tibiæ and tarsi pilose; the wings fuscous, with their apical margins darkest. Abdomen: the second and following segments with a silvery spot on each side at their basal margins.

Hab. Bachian.

Gen. *AGENIA*, *Schödte*.

1. *Agenia Atalanta*, *Smith, Proc. Linn. Soc.* ii. 94.

Hab. Bachian; Singapore.

2. *Agenia Amalthea*, *Smith, Proc. Linn. Soc.* iii. 155.

Hab. Bachian; Aru.

3. *AGENIA LUCILLA*. *A. obscure cyanea*, pube argenteo-albida; abdomine sub-petiolato; alis hyalinis iridescentibus.

Female. Length 5 lines. Obscure blue-black, with a thin silvery-white pubescence; the face with a dense silvery pile; the tips of the mandibles ferruginous. Thorax: the metathorax transversely striated, most strongly so towards the apex; wings colourless-hyaline and iridescent; the legs not spinose. Abdomen: covered with a bright changeable silvery pile, which is most dense towards the apex; the extreme apex pale testaceous, and the apical segment with a central longitudinal carina.

Hab. Amboyna.

Gen. *PRIOCNEMIS* (*Schödte*).

1. *Priocnemis fervidus*, *Smith, Proc. Linn. Soc.* iii. 156.

Hab. Dory; Aru.

The specimen from Dory differs from the Aru specimens in having the basal segment of the abdomen ferruginous, in addition to the red head, thorax, and legs; in all other particulars they are identical.

2. *Priocnemis flavipennis*, *Smith, Proc. Linn. Soc.* v. 79.

Hab. Bachian; Makassar (Celebes).

3. *PRIOCNEMIS CONFECTOR*. *P. niger*; abdomine pube aurea vestito, alis fuscis cupreo iridescentibus.

Female. Length 12 lines. Black; the head and thorax with a thin, long, black pubescence; the clypeus widely emarginate in front; the

wings dark brown with a bright coppery and violet iridescence, the base of the wings with tints of blue; the legs elongate, the posterior tibiæ strongly serrated exteriorly. Abdomen: the apical margin of the basal segment, and the whole of the following segments, densely clothed with short bright golden pubescence.

Hab. Bachian.

Gen. MYGNIMIA, *Smith.*

1. *Mygnimia Aspasia*, *Smith, Proc. Linn. Soc.* iii. 157.

Hab. Dory; Aru; Amboyna.

2. *Mygnimia ichneumoniformis* (*Pompilus*), *Guér. Voy. Coq. Zool.* ii. p. 258.

Hab. Dory; Amboyna.

3. MYGNIMIA FERRUGINEA. *M. ferruginea*; alis obscure fuscis purpureo iridescentibus.

Female. Length 14 lines. Ferruginous: the mandibles black at their apex. The pectus and two obscure longitudinal lines on the mesothorax fuscous; the wings dark brown with a purple iridescence, their base ferruginous; the metathorax transversely striated and truncate posteriorly; the legs spinose. Abdomen shining, and thinly covered with a silky sericeous pile.

Hab. Dory.

4. MYGNIMIA LACÆNA. *M. capite, thorace pedibusque ferrugineis*; metathorace et abdomine nigris; alis flavo-hyalinis.

Female. Length 8 lines. Black; the head, antennæ, pro- and mesothorax above, the femora, tibiæ, and tarsi ferruginous, the coxæ ferruginous at their apex beneath; the tips of the mandibles black; the metathorax transversely striated; the wings flavo-hyaline; the abdomen shining black, with the apical segment ferruginous.

Hab. Amboyna.

5. MYGNIMIA THIONE. *M. capite thoraceque nigris*; abdomine ferrugineo; alis obscure fuscis, purpureo iridescentibus.

Female. Length $6\frac{1}{2}$ lines. Head and thorax black; the antennæ, clypeus anteriorly, the mandibles, and palpi ferruginous; the femora, tibiæ, and tarsi ferruginous; wings dark fuscous with a violet iridescence. Abdomen ferruginous and thinly covered with a fine silky pile.

Hab. Amboyna.

Fam. SPHEGIDÆ, *Leach.*

Gen. SPHEX, *Fabr.*

1. *Sphex argentata*, *Dahlb. Hym. Europ.* i. 25.

Hab. India; Sumatra; Java; Aru; Celebes; Congo; Sierra Leone; Bachian.

2. *Sphex diabolicus*, *Smith, Proc. Linn. Soc.* ii. 100.

Hab. Bachian; Borneo.

3. *Sphex sericea*, *Fabr. Syst. Piez.* 211.

Hab. Bachian; Aru; Malacca; Borneo; Java; Philippines.

4. *Sphex formosa*, *Smith, Cat. Hym. Ins.* iv. 254.

Hab. Bachian; Amboyna; Ceram.

The specimens from Ceram have the face and thorax clothed with golden pubescence, those from Amboyna agree with them in that particular; whilst the Bachian examples have the pubescence silvery with a golden tinge.

5. *SPHEX TYRANNICA*. *S. nigra*; capite thoraceque pube nigra vestitis; alis brunneis cupreo iridescentibus.

Female. Length 13–14 lines. Black; the head and thorax clothed with short black pubescence, the vertex and the scutellum naked and shining; the anterior margin of the clypeus rounded; the mandibles stout, and acute at their apex, with an acute tooth about the middle of their inner margin; the legs stout, the tibiæ and tarsi spinose; wings dark brown, their apical margins with a darker border. Abdomen smooth and shining; the petiole short.

Hab. Bachian; Kaisaa.

6. *SPHEX JACULATOR*. *S. nigra*; facie pube argentea vestita; alis fuscis; abdomine nigro-cæruleo.

Male. Length 7 lines. Black; the head and thorax with a thin griseous pubescence; the face covered with silvery pile; the mandibles pale rufo-testaceous, their tips black. Thorax slightly shining on the disk; the legs shining; the wings fuscous, the nervures black. The abdomen black with a blue tinge; the extreme base of the first segment at its point of attachment to the petiole rufo-piceous.

Hab. Bachian.

7. *SPHEX MOROSA*. *S. nigra*; abdomine nigro-cæruleo, lævigato, nitido; alis brunneis cupreo iridescentibus.

Male. Length 10 lines. Black; the face covered with silvery pile and thickly clothed with rigid black hairs; the vertex shining and thinly sprinkled, as well as the cheeks, with black pubescence. The wings dark brown with a coppery iridescence; the thorax thinly covered with black pubescence; the claws bidentate beneath; the abdomen blue-black, its petiole nearly as long as the first and second segment.

Hab. Bachian.

8. *SPHEX VOLATILIS*. *S. nigra*; facie pube aurea vestita; alis flavo-hyalinis; abdomine nigro-cæruleo, pedibus ferrugineis.

Male. Length 9 lines. Black, the femora, tibiæ, and tarsi ferruginous, with the tips of the claws black. The face covered with golden pile and sprinkled with black hairs; the scape of the antennæ ferruginous at its apex in front. Thorax slightly shining on the disk and thinly clothed with black pubescence; the wings flavo-hyaline, the nervures

ferruginous, the tegulae rufo-testaceous. Abdomen black with a blue tinge; the petiole the length of the second segment, and slightly curved.

Hab. Bachian.

Gen. PELOPÆUS, *Latr.*

1. *Pelopæus Madraspatanus*, *Fabr. Syst. Piez.* 203.

Hab. Amboyna; Malabar; Madras; Nepal; Bengal.

2. *Pelopæus lætus*, *Smith, Cat. Hym. Ins.* iv. 229, pl. 7. fig. 1.

Hab. Bachian; Ceram; Australia (Swan River; Macintyre River).

3. PELOPÆUS FABRICATOR. *P. cæruleo-viridis*, abdomine viridescenti; alis fuscis, basi subhyalinis.

Female. Length 9 lines. Green, with shades of blue in different lights; the vertex and abdomen smooth and shining, with purple tints; the face covered with silvery-white pubescence; the thorax transversely striated and with a thin cinereous pubescence; wings fuscous with a coppery effulgence, their base subhyaline. Abdomen smooth and shining with a beautiful prismatic lustre.

Hab. Bachian.

4. PELOPÆUS UNIFASCIATUS. *P. niger*, clypeo scapoque antice flavis; scutello et segmento secundo fascia apicali flava; alis hyalinis; pedibus ferrugineis.

Female. Length $8\frac{1}{2}$ lines. Black; the scape in front and a transverse spot on the clypeus, yellow; the tips of the mandibles and the legs ferruginous; the thorax transversely striated; a narrow line on the collar, the tubercles, and a transverse line on the scutellum yellow; the wings subhyaline, with their apical margins fuscous. Abdomen obscurely chalybeous, with a yellow ovate spot in the middle of the basal segment, and a yellow fascia on the apical margin of the third segment.

Hab. Bachian.

Fam. LARRIDÆ, *Leach.*

Gen. LARRADA, *Smith.*

1. *Larrada aurulenta*, *Fabr. Mant.* i. 274.

Liris aurata, *Fabr. Syst. Piez.* p. 228.

Hab. Bachian; India; Java; Sumatra; Celebes; Philippine Islands; China; Cape of Good Hope; Gambia.

2. *Larrada modesta*, *Smith, Proc. Linn. Soc.* iii. 159.

3. LARRADA VINDEX. *L. nigra*; facie mesothoracis metathoracisque aurato pubescentibus, abdominis marginibus argentato pilo fasciatis; alis subhyalinis.

Female. Length 9 lines. Black; the face and thorax above clothed with golden-coloured pubescence; the legs black, with the posterior

tibiæ clothed with golden pubescence outside; wings fulvo-hyaline, the nervures black. Abdomen: the apical margins of the segments with fasciæ of silvery pile.

Hab. Bachian.

The specimen described is one that had been long exposed when taken, the wings being ragged and most of the golden pubescence rubbed off.

4. LARRADA TARSATA. *L. nigra*, antennis, mandibulis pedibusque rufis; alis fuscis.

Female. Length $7\frac{1}{2}$ lines. Black; the face with golden pubescence, the antennæ, mandibles, palpi, and legs ferruginous; the coxæ, trochanters, and three apical joints of the tarsi black; the five apical joints of the flagellum fuscous above; the spines on the tibiæ and tarsi black; wings fuscous, the posterior pair palest. Abdomen shining.

Hab. Bachian.

I suspect this insect, if in fine condition, would have a pale golden pubescence on the thorax, and that the abdomen would have silvery pile on the apical margins of the segments.

Gen. TACHYTES, *Panz.*

1. TACHYTES SEDULUS. *T. niger*; abdominis segmentorum marginibus argentatis.

Female. Length 6 lines. Black; the face covered with silvery pile and sprinkled with long white hairs, the cheeks having also a silvery pile; the mandibles ferruginous, their apex piceous. Thorax closely and finely punctured, the collar and tubercles silvery; the wings hyaline, their nervures testaceous; the costæ and tegulæ piceous; the tibiæ and tarsi with rufo-testaceous spines; the metathorax thinly clothed with cinereous pubescence. Abdomen shining, with a blue iridescence in certain lights; the apical margins of the segments with interrupted silvery fasciæ.

Hab. Kaisaa.

Gen. LARRA, *Fabr.*

1. LARRA MODESTA. *L. nigra*; abdomine pulchre prismatico, maculis fasciisque variis flavis ornato.

Female. Length $3\frac{3}{4}$ lines. Black; a silvery-white pubescence on the face and clypeus, that on the vertex tawny; an abbreviated white line on the inner orbit of the eyes, which curves round beneath the insertion of each antenna, the scape white in front, the flagellum fulvous beneath. Thorax slightly shining; a narrow line on the collar, the tubercles, a spot in front on the tegulæ, and an interrupted line behind them, which runs down the side and along the base of the scutellum, yellow; a line on the anterior and intermediate femora beneath, the anterior tibiæ in front, the intermediate and posterior pair at their

base outside, and the anterior tarsi, yellow: the outside of the basal joint of the latter black. Abdomen: smooth and shining, reflecting prismatic colours in different lights; the apical margins of the first and three following segments with narrow yellow fasciæ.

Hab. Bachian.

Fam. BEMBICIDÆ, *Westw.*

Gen. BEMBEX, *Fabr.*

1. *Bembex melancholica*, *Smith, Cat. Hym. Ins.* iv. 328. 47.

Hab. Bachian; Aru; Sumatra; Singapore; Madras.

Fam. CRABRONIDÆ, *Leach.*

Gen. TRYPOXYLON, *Latr.*

1. *TRYPOXYLON PROVIDUM*. *T. nigrum*; clypeo argentato-pubescente; alis hyalinis iridescentibus.

Female. Length 10 lines. Black, smooth and shining; the clypeus, face, and emargination of the eyes with bright silvery pubescence; the clypeus produced and rounded anteriorly; the mandibles ferruginous, with their base yellow. The thorax covered with long silvery-white pubescence beneath and on the sides; the metathorax with a sub-enclosed space at its base, which has a central longitudinal shallow groove transversely wrinkled; at the verge of the enclosed space is a deep fossulet which narrows and runs to the insertion of the petiole of the abdomen; the wings hyaline and iridescent; the anterior tibiæ fulvous in front, and the tarsi pale testaceous; the basal joint of the intermediate tarsi pale. Abdomen covered with a thin fine changeable silvery pile; the petiole elongate.

Hab. Bachian.

Gen. GORYTES, *Latr.*

1. *GORYTES BASALIS*. *G. niger*; abdominis basi, mandibulis pedibusque ferrugineis; alis hyalinis, marginibus anterioribus fuscis.

Female. Length $4\frac{1}{2}$ lines. Black; the head delicately punctured; the clypeus rugose; the sides of the face and the cheeks with a silvery pile; the mandibles ferruginous in the middle, longitudinally striated, and bidentate at the apex; the antennæ obscurely fulvous beneath. Thorax: closely punctured and thinly covered with cinereous pile; the metathorax coarsely rugose, the enclosed space at its base longitudinally striated; the wings hyaline, with a dark cloud in the marginal cell; the legs ferruginous, with the intermediate and posterior coxæ black behind. Abdomen smooth, shining, and covered with a changeable silvery pile; the first segment and base of the second above ferruginous; both entirely red beneath.

Hab. Amboyna.

Genus CERCERIS, *Latr.*

1. CERCERIS PRÆDATA. *C. nigra, flavo-variegata*; abdomine fasciis duabus flavis; pedibus flavo-ferrugineis.

Female. Length $4\frac{1}{4}$ lines. Black, punctured and shining; the head before the insertion of the antennæ, the scape and mandibles, yellow; the latter black at the apex. Thorax: two ovate spots on the prothorax, the tegulæ, and postscutellum, yellow; the wings subhyaline, with a fuscous cloud at the apex of the superior pair; the legs ferruginous, with yellow stains. Abdomen: the first segment with a narrow yellow band on its apical margin, the second with a transverse macula at the base, and a waved narrow yellow line at its apical margin, the third and fifth yellow, the sides and apical margin of the fourth narrowly reddish yellow, the fifth with a triangular black spot at its base, the sixth ferruginous; beneath reddish yellow, the margins of all the segments rufo-piceous.

Hab. Bachian.

Group Solitary Wasps.

Fam. EUMENIDÆ, *Westw.*Gen. EUMENES, *Latr.*

1. *Eumenes circinalis*, *Fabr. Syst. Piez.* p. 286.

Hab. Bachian; Kaisaa; Celebes; Sumatra; India; Java.

2. *Eumenes arcuatus*, *Fabr. Syst. Piez.* p. 287.

Hab. Bachian; Australia; New Guinea (Dory and Triton Bay); Key Island; Singapore; Siam.

3. *Eumenes Praslina*, *Guér. Voy. Coq. Zool.* ii. 267, pl. 9. fig. 7. ♀.

Hab. Gilolo; Kaisaa; New Ireland (Port Praslin); Key Island; Amboyna.

I agree with M. Saussure in considering *Eumenes Praslina* and *E. Blanchardi* most probably merely more highly coloured varieties of *E. arcuatus*.

4. *Eumenes esuriens*, *Fabr. Syst. Piez.* p. 286.

Hab. Bachian; Sierra Leone; Gambia; Senegal; Egypt; New Guinea; Australia; India (Mysore); China.

5. *Eumenes tricolor*, *Smith, Proc. Linn. Soc.* vol. v. p. 87.

Hab. Bachian; Makassar (Celebes).

6. EUMENES EXIMIUS. *E. niger, flavo pictus*; mesothoracis fasciis duabus flavis; alis flavescentibus.

Female. Length $10\frac{1}{2}$ lines. Black; the clypeus, a line behind the eyes, another at their inner orbit, terminating in their emargination, the scape in front, a line between the antennæ, and a minute spot outside of the posterior ocelli, yellow. Thorax: a line on the collar, two longitudinal ones on the mesothorax, a triangular spot beneath the

wings, two spots on each tegula, two small ones on the scutellum, and another on each side of the metathorax, at its base, yellow; the wings flavo-hyaline, the nervures ferruginous; the tarsi and tibiæ ferruginous, the latter yellow in front. Abdomen: the petiole as long as the thorax, with two minute yellow spots at its apex; the apical margins of all the segments with a narrow reddish-yellow border, and two yellow spots at the base of the second segment.

Hab. Bachian.

This species belongs to the division *Parumenes* of Saussure, and resembles the *E. quadrispinosus* of that author; but the petiole is considerably longer, and the four spines which characterize that species are wanting on the metathorax.

7. *EUMENES AGILIS*. *E. niger*; capite thoraceque flavo variegatis; abdomine nitido.

Female. Length 7 lines. Black; a trifurcate spot at the base of the clypeus, an oblong spot between the antennæ, a narrow line on the lower margin of the sinus of the eyes, and an abbreviated line behind them, yellow; the clypeus produced and notched at its apex. Thorax: the anterior margin of the prothorax, an oblique line on each side of the mesothorax, a small spot beneath the wings, a minute spot behind the tegulæ, two on the scutellum, the postscutellum and the metathorax behind, yellow; wings fuscous, darkest along their anterior margins, and having a purple iridescence; legs and abdomen totally black.

Hab. Amboyna.

8. *EUMENES BLANDUS*. *E. niger*, flavo-fulvo variegatus; capite thoraceque dense punctatis, abdomine sublævigato, nitido.

Female. Length 5 lines. Black; the clypeus, a spot above it, the base of the scape in front, a narrow abbreviated line behind the eyes, orange-yellow; the mandibles ferruginous. Thorax: the prothorax anteriorly, a spot beneath the wings, a line on each side of the mesothorax, the tegulæ, a narrow line behind them, the postscutellum and the metathorax, orange-yellow; a black line in the middle of the metathorax; the wings fusco-hyaline and iridescent; the tibiæ, tarsi, and tips of the femora orange-yellow. Abdomen: a spot on each side of the petiole, a subovate spot on each side of the second segment, and its apical margin orange-yellow.

Hab. Bachian.

9. *EUMENES POLITUS*. *E. niger*, flavo-variegatus; antennis antice pedibusque ferrugineis; abdomine lævigato, nitido.

Female. Length 6 lines. Black; head and thorax closely punctured and subopaque, the abdomen smooth and shining, the petiole with a few delicate punctures. The clypeus, a line above it extending to the anterior ocellus, the emargination of the eyes and a stripe behind them, bright yellow; the scape in front yellow, the flagellum ferru-

ginous beneath. Thorax: the anterior margin of the prothorax, an ovate spot beneath the wings, two narrow abbreviated lines on the mesothorax anteriorly, the tegulæ and a minute spot behind them, two spots on the scutellum, and one arcuate line on each side of the metathorax bright yellow; the legs ferruginous, the anterior tibiæ yellow in front. Abdomen: the apical margin of the petiole and of the two following segments yellow.

Hab. Bachian.

Gen. RHYNCHIUM, *Spin.*

1. *Rhynchium hæmorrhoidale*, *Fabr. Syst. Piez.* p. 259.

Hab. Bachian; Amboyna; Dory; Cape of Good Hope; Malanca; Singapore; India; Java.

Having had the opportunity of examining numerous specimens of this species from all the above localities, I have found it to be most inconstant in colouring: its varieties include the *R. sanguineum*, and *R. parentissimum*; the females from Bachian are black, with a little red on the head and prothorax.

2. *Rhynchium metallicum*, *Sauss. Mon. Guêpes Sol.* p. 114.

Hab. India; Bachian; Sarawak.

3. RHYNCHIUM IRIDIPENNE. *R. nigrum*, capite thoraceque rude punctatis; alis fuscis et violaceo splendide micantibus.

Female. Length 7 lines. Black; the head and thorax rugose, the abdomen rather finely punctured; the clypeus much produced and rather widely emarginate at the apex. Thorax elongate; the metathorax truncate with the lateral margins rounded; the wings fuscous, with a splendid violet iridescence. Abdomen with a thin, short cinereous pubescence.

Hab. Amboyna.

This insect resembles the *R. metallicum* of Saussure, but is much more elongate and more coarsely sculptured.

4. RHYNCHIUM RUBROPICTUM. *R. nigrum*, capite thoraceque rubro variegatis; alis flavis, basi nigris; abdomine rubro fasciato.

Female. Length 8½ lines. Black; the head and thorax closely and rather finely punctured; the head brick-red, black behind, and having a black spot in front of the ocelli, and another in the sinus of the eyes; the antennæ and mandibles red. Thorax: the prothorax, two oblique stripes on the mesothorax, which unite a little before reaching the scutellum, the latter as well as the tegulæ and anterior legs, brick-red; the wings yellow, with their base black. Abdomen: opaque-black, with a red band on the apical margins of all the segments; the apical segment entirely red; beneath black.

Male. This sex differs in being smaller, in having the head black with a narrow line on the inner and outer orbits of the eyes, and in the clypeus being yellow; the mesothorax entirely black; otherwise, it is like the female.

I have separated this insect from *R. hæmorrhoidale* with some doubt of its being an extreme variety of that species; if so, it is distinguishable by its much more delicate punctuation and higher colouring.

Gen. ODYNERUS, *Latr.*

1. *Odynerus petiolatus*, *Smith, Proc. Linn. Soc.* iii. 164. 1. ♀.

The *male* received from Dory is very like the female, and has the abdomen similarly petiolated; it differs in having the clypeus, scape and mandibles yellow; the yellow spots on the thorax are much larger and brighter. In other respects the sexes are identical.

Hab. Dory; Aru.

Gen. ALASTOR, *St. Farg.*

1. ALASTOR COGNATUS. *A. capite thoraceque nigris; abdomine aurantiaco-rubro, primo segmento nigro; alis fuscis.*

Male. Length $5\frac{1}{2}$ lines. Head and thorax black, opaque and rugose; the clypeus covered with silvery-white pubescence, deeply emarginate and bidentate: an elevated carina runs from each tooth halfway up the clypeus; a yellow spot between the antennæ; wings dark fuscous. Abdomen orange red, with the basal segment opaque-black.

Hab. Dory.

This insect exactly resembles the *A. fraternus* of Saussure: it may possibly be the male of that species.

Group Social Wasps.

Fam. VESPIDÆ, *Leach.*

Gen. POLISTES, *Latr.*

1. *Polistes tepidus*, *Fabr. Syst. Piez.* p. 271.

Hab. Bachian; Key Island; Solomon Islands; New Guinea; Australia.

2. *Polistes Picteti*, *Sauss. Mon. Guêpes Sot.* p. 69, tab. 6. fig. 8.

Hab. Amboyna; Australia; Ceram; Celebes.

3. POLISTES COLONICUS. *P. rufus, flavoque varius; metathorace abdomineque basi nigris.*

Male. Length $8\frac{1}{2}$ lines. Rufo-ferruginous; the face pale ferruginous, and densely covered with glittering silvery pile. The metathorax, and posterior portion of the mesothorax beneath, black; the wings fulvohyaline with the nervures ferruginous; the posterior coxæ and basal segment of the abdomen black, the posterior portion of the basal segment rufous, with the apical margin bordered with yellow; the apical margins of the following segments narrowly and obscurely yellowish.

Hab. Amboyna.

4. *POLISTES SIMULATUS*. *P. rufo-ferrugineus*; capite thoraceque flavo variis; segmentis abdominis flavo marginatis.

Female. Length 8 lines. Rufo-ferruginous; the orbits of the eyes pale; the anterior margin of the clypeus angulated. Thorax: the posterior margin of the prothorax, a spot beneath the wings, a line on the sides above each coxa, the anterior pair in front, the tegulæ, postscutellum, and two longitudinal stripes on the metathorax, yellowish-white; the metathorax faintly striated obliquely on each side from the centre; wings hyaline and iridescent, with a fuscous stripe in the marginal cell; the tips of the femora and the claw-joint of the anterior tarsi white. Abdomen: the apical margins of the four basal segments with narrow white marginal fasciæ.

The *male* differs only in having the face covered with silvery pile.

Hab. Kaisaa; Bachian.

This species closely resembles *P. elegans* from Key Island, from which it differs in being much less decorated with yellow markings on the head and thorax, but has an additional fascia on the abdomen; it may, however, be an extreme variety.

5. *POLISTES MULTIPICTUS*. *P. niger, flavo-ferrugineo varius*; alis subhyalinis, nervis ferrugineis.

Female. Length 6 lines. Head black; the cheeks, the outer orbit of the eyes, two oblique spots on the vertex behind the ocelli, a line on the inner orbit of the eyes, terminating in their emargination; the mandibles, clypeus, antennæ, and a transverse line above their insertion, ferruginous. Thorax: the prothorax, an oblong spot on the mesothorax, the scutellum, femora, tibiæ, and tarsi, ferruginous; the posterior margin of the prothorax narrowly, the postscutellum, and two longitudinal stripes on the metathorax, yellow; the wings hyaline; the nervures ferruginous. Abdomen: the first segment black, with the apical margin yellow; the second ferruginous, the base black, and the apex with a yellow marginal fascia; the third and fourth black, with yellow marginal fasciæ; the fifth and sixth yellow.

Hab. Amboyna.

Gen. ICARIA, *Sauss.*

1. *ICARIA CONSERVATOR*. *I. capite thoraceque nigris; clypei margine antico mandibulis basi, fronte ante oculos flavo maculatis; abdomine pedibusque fusco-ferrugineis; abdominis annulis flavo marginatis.*

Female. Length 5 lines. Head and thorax black; the legs and abdomen fusco-ferruginous; an interrupted line on the anterior margin of the clypeus, a spot at the base of the mandibles, a line on the inner orbit of the eyes, and the scape in front, yellow; the wings hyaline, their nervures ferruginous. Abdomen: the basal segment campanulate; a yellow fascia on the apical margin of all the segments.

Hab. Dory.

2. *ICARIA IMPETUOSA*. *I. ferruginea*; flavo multidecorata; alis hyalinis, margine antico fusco maculato.

Female. Length 4 lines. Ferruginous; the mandibles, clypeus, face on each side, the scape of the antennæ in front, and a spot between them, yellow; a black spot at the base of the clypeus. Thorax: the prothorax anteriorly, the tegulæ, scutellum, postscutellum, and the middle of the metathorax, yellow; a black line down the middle of metathorax; the legs variegated with yellow; wings hyaline, their nervures ferruginous, with a fuscous macula in the marginal cell. Abdomen: a narrow yellow band on the apical margin of the petiole, and an oblique spot on each side of the base of the first segment, its apical margin having a broad yellow fascia.

Hab. Bachian; Amboyna.

In specimens from Amboyna the yellow is almost obsolete in the metathorax.

Gen. PACHYMENES, *Sauss.*

1. *PACHYMENES ELEGANS*. *P. læte viridis*; clypeo pube argentatobalva; alis subhyalinis, marginibus anticis fuscis.

Female. Length 6 lines. Bright metallic-green; the head and thorax with coppery tints, and, as well as the basal segments of the abdomen, closely and strongly punctured; the second and following segments finely punctured. The antennæ and mandibles black; the latter green at their base. The metathorax rounded behind, with deep central depression. Wings subhyaline; the anterior margin of the superior pair fuscous, with a purple tinge. The basal segment of the abdomen campanulate and brassy-green; the following segments blue-green.

Hab. Bachian.

This species has a general resemblance to *Pachymenes viridis* from Aru, but in the present species the basal segment is oblong, whilst in the Aru insect it is transverse.

Gen. VESPA, *Linn.*

1. *Vespa affinis*, *Fabr. Syst. Piez.* p. 254 (var. *V. cincta*?).

Hab. Bachian; Celebes; Malacca; Singapore; India; China.

2. *Vespa Philippinensis*, *Sauss. Mon. Guépes, Soc.* p. 148.

Hab. Amboyna; Philippines.

Fam. ANDRENIDÆ, *Leach.*

Gen. PROSOPIS, *Fabr.*

1. *PROSOPIS EXIMIUS*. *P. capite thoraceque nigris, flavo pulchre pictis; pedibus abdomineque ferrugineis, flavo plagatis.*

Female. Length $4\frac{1}{2}$ lines. Head and thorax black, closely and finely punctured; a yellow stripe at the inner and outer orbits of the eyes, another running from the anterior ocellus to the apex of the clypeus; a yellow spot at the base of the mandibles and another on the labrum; a deeply impressed line between the ocelli and margin of the eyes. Thorax: the collar, four longitudinal stripes on the mesothorax, the sides of the scutellum, the postscutellum, and metathorax, yellow; the latter with an angular black spot on each side; the thorax beneath and at the sides yellow; an ovate black spot on each side of the pectus, and an oblong one on the sides behind the wings; the legs pale ferruginous, spotted with yellow. Abdomen pale ferruginous; the basal segment with a yellow stripe on each side in the middle; the second and third segments have a yellow line on each side at their basal margins; the three apical segments fuscous. The wings subhyaline; their apical margins faintly clouded.

Hab. Bachian.

Gen. NOMIA, *Latr.*

1. *Nomia formosa*, *Smith, Proc. Linn. Soc.* iii. 5. ♀.

Hab. Bachian; Malacca.

The male of this species is distinguished by having two acute spines on the postscutellum.

2. *Nomia halictoides*, *Smith, Proc. Linn. Soc.* iv. 6.

Hab. Bachian; Celebes.

3. *Nomia cineta*, *Smith, Proc. Linn. Soc.* iii. 132.

Hab. Bachian; Key Island.

Fam. CUCULINÆ, *Latr.*

Gen. STELIS, *Panz.*

1. *Stelis abdominalis*, *Smith, Proc. Linn. Soc.* iv. 7. ♂.

Hab. Celebes; Bachian.

A single example of the female was taken by Mr. Wallace; this sex differs from the male only in being larger. I have not satisfied myself that this really belongs to the genus *Stelis*; it is, however, certainly a parasitic insect, the female not possessing any polleniferous organs, and is either a *Stelis*, or must constitute the type of a new allied genus.

Gen. CÆLIOXYS, *Latr.*

1. *CÆLIOXYS INTRUDENS*. *C. nigra*; capite thoraceque rude punctatis; facie pube pallida vestita; alis fuscis basi hyalinis.

Female. Length $7\frac{1}{2}$ lines. Black: the head and thorax with deep confluent punctures; the abdomen shining and much more finely and

distinctly punctured. The face with a prominent longitudinal ridge which extends from the anterior ocellus to the apical margin of the clypeus; the sides of the face with a pale golden pubescence; the cheeks have also a dense pale pubescence. The thorax has an obtuse tooth on each side of the clypeus; the sides, beneath, and on the coxæ and femora beneath, a dense short whitish pubescence. Wings fuscous; their base hyaline. Abdomen conical, elongate, tapering gradually from the base to the apex, which is acute; the apical segment has the ventral plate longer than the superior one, it being lauceolate and not notched at the sides near the apex.

Hab. Bachian.

Although I have characterized the genus *Caelioxys* as having the eyes pubescent, yet amongst the exotic species, especially those from Africa, there will be found species with the eyes naked: the present species belongs to the former division.

Fam. DASYGASTRÆ.

Gen. MEGACHILE, *Latr.*

1. MEGACHILE PLUTO. *M. maxima* adhuc cognita, atterima; genis abdominisque segmento basali pube vestitis; mandibulis elongatis, apice tridentatis; alis fuscis.

Female. Length 18 lines. Intense opaque-black; the head rather wider than the thorax; the clypeus slightly produced and subtridentate, and shining black; the cheeks covered with white pubescence; the labrum elongate, thinly sprinkled with erect rigid hairs; the mandibles elongate, tridentate at their apex. Thorax thickly clothed with short erect black pubescence. Wings fuscous and shining; legs stout; the tibiæ rugged exteriorly. Abdomen covered with short black pubescence above, beneath with decumbent rigid pubescence; the basal segment clothed above with white pubescence.

Hab. Bachian.

This species is the giant of the genus to which it belongs, and is the grandest addition which Mr. Wallace has made to our knowledge of the family *Apidæ*. We have given a life-size figure of this remarkable bee. Only a single specimen has been captured, and that a female; it is to be hoped that Mr. Wallace will make his discovery complete by the capture of a male. (Plate . fig. 1.)

2. MEGACHILE LACHESIS. *M. atterima*, pube nigra dense vestita; alis nigro-fuscis.

Female. Length $9\frac{1}{2}$ lines. Opaque-black, densely pubescent; mandibles very stout, longitudinally striated, and armed with four blunt teeth. The wings dark fuscous, with a violet iridescence. Abdomen clothed

above with short black pubescence; beneath, the pubescence is long, rigid, decumbent, and shining.

Hab. Bachian; Amboyna.

3. MEGACHILE CLOTHO. *M. nigra*; mandibulis fortibus et porrectis; alis fuscis.

Female. Length 12 lines. Deep opaque-black; the anterior margin of the clypeus transverse, with an angular tubercle in the middle; mandibles stout and porrect; the labrum oblong, rounded in front, and fringed with a row of rigid hairs. Thorax densely pubescent. The wings dark fuscous with a violet iridescence. Abdomen black; the basal segment above with a dense sooty-black pubescence.

Hab. Bachian.

This insect very closely resembles *M. tuberculata*, the dark wings being almost the only difference.

4. MEGACHILE ALECTO. *M. nigra*; clypeo antice pube alba vestito; alis fuscis.

Male. Length 6 lines. Black, clothed with black pubescence; the anterior margin of the clypeus with a yellowish-white pubescence, a tuft of the same colour between the antennæ; the pectus has a griseous pubescence. The wings dark brown with a violet iridescence. Abdomen: the apex obliquely truncate; the margin of the terminal segment notched in the middle, from which a central carina runs to the base of the segment.

Hab. Dory.

M. Guérin has described a species in the 'Iconographie du Règne Animal,' which is closely allied to the present species; it is from the Isles of Madagascar and Bourbon, and named *M. mystacea*.

5. MEGACHILE FOLIATA. *M. nigra*; capite thoraceque dense punctatis et pube nigra vestitis; segmentis duobus apicalibus pube ferruginea vestitis; alis fuscis.

Female. Length 8 lines. Black, clothed with black pubescence, closely punctured; the mandibles very stout and porrect; the legs stout; the tibiæ rugose exteriorly, the posterior pair with pale pubescence; the basal joint of the tarsi within ferruginous; the claw-joint of the tarsi rufo-piceous. Abdomen: the two apical segments clothed with ferruginous pubescence, and the three segments beneath have pubescence of the same colour.

Hab. Bachian.

6. MEGACHILE VENTRALIS. *M. nigra*, delicatule punctata; abdomine subtus fulvo dense pubescente; alis subhyalinis.

Female. Length $6\frac{1}{2}$ lines. Black, closely and finely punctured, and shining; mandibles stout, striated, and subdentate; the front of the head and sides of the thorax with black pubescence. Wings fusco-hyaline.

Abdomen nigro-æneous, finely punctured, clothed beneath with bright ferruginous pubescence.

Male. The same in size and colour as the female; the face clothed with yellowish-white pubescence; the segments of the abdomen fringed with dense black pubescence; the apex obtuse, with the apical margin deeply notched in the middle. The abdomen is naked beneath and of a pale rufo-testaceous colour.

Hab. Amboyna.

Gen. XYLOCOPA, Latr.

1. XYLOCOPA CORONATA. *X. nigra*; pube nigra vestita; capite postice pube flava decorato; alis nigro-fuscis iridescentibus.

Female. Length $9\frac{1}{2}$ lines. Black; the flagellum rufo-testaceous beneath; the face covered with a mixture of griseous and black pubescence, that on the vertex and behind the eyes bright yellow. Thorax: densely clothed with short black pubescence; the disk of the mesothorax naked, smooth and shining. Wings dark brown with a splendid violet iridescence. Abdomen shining and finely punctured, thinly clothed with short black pubescence in the middle, becoming longer and more dense at the sides and towards the apex; beneath smooth and shining.

Hab. Kaisaa.

2. XYLOCOPA UNICOLOR. *X. nitida, nigra*; alis æneo et violaceo splendide micantibus.

Female. Length 9 lines. Black; the flagellum, except the two basal joints, testaceous beneath; the clypeus with a transverse shining ridge at its base, its anterior margin and a central longitudinal line smooth and shining; the face clothed with black pubescence. Thorax and legs with black pubescence, the middle of the disk of the latter smooth and shining; a central impressed line runs from the anterior margin of the prothorax to the middle of the mesothorax; wings dark brown with a violet iridescence changing to a green tint at their apex. Abdomen black, shining, and closely punctured; the sides fringed with black pubescence towards the apex.

Male. The body clothed with yellowish olive pubescence, darkest on the abdomen, the sides of which towards the apex are fringed with black; the tibiæ and tarsi have fulvous pubescence; the posterior tibiæ are yellow outside; the antennæ in front and the clypeus yellow, the latter with two ovate black spots at its base; the wings fulvo-hyaline and iridescent.

Hab. Amboyna.

In both the sexes of this species the second submarginal cell is obsolete; in the male a trace of the first transverse cubital nervure is perceptible; this nervure will frequently be found more or less obliterated in different species of this genus. The male closely resembles that of *X. æstuans*.

Gen. ANTHOPHORA, *Latr.*1. *Anthophora zonata*, *Linn. Syst. Nat.* i. 955.*Hab.* Bachian; Dory; Celebes; Aru; Borneo; Ceylon; India; Java; Hong-Kong; Shanghai; Philippine Islands.2. *Anthophora elegans*, *Smith, Proc. Linn. Soc.* iii. 135.*Hab.* Amboyna; Key Island.Fam. PROCTOTRUPIDÆ, *Steph.*Gen. EPYRIS, *Westw.*1. *EPYRIS ERRATICUS*. *E. niger*; capite thoraceque fortiter punctatis; tibiis tarsisque obscure ferrugineis, alis fuscis.*Female.* Length $2\frac{3}{4}$ lines. Black; the head oblong, transverse behind, with the lateral angles rounded, with scattered strong punctures; the eyes large, ovate, placed forwards at the sides of the head; the antennæ fulvous beneath, 13-jointed. Thorax oblong, shining, and with strong distant punctures; the metathorax quadrate, truncate, and having three longitudinal carinæ not extending to the verge of the truncation, between the carinæ roughly striated transversely, beyond which the striation is much finer; the wings fuscous; the tibiæ and tarsi obscurely ferruginous. Abdomen very smooth and shining; the apex and also the ovipositor rufo-testaceous.*Hab.* Dory.

This, I believe, is the first species of the genus which has been discovered out of Europe.

Fam. TENTHREDINIDÆ, *Leach.*Gen. CRYPTOCAMPUS, *Hartig.*1. *CRYPTOCAMPUS NIGRIPES*. *C. niger*; pedibus ferrugineis; tibiis apice tarsisque nigris; alis fuscis basi hyalinis.*Female.* Length 3 lines. Black and shining; the anterior femora, tibiæ, and base of the tarsi, and the intermediate femora and base of the tibiæ, ferruginous; the wings hyaline at their base and brown at their apex, with a violet iridescence.*Hab.* Dory.Gen. SELANDRIA, *Leach.*1. *SELANDRIA DORYCA*. *S. cærulea*; antennis pedibusque nigris; alis fuscis iridescentibus.*Female.* Length 4 lines. Head, thorax, and abdomen blue; the antennæ and legs black; the wings dark brown, with purple or violet iridescence; the legs and antennæ very pubescent.*Hab.* Bachian.

Gen. ORYSSUS, *Fabr.*

- 1.
- Oryssus maculipennis*
- ,
- Smith, Proc. Linn. Soc.*
- iii. 177.

Hab. Bachian; Aru.Gen. XYPHIDRIA, *Latr.*

- 1.
- XYPHIDRIA LÆVICEPS*
- .
- X. nigra*
- , albo maculata, tibiis tarsisque basi albis; alis hyalinis et iridescentibus.

Female. Length 5 lines. Black; the head smooth and shining above, with longitudinal curved striæ in front of the ocelli; the thorax opaque and rugose anteriorly, with a transverse irregular striation; the abdomen slightly shining. The cheeks, and a slightly interrupted narrow line on the hinder margin of the vertex, the mandibles, face anteriorly, inner orbit of the eyes, and ten apical joints of the antennæ, yellowish-white; the pale line on the inner orbit of the eyes passes a little above the ocelli, and then turns inwards to each lateral ocellus. Thorax: a spot on each side anteriorly, the scutellum, the base of the tibiæ, and of the intermediate and posterior tarsi, as well as the coxæ, white; the wings hyaline and iridescent. Abdomen: two oblique lines on the basal segment, an oblong spot at the extreme lateral margin of the second, a small ovate one on the fifth and sixth, an interrupted fascia on the eighth, and the tip of the apical segment, white; beneath rufo-piceous.

Hab. Ambyona.Fam. EVANIDÆ, *Leach.*Gen. EVANIA, *Fabr.*

- 1.
- Evania lævigata*
- (
- Latr.*
-),
- Westw. Mon. Evan. &c., Trans. Ent. Soc.*
- iii. 241.

Hab. Cape of Good Hope; Australia; Dory (New Guinea); Egypt; Greece; Sardinia; Coromandel; Mexico; Brazil; St. Vincent.Gen. MEGISCHUS, *Brullé.*

- 1.
- Megischus coronator*
- ,
- Fabr. Syst. Piez.*
- p. 118, ♀.

Hab. Bachian; Dory; Amboyna.

- 2.
- MEGISCHUS TARSALIS*
- .
- M. niger*
- , pedibus anticis et intermediis ferrugineis, tarsis posterioribus rubris, alis subhyalinis.

Female. Length 9 lines. Black; the head coarsely sculptured, on the face transversely so; the front with a transverse ridge, before which are two acute tubercles touching the eyes, and a central, more elevated one, a little in advance. The thorax coarsely punctured, the prothorax forming an elongated neck; the anterior and intermediate legs ferruginous; the dilated apical portion of the posterior tibiæ and the tarsi bright ferruginous; the posterior coxæ rugose, the femora bidentate;

wings fuscous, the nervures dark brown. Abdomen: the ovipositor the length of the body; the basal segment or petiole finely striated transversely, the following segments smooth and shining; the ovipositor with a wide fascia of white a little before the apex.

Hab. Bachian.

This species differs from *M. coronator* in the form and situation of the tubercles on the front of the head; the neck is much longer and more slender; the ovipositor is as long as, but not longer than, the body.

3. *MEGISCHUS VIDUUS*. *M. niger*; capite et antennarum basi rufis; thorace rugoso; alis fuscis.

Male. Length 13 lines. Black; the head blood-red; above, with deep curved striæ and three prominent tubercles, the central one the longest, and placed in advance of the lateral ones; before the tubercles with semicircular striæ; the scape of the antennæ and the mandibles ferruginous, the latter black at their tips. Thorax: the prothorax transversely grooved; the meso- and metathorax with large shallow punctures, the scutellum smooth and shining; the wings fuscous, the nervures dark brown; the anterior and intermediate tibiæ, tarsi, and tips of the femora, obscurely ferruginous; the articulations of the posterior legs and the tarsi rufo-piceous; the coxæ transversely rugose; the femora with two large teeth beneath and a number of minute ones between them. Abdomen smooth and shining; the ovipositor finely striated transversely towards the base.

Hab. Kaisaa.

This may possibly be the male of *M. coronator*, but, as it comes from a locality where that species has not yet been discovered, and as they differ in several particulars, I have not ventured to unite them.

GEN. CRYPTUS, *Fabr.*

1. *CRYPTUS SICARIUS*. *C. ferrugineus*; abdomine nitido; antennis apice fuscis; alis hyalinis, fusco fasciatis.

Female. Length 7 lines. Ferruginous; the antennæ as long as the body, and, beyond the fourteenth joint, fuscous; the face of a reddish-yellow. The metathorax bituberculate, a slight carina running from each tubercle to the base of the metathorax, and another to the insertion of the abdomen. Wings hyaline with a yellow tinge, and a broad fuscous fascia towards their apex. Abdomen shining and petiolated.

Var. The fuscous fascia extending to the apex of the wing.

Hab. Dory; Bachian.

The variety is from Bachian.

GEN. MESOSTENUS, *Grav.*

1. *MESOSTENUS MOLESTUS*. *M. niger*; antennis medio albis; capite thoraceque flavo punctatis; abdominis marginibus flavo fasciatis; alis hyalinis.

Female. Length 7 lines. Black; the inner orbit of the eyes, the clypeus, a spot on the mandibles, and a broad stripe behind the eyes, yellowish-white; the 7-14 joints of the antennæ white with a black line beneath. Thorax: an oblique spot before the wings, a spot on the disk of the mesothorax, the scutellum, the postscutellum, and an oblique line on each side before it, a spot in the middle of the mesothorax, and two short spines at its apex, yellowish-white; the sides of the thorax, the coxæ and trochanters, spotted with white; the legs rufo-fuscous, with their articulations paler. Abdomen: the three basal segments with yellowish-white marginal fasciæ; the apical segment with a narrow fascia; the metathorax rugose, and the second segment of the abdomen closely and finely punctured; the wings hyaline; the nervures black.

Hab. Bachian.

Gen. PIMPLA, *Fabr.*

1. PIMPLA FORMOSA. *P. rufo-ferruginea, flavo varia*; antennis strigisque tribus mesothoracis nigris; abdominis segmentis flavo marginatis; alis hyalinis, apice fusco maculato.

Female. Length 8 lines. Rufo-ferruginous; the scape in front and the head yellow; the region of the ocelli, and a transverse oval spot in front of them, black; the flagellum black, with the extreme apex and two basal joints rufo-piceous. The mesothorax with three broad black longitudinal stripes; the scutellum, postscutellum, a spot beneath the wings, and the anterior and intermediate coxæ in front, yellow; the wings hyaline, with a dark fuscous spot at the apex of the marginal cell, and extending a little beyond it. Abdomen closely punctured, with a yellow fascia on the apical margin of the first five segments; the sixth has an interrupted fascia; the ovipositor short and black.

Hab. Bachian.

This insect closely resembles *P. plagiata*, described in the paper on the Hymenoptera of Aru; but I think it differs in too many particulars to be considered a variety of that species.

2. PIMPLA FLAVICEPS. *P. ferruginea*; antennis nigris; capite luteo; alis fuscis, dimidio basali flavo-hyalinis.

Female. Length 6½ lines. Ferruginous, with the head yellow; the antennæ blackish, with the scape in front and the apex beneath more or less ferruginous. Thorax very smooth and shining above; the legs rather paler than the body. Wings dark brown; their base flavo-hyaline nearly to the apex of the externo-medial cell. Abdomen punctured; each segment with an deep oblique depression on each side nearly uniting in the middle of the segment; the ovipositor black.

Hab. Bachian.

3. *PIMPLA INTEGRATA*. *P. rufo-flava*; thorace punctis 4; abdominis segmentis punctis 12 nigris.

Female. Length $6\frac{1}{2}$ lines. Reddish-yellow; the antennæ and a spot on the vertex, enclosing the ocelli, black; the scape in front ferruginous; the flagellum beneath obscurely fulvous. Thorax: two V-shaped spots on the mesothorax, and a small transverse spot on each side of the metathorax, above, near its base, black. Wings hyaline; the tips of the claws of the tarsi and the pulvillus between them black. Abdomen: the first two segments shining and distantly punctured; the following segments closely punctured; a transverse slightly curved impressed line on each segment near its apical margin; the first and four following segments with a black ovate spot on each side, placed transversely; the seventh with two placed longitudinally.

Hab. Bachian.

This species, although distinct from, is closely allied to *P. crassipes* of Brullé.

4. *PIMPLA PLACIDA*. *P. flava*, lævigata, nitida; antennis strigisque tribus mesothoracis nigris; alis hyalinis iridescentibus.

Female. Length $5\frac{1}{4}$ lines. Yellow; the abdomen with a ferruginous tinge; the antennæ, the region of the ocelli, and a spot on the head behind, black; the scape, basal joint of the flagellum in front, and the mandibles, yellow, the latter tipped with black; the disk of the mesothorax with three longitudinal black stripes which are united at the base of the scutellum. The wings hyaline and iridescent. The segments of the abdomen with lateral oblique depressions.

Hab. Bachian.

Brullé has described two species of *Pimpla* from Australia, and one from the Mauritius, all agreeing with the present species in having three black lines on the mesothorax, as well as in general colouring; but their punctation and other particulars separate them from *P. placida*.

Gen. RHYSSA, Grav.

1. *Rhyssa fasciata* (maculipennis), *Smith, Proc. Linn. Soc.* iii. 173.

The name "*maculipennis*," as cited above, must be changed to *fasciata*, the same specific name having been used for a species of *Rhyssa* from Borneo. (See *Linn. Proc. Zool.* vol. ii. p. 120.)

Gen. OPHION, Fabr.

1. *OPHION VITTATOR*. *O. rufo-ferrugineum*; capite postice flavo; mesothorace linea media fusca; abdomine nigro-fusco.

Female. Length 10 lines. Head and thorax rufo-ferruginous; the face and back of the head yellow; the antennæ ferruginous. The thorax beneath and at the sides black; the mesothorax has a central broad longitudinal stripe which runs to the apex of the scutellum; the sides

of the thorax striated; the wings hyaline; the nervures ferruginous; the first submarginal cell with a semicircular colourless space near its apex marked on one side with a dark line; the legs pale ferruginous, their coxæ black. The abdomen dark rufo-fuscous, with the two basal segments black; the abdomen covered with a dense griseous pile.

Hab. Bachian.

This species may possibly be a variety of *O. univittatus* of Brullé.

2. *OPHION UNICOLOR.* *O. rufo-ferrugineum*; metathorace arcuate striato; alis hyalinis.

Female. Length 10 lines. Rufo-ferruginous; the mesothorax and scutellum very smooth and shining; wings hyaline and iridescent, the nervures rufo-fuscous; the metathorax with a divergent arcuate striation; abdomen smooth and shining.

Hab. Bachian.

3. *OPHION INSINUATOR.* *O. rufo-ferrugineum*; abdominis apice fusco; metathorace oblique striato.

Female. Length 8 lines. Rufo-ferruginous; the face reddish-yellow; the legs rather paler than the body; the wings hyaline and iridescent; the nervures fuscous; the mesothorax and scutellum smooth and shining; the metathorax with strong even striæ, which diverge obliquely from the centre; the third and following segments of the abdomen rufo-fuscous.

Hab. Kaisaa.

Fam. BRACONIDÆ, *Westw.*

Gen. BRACON, *Fabr.*

1. *Bracon tricolor*, *Guér. Voy. Coq. Zool.* ii. 199.

Hab. Dory.

2. *BRACON JACULATUS.* *B. niger*; capite, thorace, pedibusque anticis et intermediis ferrugineis; alis nigris.

Female. Length 7 lines. The head, the pro- and mesothorax, the scutellum, postscutellum, and the anterior and intermediate legs ferruginous; the flagellum, intermediate coxæ and trochanters, posterior legs, metathorax, and abdomen black; the wings nigro-fuscous. The head and thorax smooth and shining; the metathorax with a central diamond-shaped impression, and an impressed line on each side of it. Abdomen rugose; the basal segment with a central and lateral impressed line; the second segment with two central longitudinal and lateral oblique carinæ; the fifth and following segments smooth and shining; the ovipositor a little longer than the body.

Hab. Bachian.

3. *BRACON QUADRICEPS.* *B. rufescenti-flavus*; antennis, tibiis, tarsisque posticis nigris; alis nigro-fuscis, macula hyalina.

Female. Length $7\frac{1}{2}$ lines. Reddish-yellow, smooth and shining; the

head quadrate, with the angles rounded; the antennæ black; the wings very dark brown, shining and iridescent; the posterior tibiæ outside and the tarsi black; the basal segment of the abdomen with an abbreviated impressed line in the middle, and another on each side extending to its apical margin; the ovipositor twice the length of the insect.

Hab. Bachian.

Gen. AGATHIS, *Latr.*

1. AGATHIS ATROCEPHALUS. *A. rufescenti-flavus*; capite antennisque nigris; alis nigro-fuscis, basi flavo-hyalinis.

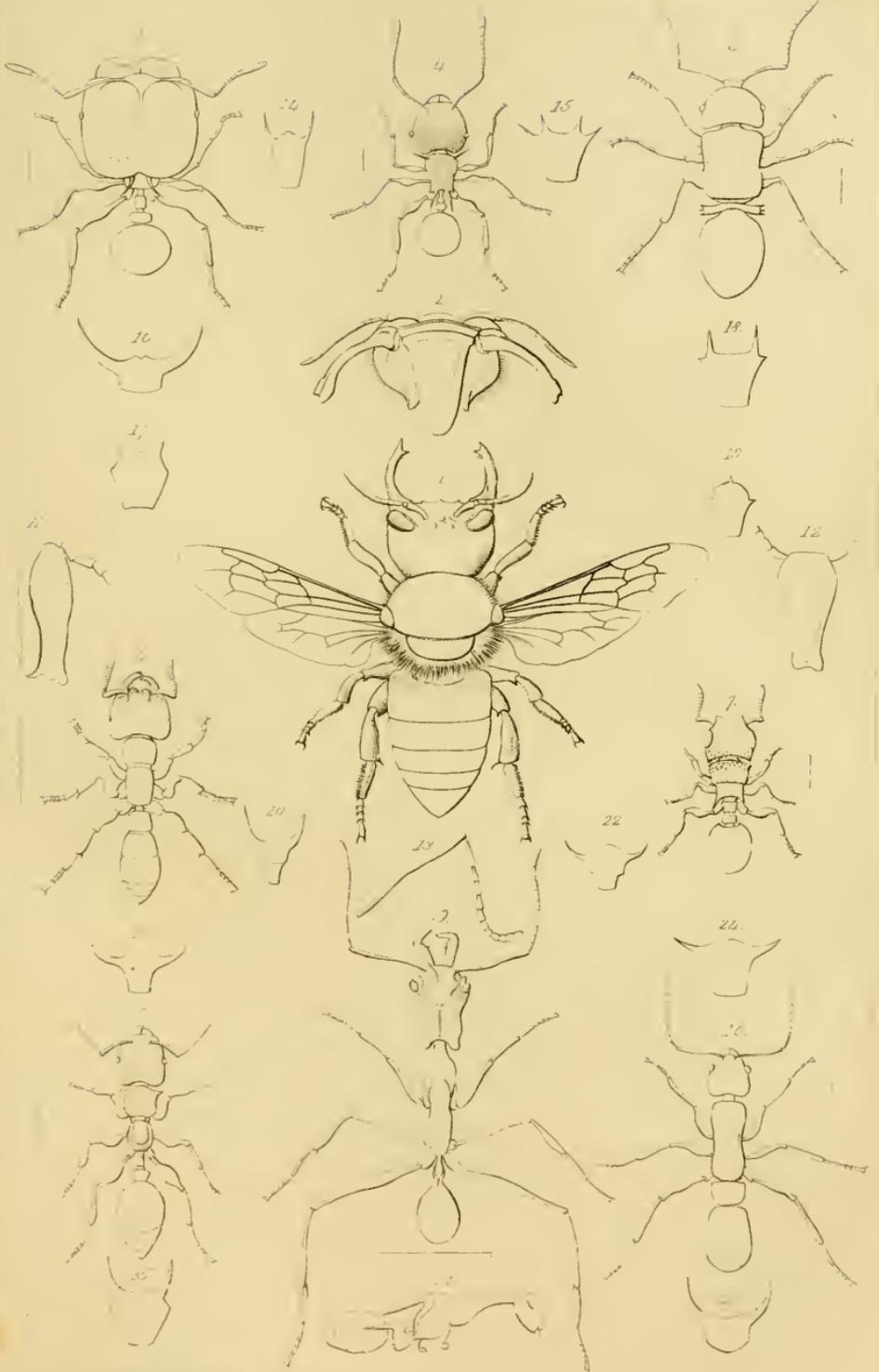
Male. Length 6 lines. Reddish-yellow; the head and antennæ black; the head strongly punctured; a deep fossulet on each side of the clypeus; the mandibles and palpi pale. Thorax shining above; the metathorax with fine longitudinal carinæ, the central one expanding in the middle, and enclosing a minute diamond-shaped space; between the striæ are a number of transverse carinæ; the legs densely clothed with short pale pubescence, the posterior pair incrassate; the wings dark fuscous, with not quite the basal half flavo-hyaline. Abdomen smooth and shining.

Hab. Bachian.

Gen. XYLONOMUS, *Grav.*

1. XYLONOMUS FRACTICORNIS. *X. nigro-chalybeus*; capite albo notato; thorace supra maculis tribus albidis, metathorace dorso quadricarinato; abdominis segmento basali pallido, secundo apice binotato, sequentibus apice pallido fasciatis; pedibus ochraceis; tarsis postice pallidis.

Female. Length $7\frac{1}{2}$ lines. Steel-blue, inclining to deep purple on the abdomen; the head, below the insertion of the antennæ, a semicircular spot above, on each side of the face, touching the inner orbit of the eyes, and a broad stripe behind them, white; the eleven basal joints of the antennæ black, the third and fourth with a white line at the outside; the four following joints white, the rest of the apical joints black; the apex of the eighteenth joint with two blunt spines at the apex outside; the apex hollowed out obliquely for the reception of the nineteenth joint, which is attenuated at its base and geniculated; this and the following joints forming, as it were, a second antenna. Thorax: the scutellum, postscutellum, tegulæ, and a spot beneath the wings, white; wings hyaline and iridescent; the legs pale ferruginous; the posterior tibiæ dusky, and the tarsi white; the claw-joint of all the tarsi black. Abdomen: the basal segment, or petiole, pale testaceous, with a blunt spine on each side of its insertion; the second segment with two white spots at its apex; the third and penultimate segment with an emarginate apical white marginal



fascia; the other segments with interrupted fasciæ; the ovipositor as long as the body.

Hab. Bachian.

This is the most remarkable species of *Ichneumon* with which I am acquainted: the extraordinary geniculation of the antennæ near its apex is the only instance of the kind that I have seen. By some, this might be regarded as being of generic value. The difference of form in antennæ in the same genus has, however, several parallels; I may instance the genus *Prosopis* amongst the *Apidæ*. In the form of the head, the tarsi, wings, and general contour of the body, this is a true *Xylonomus*.

EXPLANATION OF PLATE I.

Fig. 1. Megachile Pluto.

2. Front view of the head of ditto, with mandibles opened to show the labrum.
3. *Pheidole notabilis*, worker major.
4. Ditto, worker minor.
5. *Echinopla pratecta*.
6. *Amblyopone castanea*.
7. *Cataulacus setosus*.
8. *Podomyrma silvicola*.
9. *Odontomachus sævissimus*.
10. *Mesoxena mistura*.
11. Maxilla and maxillary palpi of *Æcophylla smaragdina*.
12. Labium and labial palpi of ditto.
13. Antenna of ditto.
14. Scale of the petiole of *Polyrhachis Charaxis*.
15. Ditto of *P. Busiris*.
16. Ditto of *P. Acantha*.
17. Ditto of *P. Merops*.
18. Ditto of *P. Ithonus*.
19. Ditto of *P. Eudora*.
20. Ditto of *P. Metella*.
21. Side view of *P. Metella*.
22. Scale of the petiole of *P. Atropos*.
23. Ditto of *P. Acasta*.
24. Ditto of *P. Alphenus*.
25. Ditto of *P. Sabella*.
26. Ditto of *P. ferreus*.

All the figures are considerably magnified representations of the insects, except that of *Megachile Pluto*, which is of the natural size.
