

Catalogue of Hymenopterous Insects collected by Mr. A. R. WALLACE at the Islands of Aru and Key. By FREDERICK SMITH, Esq., Assistant in the Zoological Department, British Museum. Communicated by W. W. SAUNDERS, Esq., F.R.S., V.P.L.S.

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THIS Collection of Hymenoptera is the most important contribution which has been made to the Aculeata through the exertions of Mr. Wallace; in point of geographical distribution, it adds much to our knowledge. In the Aru, Key, and neighbouring islands, we meet with the extreme range of the Australian insect-fauna; and as might be expected, it is found amongst the Vespidae Group, and in one or two instances in the Formicidae. The latter, being frequently conveyed from one island to another, can perhaps scarcely be considered indicative of natural geographical distribution. Of the forty-six species of the Formicidous Group, only six were previously known to science. Of the genus *Podomyrma* here established, one species only, from Adelaide, was previously known; it is one of the most distinct and remarkable genera in the family. The *Pompilidae* are species of great beauty, some closely resembling those of Australia in the banding and maculation of their wings; amongst the *Vespidae* will be found some of the most elegant and beautiful forms in the whole of that protean family of Hymenoptera.

### Fam. ANDRENIDÆ.

#### Gen. PROSOPIS.

1. *PROSOPIS MALACHISIS*. *P. nigro-cæruleo-viridis*, nitida et delicatè punctata; alis hyalinis.

*Female*. Length  $4\frac{1}{2}$  lines. Deep blue-green. with tints of purple in certain lights, particularly on the head, the clypeus with a central longitudinal ridge, its anterior margin slightly emarginate; the flagellum rufo-piceous beneath, the ocelli white. Thorax: the wings hyaline and brilliantly iridescent; the legs dark rufo-piceous with a bright purple tinge. Abdomen delicately punctured, the head and thorax more strongly so; the latter with a semicircular enclosed space at its base, which is smooth and shining.

*Hab.* Key Island.

#### Gen. NOMIA.

1. *NOMIA CINCTA*. *N. nigra*, capite thoraceque punctatis, pedibus ferrugineis; segmentis abdominis apice fulvo-testaceo late fasciatis.
- Female*. Length 5 lines. Black: the two basal joints of the flagellum,

the apical margin of the clypeus, the labrum, mandibles, and legs ferruginous; the wings fulvo-hyaline, the nervures ferruginous, the tegulæ more or less rufo-testaceous; the sides of the metathorax with tufts of pale fulvous pubescence and the floccus on the posterior femora of the same colour, the tibiæ and tarsi with short ferruginous pubescence. Abdomen shining, the apical margins of the segments broadly fulvo-testaceous, very bright, having a golden lustre.

*Hab.* Key Island.

2. *NOMIA LONGICORNIS*. *N. nigra*, lucida et delicatulè punctata, facie pube brevi griseâ tectâ, femorum posticorum flocco pallido, tibiis externè fusco-pubescentibus; maris antennis, capite thoraceque longioribus.

*Male.* Length 4 lines. Brassy, with tints of green on the clypeus, metathorax, and thorax beneath; the head and thorax very closely and finely punctured; the clypeus produced and highly polished; the mandibles rufo-testaceous, the antennæ as long as the head and thorax. Thorax: the wings hyaline and splendidly iridescent, the tegulæ and the tarsi rufo-testaceous. Abdomen closely punctured, the apical margins of the segments smooth and shining; the head and thorax above with a pale fulvous pubescence, that on the sides of the metathorax and legs pale and glittering; the abdomen has a pale scattered glittering pubescence.

*Hab.* Aru.

3. *NOMIA DENTATA*. *N. nigra* et punctata, facie metathoracisque lateribus cinereo-pubescentibus, postscutello medio unidentato. *Mas.* antennis filiformibus longitudine thoracis.

*Female.* Length 5 lines. Black; head and thorax rather finely punctured; the face covered with short cinereous pubescence; the clypeus naked and much produced, the anterior margin and the tips of the mandibles ferruginous; the cheek with long whitish pubescence. Thorax: the sides of the metathorax, the floccus on the posterior femora and the postscutellum with whitish pubescence, the latter produced in the middle into a blunt tooth; the legs fusco-ferruginous, with the anterior tibiæ and apical joints of the tarsi brighter; wings hyaline and iridescent. Abdomen shining and punctured, the apical margins of the two basal segments broadly depressed, and more finely and closely punctured than the rest; the apical margins of the second, third, and fourth segments pale testaceous; the apical margins of the two basal segments narrowly fringed with white pubescence, usually more or less interrupted in the middle.

*Male.* Resembles the female very closely, but has the face much more pubescent; the antennæ filiform and longer than the head and thorax; the scutellum armed at its posterior lateral angles with an acute tooth; the metathorax truncate and slightly concave, its base with short longitudinal grooves, the lateral margins fringed with long pubescence.

*Hab.* Aru.

## Subfam. DASYGASTRÆ.

Gen. MEGACHILE, *Latr.*

1. MEGACHILE LATERITIA. *M. nigra*, abdomine pube ferrugineâ vestito, alis fuscis.

*Female.* Length 8 lines. Black; head and thorax very closely and finely punctured; the mandibles with a single blunt tooth at their apex; the anterior margin of the clypeus transverse. Thorax: the wings brown, the posterior pair palest, their base subhyaline. Abdomen clothed with bright brick-red pubescence above and beneath; the basal segment with bright yellow pubescence above.

*Hab.* Aru.

2. MEGACHILE SCABROSA. *M. nigra*, metathorace anticè rudè scabrato, abdomine subtùs nigro-pubescente.

*Female.* Length  $5\frac{1}{2}$  lines. Black; the clypeus, mesothorax anteriorly, and the posterior tibiæ outside coarsely rugose, the roughness on the thorax consisting of transverse little elevated points; the face with a thin griseous pubescence; the anterior margin of the clypeus fringed with fulvous hairs; the cheeks have a long pale fulvous pubescence. Thorax: the wings hyaline, the nervures black. Abdomen smooth and shining, with black pubescence beneath; beneath, the apical margins of the segments with a fringe of very short white pubescence.

*Hab.* Aru.

3. MEGACHILE INSULARIS. *M. nigra*, nitida, delicatulè punctata, facie pube pallidè fulvâ vestitâ, abdomine subtùs pube latè ferrugineâ vestito, alis hyalinis.

*Female.* Length  $5\frac{1}{2}$  lines. Black; the head and thorax finely and closely punctured, the abdomen delicately so; the face clothed with pale fulvous pubescence, the mandibles with two blunt teeth at their apex; the clypeus shining and strongly punctured. Thorax: the wings subhyaline with a slight cloud at their apex; the basal joint of the posterior tarsi with a dense dark ferruginous pubescence within. Abdomen: the four basal segments with transverse impressed lines in the middle; beneath, clothed with bright ferruginous pubescence; the abdomen has an obscure æneous tinge above.

*Hab.* Aru.

Gen. CROCISA, *Jurine.*

1. *Crocisa nitidula*, *Fabr. Syst. Piez.* p. 386. 2.

*Hab.* Aru; Key Island; Australia; Amboyna.

Gen. ALLODAPE, *St.-Farg.*

1. ALLODAPE NITIDA. *A. nitida nigra*, clypeo flavo, alis hyalinis, abdomine ad apicem punctato.

*Female.* Length 3 lines. Black and shining; the clypeus yellow, pro-

duced in front; the sides of the face depressed; the ocelli prominent and reddish. Thorax very smooth and shining; the wings colourless and iridescent, their extreme base yellowish, the nervures and stigma brown, the tegulæ pale testaceous-yellow; the posterior tibiæ with a scopæ of glittering white hairs, the tarsi ferruginous and with glittering hairs. Abdomen, from the third segment to the apex, gradually more and more strongly and closely punctured.

*Hab.* Aru.

Gen. XYLOCOPA, *Latr.*

1. *Xylocopa æstuanus*, *Linn. Syst. Nat.* i. p. 961. 53 ♀; *St.-Farg. Hym.* ii. p. 193. 36 ♂ ♀.

*Hab.* Aru; India; Singapore; Celebes.

Gen. SAROPODA, *Latr.*

1. *Saropoda bombiformis*, *Smith, Cat. Hym. Ins.* pt. 2. p. 318. 6.

*Hab.* Aru; Australia (Richmond River).

Gen. ANTHOPHORA, *Latr.*

1. *Anthophora zonata*, *Linn. Syst. Nat.*

*Hab.* Aru Island; Celebes; Ceylon; India; Borneo; Hong-Kong; Shanghai; Philippine Islands.

2. *ANTHOPHORA ELEGANS*. *A. nigra*, pube capitis thoracisque nigrâ, abdomine fasciis quatuor lætè cæruleis ornato; tibiis posticis ferrugineo-pubescentibus.

*Female.* Length 6 lines. Black; the labrum, a narrow line down the middle and another on each side of the clypeus, a minute spot above it, and the scape in front testaceous yellow, the base of the mandibles of a paler colour; the flagellum fulvous beneath. Thorax: the pubescence black; wings subhyaline, the nervures dark rufo-fuscous, tegulæ obscurely testaceous. Abdomen with four fasciæ of brilliant blue, which is changeable, with pearly tints in different lights; the posterior tibiæ densely clothed outside with fulvo-ferruginous pubescence; the pubescence inside is black.

*Hab.* Key Island.

Gen. TRIGONA, *Jurine.*

1. *Trigona læviceps*, *Smith, Cat. Hym. Ins., Journ. Proc. Linn. Soc.* ii. p. 51. 8.

*Hab.* Aru; Singapore; India.

Fam. FORMICIDÆ.

Gen. FORMICA.

1. *Formica virescens*, *Fabr. Ent. Syst.* ii. p. 355. 23 ♂ ♀ ♀.—*Lasius virescens*, *Fabr. Syst. Piez.* p. 417. 8.

2. *Formica gracilipes*, *Smith, Cat. Hym. Ins., Journ. Proc. Linn. Soc. ii.* p. 55. 13 ♂.

3. *FORMICA FRAGILIS*. *F. pallidè testacea, elongata et gracilis, capite posticè angustato; thorace medio compresso, pedibus elongatis; squamâ incrassatâ triangulatâ.*

*Worker*. Length  $3\frac{1}{2}$  lines. Pale rufo-testaceous, smooth and slightly shining; antennæ elongate, longer than the body, the flagellum slender and filiform, the scape nearly as long as the head and thorax; head oblong, narrowed behind the eyes into a kind of neck, the sides parallel before the eyes, which are black and round, the clypeus slightly emarginate anteriorly, the mandibles finely serrated on their inner margin and terminating in a bent acute tooth. Thorax elongate, narrowest in the middle, the prothorax forming a neck anteriorly; legs elongate and very slender. Abdomen ovate, the node of the petiole incrassate, and viewed sideways is triangular or wedge-shaped.

*Hab. Aru.*

This is one of those remarkable forms which recede so greatly from the normal type of *Formica* as apparently to indicate a generic distinction; but in those exotic species of which we have obtained all the forms, we find many which approach closely to the present insect, which is probably only the small worker of some already described species. No one would venture, without the authority of the personal observation of some competent naturalist, to unite all the forms of any exotic species of *Formica*.

4. *FORMICA FLAVITARSUS*. *F. nigra, elongata et gracilis; thorace posticè compresso, pedibus elongatis, tarsi flavis.*

*Worker*. Length 4 lines. Black and sub-opaque; head elongate, narrowed behind, the clypeus truncate anteriorly, the mandibles pale ferruginous; antennæ elongate and slender, the flagellum filiform and pale rufo-testaceous; the thorax and legs elongate, the latter slender with their tarsi pale rufo-testaceous. Abdomen ovate, the scale of the petiole incrassate and slightly notched above.

*Hab. Aru.*

5. *FORMICA COXALIS*. *F. nigra, nitida; flagello, coxis et abdomine subtùs pallidè testaceis.*

*Worker major*. Length 5 lines. Black and very delicately roughened with a fine transverse waved striation only perceptible under a good magnifying power. Head large, much wider than the thorax, oblong-ovate with a deep emargination behind; the clypeus slightly produced and truncate anteriorly, the angles of the truncation rounded, and with a central shining carina; the flagellum, except the tarsal joint, pale rufo-testaceous. Thorax elongate, compressed behind, the coxæ pale rufo-testaceous. Abdomen ovate, the scale of the petiole incrassate, somewhat wedge-shaped when viewed sideways, the abdomen sparingly sprinkled with long pale hairs.

6. *FORMICA CORDATA*. *F. pallidè rufa*; abdomine fusco, capite cordato.

*Worker*. Length 2 lines. Pale rufo-testaceous; the head heart-shaped; the eyes black, the flagellum fusco-ferruginous with the basal joints pale; the mandibles ferruginous. Thorax narrow, deeply strangled at the base of the metathorax. Abdomen more or less fuscous, the node of the petiole narrow and pointed above; the entire insect is smooth and shining.

*Hab.* Aru.

The *worker minor* is rather smaller and has the abdomen darker, in all the specimens received, but in other respects agrees with the above.

7. *FORMICA OCLATA*. *F. pallidè ferruginea*; capite oblongo, oculis magnis, thorace compresso.

*Worker*. Length  $2\frac{1}{2}$  lines. Pale ferruginous, with the vertex and apex of the abdomen black; the head oblong, the sides nearly parallel, with the anterior margin truncate; the mandibles with fine acute teeth on their inner margin; the antennæ inserted wide apart about the middle of the head; the eyes very large and ovate, placed backwards on the sides of the head, reaching to the posterior margin of the vertex, forming as it were its posterior lateral angles. The thorax narrow and compressed behind; abdomen ovate, entirely smooth and shining.

*Hab.* Aru.

8. *FORMICA MUTILATA*. *F. nigra*; capite oblongo, truncato anticè et sanguineo, antennis tarsisque rufo-testaceis.

*Worker*. Length  $2\frac{3}{4}$  lines. Black and shining; the head truncate anteriorly, the antennæ inserted wide apart, about the middle, the face blood-red before their insertion and deeply striated longitudinally, behind the antennæ the head is black, smooth, and shining; the eyes ovate and placed backwards on the sides of the head. Thorax rounded in front and strangled between the meso- and metathorax, the latter obliquely truncate; legs rather short and stout, the femora compressed, the anterior pair broadly dilated, the base and apex of the femora, the tibiæ, and tarsi rufo-testaceous, the tibiæ with a darker stain behind. Abdomen oblong-ovate, the apical margins of the segments narrowly pale testaceous; the scale of the petiole compressed, with its superior margin rounded.

*Hab.* Aru.

This is a very singular insect in many respects, and closely resembles in form the *Formica truncata* of Spinola.

9. *FORMICA QUADRICEPS*. *F. nigra, nitida*; capite anticè obliquè truncato, thorace posticè compresso.

*Worker*. Length  $3\frac{1}{2}$  lines. Shining black; head oblong-quadrate, slightly narrowed anteriorly, with the sides nearly straight, the posterior angles rounded, and very slightly emarginate behind; the head obliquely truncate from the base of the clypeus; the truncation as

well as the mandibles obscurely ferruginous; the apex of the flagellum and the apical joints of the tarsi pale rufo-testaceous. Thorax rounded anteriorly, compressed behind, with the metathorax abruptly truncate. The scale of the petiole narrow, incrassate, its anterior margin slightly curved, its posterior margin straight; the abdomen ovate.

*Worker minor.* About 3 lines long, very like the larger *worker*, the head being truncate in front; but it is, in proportion to the thorax, narrower; the latter is compressed and abruptly truncate; in other respects it agrees with the *worker major*.

*Hab.* Aru.

10. *FORMICA LÆVISSIMA.* *F. nigra nitida lævissima, sparsè pilosa; squamâ oblongâ subdepressâ.*

*Worker.* Length 4 lines. Jet-black, very smooth and shining; head wider than the thorax, slightly emarginate behind, the sides slightly rounded; the anterior margin of the clypeus rounded, the mandibles striated and obscurely ferruginous; the scape with a few glittering silvery-white hairs. Thorax not quite so wide as the head anteriorly, narrowed behind, with the disk somewhat flattened, slightly convex, a deep strangulation between the meso- and metathorax, the latter obliquely rounded; the legs and abdomen sprinkled with glittering white hairs. The node of the petiole incrassate, very slightly elevated; viewed sideways, broadly wedge-shaped; the abdomen ovate.

*Hab.* Aru.

11. *FORMICA NITIDA.* *F. capite abdomineque nigris, antennis thoraceque pedibusque rufo-testaceis lævissimis et lucidis.*

*Worker.* Length 4 lines. Head and abdomen shining black; the flagellum, thorax, legs, and scale of the petiole rufo-testaceous; the legs palest; the scape fuscous, with its base pale; the head large, wider than the abdomen, and emarginate behind; the clypeus and mandibles obscurely ferruginous. Thorax compressed, not strangulated in the middle. The scale of the petiole narrow, with its margin rounded above; abdomen ovate, and sprinkled with a few erect pale hairs.

*Hab.* Aru.

12. *FORMICA SCRUTATOR.* *F. nigerrima, mandibulis tarsorumque articulo apicali pallidè ferrugineis, thorace medio profundè coarctato.*

*Worker.* Length  $1\frac{1}{2}$ –2 lines. Shining black; the mandibles pale, ferruginous, with their inner margins finely denticulate; the eyes placed rather forwards on the sides of the head, the latter emarginate behind. Thorax deeply strangulated in the middle; the metathorax elevated and obliquely truncate behind. Abdomen ovate; the scale of the petiole sub-incrassate, with its margin rounded above; the insect very thinly covered with a fine cinereous pile.

*Hab.* Aru.

13. *FORMICA ANGULATA*. *F. nigra nitida*; flagello capite anticè pedibusque obscurè ferrugineis, metathorace angulato.

*Worker*. Length 3 lines. Shining black; head of moderate size; the clypeus and mandibles obscure ferruginous; the flagellum fusco-ferruginous, with the tip pale testaceous. Thorax rounded anteriorly and compressed behind; the scutellum prominent, forming a small tubercle; the metathorax obliquely truncate, the margin of the truncation elevated, so that when viewed sideways the metathorax forms an obtuse angular shape. Abdomen ovate, the node of the peduncle elevated, incassate, rounded anteriorly, and flat behind.

*Hab.* Aru.

Gen. *POLYRHACHIS*, *Smith*.

1. *Formica sericata*, *Guér. Voy. Coq. Zool.* ii. 203; *Atlas Ins.* pl. 8. f. 2, 2 a, b, c, d, ♂. (*Polyrhachis sericata*, *Smith, Append. Cat. Form.* p. 200.)

*Hab.* Aru; New Hebrides.

2. *Formica sexspinosa*, *Latr. Hist. Nat. Fourm.* p. 126, pl. iv. f. 21 ♂. (*Polyrhachis sexspinosa*, *Smith, Cat. Form.* p. 56. 3.)

*Hab.* Aru; India; Philippine Islands.

3. *POLYRHACHIS MARGINATUS*. *P. niger*; antennis, palpis pedibusque ferrugineis; thoracis marginibus recurvis, metathorace petiolique squamulâ bidentatis.

*Worker*. Length  $2\frac{1}{2}$  lines. Black; the antennæ and legs ferruginous; the head and thorax rugose; the prothorax transverse, its anterior margin slightly curved, with the lateral angles produced forwards and very acute; the thorax narrowed to the metathorax, which is armed with two divergent acute spines. Abdomen velvety black and globose; the scale of the petiole produced laterally into long, bent, acute spines, which curve backwards to the shape of the abdomen.

*Hab.* Aru.

4. *POLYRHACHIS HOSTILIS*. *P. niger*, longitudinaliter striatus, thoracis marginibus expansis, metathorace squamulâque petioli spinis duabus crassis acutis curvatis.

*Worker*. Length 3 lines. Black; the head and thorax longitudinally striated, the abdomen very finely and evenly so; the prothorax transverse, wider than the head, the anterior and lateral margins recurved, the latter acute at their anterior angles, and rounded at the posterior ones; the lateral margins of the mesothorax recurved, a deep notch between the meso- and metathorax; the latter with a long, stout, curved, acute spine on each side. The scale of the petiole produced above on each side, into a long, curved, stout, acute spine, which curves backwards round the sides of the abdomen.

*Hab.* Aru.



5. *POLYRHACHIS LONGIPES*. *P. niger*; flagelli dimidio apicali tibisque anticis pallidè ferrugineis, prothorace petiolique squamulâ bidentatis.

*Worker*. Length 3 lines. Black; the head and thorax finely rugose; the antennæ elongate, longer than the insect; the apical half of the flagellum pale ferruginous. Thorax rounded above, the sides not margined; two spines on the thorax anteriorly, two on the metathorax, and two on the scale of the petiole; the legs elongate, with the anterior tibiæ ferruginous. Abdomen globose, sometimes rufous, or the base obscurely rufous.

*Hab.* Aru.

6. *POLYRHACHIS SERRATUS*. *P. niger*; capite thoraceque rugosis, abdomine densè punctato, squamâ petioli transversâ, margine superno serratâ.

*Worker*. Length 2 lines. Black, with the antennæ and legs ferruginous. Thorax oblong-quadrate or very slightly narrowed towards the metathorax, slightly convex above, not margined at the sides, the divisions not perceptible; the head and thorax rugose and pubescent. Abdomen globose, shining, and closely punctured; the scale of the petiole transverse above, produced into an acute spine on each side, the upper margin finely serrated, the lateral margins narrowed to their base, and having two or three small sharp spines.

*Hab.* Aru.

7. *POLYRHACHIS SCUTULATUS*. *P. niger*, fortiter politus et lucidus, metathorace petiolique squamulâ dente longo curvato acuto in latere utroque, pedibus nigro-ferrugineis.

*Worker*. Length  $2\frac{3}{4}$  lines. Black and very smooth and shining; the legs dark ferruginous. Thorax: the disk expanded, slightly convex above, with the margins acute and curving upwards; the anterior margin transverse, rather wider than the head, with the lateral angles slightly curved forwards, and very acute; the lateral margins of the prothorax curved backwards and inwards; the margins of the mesothorax are rounded; the pro- and mesothorax highly polished above, forming an escutcheon-shaped disk; the metathorax opaque, and sprinkled with a few short glittering hairs, armed posteriorly with two long very acute spines, divergent and directed backwards. Abdomen globose; the scale of the petiole with two long curved acute spines, directed backwards to the curve of the abdomen.

*Hab.* Aru.

8. *POLYRHACHIS MUCRONATUS*. *P. lævis*, nitidus, niger; thorace spinis duabus crassis compressis acutis posticè armato.

*Worker*. Length  $2\frac{1}{4}$  lines. Black, smooth, and shining, very delicately and indistinctly aciculate; the antennæ beneath and the tibiæ and femora obscurely ferruginous, the anterior and intermediate tibiæ brightest; the apex of the mandibles ferruginous. Thorax transverse

in front, or very slightly curved, with the lateral angles acute; the thorax is rounded above, and not margined at the sides; the metathorax armed with two long, stout, acute compressed spines; the spines divergent, as well as two on the scale of the petiole, which are long and very acute. Abdomen globose.

*Hab.* Aru.

9. *POLYRHACHIS GEOMETRICUS*. *P. niger*; antennarum apice, tibiis tarsorumque apice ferrugineis, thorace circulariter striato.

*Worker*. Length 2 lines. Black; the apical joints of the flagellum, the anterior legs, the anterior and intermediate tibiæ, and the apical joints of the tarsi pale ferruginous; the extreme base of the anterior tarsi black. Thorax rounded above, not margined, gradually narrowed posteriorly; the prothorax of the same width as the head, its lateral angles toothed; the disk with a circular striation. Abdomen globose and pubescent; the scale of the petiole compressed, its superior margin rounded, and with four minute teeth.

*Hab.* Aru.

10. *POLYRHACHIS IRRITABILIS*. *P. niger*, pube pallidè aureâ vestitus; thorace quadridentato, petioli squamulâ bidentatâ.

*Female*. Length  $6\frac{1}{2}$  lines. Black, and densely clothed with short pale golden pubescence; all parts of the insect sprinkled with erect cinereous hairs; the mandibles shining black, the palpi pale testaceous; the head elongate, the eyes placed high on the sides of the head, ferruginous and very prominent. Thorax elongate-ovate; the prothorax with a short, stout, acute tooth on each side, slightly curved and directed forwards; the metathorax with a similar tooth on each side directed backwards; the wings subhyaline, the nervures fuscous; the legs fusco-ferruginous, the femora and coxæ brightest. Abdomen ovate; the scale incrassate, armed above with two stout acute teeth.

*Hab.* Aru.

This is probably the female of *P. sexspinosus*.

11. *POLYRHACHIS LÆVISSIMUS*. *P. niger*, lævis nitidusque; metathorace bispinoso, petioli squamulâ quadrispinosâ, pedibus ferrugineis.

*Worker*. Length  $2\frac{3}{4}$  lines. Black, very smooth and shining; the legs ferruginous, with the coxæ, articulations, and the tarsi black. The thorax not flattened above, or margined at the sides; the division between the pro- and mesothorax distinct, that between the meso- and metathorax not discernible, the latter with two erect acute spines; the scale of the petiole with four short acute spines. Abdomen globose.

*Hab.* Aru.

This species is very like *P. mucronatus*; on close examination, however, it is seen to be very distinct: it may be at once distinguished by its larger head, which is wider than the thorax, rounded behind the eyes, and widely emarginate behind.

12. *POLYRHACHIS BELlicosus*. *P. capite abdomineque nigris, thorace femoribusque rufis, thorace quadrispinoso, petioli squamulâ bihamatâ.*

*Worker.* Length  $3\frac{1}{2}$  lines. Black, with the scale of the petiole, thorax, coxæ, and femora blood-red. Thorax: the lateral margins raised above, with two slightly curved divergent spines in front, and two stout, acute, long curved spines in the middle, directed backwards; the scale of the petiole forming a long erect pedestal, which terminates above in two much bent acute hooks, directed backwards, and being as high as the basal segment of the abdomen; the spines and hooks black at the apex. Abdomen ovate.

*Hab.* Aru.

13. *POLYRHACHIS HECTOR*. *P. niger et vestitus pube pallidè aureâ; prothorace petiolique squamulâ bispinosis, pedibus ferrugineis.*

*Worker.* Length 3 lines. Black; the apex of the scape and the legs ferruginous; the extreme base of the tibiæ and the tarsi black; a stout acute spine on each side of the prothorax, directed forwards; the thorax flattened above, its lateral margins raised; the divisions of the segments very distinctly impressed; the pale golden pubescence on the abdomen thinner than on the head and thorax. The scale of the petiole angled at the sides towards its summit, the angles dentate, the upper margin straight, and at each lateral angle an acute spine, directed backwards, and curved to the shape of the abdomen; the spines parallel.

*Hab.* Aru.

14. *POLYRHACHIS RUFOFEMORATUS*. *P. niger, lævis, nitidus; femoribus abdominisque squamulâ ferrugineis.*

*Worker.* Length  $3\frac{1}{2}$  lines. Black; head oblong; the eyes placed high at the sides near the vertex, the front very prominent, with two elevated carinæ in the middle, at the outside of which the antennæ are inserted. Thorax: the divisions strongly marked, flattened above with the sides elevated; the prothorax with an acute spine on each side anteriorly; the coxæ and femora ferruginous, with the apex of the latter more or less fuscous. Abdomen: the base and the scale ferruginous, the latter angled at the sides and emarginate above.

*Hab.* Aru.

#### Gen. *PONERA*, *Latr.*

1. *Ponera rugosa*, *Smith, Cat. Hym. Ins. Proc. Linn. Soc. ii. 66. 5.*

*Hab.* Aru. Borneo.

2. *PONERA SCULPTURATA*. *P. nitida nigra; capite, thorace abdominisque segmentis primo et secundo profundè striatis, nodo spinis duabus acutis armato; pedibus abdomineque apice ferrugineis.*

*Worker.* Length 5 lines. Black and shiny, the legs obscurely ferru-

ginous as well as the mandibles; the head strongly and evenly striated longitudinally. The prothorax with a circular striation above; behind, the thorax is compressed, the sides being obliquely striated, the striæ uniting and crossing the central ridge of the thorax. The node of the petiole and basal segment of the abdomen with a curved striation, the second segment longitudinally striated and depressed at its base, which is smooth and shining; the basal half of the third segment is longitudinally striated.

*Hab.* Aru.

This species is at first sight very like the *P. geometrica* from Singapore; but the striation of the abdomen alone will serve to distinguish it.

3. *PONERA PARALLELA*. *P. nigra*, opaca; antennis, mandibulis, pedibus abdominisque apice ferrugineis.

*Worker*. Length  $3\frac{1}{4}$  lines. Opake black; the antennæ thick and scarcely as long as the thorax, their apex and the mandibles bright ferruginous; the legs somewhat obscure ferruginous, with the articulations much brighter; the head a little wider than the thorax and subovate; the thorax, node of the petiole, and the abdomen of nearly equal width, the abdomen being slightly the widest; the node of the petiole nearly quadrate; the apical margin of the first segment and base of the second slightly depressed.

*Hab.* Aru.

4. *PONERA QUADRIDENTATA*. *P. atro-fusca*; antennis, facie anticè, antennis, mandibulis, tibiis tarsisque ferrugineis; alis subhyalinis.

*Female*. Length  $3\frac{1}{4}$  lines. Nigro-fuscous; the antennæ with a carina between their base, the face anteriorly, the mandibles, the legs, and the abdomen at its apex and beneath, ferruginous; the femora and coxæ above, fuscous; the head subquadrate with the angles rounded; the eyes small and placed forwards on the sides of the head towards the base of the mandibles, the latter with four strong teeth on their inner margin. Thorax oblong-ovate with the metathorax truncate; the wings fusco-hyaline, the stigma large and black. Abdomen: the second segment slightly narrowed at its base, the node of the petiole incrassate and compressed, its upper margin rounded. The insect entirely covered with a short downy cinereous pile, the abdomen having also a number of scattered erect glittering hairs.

*Hab.* Aru.

#### Gen. ECTATOMMA, *Smith*.

1. *ECTATOMMA RUGOSA*. *E. fusco-brunnea*; capite, thorace, nodoque rugosis; abdomine delicatè aciculato.

*Worker*. Length 4 lines. Obscure fusco-ferruginous, the antennæ and legs bright ferruginous; the head, thorax, and node of the petiole coarsely rugose; the eyes very prominent and glassy; the mandibles

longitudinally but very delicately striated, their inner margin edentate; the thorax slightly narrowed behind. Abdomen very delicately aciculate.

*Male.* Length  $3\frac{1}{2}$  lines. Of the same colour, and sculptured like the worker; the head rounded behind the eyes and narrowed before them; the eyes very large, prominent and ovate; the ocelli very bright and prominent; antennæ elongate and slender, the scape short, not longer than the second joint of the flagellum. Thorax: the scutellum prominent, forming a rounded tubercle, the metathorax elongate and oblique. Abdomen aciculate as in the worker, but much more deeply strangled between the first and second segments; the petiole rugose and clavate.

*Hab.* Aru.

#### Gen. ODONTOMACHUS, Latr.

1. *Odontomachus simillimus*, Smith, *Cat. Form.* p. 80. 11 ♀.

*Hab.* Aru. Ceylon.

2. *ODONTOMACHUS TYRANNICUS.* *O. capite thoraceque nigris, antennis abdomineque ferrugineis, margine interno mandibulorum serratulo.*

*Worker.* Length 7 lines. Head oblong, narrowed behind, posteriorly deeply emarginate; the mandibles rufo-piceous, brightest at their apex, which is armed with two long teeth which are bent abruptly inwards, their tips black; the anterior portion of the head striated obliquely from the centre; the head, behind the anterior sulcation, very smooth and shining and having a deep longitudinal central depression. Thorax transversely striated, the articulations of the legs and the tarsi ferruginous. Abdomen smooth, shining, and ferruginous; the node of the petiole incrassate, cylindric, and tapering upwards into a very acute spine.

*Hab.* Aru.

3. *ODONTOMACHUS MALIGNUS.* *O. ferrugineus; capite supra oblique striato; margine interno mandibulorum confertim serrato; metathorace transversim striato; squamâ unispinosâ; abdomine lævissimo.*

*Worker.* Length 7 lines. Ferruginous; the flagellum and legs palest; head much narrowed behind, the posterior margin deeply emarginate; mandibles smooth and shining, their inner margin strongly serrated, their apex abruptly bent or elbowed, and armed with two stout teeth; the face anteriorly evenly striated obliquely; the head behind the anterior sulcation very delicately striated obliquely. The prothorax smooth and shining, the meso- and metathorax transversely striated. Abdomen very smooth and shining; the node of the petiole incrassate and tapering upwards into an acute spine.

*Hab.* Aru.

This species most closely resembles *O. maxillaris* from Brazil; but its

smooth polished prothorax alone would distinguish it; its head is much broader anteriorly, and less elongate.

Gen. PSEUDOMYRMA, *Guér.*

1. PSEUDOMYRMA LÆVICEPS. *P. nigra, lævis et nitida*; antennis, mandibulis, tibiis anterioribus, tarsisque rufo-fulvis.

*Worker.* Length  $2\frac{1}{2}$  lines. Black and shining; head very smooth and slightly emarginate behind, the eyes large and ovate; the mandibles and antennæ rufo-fulvous. Thorax with the sides flattened, the disk slightly convex; a deep strangulation between the meso- and metathorax, the latter rounded above and oblique behind; the trochanters, articulations of the legs, and the tarsi rufo-fulvous. Abdomen thinly covered with a fine cinereous pile; the first node of the petiole somewhat oblong-ovate, the second subglobose, the petiole of the first node short.

*Hab.* Aru.

Gen. PODOMYRMA, *Smith.*

*Head* oblong in the *female*, rather wider than the thorax; in the *worker* subovate and much wider; *eyes* small, ovate and placed about the middle at the sides of the head; *antennæ* geniculated, the scape about two thirds of the length of the flagellum which is clavate, the club three-jointed; the *mandibles* stout and dentate; the *labial palpi* 3-jointed; the *maxillary palpi* 4-jointed. *Thorax*, oblong-ovate in the *female*, in the *worker* transverse in front and narrowed behind with the metathorax bidentate; the anterior wings with one elongate marginal cell and two submarginal cells, the second extending to the apex of the wing; the legs stout, the femora incrassate; abdomen ovate, the peduncle with two nodes.

The insects included in this genus are undoubtedly most nearly allied to those belonging to the genus *Myrmecina*; but, excepting that they agree in having the same number of joints in the palpi, they have little resemblance to each other. With the exception of the genus *Myrmecia*, these are the largest insects in the subfamily Myrmicidæ; and all the species are distinguished by their remarkably thickened femora and margined thorax: we are unacquainted with the males.

1. PODOMYRMA FEMORATA. *P. ferruginea*; capite oblongo, oblique striato, thorace abdomineque lævibus nitidis; alis subhyalinis fusconebulosis; femoribus valdè incrassatis, basi tenuissimis, femoribus posticis infra compressis.

*Female.* Length 8 lines. Rufo-testaceous; the mandibles and anterior margin of the face black, the inner margin of the mandibles rufo-piceous and armed with six short stout teeth, the apical tooth largest. The head oblong, slightly narrowed posteriorly and emarginate be-

hind, longitudinally striated, the striae diverging from the centre at the anterior ocellus; at half the distance between the posterior ocelli and the margin of the vertex the striae are transverse. Thorax smooth and shining, with scattered fulvous hairs; the wings fusco-hyaline, with a dark fuscous stain occupying the marginal cell and traversing the course of all the nervures; the legs with the femora much incrassated, the posterior pair compressed beneath into a flattened process or keel. Abdomen ovate, smooth, shining, and with a scattered fulvous pubescence; the first node of the petiole rounded in front, narrowed and truncate behind, with a large compressed tooth beneath; the second node subglobose.

*Worker major.* Length 4 lines. Ferruginous, entirely smooth and shining; the thorax, legs, and abdomen more or less obscure, the femora being usually rufo-piceous; the mandibles striated with their margins black. Thorax nearly flat above, very slightly convex with the sides margined, the anterior margin slightly rounded, the lateral angles produced into small acute spines; a deep strangulation at the base of the metathorax, a little before which the lateral margins are produced into an angular tooth, the metathorax with two short acute spines; the femora thickly incrassate. Abdomen ovate.

*Hab.* Aru.

2. *PODOMYRMA STRIATA.* *P. ferruginea*; capite thoraceque longitudinaliter striatis, femoribus valdè incrassatis, basi tenuissimis.

*Worker.* Length 3 lines. Rufo-ferruginous with the abdomen obscure, becoming blackish at the apex, the head coarsely striated, with a central portion from the insertion of the antennæ to the hinder margin of the vertex delicately so; the mandibles striated, with the teeth on their inner margin black. Thorax rugose-striate, the anterior lateral angles dentate, the metathorax without spines; the femora thickly incrassate and greatly attenuated at their base. Abdomen ovate, smooth and shining; the nodes of the petiole rugose.

*Hab.* Aru.

This species resembles *P. femorata*, but is easily distinguished by its striated head and thorax; the latter is similarly flattened above and margined at the sides; the femora are also thickened precisely as in that species.

3. *PODOMYRMA LÆVIFRONS.* *P. obscurè ferruginea*; capite abdomineque lævissimis lucidisque; thorace longitudinaliter striato; femoribus medio valdè incrassatis, basi tenuissimis.

*Worker.* Length 2½ lines. Head and abdomen smooth, shining black, in some examples fusco-ferruginous; the antennæ, legs, and thorax ferruginous, the latter longitudinally striated; the thorax margined at the sides, the disk slightly convex, the anterior margin slightly rounded, with the lateral angles armed with short acute spines, the

thorax deeply strangulated posteriorly, the metathorax not spined; the femora thickly swollen in the middle and very slender at their base and apex. Abdomen ovate, the first node of the petiole oblong, the second globose.

*Hab.* Aru.

There is considerable variation in intensity of colouring in examples of this species, the thorax and legs being sometimes pale ferruginous; in the specimen described they are dark; every shade of gradation occurs in different individuals.

4. *PODOMYRMA BASALIS*. *P. fusco-ferruginea*; abdominis basi pallidè testacea; femoribus medio incrassatis, basi tenuibus.

*Worker.* Length 3 lines. Obscurely ferruginous, the scape of the antennæ, the base of the femora and the tibiæ pale ferruginous; the base of the abdomen pale testaceous; the head and thorax with deep coarse longitudinal furrows; the flagellum blackish-brown towards its apex, with the extreme tip pale. Thorax: the anterior margin slightly rounded with the lateral angles very acute; the femora very thickly incrassate in the middle; the apex of the tibiæ ferruginous. Abdomen smooth and shining; the basal half pale testaceous, the apical half and the following segments black; the nodes of the petiole rugose; the first node elongate, with a short acute tooth at the base above, and a blunt one beneath.

*Hab.* Aru.

### Gen. *MYRMICA*, *Latr.*

1. *MYRMICA PARALLELA*. *M. rufo-fulva*; antennis pedibusque pallidè testaceis; abdomine fusco-ferrugineo; capite thoraceque longitudinaliter striatis.

*Worker.* Length 1 line. Head and thorax ferruginous and longitudinally and evenly striated; antennæ and legs pale rufo-testaceous. Thorax margined at the sides, the disk slightly convex, the anterior margin transverse, the lateral angles acute; the metathorax with two short spines; abdomen dark fusco-ferruginous, the nodes of the petiole subrugose; club of the antennæ 3-jointed.

*Hab.* Aru.

2. *MYRMICA SCABROSA*. *M. nigra*; capite thoraceque scabrosis, metathorace bispinoso, abdomine ovato lævi.

*Worker.* Length 1 line. Black; the head, thorax, and nodes of the petiole roughened; the mandibles, flagellum and tarsi rufo-testaceous; the lateral angles of the prothorax acute, the sides narrowed slightly to the base of the metathorax, the spines on the latter acute; nodes of the petiole globose. Abdomen ovate, smooth and shining; club of the antennæ 3-jointed.

*Hab.* Aru.



3. *MYRMICA THORACICA*. *M. capite abdomineque nigris; antennis, mandibulis thorace pedibusque flavis.*

*Worker.* Length  $\frac{3}{4}$  line. Head and abdomen jet-black; the antennæ, thorax, and legs of a clear honey-yellow; the mandibles of a more obscure yellow; the anterior margin of the thorax transverse, the lateral angles acute, narrowed from thence to the base of the mesothorax, the disk anteriorly slightly convex; the metathorax armed with two acute spines. Abdomen nearly round, and very smooth and shining; the first node of the petiole vertical anteriorly, and gradually rounded behind, the second node transverse, its anterior margin straight, the angles rounded, the sides narrowed towards the abdomen; the club of the antennæ 3-jointed.

*Hab.* Aru.

The singular form of the thorax of this species, as well as the construction of the nodes of the petiole, appear to indicate an uncharacterized division of the genus *Myrmica*.

4. *MYRMICA SUSPICIOSA*. *M. rufo-testacea, lævis, tota nitidissima nuda; mandibulis, antennis, pedum articulationibus tarsisque pallescentibus; metathoracis spinis minutissimis.*

*Worker.* Length 1 line. Rufo-testaceous and very smooth and shining; the antennæ as long as the insect; the flagellum, mandibles, tarsi, and articulations of the legs pale testaceous. The thorax narrowed anteriorly into a short neck, behind which it is dilated, the sides being rounded, the meso- and metathorax narrower and of nearly equal width, the spines of the metathorax minute and slender. The first node of the petiole somewhat wedge-shaped, the second globose, the abdomen very smooth and shining; club of the antennæ 3-jointed.

*Hab.* Aru.

I can detect no specific difference between this and *Myrmica levigata*, taken by myself in the neighbourhood of London; but it is not uncommonly met with in hothouses, near to which I captured my specimen. I believe *M. levigata* is identical with *Ecophthora pusilla*, the House-Ant of Madeira.

5. *MYRMICA MELLEÆ*. *M. capite thoraceque flavis; abdomine pallidè fusco.*

*Worker.* Length  $1\frac{3}{4}$  line. Head, antennæ, thorax, and legs honey-yellow and very smooth and shining; thorax strangulated at the base of the metathorax, which is not spined; the first node of the abdomen is oblique anteriorly, and vertical behind, the second node subglobose. Abdomen: the base honey-yellow, the apical margin of the first segment, and the following segments entirely, pale fuscous; the club of the antennæ 2-jointed.

*Hab.* Aru.

6. *MYRMICA CARINATA*. *M. obscurè fusco-ferruginea; thorace rufo-*

fulvo; capite thoraceque carinis irregularibus; metathorace spinis duabus longis armato.

*Worker.* Length  $1\frac{1}{4}$  lines. Head and abdomen black, with more or less of an obscure ferruginous tinge, particularly at the vertex and base of the abdomen; the thorax and nodes of the petiole ferruginous; the legs rufo-piceous, with the tarsi and articulations ferruginous, the antennæ and mandibles ferruginous; the head and thorax with irregular distant longitudinal carinæ; the sides of the thorax rugose; the spines on the metathorax long and acute; the abdomen very smooth and shining; the club of the antennæ 3-jointed.

*Hab.* Aru.

Gen. CREMATOGASTER, *Lund.*

1. *Crematogaster obscura*, *Smith, Cat. Hym. Ins., Journ. Proc. Linn. Soc.* ii. 76. 4 ♂.

*Hab.* Aru; Borneo.

2. CREMATOGASTER ELEGANS. *C. pallidè* rufo-testaceus; abdomine nigerrimo nitido; thorace bispinoso.

*Worker.* Length  $\frac{3}{4}$  line. Entirely pale rufo-testaceous, excepting the eyes and abdomen which are jet black; the nodes of the petiole pale, smooth, and shining. Head about the same width as the abdomen. The lateral angles of the anterior margin of the prothorax acute, the metathorax armed with two long acute spines. Abdomen heart-shaped, its apex acute.

*Hab.* Aru.

3. CREMATOGASTER INSULARIS. *C. niger*, lævis et nitidus; antennis tarsisque pallidè testaceis; thorace spinis duabus acutis armato.

*Worker.* Length  $1\frac{1}{4}$  line. Black, smooth and shining; the vertex, thorax and nodes of the peduncle with an obscure ferruginous tinge; the antennæ, tarsi, and articulations of the legs pale rufo-testaceous; the spines which arm the metathorax stout, elongate, and acute, with their apex pale testaceous. Abdomen heart-shaped and very acute at the apex.

*Hab.* Aru.

Gen. SOLENOPSIS, *Westw.*

1. SOLENOPSIS CEPHALOTES. *S. pallidè* ferruginea; capite maximè in medio sulcato, abdomine apice fusco.

*Worker major.* Length  $2\frac{1}{2}$  lines. Pale ferruginous, with the anterior part of the face darker, the mandibles incrassate and very dark fusco-ferruginous; head very large and divided by a deep longitudinal channel, emarginate behind, nearly quadrate; the eyes small and placed forwards on the sides of the head. The metathorax truncate, not spined. Abdomen ovate, truncate at the base, its apex fuscous; the first node of the petiole compressed, its margin rounded above,

the second node incrassate and subglobose; club of the antennæ 2-jointed.

*Worker minor.* Length  $1\frac{1}{2}$  line. Of the same colour as the *worker major*, but with the head of the ordinary size and slightly narrowed behind, the mandibles of the same colour as the head; the legs and antennæ longer, as well as the petiole of the abdomen; the body is very smooth and shining, the club of the antennæ 2-jointed.

*Hab.* Aru.

Subfam. CRYPTOCERIDÆ, *Smith.*

Gen. MERANOPLUS, *Smith.*

1. MERANOPLUS SPINOSUS. *M. castaneo-rufus*; abdomine nigro, thorace sexspinoso; abdomine ovato.

*Worker.* Length  $1\frac{1}{2}$  line. Head and thorax rugose; the antennæ and tarsi rufo-testaceous; the eyes rather prominent, the groove above them at the sides of the head extending backwards to the vertex. Thorax: the anterior margin curved forwards, the lateral angles produced into a bifurcate process on each side, behind the processes, slightly narrowed to the base of a long curved tooth; the posterior margin emarginate with a long sharp spine at each angle of the emargination; the node of the petiole globose. Abdomen black, smooth and shining.

*Hab.* Aru.

Fam. MUTILLIDÆ, *Leach.*

Gen. MUTILLA, *Linn.*

1. Mutilla Sibylla, *Smith, Proc. Linn. Soc. ii. 86. 11 ♀.*

*Hab.* Aru; Borneo; Celebes.

2. MUTILLA MANIFESTA. *M. capite abdomineque nigris, thorace sanguineo-rubro, maris alis nigro-fuscis.*

*Female.* Length  $4\frac{3}{4}$  lines. Head black and rugose. The thorax blood-red and coarsely rugose, its anterior margin widest and straight, the sides gradually narrowed to the apex in a slight curve; the lateral margins have two teeth not wide apart. Abdomen black, rugose, and slightly shining, with black pubescence above; on the under surface it is glittering silvery-white; the legs and sides of the thorax have a similar pubescence.

*Male.* The same size as the female, and the same colour; the eyes notched. The thorax oblong-quadrate, the posterior lateral angles acute; the tegulæ large and red; the wings dark brown, with their extreme base hyaline. Abdomen shining black, the first and second segments strongly punctured, the rest much more finely and not very closely so.

*Hab.* Aru.

3. MUTILLA CARINATA. *M. capite thoraceque metallico-purpureis*

viridi tinctis, pedibus ferrugineis, abdomine nigro, basi pallido fasciatâ, segmento secundo ad apicem fasciâ bilobatâ ornato.

*Female.* Length  $4\frac{1}{2}$  lines. The head and thorax of a metallic purple tint with shades of green and copper; the scape of the antennæ, the mandibles, palpi, and legs ferruginous; the head and thorax closely and strongly punctured. The abdomen velvety black; the base truncate, the truncation smooth and shining; its margin carinate; the upper surface of the basal segment yellowish-white, a broad bilobed fascia of the same colour at the apical margin of the second segment; the apex ferruginous. *Male.* The head and thorax metallic green, strongly and closely punctured; abdomen black and shining, much more finely punctured than the thorax; wings light brown, with their base and extreme apex hyaline; the legs ferruginous.

*Hab.* Aru.

4. *MUTILLA NIGRA.* *M. nigra et punctata*, abdomine lævi et nitido, delicatulè punctato, alis fuscis, basi hyalinis.

*Male.* Length  $6\frac{1}{2}$  lines. Black; head and thorax closely and strongly punctured; the eyes slightly notched; the face with silvery-white pubescence, the mandibles shining, the palpi black. Thorax: the metathorax densely clothed with yellowish-white pubescence; the legs with glittering white hairs, the calcaria white; wings brown with their base hyaline. Abdomen smooth and shining, delicately and sparingly punctured, with a few silvery hairs at the sides.

*Hab.* Aru.

5. *MUTILLA EXILIS.* *M. nigra et punctata*; abdomine lævigato, nitido; alis subhyalinis; facie et metathorace pube argentatâ vestitis.

*Male.* Length  $6\frac{1}{2}$  lines. Black; head and thorax strongly punctured; the eyes emarginate, the face with glittering silvery-white pubescence, the cheek thinly sprinkled with silvery hairs; the palpi testaceous. Thorax: the metathorax densely clothed with silvery pubescence, beneath, at the sides, and also the legs with scattered silvery hairs, the calcaria white; the tegulæ shining; the wings subhyaline with the nervures dark fuscous. Abdomen shining black, smooth, and very delicately and sparingly punctured, the apical margins of the segments very thinly fringed with glittering silvery hairs.

*Hab.* Aru.

Tribe FOSSORES, *Latr.*

Fam. SCOLIADÆ, *Leach.*

Gen. MYZINE.

1. *MYZINE TENUICORNIS.* *M. nigra*, alis hyalinis, abdomine nitido flavoque variegato.

*Male.* Length 7 lines. Black; the head and thorax very closely punctured, thinly clothed with griseous pubescence, that on the face, thorax

beneath, and on the coxæ most dense and glittering; antennæ more slender than is usual in this genus, and tapering to their apex, the joints slightly subarcuate; the mandibles bidentate at their apex and with a yellow spot at their base. Thorax: the posterior margin of the prothorax, a spot beneath the wings, the tegulæ, and the post-scutellum yellow; the anterior and intermediate tibiæ ferruginous and more or less dusky above, the posterior pair ferruginous beneath. Abdomen shining, the margins of the segments deeply depressed; a small ovate spot on each side of the first segment, the second and three following segments with a narrow stripe on each side in the middle, yellow; the yellow markings obscure; the apical segment coarsely rugose; beneath, the segments are closely and strongly punctured.

*Hab.* Aru.

Gen. SCOLIA, *Fabr.*

Division I. The anterior wings with two submarginal cells and two recurrent nervures.

1. *Scolia grossa*, *Burm. Abh. Nat. Ges. Halle*, i. p. 23. (*Tiphia grossa*, *Fabr. Syst. Piez.* p. 232. 4.)

*Hab.* Aru; Java.

The specimens of this species received from Aru are only 9 lines in length; I have examined others from Celebes, Borneo, India, and Java, showing every difference between 9 lines and 18 lines.

Division II. Anterior wings with two submarginal cells and one recurrent nervure.

2. *SCOLIA NITIDA*. *S. nitida*, *aterrima*; *alis æneo et violaceo splendide micantibus*.

*Female*. Length 11 lines. Shining jet-black, the abdomen with prismatic tints. The flagellum fusco-ferruginous beneath, the mandibles ferruginous at their apex; the wings dark brown with a splendid lustre of coppery and golden tints mixed with shades of violet. The head with a few punctures behind the ocelli; the thorax with scattered punctures; the metathorax finely but not closely punctured; the disk of the mesothorax impunctate; the abdomen with fine scattered punctures; the apical segment opaque, rugose, and with its apical margin pale testaceous; the abdomen beneath with strong distant punctures.

*Hab.* Aru.

3. *SCOLIA FULGIDIPENNIS*. *S. nitida*, *nigra*; *abdomine prismatico, alis fuscis viride et violaceo micantibus*.

*Female*. Length 12-13 lines. Jet-black, shining; head very smooth, the hinder margin of the vertex finely punctured, the face with a few fine scattered punctures; the flagellum obscurely rufo-fuscous. Thorax finely punctured, the disk of the mesothorax impunctate; wings dark brown with a splendid green iridescence, with violet tints to-

wards their base; the legs thickly spinose and pubescent; the calcaria simple. Abdomen with scattered fine punctures; the apical segment densely clothed with black pubescence; beneath, with strong scattered punctures.

*Male.* Rather smaller than the female, much more closely punctured, and not so shining and smooth; the face with a transverse arched carina above the insertion of the antennæ, which enters the emargination of the eyes; the clypeus strongly punctured; in other respects resembling the female.

*Hab.* Aru.

This species belongs to Guérin's division Liacos, of which *S. dimidiata* is the type; the third discoidal cell is petiolated, the petiole entering the second submarginal about the middle.

4. *SCOLIA INSULARIS.* *S. nitida nigra*; abdomine prismatico, alis obscurè fuscis cupreo submicantibus.

*Male.* Length 7-9 lines. Shining black; head punctured, the vertex most finely and distinctly so. Thorax punctured, the disk of the mesothorax impunctate, the punctures wide apart on the scutellum and metathorax; the wings dark brown with a coppery iridescence, which has a remarkable dimness as if breathed upon. The basal segment of the abdomen strongly and closely punctured; the following segments more finely and distantly punctured, particularly the second and third segments.

*Hab.* Key Island.

5. *SCOLIA QUADRICEPS.* *S. nitida nigra*; fœminæ capite magno subquadrato, alis fuscis cupreo iridescentibus.

*Female.* Length 6-8 lines. Black and shining; head subquadrate, smooth and shining, as wide as the thorax, with a few punctures at the sides of the face and between the antennæ. Thorax finely punctured, with the disk of the mesothorax impunctate; wings dark brown with a rich coppery iridescence. Abdomen with a fine prismatic lustre, closely and strongly punctured towards the apex and at the extreme base, the second segment and the middle of the third with only a few very fine scattered punctures.

*Hab.* Aru.

This species also belongs to the division Liacos; the petiolated cell is small and oblong-quadrate; the male exactly resembles the female, except that its head is smaller and narrower than the thorax; the abdomen is rather more strongly punctured.

#### Gen. POMPILUS, *Fabr.*

1. *POMPILUS DUBIUS.* *P. niger*, pilis mutabili-sericeis tectus; alis subhyalinis, apice nebuloso.

*Female.* Length  $4\frac{1}{2}$  lines. Black and covered with a thin changeable silvery pile, which is most dense on the sides of the metathorax and base of the segments of the abdomen. The vertex emarginate behind, the eyes very large, their inner orbits emarginate, reaching high on

the sides of the head nearly to the margin of the vertex; the clypeus emarginate in front, the labrum produced. Thorax: the prothorax subelongate, narrowed anteriorly; the wings subhyaline, their apex clouded; the intermediate and posterior tibiæ with a double row of spines; all the tarsi simple; the calcaria stout and elongate. Abdomen shining, with the margins of the segments slightly depressed.

*Hab.* Aru.

Subgen. *AGENIA*, *Schiödt*.

1. *AGENIA blanda*, *Guér. Voy. Coq. Zool.* pt. 2. ii. p. 260.

*Hab.* Celebes; India; Singapore; Malacca; Borneo; Key Island.

2. *AGENIA CALLISTO*. *A. nigra*, pilis sericeis vestita; facie thoraceque subtus pube argentato-albâ densè vestitis; alis fasciis duabus angustis.

*Female*. Length 8 lines. Black; the face, clypeus, and cheeks with a dense silvery-white pile; the tips of the mandibles obscurely ferruginous, the palpi black. Thorax with a brilliant silvery-white pile on the sides, beneath, and on the coxæ; the metathorax transversely rugose; the wings hyaline; the anterior pair with a narrow fuscous fascia at the apex of the externo-medial cell, and a second rather broader at the base of the marginal cell, which does not quite cross the wing; the apex of the wing fuscous. Abdomen petiolated, smooth and shining, with a beautiful glossy pile, which is most dense at the sides; the apical segment longitudinally subcarinated in the middle above.

*Hab.* Aru.

3. *AGENIA JUCUNDA*. *A. nitida nigra*; facie metathorace abdomineque pube sericeâ vestitis; antennis, pedibus, abdominisque marginibus apicalibus ferrugineis; alis hyalinis.

*Female*. Length  $5\frac{1}{2}$  lines. Black; head, pro- and mesothorax, as well as the scutellum, glassy-smooth and shining; the face covered with silvery-white pile; the antennæ, tips of the mandibles, and the legs ferruginous; the palpi elongate and pale rufo-testaceous. Thorax: the wings hyaline and iridescent, the nervures very slender and pale rufo-testaceous, the stigma fuscous; the metathorax rounded behind, transversely rugose, and covered with silvery-white pile. Abdomen petiolated; the apical margins of the second and following segments ferruginous, the apical segment entirely so; the ferruginous band on each segment produced in the middle into an angular shape; on the abdomen beneath they are similarly produced; the basal segment entirely ferruginous, with a black spot on each side.

*Hab.* Aru.

4. *AGENIA ALTHEA*. *A. nigra*; facie pube argentato-albâ vestitâ, thorace abdomineque sericeo pubescentibus; alis hyalinis, venis nigris.

*Female.* Length 5 lines. Black; the face silvery; the anterior margin of the clypeus rounded and narrowly smooth and shining; tips of the mandibles ferruginous; the mandibles elongate and pale rufo-testaceous. Thorax: the metathorax finely transversely rugose, the sides with bright silvery-white pubescence; the coxæ, the thorax beneath and on the sides, with fine silky sericeous pile; the anterior tibiæ and tarsi, and all the femora at their apex beneath, ferruginous; wings hyaline and iridescent, nervures black; the outer margin of the tegulæ testaceous. Abdomen shining, and with a fine silvery sericeous pile; the apical margins of the segments narrowly rufo-piceous; the terminal segment with an elongate, smooth, shining space, which extends to the apex, which is testaceous.

*Hab.* Aru.

5. *AGENIA ALCYONE.* *A. nigra*, pilis sericeis cinereis vestita; antennis pedibusque ferrugineis, alis hyalinis; abdomine petiolato; marginibus apicalibus segmentorum flavis.

*Male.* Length 7 lines. Black; the antennæ, tips of the mandibles, and the legs ferruginous; the scape in front, a narrow line on the inner orbit of the eyes, and the anterior portion of the clypeus yellow; the antennæ fuscous above towards their base. Thorax: the femora beneath towards their base, the trochanters and coxæ, except their apex, black; the apical joints of the intermediate and posterior tarsi fuscous; wings hyaline, the nervures fusco-ferruginous, the tegulæ reddish-yellow. Abdomen petiolated; the apical margins of the segments with reddish-yellow fasciæ; beneath, the margins of the segments are rufo-piceous, not fasciated.

*Hab.* Aru.

6. *AGENIA AMALTHEA.* *A. nigra*, pilis tenuibus cinereis sericeis vestita; antennis anticè pedibusque anticis et intermediis anticè ferrugineis; abdomine petiolato; alis hyalinis bifasciatis.

*Female.* Length 6 lines. Black; the face densely covered with silvery pile; the antennæ in front, the anterior margin of the clypeus and the tips of the mandibles ferruginous; palpi elongate and pale rufo-testaceous. Thorax: the posterior margin of the prothorax narrowly, the tegulæ, the anterior and intermediate femora in front, the posterior pair towards their apex beneath, the anterior tibiæ and tarsi, the intermediate and posterior tibiæ more or less beneath, and their tarsi, ferruginous; the tarsi sometimes dusky above; the wings hyaline, a narrow fuscous fascia at the apex of the externo-medial cell, and a broad one crossing at, and being the width of, the second and third submarginal cells; tips of the wings milky-white; the metathorax rounded posteriorly, transversely finely rugose and densely covered with short silvery-white pubescence at the sides and apex. Abdomen petiolated, smooth and shining, with the apex and the margins of the segments narrowly rufo-piceous.

*Hab.* Aru.



Gen. *PRIOCNEMIS*, *Schödtte*.

1. *PRIOCNEMIS PULCHERRIMUS*. *P. lætè ruber*; alis flavo-hyalinis, apice latè fusco, abdominis lateribus nigris.

*Female*. Length  $7\frac{1}{2}$  lines. Bright red; the anterior margin of the clypeus with a minute tooth in the centre; the tips of the mandibles fuscous. The metathorax slightly striated transversely, and with a central as well as a lateral longitudinal groove; the wings flavo-hyaline, their apex with a fuscous cloud, which commences at the base of the first discoidal cell, the extreme tips pale; the tibiæ and tarsi with short slender spines; the extreme apex of the joints of the posterior tarsi black. Abdomen: the short petiole of the basal segment, and the sides of the second, third, and fourth segments black, leaving a red line down the middle of each; beneath, the second, third, and base of the fourth segments black.

*Hab.* Aru.

2. *PRIOCNEMIS FERVIDUS*. *P. capite, antennis, thorace pedibusque ferrugineis*; abdomine nigro; alis fuscis basi subhyalinis.

*Female*. Length 9 lines. Ferruginous, with the abdomen black; the anterior margin of the clypeus rounded. The metathorax transversely rugose; the pectus, and coxæ at their base within, black; wings brown, with a violet iridescence, their base rufo-hyaline; the intermediate and posterior tibiæ with a double row of spines, all the tarsi spinose. Abdomen shining black, with the extreme apex slightly ferruginous.

*Hab.* Aru.

Gen. *MACROMERIS*, *St.-Farg.*

1. *MACROMERIS IRIDIPENNIS*. *M. cæruleo-nigra*; abdomine iridescente, alis cæruleo-violaceoque splendè micantibus; pedibus muticis, simplicibus.

*Female*. Length 12 lines. Blue-black; abdomen with a changeable iridescent pile; head and thorax with a black velvety pubescence; the metathorax very finely rugose and opaque; the legs simple; the posterior tibiæ villose within; the wings very dark brown, with a splendid violet and blue iridescence.

*Male*. Very closely resembling the female, but rather smaller; the anterior and intermediate femora more incrassate, and all the femora with a simple row of teeth or serrations on their inferior margins.

*Hab.* Aru.

Although this species of *Macromeris* is very similar in colour to the *M. violacea* of St.-Fargeau, the femora are not so thick as in that species, not in fact much more so than in the female; and the row of teeth beneath is a strong specific character.

Gen. *SALIUS*, *Fabr.*

1. *SALIUS MALIGNUS*. *S. niger*, pube cinereâ sericeâ vestitus; alis fuscis, albo fasciatis.

*Female*. Length 9 lines. Black, and covered with a fine thin ashy pile; the scape in front, and the anterior margin of the clypeus narrowly, obscure yellow; the mandibles ferruginous at their apex, which has a single notch; the palpi pale rufo-testaceous. Thorax: the prothorax with a slightly interrupted narrow fascia a little before its posterior margin, and the scutellum, yellow; the anterior femora broadly dilated, and, as well as the anterior tibiæ, ferruginous within; the intermediate tibiæ ferruginous at their apex in front, and the posterior pair with a yellowish-white spot at their base outside; the calcaria pale testaceous, the claws ferruginous, the anterior tarsi entirely so, but more or less obscure; the posterior tibiæ slightly spinose; the anterior wings brown, with a white fascia crossing at the first discoidal cell, and a second at the apex of the third submarginal, the extreme base and the anterior margin of the externo-medial cell hyaline. Abdomen: the apical margins of the segments with a little bright silvery pile.

*Hab.* Aru.

Gen. *MYGNIMIA*, *Smith.*

1. *MYGNIMIA ASPASIA*. *M. cæruleo-nigra*; capite thoraceque pube holosericeâ vestitis; alis fulvo-hyalinis; abdomine pilis iridescentibus vestito.

*Female*. Length 14 lines. Black, with shades of blue in certain lights; the abdomen with bright tints of blue and violet, caused by fine iridescent changeable pile; the legs have a similar pile, very bright on the femora within; the head and thorax with a short black velvety pubescence; the wings flavo-hyaline; the nervures pale ferruginous; the extreme base of the wings blackish, their apical margins with a narrow fuscous border. The legs spinose; the posterior tibiæ with a double row of strong serrations.

Gen. *SPHEX*, *Fabr.*

1. *SPHEX ARGENTATA*, *Dahlb. Hym. Eur. i. 25. 1.*

*Hab.* Aru; Celebes; Sumatra; India; Greece; Africa; East Florida.

2. *SPHEX SERICEA*, *Fabr. Syst. Piez. 211. 19.*

*Hab.* Aru; Malacca; Borneo; Java; Philippine Islands.

3. *SPHEX AURIFRONS*. *S. niger*; facie pube aureâ vestitâ, alis flavo-hyalinis apice fuscis, abdomine pilis sericeo-aureis vestito.

*Female*. Black; the face densely clothed with golden pubescence, the head having a number of scattered long golden-yellow hairs. Thorax

thinly covered with long yellow pubescence, which is most dense at the sides of the metathorax; the tibiæ, tarsi, and posterior femora ferruginous; the claw-joint of the tarsi black; the tibiæ and tarsi with black spines; the wings fulvo-hyaline, their apex with a narrow fuscous border, the nervæ ferruginous. Abdomen covered with a fine, thin, golden-reflecting pile; the apical margins of the segments rufo-testaceous, the testaceous margin produced in the middle into a triangular shape, most conspicuously so on the segments beneath.

*Hab.* Aru.

4. *SPHEX NITIDIVENTRIS*. *S. niger*; abdomine nigro-cæruleo, lævigato, nitido; alis fuscis.

*Female*. Length 12 lines. Black; the face with silvery pubescence, and thinly covered with long black hairs; the clypeus with a central longitudinal carina at the base, which terminates at the middle, from whence to the anterior margin is a broad, smooth, shining space. Thorax shining and finely punctured; the metathorax opaque and covered with long, loose, black pubescence; the legs shining, the posterior tibiæ with shining grey pile within; wings brown, darkest at their base. Abdomen blue, and very smooth and shining, oblong-ovate; the apical segment vertical.

*Hab.* Aru.

5. *SPHEX SEPICOLA*. *S. niger*; facie pube aureâ vestitâ; alis subhyalinis apice fuscis; abdomine nitido.

*Female*. Length 9 lines. Black; the face densely clothed with golden pubescence, the cheeks with iridescent pile, with a long, loose, scattered pale yellow pubescence on the head and thorax; the mandibles smooth, shining black. The disk of the thorax with an obscure chalybeous tint, shining and finely punctured; the metathorax opaque and finely rugose; the wings subhyaline, their apical margins fuscous, the nervures fusco-ferruginous. Abdomen with a slender subelongate petiole, and with a thin, silky, grey pile; the apical margins of the segments narrowly and obscurely rufo-piceous.

*Male*. Rather smaller than the female, more slender and more pubescent, the pubescence on the face paler.

*Hab.* Aru.

6. *SPHEX GRATIOSA*. *S. capite thoraceque nigris, abdomine cæruleo, alis fusco-hyalinis*.

*Male*. Length 10 lines. Head and thorax black; the face densely clothed with pale golden pubescence; the labrum and mandibles highly polished, very smooth and shining; a thin pale pubescence is scattered over the head, pro- and mesothorax, the latter obscurely chalybeous above, shining, and finely and closely punctured, with an abbreviated, deeply impressed line in the middle anteriorly; the posterior margin of the prothorax covered with shining silvery pubescence; the

metathorax opaque, and clothed with black pubescence; wings fusco-hyaline, the anterior pair darkest towards their base, the nervures dark fusco-ferruginous, nearly black. Abdomen smooth, shining dark blue; beneath, the margins of the segments have a bright, glittering, pale-golden pile.

Gen. *PELOPÆUS*, *Latr.*

1. *PELOPÆUS LABORIOSUS*. *P. niger*; scapo anticè, pedibus petioloque rufescenti-flavis, alis hyalinis fulvo tinctis.

*Female*. Length 12 lines. Black, with black pubescence on the head and thorax; the face with a fine cinereous pile; the scape yellow in front; the mandibles smooth and shining. Thorax: the legs pale ferruginous, the posterior femora darkest; the coxæ, the anterior and intermediate trochanters, and base of the femora black; wings fulvo-hyaline, the nervures ferruginous; the metathorax obliquely striated. Abdomen slightly shining at the base, with the petiole reddish-yellow.

*Hab.* Aru.

Gen. *LARRADA*, *Smith.*

1. *LARRADA MODESTA*. *L. nigra*; abdomine pilis argentatis fasciato; alis hyalinis.

*Female*. Length  $6\frac{1}{2}$  lines. Black; the face covered with silvery down; the mandibles smooth, shining, black, and fringed beneath with fulvous hairs, the cheeks silvery. Thorax slightly shining, closely and delicately punctured; the metathorax opaque and transversely striated; wings subhyaline, with a fuscous border at their apex, the nervures black. Abdomen slightly shining; the apical margins of the first, second, and third segments with fascia of silvery pile, which is very brilliant in certain lights.

*Male* closely resembles the female, but has an additional fascia on the abdomen.

*Hab.* Aru.

Gen. *LARRA*, *Fabr.*

1. *LARRA SIMILLIMA*. *L. nigra*, pulchre prismatica, maculis fascisque variis flavis ornata.

*Female*. Length  $6\frac{1}{4}$  lines. Black; the abdomen with tints of blue violet; the thorax slightly prismatic; the labrum, clypeus, an angular scape above, an abbreviated line on the inner orbits of the eyes, the scape in front, and the antennæ beneath, yellow; the cheeks with a silvery reflexion. The thorax beneath, and the metathorax, with a shining white silvery pile; the anterior and intermediate femora and tibiæ beneath yellow; the tarsi pale ferruginous, and more or less fuscous above; wings subhyaline, the nervures fuscous; a spot on the lateral posterior angles of the metathorax, two ovate spots on the scutellum, and a line on the postscutellum yellow. Abdomen: the basal segment with a broadly interrupted fascia a little before its

apical margin; the second and fourth segments with a narrow yellow fascia at their apical margins, which is widened laterally; beneath, the second and third segments with a yellow spot on each side.

The *Male* differs from the female in having a large quadrate black spot on the clypeus, and a spot at the base of the labrum; there is also a narrow yellow line on the posterior margin of the prothorax; and the third segment of the abdomen has a yellow fascia: it is also rather smaller.

*Hab.* Aru.

This insect very closely resembles *Larra prismatica*, from Borneo, Malacca, and Celebes, of which it may be a variety.

#### Gen. BEMBEX, *Fabr.*

1. *Bembex melancholica*, *Smith, Cat. Hym.* pt. iv. p. 328; *Proc. Linn. Soc.* ii. p. 105.

*Hab.* Aru; Sumatra; Borneo.

Many of the specimens from Aru are less highly coloured than those of Sumatra or Borneo: the yellow markings on the abdomen are frequently much obliterated in the females; others are as highly coloured as any examples I have seen.

#### Gen. PISON, *Spin.*

1. *PISON NITIDUS*. *P. nitidus*, niger, distinctè punctatus; alis subhyalinis, venis fuscis; segmentis abdominalibus apice depressis.

*Female.* Length 5 lines. Black and shining; the head and thorax strongly punctured; the face beneath, the antennæ, the clypeus, cheeks, and the sides of the segments of the abdomen covered with a silvery down; the palpi pale testaceous; the mandibles obscurely ferruginous at their apex. The metathorax transversely striated behind, with a central longitudinal impressed line above, which is transversely striated, and terminates in a deep fovea just beyond the verge of the posterior inclined truncation; the wings subhyaline; the nervures dark fuscous; the first recurrent nervure received at the apex of the first submarginal cell, and the second at the base of the third submarginal. Abdomen shining, and more delicately punctured than the thorax; the margins of the segments deeply depressed.

*Hab.* Aru, Key Island.

#### Gen. GORYTES, *Latr.*

1. *GORYTES CONSTRICTUS*. *G. niger*; clypei lateribus flavis; collari, tuberculis postscutelloque flavis; segmentorum abdominis marginibus apicalibus flavis constrictis, pedibusque flavo variegatis.

*Female.* Length 6 lines. Black; the head and thorax very closely punctured and opaque, the head slightly shining on the vertex; the antennæ beneath and the apical half of the mandibles ferruginous, the latter black at their tips; the clypeus yellow at the sides, and coarsely rugose in front. Thorax: the metathorax coarsely longitudinally

rugose, with cinereous pubescence at the sides; the antennæ and intermediate tibiæ, the tarsi, and articulations of the legs reddish-yellow; wings subhyaline, with a fuscous cloud in the marginal cell, which passes beyond to the apex of the wings; the nervures fusco-ferruginous; the tegulæ ferruginous. Abdomen shining, covered with a thin, fine, cinereous pile, and with the margins of the segments constricted; the apical margins of the segments with narrow yellow fasciæ, that on the fourth abbreviated on each side, on the fifth it is obsolete; beneath, the second segment is opaque, finely punctured, and pilose; the following segments smooth, shining, and with five scattered punctures.

The *Male* strongly resembles the female, but is smaller and less variegated with yellow; the face covered with silvery down; the scape and base of the flagellum ferruginous beneath; the clypeus yellow, except its extreme base. The thorax black, with the legs rufo-piceous; the tibiæ and tarsi pale ferruginous, variegated with yellow; the sides of the thorax beneath the wings longitudinally striated in both sexes, most conspicuously so in the male. The abdomen with three narrow interrupted fasciæ.

*Hab.* Aru.

2. *GORYTES VAGUS*. *G. niger*; clypeo maculis duabus flavis notato; postscutello et segmentis primo et secundo fasciâ apicali flavis, fasciâ in segmento primo subinterrupto.

*Female*. Length 6 lines. Black; the head finely punctured and shining; the anterior margin of the clypeus emarginate in the middle, and more deeply so on each side; on each side of the clypeus, at its base, is an oblique yellow spot, and anteriorly it is roughly punctured; the mandibles roughened at their base, their apical half smooth, shining, and ferruginous, with their apex black. Thorax subopaque, very closely punctured, and slightly shining; the metathorax coarsely longitudinally rugose-striate; the postscutellum yellow; wings subhyaline and iridescent, the nervures fusco-ferruginous; a dark fuscous cloud occupies the marginal cell. Abdomen smooth and shining, with a slightly interrupted fascia a little before the apical margin of the basal segment; the second segment has a fascia at its apical margin; both are yellowish white; the first is gradually widened towards the sides of the segment, the second abruptly widened, with the angle of the widened portion pointed inwards; beneath the abdomen is glossy, with the basal segment closely punctured and subopaque; the margins of abdominal segments slightly constricted.

*Hab.* Key Island.

#### Gen. TRYPOXYLON, *Latr.*

1. *TRYPOXYLON EXIMIUM*. *T. nigrum*; clypeo argentato-pubescente; abdominis segmentis secundo tertio quartoque basi rubris; alis hyalinis.

**Female.** Length  $8\frac{1}{2}$  lines. Black, smooth, and shining; the head and thorax very delicately punctured; the face and clypeus below the insertion of the antennæ densely covered with silvery-white pubescence; the anterior margin of the clypeus rounded and much produced, with a slight curving upwards at its margin; the mandibles yellow, with their apex ferruginous; the palpi pale testaceous; the inner orbits of the eyes very deeply notched. Thorax: the metathorax, the sides, and beneath with a thin silvery-white pubescence, most dense on the former; the metathorax not distinctly enclosed at its base, but with two shallow impressed lines, which mark the form of the usual enclosed space; a central longitudinal channel extends from its base to the apex, slightly sub-interrupted in the middle; the wings hyaline and iridescent, the nervures dark fuscous; the anterior and intermediate tibiæ in front, their tarsi, the apical joints of the posterior pair, and the base of the tibiæ very pale ferruginous; the claw-joint of the intermediate and posterior tarsi fuscous above; the calcaria pale testaceous. Abdomen, the second, third, and base of the fourth segment more or less ferruginous; the apex of the basal petiolated joint ferruginous beneath.

**Hab.** Aru and Key Island.

#### Gen. CRABRO, *Fabr.*

1. CRABRO SOLITARIUS. *C. niger*; abdomine petiolato; scapo flagellique articulo ultimo, collari, tuberculis, postscutelli maculis duabus flavis; pedibus petioloque basi ferrugineis.

**Female.** Length 5 lines. Black and opaque; the head large, quadrate, and wider than the thorax; the ocelli in a curve on the vertex; the clypeus covered with silvery pubescence, carinated in the middle, and slightly produced; the scape and basal joint of the flagellum pale yellow. Thorax: an interrupted line on the collar, the tubercles, a spot beneath the wings, and two minute ones on the postscutellum yellow; the disk of the thorax longitudinally delicately rugose; the metathorax obliquely striated, with an enclosed space at its base, and having a central longitudinal channel, the sides covered with thin silvery pubescence; the wings hyaline and iridescent, the nervures fuscous; the legs ferruginous, variegated with yellow. Abdomen: the basal petiolated segment ferruginous, with its apical half black above; the apical segment with an angular shape at its base, which is smooth and shining, with its lateral margins carinate, the extreme apex ferruginous; beneath smooth and shining, with the apical margins rufo-piceous.

**Hab.** Aru.

This species would, according to the views of some Hymenopterists, belong to the genus *Rhopalum* of Kirby.

## Group SOLITARY WASPS.

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

1. *Eumenes arcuata*, *Fabr. Syst. Piez.* 287. 11.

*Hab.* Key Island; coast of New Guinea (Triton Bay); Australia.

Gen. PACHYMENES, *Sauss.*

1. *PACHYMENES VIRIDIS*. *P. lætè viridis*; facie pube argentato-albâ tectâ; alis hyalinis.

*Female.* Length 8 lines. Bright green; the head, thorax, and basal segment of the abdomen rugose, the rest of the abdomen finely and very closely punctured; the clypeus thinly covered with a fine silvery-white pubescence, its apex produced and truncate. Thorax: the metathorax rounded behind, a deep longitudinal impressed line in the middle, and with fine silvery down at the sides and behind; the wings subhyaline, with a fuscous stain along the anterior margin of the superior pair; the legs rufo-piceous; the coxæ, femora, and tibiæ more or less tinged with green.

*Hab.* Aru.

Gen. RHYNCHIUM, *Spin.*

1. *Rhynchium mirabile*, *Sauss. Mon. Guêpes Sol.* 106\* 6, t. 14. f. 5 ♀.

*Hab.* Aru; Tasmania.

The *Male* of this fine species closely resembles the female; it is black, with a transverse spot above the insertion of the antennæ, an abbreviated narrow line behind the eyes, another on the lower margin of their emargination; the scape in front and the clypeus yellow, the latter notched at its apex; a minute yellow spot at the base of the mandibles; the antennæ, tibiæ, apex of the femora, and the tarsi ferruginous; the basal joint of the intermediate and posterior tarsi dusky; the intermediate femora deeply excavated or hollowed beneath; the prothorax yellow above; the metathorax truncate, transversely striated with several minute teeth on the lateral margins; the wings hyaline, tinted with yellow, their apical margins slightly clouded; the apical margins of all the segments of the abdomen bordered with yellow, that on the first segment narrowest. The only particulars in which the female apparently differs from Saussure's description, is that the second fascia on the abdomen is *widest at the sides*, and there are *three little teeth* on each side of the margins of the metathorax.

The *Female* is also in the Paris Museum.

2. *Rhynchium superbum*, *Sauss. Mon. Guêpes Sol.* p. 113. 18.

*Hab.* Aru; New Holland.



Our example of this species slightly differs in coloration from the description of Saussure. He says, "black, with the vertex, the front, the prothorax, and the border of all the segments of the abdomen, except the first, yellow; the wings yellow;" in the Aru specimen, the sinus of the eyes, a spot above the clypeus, a reversed crescent-shaped spot crossing the ocelli, two oblique spots behind them, and a broad elongate stripe behind the eyes yellow. These slight differences cannot characterize more than a variety; in every other particular they exactly correspond.

Gen. ODYNERUS, *Latr.*

1. ODYNERUS PETIOLATUS. *O. niger*; clypeo apiculato; capite, thorace abdomineque flavo variis; abdomine petiolato; alis subhyalinis.

*Female.* Length  $7\frac{1}{2}$  lines. Black; head and thorax strongly punctured; two confluent spots between the antennæ, a line on the inner orbits of the eyes, terminating in their emargination, an oblong spot behind them, a spot at the base of the mandibles, the scape in front, and the clypeus yellow; the latter with a large black spot in the middle, and with its anterior margin prolonged into an acute point; the mandibles ferruginous, with their base and margins black; the flagellum fulvous beneath. Thorax: an interrupted line on the collar, a spot beneath the wings, the outer margin of the tegulæ, two spots on the scutellum, two longitudinal curved lines on the metathorax, extending from the base to the apex, yellow; the yellow lines on the metathorax curving inwards. The tibiæ, tarsi, and apex of the femora ferruginous; the intermediate and posterior tibiæ with a fuscous line outside, a spot on the coxæ outside, a stripe at the apex of the anterior femora beneath, another on the intermediate pair, and a line on the anterior tibiæ, behind, yellow; wings subhyaline, their margins fuscous. Abdomen petiolated; a fascia on the apical margins of all the segments, and the petiole, yellow; the third and following fasciæ narrowest; all the fasciæ continued beneath the abdomen.

*Hab.* Aru.

2. ODYNERUS AGILIS. *O. niger*; capite thoraceque distinctè, abdomine delicatè punctatis; pedibus ferrugineis; abdominis segmentis duobus basalibus flavo fasciatis; alis subhyalinis.

*Male.* Length 6 lines. Black; the scape in front, a line on the inner margin of the eyes, terminating in their emargination, an abbreviated line behind them, and the clypeus yellow; the latter deeply emarginate, forming two teeth. Thorax: a line in the middle of the anterior margin of the prothorax, two spots on the verge of the emargination of the metathorax, and a fascia on the apical margins of the first and second segments of the abdomen yellow; the legs ferruginous; the wings subhyaline, the anterior margin of the superior pair fuscous; the outer margin of the tegulæ yellowish.

*Hab.* Aru.

3. *ODYNERUS MULTIPICTUS*. *O. niger*, flavo maculatus et punctatus; pedibus flavis, alis hyalinis.

*Female*. Length 4 lines. Black; the head and thorax strongly punctured, the abdomen finely and distantly so; the clypeus, a spot above it, the inner and outer orbits of the eyes, and the scape in front yellow; the clypeus deeply emarginate in front; the mandibles ferruginous, with a yellow spot at their base. Thorax: the prothorax in front, the tegulæ and two spots beneath the wings, the scutellum, and sides of the metathorax yellow; the legs yellow, with ferruginous stains; the femora with a black or dark stain above; wings hyaline, with a fuscous stain along the anterior border of the superior pair. Abdomen: a yellow fascia on the apical margins of the two basal segments; the three following segments with very narrow yellow borders, and the apical segment entirely reddish-yellow.

*Hab.* Aru.

4. *ODYNERUS MODESTUS*. *O. niger*; abdominis segmentis duobus basalibus flavo fasciatis; tibiis tarsisque ferrugineis; alis hyalinis; abdominis segmento primo basi transversim bicarinato.

*Female*. Length 4 lines. Black; head and thorax coarsely punctured; the vertex swollen; the scape of the antennæ, a spot between them, and the clypeus yellow; the latter with a transverse black spot in the middle, deeply notched in front, and having a carina on each side, in a line with the angle or tooth of the emargination; the flagellum ferruginous towards the apex beneath; wings hyaline, with a fuscous cloud in the marginal cell; the tibiæ and tarsi ferruginous. Abdomen: the base truncate, with an oblique space above the truncation, the margin of both defined by an elevated ridge or carina; a narrow fascia on the apical margin of the basal segment, and a broader one on the second; the latter continued beneath the abdomen.

*Hab.* Aru.

This species is undoubtedly allied to *O. Sichellii* of Saussure; but, beside differing in the colour of its legs, and of the bands of the abdomen, it wants the strong tubercle at the base of the second segment of the latter.

#### Gen. ALASTOR, *St.-Farg.*

1. *ALASTOR UNIFASCIATUS*. *A. niger*; maculâ inter antennis, abdominisque margine apicali et segmento secundo flavis; alis fuscis.

*Female*. Length  $6\frac{1}{2}$  lines. Black; the head and thorax strongly punctured; the face, sides of the clypeus, cheeks, and base of the mandibles with a fine silky silvery-white pubescence; the clypeus convex, its anterior margin emarginate; from each angle of the emargination a shining carina runs more than halfway up the clypeus; a minute spot between the antennæ, and two on the anterior margin of the prothorax, yellow; the wings fuscous, palest at their posterior mar-

gins. Abdomen finely and closely punctured; the third segment strongly so; a broad yellow fascia on the apical margin of the second segment.

*Hab.* Aru.

2. *ALASTOR APICATUS*. *A. niger*; abdominis segmentis primo et secundo aurantiaco-rubris; alis fuscis.

*Male*. Length  $5\frac{1}{2}$  lines. Black; the head and thorax strongly punctured; a spot between the antennæ, the scape in front, and the clypeus yellow; the latter with a large black spot at its base, anteriorly deeply emarginate; wings fuscous; the tegulæ with a rufo-testaceous spot at their outer margins; the tarsi and articulations of the legs ferruginous. Abdomen bright orange-red, with the third and following segments black; the base rugose, the second segment finely punctured, the rest much more strongly so.

*Hab.* Aru.

## Group SOCIAL WASPS.

### Fam. VESPIDÆ, *Steph.*

1. *ISCHNOGASTER IRIDIPENNIS*. *I. rufescens*-fuscus flavo varius; vertice et metathorace nigris, alis subhyalinis et pulcherrimè iridescentibus.

*Male*. Length  $7\frac{1}{2}$  lines. Head yellow, above the insertion of the antennæ black; antennæ black, with the scape, basal joint of the antennæ, and the mandibles ferruginous; the flagellum obscurely ferruginous beneath; the clypeus produced at the apex into an acute tooth. Thorax pale ferruginous; the metathorax black, with a ferruginous spot on each side in front; the scutellum with a reddish-brown spot in the middle, the postscutellum yellow and subinterrupted in the middle; the sides of the thorax yellow anteriorly, the yellow portion with two black spots; the legs slightly variegated with yellow; wings subhyaline and brilliantly iridescent, the marginal cell with a fuscous cloud. Abdomen brown; the petiole pale testaceous at its apex and ferruginous beneath, longer than the head and thorax; the second segment has a yellow macula on each side, and, beneath, a smaller spot on each side in a line with the side spots; the first segment has its basal portion yellow beneath, and a blackish spot in the centre rather behind the middle.

*Hab.* Aru.

This species in many particulars agrees with the *I. nitidipennis* of Saussure, but differs in too many, I think, to be considered the same species; the second recurrent nervure is straight at the upper extremity, then curved towards the margin of the wing, and again straight at its lower extremity; the third submarginal cell is much wider than the fourth.

Gen. ICARIA, *Sauss.*

1. *Icaria maculiventris*, *Sauss. Mon. Guêpes Soc.* p. 23. 1.—*Rhopalidia maculiventris*, *Guér. Voy. Coq. Zool.* ii. pt. 2. *Ins.* p. 267, pl. 9. fig. 8.  
*Hab.* Aru; New Guinea.

2. *ICARIA NIGRA*. *I. nigra*; clypeo anticè angulato; metathorace concavo et transversim striato; alis hyalinis.

*Female.* Length 6 lines. Black, punctured and opaque; the clypeus terminating in a sharp-pointed angle; the base and apex of the mandibles rufo-piceous; the scape ferruginous in front; the face with a thin, fine, griseous pubescence. Thorax slightly margined in front; an obscure testaceous spot on each side of the postscutellum, the metathorax concave and transversely striated; wings hyaline. Abdomen with a short petiole to the basal segment, which is very short and campanulate; at its posterior margin are two minute, obscure, pale spots; beneath, the margins of the apical segments are rufo-piceous.

*Hab.* Aru.

3. *ICARIA FASCIATA*. *I. nigra*; clypei margine antico, maculis duabus postscutelli flavis; segmentis abdominis ad apicem flavo angustè fasciatis.

*Female.* Length 5 lines. Black; the clypeus angular in front, its anterior margin and a spot on the mandibles yellow; the antennæ rufo-testaceous beneath. Thorax: the anterior margin of the prothorax slightly rebordered; the anterior coxæ with a spot in front and two spots on the postscutellum yellow; the anterior and intermediate tibiæ beneath, the tarsi beneath and the claw-joint entirely, ferruginous; wings hyaline with a fuscous stain along the anterior margin of the superior pair; the metathorax oblique and slightly concave, with an acute stout tooth on each side. Abdomen: the basal segment campanulate, the petiole short; a narrow yellow fascia on the apical margin of all the segments.

*Hab.* Aru.

4. *ICARIA BRUNNEA*. *I. rufescenti-fusca*; coxis femoribusque obscuris; alis hyalinis.

*Female.* Length  $3\frac{1}{2}$  lines. Reddish-brown; head and thorax punctured, the abdomen finely rugose; the clypeus and mandibles pale ferruginous, the former with a darker spot in the middle, the anterior margin angular. The anterior margin of the prothorax slightly rebordered; the wings hyaline and iridescent, with a fuscous stain along the anterior margin of the superior pair; the metathorax abruptly truncate. Abdomen: the basal margin of the third and following segments black.

*Hab.* Aru.

5. *ICARIA GRACILIS*. *I. nigra* flavo variegata; abdominis segmento basali elongato, gracili et petiolato; alis hyalinis.

*Female.* Length 7 lines. Black; the scape in front, the sides and apical margin of the clypeus, and a spot at the base of the mandibles yellow; the cheeks reddish-yellow; the antennæ ferruginous; the head covered with short griseous pubescence. Thorax with obscure ferruginous tints and a short griseous pubescence, most dense on the sides and beneath; the anterior margin of the prothorax, the tegulæ, scutellum and postscutellum, a broad stripe on each side of the metathorax, the coxæ, and the anterior and intermediate femora, at their apex beneath, yellow; the scutellum with a ferruginous stain in the middle, the postscutellum with a black stain, the coxæ ferruginous above, the tibiæ and tarsi ferruginous beneath; wings hyaline, with a fuscous stain along the anterior margin of the superior pair. Abdomen: a yellow fascia on the apical margin of the first and second segments; that on the following segments rufo-testaceous.

*Hab.* Aru.

6. *ICARIA UNICOLOR.* *I. rufescenti-fusca*, tenuiter cinereo-pubescent.

*Female.* Length 5 lines. Reddish-brown, covered with a thin cinereous pubescence; the clypeus acutely angular anteriorly; the metathorax oblique and delicately striated transversely; wings fusco-hyaline; the petiole of the abdomen long, the segment campanulated and narrow.

*Hab.* Key Island.

#### Gen. *POLISTES*, Latr.

1. *Polistes tepidus*, *Fabr. Syst. Piez.* p. 271. 7.

*Hab.* Aru; Key Island; Solomon Islands; New Guinea; Australia.

2. *Polistes diabolicus*, *Sauss. Mon. Guêpes Soc.* 68. 26, t. 6. f. 7.

*Hab.* Aru; Java; Timor.

3. *Polistes stigma*, *Fabr. Syst. Piez.* p. 261. 41.

*Hab.* Aru; Celebes; Ceram; India.

*Var.* The specimens from Aru differ from the typical ones in wanting the two longitudinal yellow lines on the metathorax, which is entirely black. Saussure has a variety with the metathorax black between the lines; of two examples from Celebes, one has the yellow lines entire, the other has them abbreviated at half their length.

4. *POLISTES NIGRIFRONS.* *P. capite thoraceque nigris, flavo et ferrugineo variegatis; abdomine ferrugineo, segmentis basi nigris, marginibus apicalibus flavis.*

*Female.* Length 8 lines. Head and thorax black; the anterior margin of the clypeus angular and narrowly rufo-testaceous; the mandibles, palpi, and antennæ ferruginous; the scape, and flagellum above, except the basal joint, fuscous; the outer orbits of the eyes with a narrow yellow line. The anterior margin of the prothorax slightly rebordered, the posterior margin ferruginous; the outer margin of the tegulæ reddish-yellow; wings subhyaline with a fusco-ferruginous stain along the anterior margins of the superior pair; the metathorax

finely striated transversely, and with two yellow stripes running upwards halfway from the base, the posterior margin of the pectus, tips of the coxæ, the femora at their base and apex, the tibiæ and tarsi beneath, ferruginous; tips of the femora, and tibiæ above, yellowish. Abdomen ferruginous, with the base of the second and following segments black; the first and three following segments with a yellow fascia on their apical margins; beneath, the two basal segments entirely ferruginous.

*Hab.* Aru.

This species is closely allied to the *P. fastidiosus* of Saussure, and, notwithstanding the difference in colouring, may possibly, I think, be an extreme variety of that species.

5. *POLISTES ELEGANS*. *P. ferrugineus*; capite thoraceque flavo variis; segmentis abdominis flavo marginatis.

*Female*. Length 8 lines. Ferruginous; the clypeus, mandibles, cheeks, and the face, as high as the middle of the emargination of the eyes, yellow. Thorax: the margins of the prothorax, two longitudinal stripes on the mesothorax, the scutellum, postscutellum, and sides of the metathorax broadly, yellow; the legs beneath, the coxæ and the sides of the thorax spotted with yellow; the intermediate and posterior coxæ spotted with ferruginous or fusco-ferruginous; the metathorax finely striated transversely; the wings hyaline with the nervures ferruginous. Abdomen: the first and three following segments with yellow marginal fasciæ, that on the fourth usually more or less obliterated.

*Hab.* Aru; Key Island.

### Fam. EVANIDÆ, *Leach*.

#### Gen. FÆNUS, *Fabr.*

1. *FÆNUS GRACILIS*. *F. niger*, facie lateribusque thoracis argenteo pilosis; pedibus anticis et intermediis pallidè -rufo-testaceis, tibiis posticis basi tarsisque albis; abdomine subtùs rufo-testaceo.

*Female*. Length 6 lines. Black; sub-opake; the face, sides of the thorax and beneath with silvery pubescence; the mandibles, palpi, and scape in front rufo-testaceous. Thorax: the anterior and intermediate legs rufo-testaceous, the femora having a darker stain above; the posterior legs black, with the base of the tibiæ and the tarsi white. Abdomen rufo-testaceous beneath; the ovipositor white at its apex.

*Hab.* Aru.

#### Gen. STENOPHASMUS.

Head globose; antennæ longer than the body, and very slender and setaceous; the prothorax forming a slender neck; the anterior wings with one marginal and three submarginal cells; the femora slightly

incrassate, not denticulate; the tarsi 5-jointed. Abdomen petiolated, the petiole as long as the abdomen; the ovipositor as long as the petiole and abdomen united.

This genus is founded on the examination of a single individual, which in general appearance exactly resembles the smaller species of the genus *Megischus*; on examination, however, it will be found that it differs from that genus in the neurulation of the anterior wings; its femora are not denticulate, in which character it differs from both *Megischus* and *Stephanus*; with the latter genus it agrees in having 5-jointed tarsi.

1. *STENOPHASMUS RUFICEPS*. *S. niger*; capite et antennarum basi rufis; ovipositore tarsisque pallidè testaceis; petiolo abdominis cylindrico; alis subhyalinis.

*Female*. Length 5 lines. Black, slightly shining; head globose, red and sprinkled with white hairs, and delicately striated transversely. Thorax sprinkled with white pubescence above, the sides more thickly clothed with the same; above, the thorax is transversely rugose, on the metathorax becoming more regularly striate; the metathorax has a central longitudinal carina and also one on each side; the legs sprinkled with erect white hairs; the tarsi pale rufo-testaceous with the claw-joint black; wings subhyaline, with a broad light-fuscous stain along the centre of the anterior pair; a hyaline streak crosses them at the base of the stigma. Abdomen: the petiole as long as the thorax, narrowest at the base of the abdomen; it is rugose at the base; the ovipositor pale testaceous.

*Hab.* Aru.

### Fam. ICHNEUMONIDÆ, *Leach*.

#### Gen. ICHNEUMON.

1. *ICHNEUMON INSULARIS*. *I. niger*; capite thoraceque albo variegatis; abdominis segmentorum primo, secundo, tertioque albo maculatis.

Length  $7\frac{1}{4}$  lines. Black; the orbits of the eyes, the face before the antennæ, the mandibles and palpi yellowish-white; the flagellum with the joints from the 14th to 25th white. Thorax: a line on each side before the tegulæ, a spot beneath the wings, two at the sides of the pectus, the anterior coxæ in front, and a narrow line on each side of the scutellum yellowish-white; the anterior and intermediate legs and a spot beneath the posterior tibiæ rufo-testaceous; the wings hyaline, the nervures black. Abdomen: a minute spot at the lateral apical margins of the three basal segments, and a large central one on the two apical segments, white.

*Hab.* Key Island.

#### Gen. CRYPTUS, *Fabr*.

1. *CRYPTUS SCUTELLATUS*. *C. ferrugineus*; tibiis posticis tarsisque albo annulatis; scutello tuberculato.

*Female.* Length 5 lines. Ferruginous; the face testaceous-yellow, an elongate black spot on the vertex enclosing the ocelli and extending to the insertion of the antennæ; the latter black, with the scape ferruginous in front. Thorax: the scutellum elevated, forming a compressed tubercle, its side view wedge-shaped; the wings hyaline the nervures black, the base of the wings yellowish; the apical joints of the intermediate tarsi, the tips of the posterior femora, the extreme base of the tibiæ, their apical half, and the tarsi black; the intermediate portion of the tibiæ yellow; the apical segment of the abdomen black.

*Hab.* Aru.

Gen. *MESOSTENUS*, *Grav.*

1. *MESOSTENUS PICTUS.* *M. niger*; capite thoraceque flavo striatis et punctatis; pedibus flavis nigro et ferrugineo lavatis; segmentis abdominalibus flavo marginatis; alis hyalinis.

*Female.* Length 8 lines. Black; a large ovate spot on the cheeks touching the mandibles, the labrum, palpi, inner orbits of the eyes, and from the 7th to the 10th joints of the antennæ yellowish-white. Thorax: an ovate spot in the middle of the disk of the mesothorax, the tegulæ, a spot beneath them, two larger spots beneath the wings, the scutellum, a spot on the postscutellum uniting with another at the base of the metathorax, a trilobed spot at its apex, and a subovate one on each side yellowish-white; the coxæ white with black stains on the intermediate and posterior pairs; the femora white beneath, the anterior and intermediate pairs with a black line above, the posterior pair ferruginous above; the tibiæ and tarsi whitish beneath, stained more or less fusco-ferruginous above; wings hyaline. Abdomen: all the segments with yellowish-white fasciæ on their apical margins, the fasciæ continued beneath; the ovipositor about the length of the abdomen, the valves broadest at their apex.

*Hab.* Aru.

2. *MESOSTENUS AGILIS.* *M. niger*; antennis medio albis; thorace pedibusque albo variegatis; abdominis marginibus fasciis albis.

*Female.* Length 5 lines. Black; the joints of the antennæ, from the 6th to 13th, white, the vertex also white. Thorax: a spot in the middle of the disk of the mesothorax, the scutellum, a spot on the postscutellum, two beneath the wings, the apex of the metathorax, and a spot on each side white; the legs white, the anterior pair slightly fuscous above; the intermediate femora and tibiæ beneath, and the tarsi above, black; the posterior femora above and beneath the tibiæ, except their extreme base and the base and apex of the tarsi, black; wings hyaline, the nervures black. Abdomen: the apical margins of the segments, excepting the fourth and fifth, with white fasciæ, the second and third fasciæ attenuated in the middle.

*Hab.* Aru.



3. *MESOSTENUS ALBOPICTUS*. *M. niger*, albo varius; alis hyalinis.

*Female*. Length 7 lines. Black; the clypeus, mandibles, palpi, the joints of the antennæ from the sixth to the thirteenth, and a broad stripe at the inner orbits of the eyes white. Thorax: an ovate spot on each side of the prothorax above, a similar spot in the middle of the mesothorax, the tegulæ, scutellum and postscutellum, a T-shaped spot reversed on the metathorax, a large quadrate one on its sides, three irregular-shaped maculæ beneath the wings, and the anterior and intermediate legs white, the legs with a black line above; the posterior legs have a large spot on the coxæ behind, the trochanters, the tibiæ, and tarsi white, the tibiæ black at their apex, and the femora palish at their base outside; the wings hyaline and iridescent, with the nervures black. The abdomen beneath, and the apical margins of the segments above, white.

*Male*. Rather smaller than the female, but only differs otherwise in the colour of the legs, the anterior and intermediate pairs being entirely yellowish-white, excepting the intermediate tibiæ and tarsi, which are slightly fuscous above; the posterior femora are ferruginous, the tibiæ and tarsi white, with the base and apex of the two former black as well as the apical joint of the tarsi.

*Hab.* Key Island.

Gen. *PIMPLA*, *Fabr.*

1. *PIMPLA OCHRACEA*. *P. ochracea*; antennis ferrugineis; facie luteâ; alis hyalinis, apice fuscis.

*Female*. Length 5 lines. Entirely ochraceous, with the face and scape in front yellow; the body beneath is pale ochraceous; the antennæ ferruginous, above dusky; the eyes emarginate within; the tarsi have the tips of the claws black; the wings flavo-hyaline, with the apex of the anterior pair fuscous, the nervures black, becoming yellow at the base of the wings. The head, thorax, legs, and base of the abdomen smooth and shining; the abdomen, except the base, finely punctured; a transverse impressed row of punctures a little before the apical margin of each segment, and the space between impunctate.

*Hab.* Aru.

2. *PIMPLA BRACONOIDES*. *P. rufo-flava*; antennis tarsisque et abdominis dimidio posteriori nigris; alis fuscis, dimidio basali flavis.

*Female*. Length 6 lines. Ferruginous; the posterior tarsi and the fourth and following segments of the abdomen black; the head is reddish yellow, the eyes brown; the scape and two or three of the basal joints of the flagellum ferruginous, the rest fuscous; the basal half of the wings flavo-hyaline, the apical half fuscous; the stigma yellow, with a subhyaline macula beneath, and two other similar irregular-shaped spots. The abdomen with two longitudinal carinæ

on the basal segment, and a transverse curved impressed line on the other segments.

*Hab.* Key Island.

This species might at first sight be mistaken for a species of the genus *Bracon*. The male only differs from the female in having the abdomen black, with only the basal segment yellow; the wings are only very slightly yellow at their base; it is also rather smaller.

3. *PIMPLA PENETRANS*. *P. flavo-ferruginea*; flagello fusco; alis flavo-hyalinis, apice fuscis.

*Female.* Length  $4\frac{1}{2}$  lines. Reddish yellow, smooth, and shining; the face testaceous, with slight fuscous stains; the scape and two or three of the basal joints of the flagellum yellow in front; the wings hyaline, with a yellowish tinge; the nervures black, except the costal nervure, which is ferruginous towards the base, the apex of the wings slightly clouded; the posterior tibiae fuscous above. Abdomen: the segments with slightly impressed oblique depressions, the ovipositor shorter than the abdomen, and black.

The *Male* only differs in having the abdomen rather more slender.

*Hab.* Aru.

4. *PIMPLA FERRUGINEA*. *P. flavo-ferruginea*; antennis supra fuscis; alis hyalinis.

*Female.* Length  $5\frac{1}{2}$  lines. Ferruginous, with the head and thorax beneath yellow-testaceous; the coxæ also are of the same colour; the flagellum slightly fuscous above; the wings flavo-hyaline, the nervures black; the two basal segments of the abdomen shining, the third and the following segments subopaque; the ovipositor as long as the abdomen.

*Hab.* Key Island.

5. *PIMPLA PLAGIATA*. *P. flavo-rufa*; antennis strigisque tribus mesothoracis nigris; alis hyalinis, apice cellulæ marginalis fusco unimaculato.

*Female.* Length  $5\frac{1}{2}$  lines. Yellow, the legs with ferruginous stains; the antennæ black, with the scape yellow in front; the head with a large ovate black spot behind the ocelli. Thorax finely punctured on the disk of metathorax, which has three longitudinal broad black stripes, a narrow black line on the posterior margin of both the scutellum and postscutellum; wings hyaline, the nervures black, with a dark fuscous spot at the apex of the marginal cell. Abdomen reddish-yellow, with the apical margins of the segments yellow; the ovipositor black, and shorter than the abdomen.

*Hab.* Aru.

#### Gen. RHYSSA, Grav.

1. *RHYSSA MACULIPENNIS*. *R. rufescenti-flava*; antennis et vertice nigris; alis hyalinis, plaga nigro-fusca.

*Male.* Length 9 lines. Ferruginous; the head of a yellow testaceous, with the vertex and antennæ black; the scape ferruginous in front; the mandibles black. Thorax: the mesothorax and scutellum transversely rugose, the former with two deeply impressed lines in front, which converge inwards, and meet in the middle of the disk; wings hyaline, with a yellow tinge on the anterior pair, the nervures black; a black stripe crosses the middle of the marginal cell, and terminates at the inferior margin of the discoidal cell; the legs ferruginous, with the posterior tarsi black. Abdomen smooth, shining, ferruginous.

*Hab.* Aru.

2. *RHYSSA VESTIGATOR.* *R. ferruginea*; *antennis, mesothorace, metathoracisque basi nigris*; *abdomine lineari, nitido et lævi*; *alis hyalinis, apice subfuscato.*

*Male.* Length 9 lines. Head testaceous-yellow, with the vertex ferruginous; the antennæ fusco-ferruginous. Thorax black, with the prothorax, a large oblique spot beneath the wings, the scutellum, and metathorax yellow, the base of the latter black; the mesothorax and scutellum rugose; the metathorax smooth and shining; the legs ferruginous, with the anterior coxæ in front and the posterior pair behind yellow; the posterior coxæ black beneath; wings hyaline, faintly clouded at their apical margins. Abdomen elongate, linear, glossy, smooth, and shining, ferruginous, with the base and lateral margins blackish.

*Hab.* Aru.

#### Gen. BRACON, *Fabr.*

1. *BRACON BASALIS.* *B. capite, thorace, pedibus anticis et intermediis, femoribus posticis ferrugineis*; *tibiis tarsisque et abdomine nigris, segmento basali flavo*; *alis fusco-hyalinis.*

*Female.* Length  $4\frac{1}{2}$  lines. The head, scape in front, thorax, anterior and intermediate legs, the posterior coxæ, trochanters, and femora, and the first segment of the abdomen, and a semicircular spot in the middle of the base of the second, yellow-ferruginous; the antennæ, the posterior tibiæ and tarsi, fuscous; abdomen shining black; the thorax smooth and shining; the wings fusco-hyaline. The basal segment of the abdomen with a longitudinal impressed line on each side, the second segment with an oblique depression, the third with an impressed line, curved forwards and extending to the lateral margins; the base of the segment has a row of short, deeply impressed striæ; the ovipositor shorter than the abdomen.

*Hab.* Aru.

2. *BRACON ALBO-MARGINATUS.* *B. capite, thorace pedibusque ferrugineis*; *abdomine nigris annulis albo-marginatis*; *alis fusco-hyalinis.*

*Female.* Length  $4\frac{1}{2}$  lines. Head, thorax, and legs ferruginous, smooth, and shining; antennæ and abdomen black, the latter smooth and

shining, the posterior margins of the third and following segments with a narrow bluish-white fascia; the posterior tarsi slightly fuscous; the wings fusco-hyaline; the ovipositor a little longer than the abdomen.

*Hab. Aru.*

3. *BRACON NIGRIPENNIS*. *B. thorace, pedibus anticis et intermediis, femoribusque posticis ferrugineis; tibiis tarsisque posticis et abdomine nigris; alis nigro-fuscis; capite luteo-testaceo.*

*Female.* Length 9 lines. Head testaceous, the antennæ black. Thorax, anterior and intermediate legs, the posterior coxæ, trochanters and femora, the tegulæ, extreme base of the wings, and the base of the stigma ferruginous; the thorax smooth and shining; the wings brown-black, with a small hyaline spot in the first submarginal cell. Abdomen longitudinally aciculate, a central carina at the base of the first segment, the second segment with an oblique impressed line running from the lateral angles of its basal margin, and meeting in the centre of its posterior margin; the margins of all the segments constricted; the ovipositor shorter than the abdomen.

*Hab. Aru.*

4. *BRACON EXOLETUS*. *B. niger; capite, thorace, pedibus anterioribus et intermediis ferrugineis; alis subhyalinis.*

*Female.* Length 5 lines. Head, scape of the antennæ, thorax, anterior and intermediate legs, ferruginous; flagellum and tips of the mandibles black. Thorax smooth and shining; wings fusco-hyaline, the nervures dark brown; the posterior legs fusco-ferruginous. Abdomen rugose and subopaque; the basal segment black in the middle, with the base and lateral margins ferruginous, the sides deeply channeled; the second segment with an arrow-headed shining space in the middle of its base; the ovipositor shorter than the abdomen.

*Hab. Aru.*

5. *BRACON ABDOMINALIS*. *B. rufo-flavus; antennis fuscis; alis subhyalinis; abdomine ovato.*

*Female.* Length 3 lines. Reddish yellow; head and thorax smooth and shining; the head narrower than the thorax; wings fusco-hyaline; abdomen ovate, broader than the thorax, the first and second segments rugose, with deep sculptured impressions; the second segment has an ovate shining space in the middle at its basal margin; the third segment is deeply depressed and sculptured at the base, leaving a transverse arched space at its apex, the width of the entire segment; the following segments have their margins very deeply depressed.

*Hab. Aru.*

6. *BRACON NITIDUS*. *B. niger; capite, thorace pedibusque et abdominis segmento primo ferrugineis, totis nitidissimis.*

*Female.* Length 4 lines. Ferruginous, with the flagellum, second and

following segments shining black; the thorax smooth and shining, with the scutellum prominent; the wings subhyaline, their apical margins clouded, their extreme base yellowish, the nervures dark brown, the stigma black. Abdomen: the second and third segments with deeply impressed oblique lines on each side, and the basal margins of the following segments depressed.

*Hab. Aru.*

7. *BRACON PALLIFRONS*. *B. niger*; thorace pedibusque anticis et intermediis ferrugineis; alis fuscis.

*Female*. Length 6 lines. Head obscure, testaceous yellow; the eyes brown; the antennæ black. Thorax and the anterior and intermediate legs ferruginous; an ovate black spot on the metathorax; and the posterior legs black, with the articulations obscurely ferruginous; wings dark fuscous, with the nervures and stigma black, the base of the latter yellowish, and a hyaline streak beneath it, which crosses the first submarginal cell. Abdomen black and shining; the first segment with some coarse striæ at the apex; the second with a central forked carina and an oblique one on each side running inwards to the apex of the segment; between the carinæ are a number of deep grooves; the lateral margins of the three basal segments carinated; the third segment has a row of short deep striæ at its base; the ovipositor longer than the body.

*Hab. Aru.*

8. *BRACON INTRUDENS*. *B. niger*; thorace, pedibus anticis intermediisque et abdominis segmento basali ferrugineis; alis hyalinis.

*Female*. Length 5 lines. Black; the thorax, anterior and intermediate legs, the articulations of the posterior pair, and the base of the abdomen ferruginous, entirely smooth and shining; the wings subhyaline, the nervures fusco-ferruginous, an irregular fuscous stain at the base of the first submarginal cell, extending beyond it. Abdomen: the basal segment margined at the sides; the second segment with an oblique deeply impressed line running inwards, not quite meeting or extending to the apical margin.

*Hab. Aru.*

#### Gen. AGATHIS, *Latr.*

1. *AGATHIS FUMIPENNIS*. *A. ferruginea*; capite, abdominis apice tarsisque posticis nigris; alis obscurè fuscis.

*Female*. Length 4 lines. Reddish-yellow; the head, apical joint of the intermediate tarsi, the apex of the posterior tibiæ, and the third and following segments of the abdomen black; the thorax and legs with a thin, short, pale fulvous pubescence; the head and abdomen smooth and shining; the head produced before the eyes into a kind of beak, rufo-piceous anteriorly. Thorax narrowed before the wings, which are dark fuscous, with a hyaline irregular mark below the

stigma, crossing the submarginal cell; the anterior margin of the anterior wings pubescent; the metathorax broad, margined laterally, with a central forked carina, and a crooked one on each side; the posterior legs inkrassate. Abdomen with the sides of the upper surface carinated.

*Hab.* Aru.

Fam. CHRYSIDIDÆ, *Leach.*

Gen. STILBUM, *Spin.*

1. *Stilbum splendidum*, *Fabr. Syst. Piez.* p. 170. 1.

*Hab.* Aru; Senegal; Java; Bengal.

2. *Stilbum amethystinum*, *Fabr. Syst. Piez.* p. 176. 32.

*Hab.* Aru; Australia.

Fabricius includes this insect in the genus *Chrysis*; the typical specimen, however, proves that it belongs to the more modern genus *Stilbum*: it is very distinct from *S. splendidum*, being much more strongly and coarsely punctured; and the teeth which arm the apical segment are differently disposed on the margin.

Fam. TENTHREDINIDÆ, *Leach.*

Gen. ORYSSUS, *Fabr.*

1. *ORYSSUS MACULIPENNIS*. *O. niger, punctatus*; pedibus ferrugineis; alis fuscis fasciâ hyalinâ ante cellulam marginalem sitâ.

*Female.* Length  $5\frac{1}{2}$  lines. Black; the head rugose, the front coarsely so, with a row of transverse tubercles running from the vertex along the inner orbits of the eyes, and crossing the front at half their length; the cheeks with a cinereous down, and a line of silvery-white pubescence or down, along the outer orbits of the eyes. Thorax coarsely punctured; the mesothorax with a central longitudinal smooth elevation; wings fuscous, with a broad transverse hyaline fascia before the base of the marginal cell, the tips of the wings hyaline; the legs ferruginous, with the coxæ and trochanters black; the posterior tibiæ with a double row of serrations outside. Abdomen shining and closely punctured; the base and apex coarsely so.

*Hab.* Aru.

Gen. XYPHIDRIA, *Latr.*

1. *XYPHIDRIA RUFIPES*. *X. nigra*; mandibulis, antennarum scapo, pedibusque ferrugineis; alis hyalinis et iridescentibus.

*Female.* Length 4 lines. Black and shining; the vertex highly polished; the front from the posterior ocelli forwards closely punctured and opaque; the mandibles, scape, and basal joint of the flagellum ferruginous. The thorax anteriorly punctured and opaque, posteriorly shining, and with a few punctures at the base of the scutellum; wings hyaline and iridescent, the nervures black, the extreme base of the wings and the

tegulæ pale testaceous; the legs pale ferruginous, with the claws of the tarsi darker. Abdomen: the base of the segments depressed and very delicately and closely punctured, subopaque; the apical half highly polished and shining; beneath obscurely rufo-piceous.

*Hab. Aru.*

Gen. TREMEX, *Jurine*.

1. TREMEX INSIGNIS. *T. nigro-purpureus*; abdominis fasciis basalibus albis; alis nigris cupreo nitentibus.

*Female.* Length 11 lines. Obscure steel-blue, with shades of green, purple, and violet; the head and thorax punctured; the prothorax with an oblique smooth shining space on each side; the wings very dark brown, with a brilliant coppery effulgence. The base of the abdomen opaque, velvety, purple-black; the first segment with a transverse cream-coloured fascia in the middle, the second very slightly whitish at its base; the rest of the abdomen is highly polished, and has a scattered, short, black pubescence.

*Hab. Aru.*

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Note on Two Insect-products from Persia.

By DANIEL HANBURY, Esq., F.L.S.

[Read December 16th, 1858.]

IN the month of June last, my friend Professor Guibourt, of Paris, laid before the Académie des Sciences\* some account of a remarkable substance called *Tréhala*, the cocoon of a Curculionidous insect found in Persia, where, as well as in other parts of the East, it enjoys some celebrity as the basis of a mucilaginous drink administered to the sick.

Specimens of this substance, as well as of another insect-product of Persia, together with the insects themselves, were presented a few years ago to the British Museum by W. K. Loftus, Esq., who obtained them while engaged by the British Government on the question of the Turco-Persian boundaries.

The precise determination of the species of these insects being a matter of doubt, they have at my request been lately examined by M. Jekel, of Paris, an entomologist with whom the family of *Curculionidæ* has long been an especial study. One of these insects M. Jekel has identified with a species of wide distribution; the other proving undescribed, he has drawn up a description of it, which, accompanied by a figure, I have the honour to lay before the Linnean Society. To this, I venture to add a few observations upon the productions to which I have alluded.

\* Comptes Rendus, 21 Juin, 1858, p. 1213.