

Div. 3. *The anterior wings with three submarginal cells and one recurrent nervure.*

5. *Scolia patricialis*, *Burm. Abh. Nat. Ges. Halle*, i. 19.

Hab. Malacca. Sumatra.

6. *Scolia rubiginosa*, *Fabr. Syst. Piez.* p. 241.

Hab. Malacca. Java.

7. *SCOLIA CINCTA*, *Smith.* *S. nigra*; vertice flavo; alis nigris; abdomine fascia pubescente ferruginea.

Black; the head, from the insertion of the antennæ to the hinder margin of the vertex, yellow, glossy smooth. The thorax closely and strongly punctured; a smooth shining space in the middle of the disk, the scutellum also shining, with a few large scattered punctures; the wings brown-black with a splendid violet iridescence, rather paler towards their base with the nervures ferruginous; the metathorax truncated and slightly concave. Abdomen: closely but more finely punctured than the thorax, with a shining nearly impunctate space in the middle of each segment; the posterior margin of the second segment with a fringe of bright ferruginous pubescence, also a little ferruginous pubescence at the tip of the apical segment.

Female. *Hab.* Borneo (Sarawak). Length 13 lines.

This species is most closely allied to *S. patricialis*, but has the sculpture of the thorax very different and has no yellow markings on the scutellum, base and third segment of the abdomen, which distinguishes that species.

8. *Scolia procera*, *Fabr. Syst. Piez.* p. 241.

Hab. Sarawak. Java.

Nearly all the specimens of this fine species have been brought from Java. I believe it has occurred in India, but Borneo is probably the extent of its geographical range to the south.

9. *SCOLIA OPALINA*, *Smith.* *S. atra*; alis nigris; metathorace abdomineque opalino pulcherrime lavatis.

Black, with splendid prismatic colours reflected in certain lights; the head smooth and shining, and with a few scattered punctures; the scape of the antennæ smooth and shining, the flagellum opaque. Thorax: above shining, somewhat distantly but evenly punctured, a smooth space on the disk of the mesothorax; wings brown-black with a splendid violet iridescence. The abdomen smooth and shining, the sides and the two apical segments rather closely punctured, in the middle of the three basal segments only a few fine scattered punctures; beneath strongly but not very closely punctured. *Female.* Length 12 lines.

The male resembles the female, but is, if possible, more beautiful in the splendour of its metallic lustre. Length 9 lines.

Hab. Sarawak.

10. *SCOLIA SPECIOSA*. *S. atra*; fronte, macula post-oculari, thoracis maculis duabus frontalibus, metathorace supra, fascia annuli tertii abdominis interrupta, flavis.

Black and shining; the head impunctate; a large bell-shaped macula on the face extending from the margin of the vertex to the insertion of the antennæ, a black spot nearly in the centre of the space enclosing the ocelli; the eyes and a lunate spot behind them yellow. Thorax: a broad yellow stripe on each side in front curving over each tegula, having a straight oblique termination within; the metathorax yellow at the base as far as the margin of the truncation; the whole of the disk of the thorax impunctate, or with only a few widely scattered punctures on the sides of the mesothorax and scutellum: from the anterior angles of the latter a deeply impressed smooth line passes forward, terminating opposite to the anterior margin of the tegulæ; the post-scutellum punctured and the thorax on each side of the scutellum opaque; the wings brown-black, with a splendid violet and blue iridescence, the nervures black. Abdomen: closely punctured, the first segment with a central smooth space at its base; the second segment smooth and shining, except at the sides; the third smooth at the base with a broad transverse yellow stripe slightly interrupted in the middle; beneath, the segments smooth and shining in the middle, and with a few scattered punctures.

Female. Length 15 lines. *Hab.* Sarawak.

This is one of the most beautiful species of the genus, and has not hitherto been captured in any other locality than Borneo.

Gen. TIPHIA, *Fabr.*

1. *TIPHIA FUMIPENNIS*. *T. nitida, atra, punctata*; alis anticis fumatis purpureo-iridescentibus.

Female. Length 8 lines. Black, shining, pubescent, with scattered punctures; the mandibles ferruginous, fringed beneath with bright fulvous hairs; the head strongly punctured. The prothorax strongly punctured, its posterior margin impunctate, smooth and shining; the mesothorax strongly punctured; the tegulæ smooth and shining; the superior surface of the metathorax with three central longitudinal elevated lines, the spaces between them rugose; the verge of the truncation and the lateral margins bordered by an elevated line; the surface has a shining silky appearance and is very delicately transversely reticulated; the anterior wings smoky, with a bright purple iridescence; the posterior pair faintly coloured towards their apex; the legs with a glittering white pubescence. Abdomen: smooth and shining; the three apical segments punctured; the apex rufopiceous.

Hab. Borneo (Sarawak).

2. *TIPHIA STIGMA*. *T. nitida*, atra, punctata; alis subhyalinis, stigmatate atro.

Male. Length 5 lines. Black, punctured and shining; the clypeus with shining white pubescence; its anterior margin notched; tips of the mandibles ferruginous; the flagellum fuscous beneath; the metathorax with three or four longitudinal elevated lines; wings subhyaline, faintly smoky towards their apex; the nervures pale testaceous; the stigma large and black; the tibiæ and tarsi with glittering white pubescence; the calcaria pale testaceous. Abdomen: the first segment much narrower than the second, and subglobose; the following segments thinly covered with sooty-black pubescence.

Hab. Borneo (Sarawak).

3. *TIPHIA FLAVIPENNIS*. *T. nitida*, atra, sparse griseo-pubescentibus; alis flavescentibus.

Female. Length 4-5 lines. Black, with scattered punctures: the mandibles ferruginous; the palpi pale testaceous; the flagellum obscurely ferruginous beneath; the scape fringed beneath with long glittering pale hairs; the superior surface of the metathorax, with three longitudinal elevated lines, extending to the verge of the truncation; the outer margin of the tegulæ piceous; wings yellowish, their apical margins slightly clouded; stigma small, and as well as the nervures, pale testaceous; the legs with a glittering white pubescence; the calcaria pale testaceous. Abdomen: smooth and shining, with scattered delicate punctures; the margins of the segments thinly fringed with long pale hairs; the apex rufo-piceous.

Hab. Borneo (Sarawak).

Gen. MYZINE, *Latr.*

1. *MYZINE TRICOLOR*. *M. punctata*, nitida; capite rubro; thorace nigro; abdomine metallico-cyaneo.

Female. Length 10 lines. Head red; the thorax black; the abdomen metallic-blue; the face closely and coarsely punctured; the vertex shining, the punctures finer and more distant; a deep punctured fovea behind the ocelli; the scape in front, and the mandibles ferruginous, the latter black at their tips. Thorax coarsely punctured; the wings brown at their apex, becoming by degrees hyaline at their base, the anterior pair with a bright violet iridescence; the nervures black; the legs strongly spinose, with scattered white pubescence. The abdomen partaking of purple and violet tints in different lights.

Hab. Borneo (Sarawak).

Fam. POMPILIDÆ.

Gen. POMPILUS, *Fabr.*

This extensive genus of insects, some species of which inhabit

every known country of the world, contains individuals exhibiting great variety, not only in their colouring, but also in their structure and form; one group, which contains the most highly coloured and elegantly formed species, have their tibiæ and tarsi destitute, or nearly so, of spines; another, on the contrary, have their tibiæ more or less spined, the anterior tarsi spined, and frequently pectinated; a third group have the intermediate and posterior tibiæ furnished with a double row of teeth, or serrations, the tarsi being strongly spined. All the above striking differences are, however, linked together by imperceptible modifications; these will always be found, when an extensive collection of these insects, from various countries, are brought together and carefully examined. The differences alluded to are undoubtedly of high value, when investigating the economy and habit of the species; thus we find, that the *P. punctum* of Europe, which belongs to the subgenus *Agenia*, in which the species are destitute of spines on the tibiæ, is not a burrowing insect, but constructs tubular cells of mud; *P. rufipes*, on the contrary, is eminently fossorial and has serrated posterior tibiæ, and has also the anterior tarsi furnished with long cilia. In the present paper, I adopt as subgenera, the names given to the groups by Schiödte, in Kröyer's Tidsskrift.

1. **POMPILUS LEUCOPHÆUS.** *P. schistaceo-pubescens*; facie albo-maculata; prothoracis margine postica alba; alis fuscis basi hyalinis.

Male. Length $5\frac{1}{2}$ lines. Black, covered with slate-coloured pubescence or pile; a spot on each side of the clypeus, the inner orbits of the eyes, not reaching their vertex, a narrower line behind them and the palpi, yellowish-white; the antennæ stout and tapering to their apex; the hinder margin of the prothorax white and subangulated; wings brown, becoming gradually hyaline to their base; the tibiæ and tarsi strongly spinose; a white spot on the posterior tibiæ near their base; the calcaria nearly as long as the basal joint of the tarsi. Abdomen densely pilose; the apical margins of the three basal segments naked and shining; the four apical segments beneath, naked and shining.

Hab. Malacca.

2. **POMPILUS VAGABUNDUS.** *P. ater*, guttis maculisque flavis variegatus; alis hyalinis apice fuscis; tibiis posticis ferrugineis.

Female. Length $5\frac{1}{2}$ lines. Black; a line on the inner orbits of the eyes; the anterior margin of the clypeus with a narrow line which unites with a quadrate spot on each side of the clypeus, and a narrow line behind the eyes, yellow; the face with a thin silvery pile, and the cheeks with a few white hairs. Thorax covered with a fine silky white

pile, which is more dense on the coxæ and femora beneath; the posterior margin of the prothorax, and a minute spot on the outer margin of the tegulæ, yellow; the wings hyaline, with a dark fuscous cloud at the apex of the anterior pair: the second submarginal cell twice the width of the third, which is subangular; the nervures fuscous; the calcaria and posterior tibiæ ferruginous, the latter black at their extreme base and apex; the tibiæ and tarsi spinose; the anterior tarsi ciliated. Abdomen covered thinly with a fine changeable pile; a transverse yellow fascia near the base of the second and third segments, the first slightly interrupted in the middle, both widest at the sides; a narrow transverse yellow fascia in the middle of the fifth segment, slightly produced upwards in the middle.

Hab. Borneo (Sarawak).

This species has a strong resemblance to the *P. variegatus* of Europe, but from which it is abundantly distinct.

3. *POMPILUS PULVEROSUS.* *P. ater, pubeque cinerea tectus; alis hyalinis apice nigro-fuscis.*

Male. Length 4 lines. Black; entirely covered with a fine glittering white silky pile; the face silvery; head and thorax smooth, shining and impunctate; the hinder margin of the prothorax subangular; the wings hyaline and iridescent, with a slight fuscous cloud beyond the first submarginal cell; the nervures dark fuscous; the legs spinose, with their calcaria nearly as long as the basal joint of the tarsi. Abdomen with a faint tinge of blue in certain lights.

Hab. Borneo (Sarawak).

Subgen. *PRIOCNEMIS*, *Schiödte.*

4. *PRIOCNEMIS SERICOSOMA.*

Pompilus sericosoma, Smith, Cat. Hym. p. 146. no. 137.

Hab. Sumatra. Borneo (Sarawak).

5. *PRIOCNEMIS OPTIMUS.* *P. atra, capite, thorace, dorso metathoracisque lateribus et maculis basi, coxis intermediis, aureo-pubescentibus; alis nigro-fuscis; femoribus posticis ferrugineis, basi apiceque nigris.*

Female. Length 8 lines. Black; the head and scape above covered with golden pubescence; the clypeus convex, somewhat produced in the middle of its anterior margin, which is slightly emarginate and recurved; the apex of the mandibles ferruginous. Thorax: the prothorax, mesothorax, scutellum, and sides of the metathorax posteriorly, covered with golden pubescence; a golden spot at the sides of the pectus, close to the base of the intermediate coxæ; the wings dark fuscous with a beautiful violet iridescence; the posterior margin of the inferior pair subhyaline; legs elongate, the middle of the posterior femora ferruginous; the intermediate and posterior tibiæ with a

double row of serrations. Abdomen subpetiolate and covered with a fine silky pile.

Hab. Singapore.

6. *PRIOCNEMIS VERTICALIS*. *P. ater*; vertice antennarumque articulis basalibus flavis; thorace flavo-guttato; alis, tibiis tarsisque flavis.

Female. Length 9–12 lines. Black; the vertex and face above the antennæ and also the scape, yellow; the first and second joints of the flagellum more or less yellow. Thorax: a line on the posterior margin of the prothorax, a quadrate spot on the disk of the mesothorax touching the scutellum, the latter as well as an ovate spot on the post-scutellum, the outer margins of the tegulæ, the tips of the femora, the tibiæ and tarsi, yellow: the claw-joint of the latter black; the wings yellow with their nervures ferruginous; the wings palest towards their apical margins, their extreme edge indistinctly fuscous; the metathorax transversely striated; the posterior tibiæ with two rows of serrations, the intermediate pairs spinose. Abdomen smooth and shining.

Hab. Malacca (Mount Ophir); Borneo (Sarawak).

This species bears a close resemblance to *P. unifasciata*, Smith, 'Cat. Hym.' iii. p. 145, but independent of a difference in the neururation of the anterior wings, the armature of the legs is totally different: in *P. unifasciata* the posterior tibiæ are armed with long scattered spines, not serrated, as in the present species.

Subgen. *AGENIA*, *Schiödte*.

7. *AGENIA BLANDA*.

Pompilus blandus, *Guér. Voy. Coq. Zool.* ii. pt. 2. p. 260.

Hab. Borneo (Sarawak); Singapore; Malacca (Mount Ophir).

8. *AGENIA ATALANTA*. *A. atra*; capite thoraceque flavo notatis; alis flavis fusco terminatis; tibiis tarsisque flavis.

Male. Length 7–7½ lines. Black; covered with fine silky pile. The clypeus, sides of the face, scape in front, a line behind the eyes, the mandibles and palpi, yellow. The posterior margin of the prothorax, the outer margins of the tegulæ, a quadrate spot on the disk of the mesothorax touching the scutellum, and an ovate spot on the scutellum and post-scutellum yellow; the scutellum prominent; the tibiæ, tips of the femora and the tarsi yellow; the apex of the posterior tibiæ and the claws of the tarsi dusky; the metathorax transversely rugose-striate; the wings yellow, the nervures ferruginous; the tips of the anterior and posterior wings dark brown, with a purple iridescence. Abdomen, with a slight metallic lustre.

Hab. Borneo (Sarawak); Singapore.

9. *AGENIA ÆGINA*. *A. capite abdomineque nigris; thorace sanguineo; alis anticis fascia transversa fusca.*

Female. Length 5 lines. Head and abdomen black, the thorax red. The antennæ beneath and the mandibles ferruginous; the palpi elongate, pale testaceous. Thorax: the wings hyaline and iridescent, with a transverse broad dark fascia before the apex of the anterior wings; the nervures pale ferruginous, with a fuscous stain traversing the apical portion of the externo-medial nervure and the basal portion of the transverso-medial nervure; the anterior legs pale ferruginous; the tarsi, the tibiæ and apex of the femora above, fuscous; the intermediate legs fusco-ferruginous, with a yellow spot on the femora beneath towards their base; the posterior legs fusco-ferruginous; the femora yellow, with their apex fuscous. Abdomen smooth and shining, covered with a fine silky pile.

Hab. Borneo (Sarawak).

10. *AGENIA DAPHNE.* *A. atra*; capite thoraceque maculis auratis ornatis; alis subhyalinis, ad apicem subnubeculosis.

Female. Length 8 lines. Black; the face, vertex and clypeus covered with golden pile; the palpi pale testaceous. The prothorax, the apical margin of the disk of the mesothorax, the scutellum, an oblique stripe beneath the wings extending to the intermediate coxæ, the sides of the metathorax and the coxæ, covered with golden pile; the legs with a fine silky pile; the wings subhyaline, with a slight fuscous cloud before the apex of the anterior pair. Abdomen smooth and shining, covered with a fine changeable glittering silky pile.

Hab. Borneo (Sarawak).

11. *AGENIA LAVERNA.* *A. obscure cyanea*, fascia albida; alis hyalinis; abdomine petiolato, annulo apicali albido.

Male. Length 4 lines. Obscure blue, covered with a fine gray silky pile. The face, clypeus, labrum, palpi and scape in front, white; the labrum exerted; the antennæ as long as the body, testaceous beneath. The anterior femora in front, a narrow line in front of the intermediate pair, not extending to their apex, and a minute spot in front on the tegulæ, white; the wings hyaline and beautifully iridescent, the nervures black; the metathorax with a fine transverse granulation. Abdomen petiolated; the apical segment white.

Hab. Borneo (Sarawak).

This species in many respects approaches closely to the species of the genus *Ceropales*: its exerted labrum, white face, and indistinctly observable joints of the antennæ, are all characteristics of that genus, but the cubital nervure does not run to the apical margin of the wing.

12. *AGENIA MELAMPUS.* *A. atra*; faciei lateribus, margine clypei antica mandibulisque flavis; alis fuscis basi hyalinis; annulis tribus basalibus abdominis ferrugineis.

Male. Length $5\frac{1}{2}$ lines. Black; the sides of the face, the anterior margin of the clypeus, the mandibles and scape in front, yellow, tips

of the mandibles ferruginous; the palpi black. Thorax: the anterior coxæ in front and a minute spot in front of the intermediate pair, yellow; the apex of the femora beneath and the anterior tibiæ in front, ferruginous; the posterior femora slightly ferruginous above; the wings brown with their base hyaline, the posterior pair palest. Abdomen petiolated, with the three basal segments ferruginous; the apical margin of the third segment dusky, covered with a fine white silky pile.

Hab. Borneo (Sarawak).

13. *AGENIA FLAVOPICTA*. *A. atra* flavo variegata; pedibus flavis; alis hyalinis iridescentibus.

Female. Length $3\frac{1}{2}$ lines. Head black; a broad stripe at the inner orbits of the eyes, the clypeus, labrum, mandibles, palpi and scape in front, yellow; the flagellum reddish-yellow, fuscous above beyond the first joint. Thorax: the prothorax, tegulæ, scutellum, post-scutellum, the apex of the metathorax and the legs, yellow; the apical joints of the tarsi fuscous; the metathorax with a changeable golden pile; the wings hyaline and beautifully iridescent, the nervures testaceous. Abdomen: the second, third and fourth segments black with a changeable pile, the apical margins testaceous yellow; the basal and fifth and sixth segments, yellow; the apical segments incurved; the sting elongate.

Hab. Singapore.

14. *AGENIA HIPPOLYTE*. *A. atra*, facie metathoracisque lateribus aureo-pubescentibus; alis flavo-hyalinis; femoribus posticis ferrugineis, basi apiceque nigris.

Female. Length $6\frac{1}{2}$ lines. Black, with a fine changeable pile; the face, clypeus and cheeks covered with a dense pale golden pile. The sides of the metathorax and the posterior coxæ above with a dense pale golden pile; the wings flavo-hyaline, the nervures testaceous; the posterior femora ferruginous, their base and apex black. Abdomen: distinctly petiolated, the apical margins of the segments narrowly rufo-testaceous; the sixth segment with a central longitudinal smooth shining space.

15. *AGENIA CELÆNO*. *A. atra*, cinereo-pubescentibus; facie abdomineque argenteo-iridescentibus; alis hyalinis apice fuscis.

Female. Length $3\frac{1}{2}$ lines. Black; covered with a changeable cinereous pile, that on the face, coxæ and abdomen having in certain lights a silvery brilliancy; the tips of the mandibles and the palpi pale testaceous; the posterior margin of the prothorax curved; the wings hyaline, with a faint fuscous fascia crossing the superior pair at the second submarginal cell, the apex of the wings narrowly and slightly fuscous; the apical segment of the abdomen nigro-piceous with the extreme apex pale, very glossy, smooth and shining.

Hab. Singapore.

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

Macromeris, *St. Farg. Hym.* iii. 4631.

1. *MACROMERIS SPLENDIDA*.

Macromeris splendida, *St. Farg. Hym.* iii. 464. 2.

Hab. Borneo (Sarawak). India. Java. China. Malacca.

2. *MACROMERIS ARGENTIFRONS*. *M. ater*, pube argentata tecta; facie dense pubescente; alis subhyalinis; metathorace quadrato.

Female. Length 8 lines. Black; covered with a fine silvery silky pile, very dense and brilliant on the face, base and apex of the metathorax, sides of the prothorax and coxæ; the wings subhyaline, the nervures dark ferruginous; the joints of the anterior tarsi remarkably attenuated at the base; the claws of the tarsi small and unidentate; the tibiæ slightly spinose; the thorax subelongate, the sides parallel; the metathorax transversely rugose. Abdomen distinctly petiolated, very smooth and shining, abruptly incurved; the aculeus elongate.

Male. About the same size as the female, similarly clothed with silvery pile; the coxæ greatly swollen; the femora much stouter than in the female, and ferruginous beneath; the anterior tibiæ ferruginous within; the posterior tibiæ bent inwardly at their base; the thorax gradually widening to the apex of the metathorax, which is finely roughened transversely and margined at the truncation. Abdomen small, distinctly petiolated, and very smooth and shining.

Hab. Borneo (Sarawak). Malacca. Singapore. Java.

Gen. *MYGNIMIA*, *Smith.*

This genus of *Pompilidæ* contains all those species which have the first recurrent nervure uniting with the second transverso-cubital nervure, the posterior tibiæ strongly serrated, with a double row of short spines. These insects are in fact the representatives of the *Pepsis* of South America, and embrace some of the largest and most beautiful species of *Pompilidæ*; all, with one solitary exception, (a species from Mexico), are inhabitants of the Old World; *Pepsis*, on the contrary, is almost exclusively found in the New World: I am only acquainted with four exceptions, three being African, and one from Singapore.

1. *MYGNIMIA FLAVA*.

Pompilus flavus, *Fabr. Syst. Piez.* p. 197.

Hemipepsis flavus, *Dahlb. Hym. Europ.* p. 123.

Hab. Borneo (Sarawak). Malacca (Mount Ophir). Singapore. India.

2. *MYGNIMIA ANTHRACINA*.

Mygnimia anthracina, *Smith, Cat. Hym.* pt. iii. 183.

Hab. Borneo (Sarawak). Malacca and Singapore.

3. *MYGNIMIA DUCALIS*. *M. atra*; alis nigris, anticis fascia argentata ornatis.

Black; the abdomen blue-black with a fine silky pile; the third and following joints of the flagellum fuscous, the tips of the joints ferruginous; the clypeus, the scutellum and post-scutellum, obscurely fusco-ferruginous; the metathorax transversely striated, and truncate at the apex; the margin of the truncation raised; the wings brown-black with bright violet and purple shades; a broad silvery band crosses the anterior wings beyond their middle, the band consisting of fine silvery pile. *Female*. Length 1 inch $\frac{3}{4}$.

Hab. Malacca (Mount Ophir).

4. *MYGNIMIA PRINCEPS*. *M. atra*; antennis flavis, alis nigris, anticis fascia subhyalina ornatis.

Female. Length 1 inch 10 lines. Black; with obscure shades of blue, the abdomen blue-black, covered with a fine pile which partakes of purple or blue shades in different lights. The scape of the antennæ ferruginous in front, the flagellum yellow; a ferruginous line bordering the anterior margin of the clypeus. Thorax: the hinder margin of the scutellum obscurely ferruginous; the metathorax coarsely transversely striated; the posterior tibiæ and basal joint of the tarsi with a fine changeable ferruginous pile within; the wings brown-black, with a broad sub-hyaline transverse fascia beyond the middle, the fascia tinged with yellow.

Hab. Borneo (Sarawak).

5. *MYGNIMIA IRIDIPENNIS*.

Female. Length 1 inch. Black; the clypeus densely covered with a short dense black pubescence, slightly emarginate in front; the mandibles obscurely ferruginous in the middle. Thorax: the wings with a splendid lustre of coppery and violet tints, beneath, equally vivid in colour; the metathorax coarsely striated transversely; the pro- and meso-thorax with a short black velvety pubescence. Abdomen sub-opaque, with shades of blue in certain lights.

Hab. Malacca. Sarawak.

Fam. SPHEGIDÆ.

Gen. AMPULEX, *Jurine*.

1. *AMPULEX HOSPES*, *Smith, Cat. Hym.* pt. iv. p. 272.

The particulars in which this remarkable species differs from those with which I have associated it, would perhaps warrant the establishment of a new genus, but only a few specimens have yet been obtained; and although in all, the first transverse cubital nervure is obsolete, still it is a circumstance of frequent occurrence in the genus, particularly in the typical species *A. compressa*. The antennæ are much stouter and shorter, and the posterior angles of the thorax without spines, in all which particulars it differs from the rest of the genus.

2. AMPULEX COMPRESSA.

Chlorion compressum, *Fabr. Syst. Piez.* p. 219.

Hab. Malacca (Mount Ophir). Borneo (Sarawak).

3. AMPULEX SMARAGDINA. *A. læte viridis*; pedibus abdomineque purpureis; prothorace tuberculato; alis anticis obscure unifasciatis.

Female. Length 8 lines. Brilliant green with shades of violet and coppery effulgence; the vertex angulated, the sides oblique from the margin of the eyes; the antennæ shorter and much thicker than in *A. insularis*. The prothorax subtuberculate in front; the mesothorax, scutellum and post-scutellum, smooth and shining, the former with a longitudinal coppery vitta in middle; the wings subhyaline; the anterior pair with a slight fuscous cloud crossing them from the marginal cell; the legs bright purple; the anterior pair with their coxæ beneath, their femora and tibiæ in front ferruginous. Abdomen brilliant purple, smooth, shining and impunctate.

Hab. Singapore.

4. AMPULEX INSULARIS. *A. fulgide viridis*, abdomine purpureo lavato; prothorace elongato, lævigato, nitido, sine tuberculis; alis anticis fasciatis.

Female. Length 8 lines. Brilliant green; the head smooth and shining; the vertex subquadrate with the posterior angles rounded; the clypeus covered with silvery pubescence; the mandibles ferruginous; the antennæ black. The prothorax smooth and shining, not tuberculate; the mesothorax, scutellum and post-scutellum, smooth and shining; the metathorax transversely striated, and having a central and three lateral carinæ, the third recurved inwards at the apex; the sides margined, the apical angles produced into short acute teeth; the wings subhyaline with a fuscous cloud crossing the anterior pair at, and being the width of, the marginal cell; the tibiæ and tarsi obscurely æneous. Abdomen: very smooth and shining, with purple and violet tints; the apex compressed at the sides; the first segment much narrower than the second.

Hab. Borneo (Sarawak).

Gen. TRIROGMA, *Westw.*

1. TRIROGMA CÆRULEA.

Trirogma cærulea, *Westw. Trans. Ent. Soc. Lond.* iii. 225 ♂. *Arcana, Ent.* ii. p. 66 ♀.

Hab. Singapore. Northern India and Madras.

2. TRIROGMA PRISMATICA. *T. fulgide cæruleo-viridis*; abdomine purpureo et violaceo lavato.

Male. Length 6 lines. Brilliant green, the abdomen vivid purple or violet in different lights, highly prismatic; the palpi and mandibles white, the latter ferruginous at their apex; the scape of the antennæ green with purple reflexions, the flagellum fuscous; the face below

the antennæ, the scape, cheeks and mandibles, thinly covered with long white pubescence; the head coarsely punctured; a deep transverse impressed line behind the ocelli, the vertex impunctate. Thorax the prothorax forming a neck, with two elevated tubercles behind, the mesothorax with three or four transverse elevated carinæ at the base, the spaces between rugose; the disk behind, smooth and shining; the scutellum with an elevated shining tubercle in the middle; the metathorax smooth and shining, with an elevated carina traversing its margins; the lateral margins produced at the sides into a blunt angle or tooth; the disk with two longitudinal carinæ which curve towards the sides, then inwardly towards the apical margin, not quite meeting in the centre; between the curved carinæ are two central and two lateral ones, none extending to the outward ones; wings subhyaline and splendidly iridescent; the thorax at the sides and beneath, and also the abdomen, thinly clothed with white pubescence; the third segment above, with scattered short white hairs. Abdomen very delicately and distantly punctured.

Hab. Borneo (Sarawak).

This beautiful species is very distinct from the *Tirogma cærulea*, the only species previously known; the antennæ are much longer and perfectly filiform, the apex of the joints not thickened as in that species.

Gen. SPHEX, *Fabr.*

1. SPHEX SERICEA.

Sphex sericea, *Fabr. Syst. Piez.* p. 211, 19.

Hab. Borneo (Sarawak). Malacca.

This species is very widely distributed: we have seen examples from the islands of the Pacific, the Philippine Islands and Java; some specimens have the scutellum and post-scutellum black; in all probability the *S. ferruginea* of St. Fargeau is a variety of this insect.

2. SPHEX NIGRIPES.

Sphex nigripes, *Smith, Cat. Hym.* pt. 4. p. 254 ♀.

Hab. Singapore. Sumatra.

3. SPHEX DIABOLICUS. *S. ater*; metathorace densissime nigro-pubescentis; alis flavo-hyalinis basi fuscis, apice subnubeculosis.

Female. Length 14 lines. Black; the head and thorax opaque; the mandibles very stout, forcipate, acute at their apex and having a stout tooth in the middle of their inner edge; their outer margins fringed with long hairs; the face thinly covered with black pubescence. Thorax: the metathorax covered with a dense black pubescence; a similar-coloured pubescence, but more sparing, clothes the thorax on the sides and beneath; wings flavo-hyaline, blackish at their base;

the apical margins of the anterior pair with a pale fuscous border ; the nervures ferruginous. Abdomen : sub-opaque, smooth and slightly shining.

Hab. Borneo (Sarawak).

Gen. PELOPÆUS, *Latr.*

1. PELOPÆUS JAVANUS.

Pelopæus Javanus, *St. Farg. Hym.* iii. p. 309.

Hab. Borneo (Sarawak). Malacca. Java.

2. PELOPÆUS FERVENS. *P. ater*; clypeo scapoque antice, pedibus abdomineque ferrugineis ; alis subhyalinis.

Female. Length 8 lines. Black ; the scape in front, the clypeus and tips of the mandibles ferruginous. Thorax : the posterior margin of the prothorax, the tegulæ, a transverse line at the base of the scutellum, the tips of the anterior and intermediate femora, the posterior pair, except their base, the tibiæ and tarsi, ferruginous ; the apical joints of the tarsi fuscous ; the wings subhyaline, with a black spot at the apex of the superior pair ; the nervures ferruginous ; the mesothorax finely striated transversely, the metathorax much more strongly so ; the head and thorax thinly covered with long thin pale pubescence. Abdomen : ferruginous, with the base of the petiole black ; the three apical segments fusco-ferruginous.

Hab. Borneo (Sarawak).

Fam. LARRIDÆ, *Leach.*

Gen. TACHYTES, *Panzer.*

1. TACHYTES NITIDULUS.

Crabro nitidulus, *Fabr. Piez. Syst.* 309. 7.

Hab. India. Borneo.

2. TACHYTES ARGENTATUS.

Tachytes argentata, *Brullé, Exped. Sc. de Morée*, iii. p. 372.

Hab. Singapore. The Morea. Albania.

3. TACHYTES AURIFEX. *T. ater*; facie aurate pubescente ; pedibus ferrugineis ; alis flavo-hyalinis ; abdomine aurato-fasciato.

Female. Length $10\frac{1}{2}$ lines. Black ; the face densely clothed with golden pubescence ; the cheeks and vertex behind, with a changeable golden pile ; the scape and mandibles at their base, ferruginous, the former black at their base above ; the palpi pale ferruginous. Thorax : with a changeable golden pubescence, very dense and shining on the posterior margin of the prothorax, the margins of the mesothorax and on the post-scutellum ; the tegulæ and legs ferruginous ; the coxæ and femora fuscous ; the wings flavo-hyaline, palest towards the apical margins, which have a pale fuscous narrow border. Abdomen :

rusco-ferruginous at the apex ; covered with a thin changeable golden pile ; each segment with a bright golden fascia on its apical margin ; beneath smooth and shining, with the apical margins of the segments rufo-piceous.

Hab. Borneo (Sarawak).

GEN. LARRADA, *Smith*.

1. LARRADA EXILIPES.

Larrada exilipes, *Smith, Cat. Hym.* pt. 4. p. 278.

Hab. Borneo (Sarawak).

2. LARRADA CARBONARIA. *L. nigerrima*; capite abdomineque nitidis; thorace opaco; alis rufescenti-fuscis, purpureo læte micantibus.

Female. Length 10 lines. Jet-black, shining; the clypeus delicately punctured; the flagellum fuscous; the cheeks with a fine cinereous pile. Thorax: the pro- and meso-thorax, the scutellum and post-scutellum closely punctured; the metathorax elongate, its superior surface finely shagreened; the truncation finely strigose; the tegulæ testaceous; the wings brown, with a brilliant violet iridescence; the legs strongly spinose. Abdomen: as long as the head and thorax, being smooth, shining and very delicately and sparingly punctured.

Hab. Singapore.

3. LARRADA SYCORAX. *L. nigerrima*, lævigata, nitida, punctata; alis fuscis violaceo-iridescentibus.

Female. Length $7\frac{1}{2}$ lines. Jet-black; shining and finely punctured; the face and cheeks covered with silvery pubescence interspersed with long pale hairs; the metathorax oblong, truncated at the apex; the superior surface with a central impressed longitudinal line, on each side of which it is delicately striated obliquely. The thorax: beneath, the sides and also the legs, covered with a cinereous pile, and sprinkled with long white hairs; the wings brown, with a violet iridescence; their base, as well as the posterior pair, palest. Abdomen: smooth, shining and very delicately and distantly punctured; the margins of the segments slightly depressed and glittering in certain lights with silvery pile.

Hab. Borneo (Sarawak).

4. LARRADA POLITA. *L. nigra*; capite abdomineque nitidis; thorace opaco; femoribus tibiisque intermediis posticis ferrugineis; alis fusco-hyalinis.

Female. Length 6 lines. Black; the head shining, the clypeus closely and finely punctured and covered with silvery pile; the mandibles ferruginous. The pro- and meso-thorax closely punctured, thinly covered with a short glittering pubescence; the metathorax transversely rugose; the thorax on the sides and beneath covered with a fine changeable silvery pile; the intermediate and posterior femora and tibiæ, bright ferruginous; the wings fusco-hyaline and iridescent.

Abdomen : elongate, smooth, shining, and covered with a thin changeable glittering silvery pile ; the apex acute and having a produced ferruginous style.

Hab. Borneo (Sarawak).

5. LARRADA TISIPHONÆ. *L. nigerrima*; capite thoraceque subopacis; metathorace reticulato; alis fusco-hyalinis.

Female. Length 4 lines. Black; the head very delicately and closely punctured, sub-opaque; the face and clypeus covered with silvery pubescence, the mandibles ferruginous at their apex; the cheeks with a bright silvery pile. Thorax: the pro- and mesothorax closely and finely punctured, the scutellum more delicately and sparingly so, the former sub-opaque, the latter shining; the metathorax coarsely reticulated; the tegulæ piceous; the wings fusco-hyaline and iridescent, the nervures black; the thorax beneath, and the legs, covered with a fine silky pile. Abdomen: smooth and shining, the apical margins of the segments with fasciæ of silvery pile, only observable in certain lights.

Hab. Borneo (Sarawak).

6. LARRADA ALECTO. *L. nigerrima*; capite thoraceque subopacis; metathorace reticulato; alis fusco-hyalinis.

Female. Length $5\frac{1}{2}$ lines. Jet-black; the head shining; the cheeks with a silvery down; the clypeus impunctate; the mandibles ferruginous; the palpi rufo-testaceous. The mesothorax shining, closely and finely punctured; the scutellum shining; the metathorax rugose, more finely so towards the verge of the truncation, the latter transversely rugose; the tegulæ rufo-testaceous; wings fusco-hyaline, splendidly iridescent, with the nervures black; the legs strongly spinose, the knees somewhat ferruginous. Abdomen: smooth, shining and impunctate.

Hab. Singapore.

Gen. LARRA, *Fabr.*

1. LARRA PRISMATICA. *L. nigra*, pulchre prismatica, maculis fasciisque variis flavis ornata.

Female. Length 4-5 lines. Black, with prismatic tints of violet and blue, particularly on the abdomen. The palpi, labrum, clypeus and a triangular space above it, an abbreviated line at the inner orbits of the eyes, the scape in front and the flagellum beneath, yellow; the clypeus emarginate in its entire width and a black transverse spot in the middle, a similar spot at the base of the labrum, which is rounded in front. The posterior margin of the prothorax, the tubercles, the outer margins of the tegulæ, an oblique spot on each side of the scutellum, a transverse line on the post-scutellum and an elongate spot on the lateral margins of the metathorax, yellow, the margins compressed; the anterior legs with the femora beneath and a spot at their apex above, and the tibiæ and tarsi in front, yellow, the claw-joint entirely so;

the intermediate legs with a line on the femora behind, a spot at their apex in front, the tibiæ in front as well as the tarsi, yellow; the posterior legs with a stripe on the tibiæ in front at their base; the wings hyaline and iridescent. Abdomen: an elongate transverse yellow macula on each side of the basal segment near its apical margin, a yellow fascia on the apical margin of the second segment, widest at the sides, an abbreviated fascia in the middle of the third, an entire one on the fourth, and a spot on each side of the fifth.

Male. Differs in having the clypeus black, two parallel abbreviated yellow lines on the disk of the mesothorax and the fasciæ on the abdomen entire, that on the basal segment being very broad and deeply notched in the middle.

Hab. Borneo (Sarawak).

I have here restored the name *Larra* to one of the insects agreeing with the type, *L. vespiformis*,—the *Stizus vespiformis* of many authors.

Gen. PISON, *Spin.*

1. PISON SUSPICIOSUS. *P. niger*; capite thoraceque rude punctatis; abdomine lævigato, nitido; facie pube argentea ornata.

Female. Length 4 lines. Black; the face with silvery pubescence; the palpi testaceous; the tips of the mandibles ferruginous; the head and thorax strongly and closely punctured, the clypeus finely so. Thorax: the tegulæ testaceous; the wings fusco-hyaline; the first recurrent nervure received at the apex of the first submarginal cell; the second at the apex of the second submarginal; the nervures dark fuscous; the metathorax with a number of coarse radiating striæ at its base; the truncation transversely rugose. Abdomen: very smooth and shining, with a few delicate scattered punctures; the margins of the segments depressed.

Hab. Singapore.

This species very closely resembles the *Pison rugosus*, but it differs from that species in the neuration of the wings, and also in the puncturing of the abdomen; I suspect that an example in fine condition would have silvery bands on the abdomen.

Subgen. PISONOIDES, *Shuck.*

The anterior wings with one marginal cell, and two submarginal cells, each receiving a recurrent nervure.

1. PISONOIDES OBLITERATUS. *P. ater*, glaber, tenuissime punctatus; facie argenteo-villosa; alis hyalinis iridescentibus; metathoracis basi lævi.

Female. Length $3\frac{1}{2}$ lines. Black; the head and thorax punctured, the mesothorax rather distantly so; the clypeus and the notch of the eyes

with a silvery pubescence; the tips of the mandibles ferruginous; the tegulæ testaceous; the nervures brown; the costal nervure and the stigma black; the tibiæ and tarsi simple; the metathorax with a deep triangular depression at its base, which is obliquely striated on each side, and from which a deep smooth channel runs to the apex of the metathorax; on each side of the depression it is smooth and shining, and finely punctured beyond. Abdomen highly polished, with the margins of the segments deeply depressed; the apical margins with a fine short silky white pubescence; the sixth segment acute at the apex.

Hab. Borneo (Sarawak).

I have formed a section for the reception of this species, which I regard as a true *Pison*, having the petiolated cell obsolete, or rather the apical nervure of the usually enclosed cell. I have seen other species with the nervure obsolete in both, or sometimes only in one wing; the latter circumstance confirms my opinion of this species only being an exceptional case, and that it is a true *Pison*.

Fam. BEMBICIDÆ, *Westw.*

Gen. BEMBEX, *Fabr.*

Bembex melancholica, *Smith, Cat. Hym.* pt. iv. p. 328.

Hab. Borneo (Sarawak). Sumatra.

Fam. CRABRONIDÆ, *Leach.*

Gen. TRYPOXYLON, *Latr.*

1. *Trypoxylon bicolor*, *Smith, Cat. Hym.* pt. iv. p. 377.

Hab. Singapore. Madras.

2. **TRYPOXYLON PETIOLATUM.** *T. nigrum nitidum*, petiolo gracili elongato; abdominis articulis secundo et tertio ferrugineis.

Female. Length 7 lines. Black, very smooth and shining; the clypeus, the inner orbits of the eyes, the emargination of the eyes, and the cheeks, with a glittering silvery pile; the mandibles ferruginous; the palpi pale testaceous. Thorax: the tegulæ, anterior and intermediate tarsi, the extreme base of the posterior tibia, the calcaria, and the claws and pulvilli of the tarsi, pale rufo-testaceous; the apical joints of the tarsi fuscous; the sides of the thorax sprinkled with glittering silvery hairs; the wings hyaline, the nervures rufo-fuscous. Abdomen: the petiole slender, as long as the head and thorax, with the apex of its node, the second and third segments, ferruginous; covered with a fine changeable pile, only observable in certain lights.

Hab. Borneo (Sarawak).

3. *TRYPOXYON COLORATUM*. *T. nigrum*, læve, nitidum; pedibus pallide ferrugineis, abdomine subferrugineo supra, obscure maculato.

Male. Length $7\frac{1}{2}$ lines. Black, smooth and shining: the clypeus, mandibles, palpi and scape of the antennæ, covered with golden pile; the cheeks and the emargination of the eyes with a glittering pale golden pile. Thorax: the posterior margin of the prothorax, the tegulæ, tubercles and legs, pale ferruginous; the intermediate and posterior tibiæ beneath, and also the tarsi, fuscous; the apex of the joints of the latter ferruginous; the wings hyaline, their nervures ferruginous, the stigma pale; the sides of the thorax and the metathorax with golden pubescence. Abdomen rufo-testaceous; the petiole, except its base, above, the node at its apex, above, as well as all the segments, more or less black, or rufo-fuscous above; the base and apex of the segments, as well as the apical segment entirely, pale; beneath entirely pale.

Hab. Borneo (Sarawak).

This species is about the size of *T. bicolor*, which it very much resembles, but from which it is very distinct.

Gen. CRABRO, *Fabr.*

1. *CRABRO FAMILIARIS*. *C. niger*, ocellis triangulariter ordinatis, mesothorace punctulato, pedibus flavis, metathorace lævi nitido, abdomine pubescente.

Male. Length $2\frac{1}{2}$ lines. Black: head a little wider than the thorax, shining and delicately punctured; the stemmata in a triangle; the clypeus and cheeks with silvery pubescence; the scape yellow; the flagellum rufo-testaceous, slightly fuscous above; the palpi pale testaceous; the mandibles ferruginous at their apex. Thorax: the collar, tubercles, tegulæ, scutellum and post-scutellum, the extreme base of the wings, and the legs, of a sulphur-yellow; the wings hyaline and splendidly iridescent; the base of the femora and the coxæ slightly ferruginous; the mesothorax delicately punctured; the metathorax smooth and shining, with a central impressed fovea. Abdomen pubescent, with the apical margins of the segments rufo-piceous.

Hab. Borneo (Sarawak).

2. *CRABRO RUGOSUS*. *C. niger*, ocellis triangulariter ordinatis in vertice, mesothorace longitudinaliter striato, metathorace rugoso.

Male. Length $2\frac{1}{2}$ lines. Black: head wider than the thorax, quadrate; the stemmata in a triangle on the vertex; an impressed line in front of the anterior stemma extending to the sulcation on the face; an impressed line running round the orbits of the eyes; the cheeks and face with a dense silvery pubescence; the scape yellow; the tips of the mandibles ferruginous. Thorax: an interrupted line on the collar, the tubercles, two spots on the scutellum, the post-scutellum, the tips of the anterior femora, all the tibiæ at their base,

and the basal joint of the tarsi, yellow; the apical joints of the tarsi rufo-fuscous; the yellow markings on the legs paler than those on the thorax; the mesothorax deeply striated longitudinally; the metathorax rugose; the wings hyaline and iridescent. Abdomen: the four basal segments with a small ovate yellow spot at their extreme lateral margins; the fifth with a yellow fascia at its base.

Hab. Borneo (Sarawak).

This species has a remarkably close resemblance to the *Crabro Panzeri* of this country.

Gen. MELLINUS, *Fabr.*

1. MELLINUS CRABRONIFORMIS. *M. niger*, scapo palpis mandibulis tuberculis pedibusque flavis, abdomine ferrugineo.

Female. Length 4 lines. The head and thorax black; the legs and abdomen pale ferruginous; the head and thorax with a thin glittering pale golden pubescence; the palpi, mandibles and scape of a yellowish white; the flagellum testaceous, yellow beneath. Thorax smooth and shining; the tegulæ and base of the wings of a yellowish white; the wings hyaline and splendidly iridescent; the nervures testaceous; the metathorax with a subenclosed space at its base, with a row of sulcations along the basal margin; the sides and apex of the metathorax rugose. Abdomen pale ferruginous, smooth, shining and pubescent; the basal segment petiolated, the petiole curved, clavate at the apex.

Hab. Borneo (Sarawak).

I am aware that this insect, if a strict adherence to the neuration of the wings, as a character for generic subdivision, were rigidly adopted, would form a type of a new genus, but the difference is too slight in my opinion to justify such a course; in other respects it agrees with the insects included in the genus *Mellinus*; the principal difference in the neuration of the present species is the elongation of the third discoidal cell.

Gen. CERCERIS, *Latr.*

1. CERCERIS SEPULCRALIS. *C. capite thoraceque nigris*, abdomine ferrugineo.

Female. Length $7\frac{1}{2}$ lines. Black, with the abdomen ferruginous; the head and thorax finely shagreened; the face with a silvery-white pubescence; the carina between the antennæ, an ovate spot on the clypeus, and the mandibles, obscurely rufo-testaceous. Thorax: a minute obscure spot on the posterior margin of the prothorax, laterally, and a distinct spot on the tegulæ in front, pale yellow; the wings brown, their base subhyaline; the sides of the metathorax covered with hoary pubescence; an indistinct pale spot on the inter-

mediate and posterior tibiæ, outside; the apical joints of the anterior tarsi, and the calcaria, pale testaceous; the tarsi beneath, and the posterior tibiæ within, clothed with a golden-yellow pubescence.

Hab. Borneo (Sarawak).

Group SOLITARY WASPS.

Fam. EUMENIDÆ

Gen. GAYELLA, *Saussure*.

1. **GAYELLA PULCHELLA.** *G. nigra*, punctata, subnitida, flavo-guttata et fasciata, pedibus ferrugineis flavo-guttatis, alis subhyalinis et iridescentibus.

Female. Length 10 lines. Black: head quadrate; the clypeus deeply emarginate in front, the angles of the emargination produced and denticulate; a large oblong spot behind the eyes, two oblique lines on the vertex nearly touching the summit of the eyes and inclined inwards, a stripe at the base of the scape in front, the labrum and mandibles, yellow. Thorax: the prothorax in front, two longitudinal abbreviated lines on the disk of the mesothorax, the tegulæ in front and behind, a slightly interrupted transverse line on the scutellum and post-scutellum; a spot beneath the wings, and the sides of the metathorax, yellow; the legs ferruginous; a stripe on the anterior femora outside, another on the anterior and intermediate tibiæ, and a spot at the apex of the posterior pair, yellow; the tibiæ and tarsi fuscous; the wings fusco-hyaline; the anterior margin of the superior pair yellowish, their apex slightly clouded. Abdomen: the lateral and apical margins of the petiole, an ovate spot on each side of the basal segment, a fascia a little before the apical margins of the first, second and third segments, yellow; beneath black.

Hab. Borneo (Sarawak).

Gen. EUMENES.

1. **Eumenes flavopicta.**

Eumenes flavopicta, *Blanch. Dict. d'Hist. Nat. de Ch., d'Orb. Ins.* pl. 2. fig. 2.

Hab. Singapore.

2. **Eumenes Blanchardi**, *Sauss. Mon. Guêpes, Sol.* p. 66.

Hab. Borneo (Sarawak).

3. **Eumenes quadrispinosa**, *Sauss. Mon. Guêpes, Suppl.* p. 134. pl. 7. fig. 2 ♀.

Hab. Malacca.

4. **Eumenes xanthura**, *Sauss. Mon. Guêpes, Sol.* p. 46.

Eumenes circinalis, *Fabr. Syst. Piez.* p. 286 (var.?).

Hab. Borneo (Sarawak).

5. *Eumenes hæmorrhoidalis*.

Vespa hæmorrhoidalis, *Fabr. Syst. Piez.* p. 259.

Hab. Borneo (Sarawak).

6. *Eumenes quadrata*, *Smith, Trans. Ent. Soc. Lond.* n. ser. ii. p. 36.

Hab. Borneo (Sarawak).

The specimens from Sarawak only differ from those from China in having the tibiæ and tarsi paler.

7. *EUMENES INCONSPICUA*. *E. nigra flavo-variegata*, capite thoraceque dense punctato, abdomine sublævigato nitido.

Female. Length 5 lines. Black: the clypeus deeply emarginate at the apex, the angles acute; the basal portion of the clypeus yellow, with a yellow spot above between the antennæ, and a narrow abbreviated yellow line behind the eyes; the tips of the mandibles, and the apex of the flagellum beneath, ferruginous. Thorax: an abbreviated line on the posterior margin of the prothorax in the middle, a spot beneath the wings and another before it, the tegulæ, a spot behind them, the post-scutellum, two spots on each side of the metathorax, the tips of the femora and the tibiæ, yellow; the anterior tarsi yellow, the intermediate and posterior pairs dusky; the intermediate and posterior tibiæ fusco-ferruginous beneath; wings subhyaline, the anterior margin of the superior pair fuscous. Abdomen: a minute spot on each side of the petiole, its apical margin, a larger spot on each side of the second segment and its apical margin, yellow; the following segments with a silky pubescence.

Hab. Borneo (Sarawak).

8. *EUMENES SINGULARIS*. *E. nigra flavo-variegata*, capite thorace petioleque (ad apicem excepto) rude punctato; abdomine lævigato nitido.

Female. Length 6 lines. Black: the basal and the lateral margins of the clypeus, an oblong spot between the antennæ, a minute spot in the sinus of the eyes and a short line behind them, yellow; the apex of the antennæ ferruginous beneath. Thorax suborbicular; the prothorax in front, two spots on each tegula and another behind them, a transverse line on each side of the metathorax at its base, two ovate ones at its apex, and a spot beneath the wings, yellow; the anterior femora at their apex, the tibiæ, and the intermediate and posterior tibiæ outside, yellow; the wings fusco-hyaline, and iridescent, their apical margins darkest. Abdomen: the petiole longer than the head and thorax; the apical margin of the petiole, an ovate spot on each side of the first segment, its apical margin, and a line in the middle of that of the following segment, yellow; the thorax and abdomen beneath with a fine griseous pile.

Hab. Borneo (Sarawak).

Gen. RHYNCHIUM, *Spinola*.1. *Rhynchium hæmorrhoidale*.*Vespa hæmorrhoidalis*, *Fabr. Syst. Piez.* p. 259.*Hab.* Singapore. Malacca.2. *Rhynchium sanguineum*, *Sauss. Mon. Guêpes, Sol.* p. 110 (var. *R. hæmorrhoidalis*).*Hab.* Borneo (Sarawak).3. *Rhynchium metallicum*, *Sauss. Mon. Guêpes, Sol.* p. 114.*Hab.* Borneo (Sarawak).4. *Rhynchium nitidulum*.*Vespa nitidula*, *Fabr. Syst. Piez.* p. 260.*Hab.* Borneo (Sarawak).

The specimens from Borneo have the clypeus strongly punctured; in other respects they agree precisely with Indian and Javanese examples.

5. RHYNCHIUM OBSCURUM. *R. capite thoraceque rude punctatis, alis apice nigris, abdominis segmento primo rubro-fasciato.*

Female. Length 6 lines. Black: the head and thorax very coarsely punctured; the margins of the clypeus covered with silvery pile; the face with scattered, short, griseous pubescence. Thorax: the tegulæ black and shining; the wings fusco-hyaline; a dark stain along the anterior margin of the externo-medial cell, and a dark fuscous cloud beyond the second submarginal cell occupying the entire apex of the wings. Abdomen: opaque black, the apical margin of the first segment with an obscure ferruginous band; the apical margins of the following segments slightly and very obscurely ferruginous, and covered with fusco-ferruginous pubescence.

Hab. Borneo (Sarawak).Gen. ODYNERUS, *Latr.*1. *Odynerus flavo-lineatus*, *Smith, Cat. Hym.* pt. v. p. 60.*Hab.* Malacca (Mount Ophir). Java.2. ODYNERUS MANIFESTUS. *O. niger, capite thoraceque rude et confluentè punctatis, clypeo scapo pedibus et prothorace flavo-guttatis, abdomine fasciis duabus flavis ornato.*

Male. Length 5 lines. Black: the head and thorax covered with deep coarse confluent punctures; a spot on each side of the clypeus, a line on the scape in front, and another behind the eyes, yellow; the clypeus produced and truncate in front. Thorax: a line on the posterior margin of the prothorax in the middle, a spot on the tegulæ in front and behind, the post-scutellum, the apex of the anterior and intermediate femora, and all the tibiæ outside, yellow; the tarsi black; wings subhyaline, the nervures black; the anterior margin of the

superior pair fuscous. Abdomen shining and delicately punctured; the first and second segments with a yellow fascia on their apical margins.

Hab. Borneo.

3. *ODYNERUS SEPTEM-FASCIATUS*. *O. niger* capite thoraceque profunde punctatis flavoque variegatis, abdominis segmentis flavo-marginatis, segmento secundo flavo-fasciato.

Male. Length 5 lines. Black: head and thorax deeply, but not coarsely punctured; the margins of the clypeus, the labrum, mandibles, scape in front, the sinus of the eyes, a longitudinal stripe running from the anterior stemma to the insertion of the antennæ, and a line behind the eyes, yellow. Thorax: a transverse line on the prothorax in front, not touching its anterior angles, two longitudinal abbreviated lines on the disk of the mesothorax, the tegulæ, two spots on the scutellum, the post-scutellum, the sides of the metathorax, a spot beneath the wings, an oblique line beneath it, and a similar line running down to the posterior coxæ, yellow; the legs yellow, with a fuscous line on the femora above and on the tibiæ behind. Abdomen: the anterior, posterior and lateral margins of the basal segment yellow; a fascia across the middle of the second segment, and another a little before its apical margin, and also before the margins of the three following segments, yellow; beneath, the second segment yellow, with an oblong black spot in the middle; the apical margins of the three following segments yellow.

Hab. Borneo (Sarawak).

4. *ODYNERUS MACULIPENNIS*. *O. niger*, punctatus, capite thoraceque flavo-guttatis, abdominis segmentis singulis flavo-fasciatis, alis apice nigro unimaculatis.

Female. Length $3\frac{1}{2}$ lines. Black: the clypeus, mandibles, antennæ beneath, a spot between them, another in the sinus of the eyes, and a stripe behind them, yellow; the antennæ rufo-fuscous above; the mandibles ferruginous at their apex. Thorax: the anterior margin of the prothorax, the tegulæ and a spot behind them, a spot beneath the wings, the scutellum, a line on the post-scutellum and the sides of the metathorax, yellow; the legs yellow, with the coxæ and the femora above, more or less fuscous; the wings hyaline, with a black spot occupying the greater part of the marginal cell and passing off beyond it to the apex of the wings; the nervures fuscous. Abdomen shining and delicately punctured; the first segment short and cup-shaped, its apical margin thickened; the second segment much wider than the first, its sides rounded; a yellow fascia on the apical margins of the segments, that on the third segment much narrower than the others; an ovate spot on each side of the second segment, at its lateral margins, at the base.

Hab. Borneo (Sarawak).

This species is closely allied to the *O. miniatus* of Saussure.

5. *ODYNERUS MULTIPICTUS*. *O. niger*, capite thoraceque rude punctatis et flavo-variegatis, pedibus flavis, alis hyalinis apice fuscatis, abdomine flavo-fasciato.

Female. Length $5\frac{1}{2}$ lines. Black: the head and thorax rugose-punctate; the mandibles, clypeus, sinus of the eyes, a longitudinal line running from the anterior ocellus to the insertion of the antennæ, a parallel line on each side of the ocelli touching the eyes, a broad stripe behind the eyes, and the scape in front, yellow; a black spot in the centre of the clypeus, and the apex of the mandibles, ferruginous; the flagellum fulvous beneath. The prothorax in front, two longitudinal lines on the mesothorax, two ovate spots on the scutellum, the sides of the metathorax with a large angular spot, the tegulæ, a spot and an oblique line beneath them, and also the legs, yellow; a line on the femora above and on the tibiæ behind, and the coxæ spotted with fuscous; a black spot on the tegulæ; the wings subhyaline and iridescent; a dark cloud on the anterior margin of the superior pair towards their apex. Abdomen smooth and shining; a yellow fascia on the apical margins of the segments, and also a fascia at the base of the first segment, with a transverse spot on each side of the second segment; beneath, the second segment yellow, with a black quadrate spot at its base, a yellow fascia on the apical margins of the following segments

Hab. Borneo (Sarawak).

6. *ODYNERUS LATIPENNIS*. *O. niger*, angustus, elongatus, alis amplis apice nigro-maculatis, capite thoraceque flavo-guttatis, pedibus flavis, abdomine flavo-fasciato.

Female. Length 6 lines. Black: head and thorax strongly punctured; the clypeus, and an ovate spot above, from which a narrow line runs up to the anterior ocellus, the sinus of the eyes, a stripe behind them and the scape in front, yellow; the flagellum fulvous beneath; the tips of the mandibles ferruginous. Thorax elongate; the prothorax in front, the tegulæ, two spots on the scutellum, and the metathorax, yellow; a longitudinal black line in the middle of the latter; a yellow spot beneath the wings and an oblique line behind it; the legs yellow; the wings very large, subhyaline and iridescent; the nervures towards the base of the wings fusco-ferruginous, towards their apex they are pale testaceous; the costal and externo-medial cells with a slight fuscous cloud; a dark cloud occupying the apical half of the marginal cell and passing on to the apex of the wings. Abdomen: the basal segment campanulate, the apical margins of the segments with yellow fasciæ.

Hab. Borneo (Sarawak).

This species belongs to the subgenus *Symmorphus*.

Group **SOCIAL WASPS.**

Fam. VESPIDÆ.

Gen. ISCHNOGASTER, *Guérin*.

1. *Ischnogaster cilipennis*, *Smith, Cat. Hym.* pt. v.
Hab. Borneo (Sarawak). Malacca (Mount Ophir).
2. *Ischnogaster Mellyi*, *Ann. Soc. Ent. Fr.* 2^e sér. x. p. 25. pl. 2. f. 1.
Hab. Malacca. Sarawak.
3. **ISCHNOGASTER NIGRIFRONS.** *I. niger*, *subtus flavo-variegatus*,
cellulis primo secundoque submarginalibus æquis, tertia breviori et ad
cellulam marginalem angustata.
Female. Length 6 lines. Black: the face and clypeus covered with
pale golden pubescence, the colour changing in different lights; the
clypeus produced at its apex into an acute spine; the scape in front,
the flagellum beneath, the palpi and mandibles, yellow, the latter ferru-
ginous at their apex. Thorax globose; the posterior margin of the
prothorax, two oblique lines on the mesothorax anteriorly, a spot on
each side of the scutellum, the post-scutellum, and two spots at the
apex of the metathorax close to the insertion of the petiole, yellow;
beneath, fusco-ferruginous; the legs rufo-piceous, with the knees and
the anterior and intermediate tibiæ outside, yellow. Abdomen ob-
scurely rufo-fuscous; the first segment petiolated; beneath, with two
lines at the base of the node of the petiole; the extreme lateral mar-
gins of the first segment, two oblique ones towards its apex beneath,
an ovate spot on each side of the two following segments beneath,
and the extreme lateral basal margin of the second segment above,
yellow.
Hab. Borneo (Sarawak).
4. *Ischnogaster micans*, *Sauss. Mon. Guêpes, Soc.* p. 8.
Hab. Borneo (Sarawak). Malacca.

Gen. POLISTES, *Latr.*

Polistes sagittarius, *Sauss. Mon. Guêpes, Soc.* p. 56.

Hab. Borneo (Sarawak). India. China. Greece.

There is probably no species of this genus which is so widely distributed
as the present; the specimens which I have seen from Borneo are all
smaller than the Indian ones, and are more highly coloured; the
mesothorax has a central longitudinal ferruginous stripe, and the me-
tathorax two longitudinal ones.

Gen. POLYBIA, *Sauss.*

1. *Polybia Sumatrensis*, *Sauss. Suppl. Guêpes, Soc.*

Hab. Sumatra. Borneo (Sarawak). Malacca.

2. *POLYBIA STIGMA*. *P. nigra, flavo-variegata, alis anticis hyalinis, margine antico obscurato, stigmatè flavo.*

Male. Length 5 lines. Black : the clypeus and cheeks with a silvery pubescence ; the mandibles, clypeus, sinus of the eyes, the antennæ beneath, and the cheeks, yellow. Thorax : the anterior margin of the prothorax, the tegulæ and a line beneath the wings, a broad oblique stripe on the sides of the metathorax, the scutellum, post-scutellum, and an oblong-quadrate spot beneath it, and also the legs, yellow ; the femora and tibiæ slightly fuscous behind ; the anterior wings with a dark spot at the apex of the externo-medial cell ; the stigma honey-yellow, with a dark stripe beyond it at the margin of the wing. Abdomen : an ovate spot on each side of the second segment at its base, and a yellow fascia on the apical margin ; the extreme apex of the abdomen yellow ; the fascia on the second segment, continued beneath, and two ovate maculæ at its base.

Hab. Borneo (Sarawak).

This is probably the male of *P. decorata*.

3. *POLYBIA LUCTUOSA*. *P. opaca, nigra, clypei margine antico flavo, segmentis primo tertio quartoque abdominis flavo-marginatis, alis apice nigro uni-maculatis.*

Female. Length $5\frac{1}{4}$ lines. Black : the anterior margin of the clypeus, slightly interrupted in the middle, and a very narrow line at the inner orbits of the eyes, not entering the sinus, yellow ; the head and thorax opaque ; wings hyaline, with a black spot on the anterior margin of the superior pair, near their apex. Abdomen : a narrow yellow fascia on the apical margins of the first, third and fourth segments, the extreme apex yellow.

Hab. Borneo (Sarawak).

4. *POLYBIA DECORATA*. *P. nigra, flavo multidecorata, pedibus flavis.*

Female. Length 5 lines. Black : the clypeus, mandibles, antennæ beneath, the sides of the face and sinus of the eyes, a spot above the clypeus running up into a point as high as the anterior ocellus, and two minute spots on the margin of the vertex, yellow. Thorax : the anterior margin of the prothorax, the tegulæ, and a large broad oblique spot beneath the wings, two longitudinal lines on the mesothorax, the scutellum and post-scutellum, the metathorax and legs, yellow ; the scutellum and metathorax with a longitudinal black line down the middle ; the wings subhyaline, with a fuscous cloud in the marginal cell ; the tibiæ outside, and the tarsi above, slightly fuscous. Abdomen : the first segment campanulate, with a yellow spot on each side at its apex ; the second segment with two very large spots at its base occupying nearly half the length of the segment, and nearly uniting its apical margin as well as those of the three following, with a marginal fascia, yellow ; the apical segment entirely yellow ; beneath

yellow, with only the apical margins of the segments narrowly fuscous.

Hab. Borneo (Sarawak).

Gen. ICARIA, *Saussure*.

1. *Icaria opulenta*, *Smith, Cat. Hym.* pt. v. p. 99. ♀.

The male of this species has been received from Borneo since I described the female, from which it only differs in having the clypeus and mandibles entirely black; in other respects they agree.

2. *Icaria speciosa*, *Sauss. Rev. Zool.* (*Guérin*, 1855) p. 374.

Hab. Borneo. Malacca. Sumatra.

3. *Icaria ferruginea*, *Fabr.*

Polistes ferruginea, *Fabr. Syst. Piez.* p. 277.

Hab. Malacca (Mount Ophir). India.

4. ICARIA LUGUBRIS. *I. opaca nigra pube sericea variabili vestita, alis subhyalinis, apice nigro subnebulosis.*

Female. Length 6 lines. Black: covered with a fine changeable white silky pile; head opaque, delicately roughened; the clypeus angular in front and with a broad white margin, smooth and shining anteriorly; the mandibles smooth and shining, with a white spot at their base. Thorax finely rugose; the sides of the prothorax, the scutellum and post-scutellum, very obscurely tinged more or less with ferruginous, sometimes not observable; the wings subhyaline, with a dark brown stain at the apex of the externo-medial cell, a similar stain occupies the marginal cell, and a paler cloud descends from it across the apex of the wing. Abdomen: the apex of the petiole and the apical margins of the third and following segments very indistinctly tinged with ferruginous, generally black; the third and following segments densely covered with silky pile.

In my Catalogue of Vespidae, I have indicated this species as being a black variety of *I. speciosa*; I had only one or two examples at that time for examination; but having now a series, I am satisfied of their being distinct: in *I. speciosa* the first segment of the abdomen is as broad as long, in the present it is longer than broad.

Hab. Borneo (Sarawak).

5. ICARIA MODESTA. *I. nigra, alis fulvo-hyalinis, abdomine ferrugineo.*

Female. Length 5 lines. Black: the head and thorax roughly punctured; the face and cheeks with short griseous pubescence; the clypeus angular in front, produced into an acute point. Thorax: the posterior margin of the prothorax ferruginous in the middle; the apical joints of the tarsi ferruginous; wings fulvo-hyaline, the ner-

vures dark ferruginous towards the base of the wings, and pale ferruginous towards their apex. Abdomen dark ferruginous, somewhat obscure; the first segment and base of the second bright red; the sides and the apex of the abdomen with a fine silky white pile.

Hab. Borneo (Sarawak).

Gen. VESPA, *Linn.*

1. *Vespa cincta*, *Fabr. Syst. Piez.* p. 254.

Hab. Borneo (Sarawak). Malacca (Mount Ophir).

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

Hab. Malacca.

3. *Vespa tyrannica*, *Smith, Cat. Hym.* pt. 5. p. 119.

Hab. Singapore.

4. *Vespa (anomala) dorylloides*, *Sauss. Mon. Guêpes, Soc.* p. 112.

Hab. Borneo (Sarawak). Malacca. Singapore.

5. *Vespa bellicosa*, *Sauss. Mon. Guêpes, Soc.* p. 146.

Hab. Borneo (Sarawak).

6. VESPA ANNULATA. *V. nigra*, scutello flavo-maculato, post-scutello metathoraceque flavis, illo in summo nigro, segmentis tenuibus flavo marginatis.

Worker. Length 10 lines. The clypeus emarginate in front, its lateral angles acute and slightly produced; an elongate-quadrangle black spot in the middle not extending to the anterior margin; the cheeks, mandibles, clypeus, a coronet-shaped spot above, the emargination of the eyes, the scape in front and the flagellum beneath, yellow. Thorax: a narrow line on the anterior and posterior margins of the prothorax, the tegulæ and a spot beneath the wings, an ovate spot on each side of the scutellum, the post-scutellum and metathorax, yellow; wings subhyaline, with a narrow fuscous stain at the anterior margin of the superior pair; legs yellow, with a fuscous stain on the tibiæ and femora above. Abdomen: two large spots at the base of the first segment, and a narrow fascia on the apical margins of all the segments, yellow; the yellow bands abruptly widened laterally; the abdomen yellow beneath, with the base of the segments blackish.

Hab. Borneo (Sarawak). Malacca.

Fam. TENTHREDINIDÆ, *Leach.*

1. TENTHREDO COXALIS. *T. chalybea*, clypeo palpis trochanteribus coxarum apicibus tibiisque postice albis, alis hyalinis.

Female. Length 4 lines. Steel-blue; the antenna black; the clypeus and palpi white. Thorax: a line before and a spot beneath the tegulæ,

the trochanters, apex of the coxæ, the knees and the tibiæ behind, white; the wings hyaline and iridescent; the nervures and stigma dark brown; two minute white spots on the post-scutellum; the extreme apex of the abdomen with a white spot.

Hab. Singapore.

Gen. TREMEX, *Jurine*.

1. TREMEX INSULARIS. *T. ater*, capite thorace disco viridibus, abdomine et thorace flavo-variegatis, alis subhyalinis, margine antico fuscis.

Female. Length 8 lines. Head brassy-green, strongly punctured; the antennæ black with the apical joints yellow; the face thinly covered with white pubescence. Thorax: the disk and the scutellum with a green tinge; the pro- and metathorax above yellow; the segments of the abdomen have each a yellow fascia, the first two slightly interrupted, the terminal segment with an oblique yellow stripe on each side; the tibiæ yellow, the tarsi ferruginous; the base of the abdomen yellow beneath; the wings subhyaline, a dark fuscous stain along the anterior margin of the superior pair, the apical margins of both wings fuscous.

Hab. Borneo (Sarawak).

Fam. CYNIPIDÆ, *Westw.*

1. CYNIPS INSIGNIS. *C. flavo-ferruginea*, antennis fuscis, alis flavo-hyalinis apice fuscis.

Female. Length $4\frac{1}{2}$ lines. Reddish-yellow, smooth and shining, rather paler beneath; the flagellum slightly fuscous, with the base and apex pale; tips of the mandibles black; the mesothorax deeply and transversely grooved; the base of the wings flavo-hyaline; from the base of the stigma to the apex dark fuscous; the insect is thinly covered with a short pale pubescence; the ovipositor black; the sheath and the claws dark ferruginous.

Hab. Borneo (Sarawak).

Fam. ICHNEUMONIDÆ, *Leach*.

1. ICHNEUMON PENETRANS. *I. niger*, capite thoraceque flavo variegatis, pedibus flavis nigro-maculatis, abdominis annulis flavo-marginatis.

Female. Length 8 lines. Black: the face below the insertion of the antennæ, the labrum, mandibles, palpi, cheek, inner orbits of the eyes, and the antennæ, yellow; the scape and base and apex of the flagellum black: a black spot above the clypeus, and the apex of the mandibles ferruginous. Thorax: the lateral margins of the prothorax, a

spot on the tegulæ, two longitudinal spots on the mesothorax, the scutellum, post-scutellum, two spots on the metathorax behind and a line at the sides, two oblique maculæ on the sides of the thorax and the legs, yellow; the anterior and intermediate legs with a fuscous line outside; the posterior femora and the apex of the tibiæ black; wings hyaline. Abdomen: the base of the petiole and its apical margin yellow; the base of the first segment and the apical margins of all the segments with a yellow fascia; beneath entirely yellow.

Hab. Borneo (Sarawak).

2. *ICHNEUMON COMISSATOR*. *I. niger*, antennis medio albis, thorace pedibusque flavo variegatis, abdominis petioli basi marginibus basilibus segmentorum trium sequentium duobusque segmentis apicalibus flavis.

Male. Length 7 lines. Black: antennæ white in the middle; the head is yellow, except the hinder part of the vertex, and a black stripe running from the vertex to the insertion of the antennæ. The prothorax has the anterior and posterior margins yellow; the tegulæ, two spots on the disk of the mesothorax, the scutellum and post-scutellum, and metathorax, yellow; a black spot on the tegulæ, another on the scutellum, and a black T-shaped mark on the metathorax; the thorax with yellow maculæ on the sides, and the legs yellow; the anterior and intermediate legs with a black line outside, and the posterior femora and apex of the tibiæ black. The petiole of the abdomen yellow, with a black macula at its apex; the first, second and third segments with a broad, deeply emarginate fascia at their base; the two apical segments entirely yellow.

Hab. Borneo (Sarawak).

Gen. *CRYPTUS*, *Fabr.*

1. *CRYPTUS CROCEIPES*. *C. niger*, metathorace bispinoso, antennis medio tarsisque posticis et abdomine apice albis, pedibus flavis.

Female. Length 5 lines. Black: subopake, with the apex of the abdomen white above; the middle of the antennæ, above, white about one-third of their length; the legs yellow; the posterior tibiæ and claw-joint of the tarsi, and also the anterior tarsi, fuscous; the posterior tarsi white; the wings hyaline and iridescent, with a faint cloud at the apex of the first submarginal cell, the stigma and nervures, black; the metathorax armed with two short spines which are white at their tips.

Hab. Borneo (Sarawak).

2. *CRYPTUS ELEGANS*. *C. niger*, antennis medio scutelloque et abdominis apice albis, alis hyalinis macula fusca ad apicem, abdominis fasciis albis, thorace bispinoso.

Female. Length $4\frac{1}{2}$ lines. Black: the scape pale rufo-testaceous, the apical half of the flagellum and the palpi white; the apex of the flagellum, and the outside of the white portion, fuscous. The tegulae, scutellum, a line on the post-scutellum, and the posterior tarsi, white; the legs pale rufo-testaceous; the metathorax rugose and armed with two white spines; the wings hyaline, with a fuscous stain descending from the stigma to the inferior margin of the discoidal cell. Abdomen: the basal segment rufo-testaceous at the base and white at its apical margin; the second segment black at its base, then rufo-testaceous, becoming white at its apical margin; the apex of the abdomen white.

Hab. Borneo (Sarawak).

3. *CRYPTUS LEPIDUS.* *C. niger*, alis hyalinis, tarsis posterioribus albo-, metathorace transverso-striatis, abdominis apice albo.

Female. Length 6 lines. Black; shining: antennae white in the middle; the wings hyaline, the nervures black; the anterior and intermediate legs, and the posterior coxae, reddish-yellow; the anterior and intermediate tarsi fuscous, the posterior pair white; the three apical segments white above; the posterior margins of the second and third segments with very narrow white fasciae; the metathorax transversely striated.

Hab. Borneo (Sarawak).

Gen. PIMPLA, *Fabr.*

1. *Pimpla punctator.*

Ichneumon punctator, *Lin. Syst. Nat.* i. 935. 38.

Pimpla pedator, *Fabr. Syst. Piez.* p. 114. 6.

Hab. India. Borneo (Sarawak).

Gen. MEGAPROCTUS, *Brullé.*

1. *MEGAPROCTUS RUFICEPS.* *M. niger*, capite ferrugineo, thorace abdominisque segmento primo et secundo rugosis, alis hyalinis, tarsis posterioribus albis.

Female. Length 8 lines. Head and scape of the antennae ferruginous, smooth and shining; the flagellum and tips of the mandibles black. Thorax opaque black, rugose, but not coarsely so; the mesothorax convex in front, sub-bituberculate, the tubercles obsoletely ferruginous; the wings hyaline, the nervures black; the base of the tibiae, the apex of the first and second joints of the anterior tarsi, the third and fourth entirely, the intermediate pair wanting, and the posterior pair, white; the claw-joint of the latter black. Abdomen opaque black, broad at the base and slightly widening to the apex; the first segment and a large angular shape in the middle of the second with large close punctures; on each side of the angular shape it is lower

tudinally rugulose; the apical segments smooth and shining; the ovipositor a little longer than the insect.

Hab. Singapore.

Gen. RHYSSA, *Grav.*

1. RHYSSA MIRABILIS. *R.* capite thorace pedibus anticis et intermediis sanguineo-rubris, coxis intermediis antice posticisque a tergo, albis, alis fuscis, abdomine basi nigro sensim ad apicem pallidiore, apice flavescenti-albo, ovipositore elongato.

Female. Length 13 lines. Head, thorax and anterior legs ferruginous; the mandibles black; wings dark fuscous, with a coppery effulgence; the intermediate and posterior legs dark rufo-piceous; the intermediate coxæ in front and the posterior pair behind, white; the intermediate tibiæ ferruginous in front, the tarsi fuscous; the apex of the metathorax above black, smooth and shining. Abdomen smooth and shining, black at the base, and gradually becoming paler to the apex, which is pale yellowish-white; the apical segments deeply emarginate in the middle above; the ovipositor one-third longer than the body.

Hab. Borneo (Sarawak).

2. RHYSSA MACULIPENNIS. *R.* nigra, flavo dense maculata, alis anticis macula magna fusca ad apicem.

Female. Length 10 lines. Black: the face, inner and outer orbits of the eyes, and a spot on the scape in front, yellow. Thorax: the posterior margin of the prothorax, the tegulæ and two spots beneath the wings, the scutellum and a minute spot on each side, at its anterior angles, a spot on the post-scutellum, a trilobate spot on the metathorax, in the middle, and a large irregular macula at the sides, yellow; the legs yellow; the tarsi fuscous; the anterior coxæ behind and the femora and tibiæ outside with a rufo-piceous stain, the intermediate and posterior black and spotted with yellow, the femora black above, the tibiæ fuscous at their base behind; the wings hyaline, with a faint yellow tinge, the nervures black, the stigma ferruginous; a large dark brown macula on the anterior wings placed at the apex of the stigma. Abdomen: a longitudinal yellow spot in the middle of the two basal segments, and an oblique ovate yellow spot at the sides of the three following segments towards their apical margins; the ovipositor one-fourth longer than the body.

Hab. Borneo (Sarawak). Singapore.

Gen. MEGISCHUS, *Brullé.*

1. MEGISCHUS INSULARIS. *M.* niger, capite ferrugineo, thorace abdominisque segmento primo rugosis, alis subhyalinis, ovipositore ad apicem albo annulato.

Female. Length 10 lines. Black: the head red, coarsely rugose, having three or four deep transverse curved grooves above the ocelli, in front

of which is a triangular shallow cavity which has several radiating carinæ; the corners of the triangle raised and recurved; the antennæ and palpi black. Thorax coarsely rugose, having a mixture of transverse sculpturing and large shallow punctures; wings fusco-hyaline, with the nervures black, a slight fuscous cloud in the first discoidal cell; the posterior margin of the prothorax narrowly pale testaceous; the posterior coxæ transversely rugose-striate; the posterior femora incrassate, denticulate beneath. Abdomen: the first segment transversely striated, the following smooth and shining; the ovipositor a little shorter than the body.

Male. About the same size as the female, similarly coloured and sculptured; the posterior femora similarly denticulate; the first segment of the abdomen more finely striated, the apical margins of the third and three following segments notched in the middle.

Hab. Sarawak.

Gen. MACROGASTER, *Brullé*.

1. MACROGASTER FLAVO-PICTUS. *M. nigro flavoque varius, alis anticis macula magna nigro-fusca ad apicem.*

Female. Length 15 lines. Head black; the face, cheeks, mandibles, and scape in front, yellow. Thorax black, transversely rugose; the posterior margin of the prothorax, a small and a large spot beneath the wings, the legs and breast in front, four spots on the mesothorax, a spot on the scutellum and a smaller one at each side, the tegulæ, and the base and sides of the metathorax, yellow; the wings hyaline; the nervures black; the stigma yellow; a large dark fuscous macula at the apex of the marginal cell extending across the second submarginal cell. Abdomen black and subopaque, with the apical margins of the segments smooth and shining; each segment with a yellow fascia before its apical margin, the two basal fasciæ widest in the middle, the four following narrowest in the middle, or the two last slightly interrupted; the ovipositor twice the length of the insect.

Hab. Singapore.

This species may possibly be a *Rhyssa* with the petiolated submarginal cell obsolete; the neuration of the wing agrees with that of *Brullé's* genus *Macrogaster*. I am not acquainted with any other genus to which it could belong; the antennæ are those of *Rhyssa*, not apparently of *Macrogaster*.

Gen. OPHION, *Fabr.*

1. OPHION IRIDIPENNIS. *O. rufo-ferrugineus, capite postico flavo, abdomine fusco basi ferrugineo, metathorace rugoso.*

Female. Length 10 lines. Reddish-yellow; the eyes distinctly emarginate; the face smooth and shining, slightly convex; the tips of the mandibles black; the head yellow behind. Thorax: the mesothorax smooth and shining, with a central longitudinal fuscous stripe; the metathorax coarsely transversely rugose, with a series of short longi-

tudinal striæ at the base; wings hyaline and splendidly iridescent, the nervures ferruginous, with the costal nervure and stigma much darker. Abdomen fuscous, with the first, second, and base of the third segments ferruginous.

Hab. Borneo (Sarawak).

2. OPHION VESTIGATOR. *O. rufo-testaceus*, abdomine apice fusco, metathorace subrugoso.

Female. Length 10 lines. Pale rufo-testaceous: eyes deeply emarginate; wings hyaline and iridescent, the nervures fusco-ferruginous; the meso- and metathorax rugose; the four apical segments of the abdomen fuscous and covered with short cinereous pubescence.

Hab. Malacca.

Gen. XYLONOMUS, *Grav.*

1. XYLONOMUS FULGIDIPENNIS. *X. opacus*, niger, antennis flavo-annulatis, alis nigris aureo-fulgentibus, abdomine nigro-chalybeo.

Female. Length 14 lines. Black and opaque: antennæ annulated with yellow; the thorax narrowed anteriorly; the metathorax large and wide; the wings dark brown, with a bright coppery effulgence; the tegulæ and two spots at the base of the metathorax obscurely blue. Abdomen blue-black, with bright tints of blue in certain lights.

Hab. Sarawak.

I have assigned this fine insect to the genus *Xylonomus*, to which it appears to belong; the neuration of the wings and the enlarged metathorax connect it with that genus.

Fam. BRACONIDÆ, *Westw.*

Gen. BRACON, *Fabr.*

1. BRACON ACULEATOR, *Fabr.* *B. ferrugineus*, antennis aculeoque nigris, alis flavescentibus, puncto marginali nigro.

Ichneumon aculeator, *Fabr. Ent. Syst.* ii. 159. 105.

Bracon aculeator, *Fabr. Syst. Piez.* 107. 21.

Hab. Malacca (Mount Ophir). Borneo (Sarawak). Tranquebar.

2. BRACON QUADRICEPS. *B. capite thorace pedibus anticis et intermediis coxisque posticis ferrugineis, pedibus posticis et abdomine nigris, alis fuscis basi hyalinis.*

Female. Length $7\frac{1}{2}$ lines. Head, thorax, anterior and intermediate legs, and the posterior coxæ, ferruginous; the head and thorax smooth and shining, the former quadrate; the clypeus deeply emarginate; the scape and first joint of the flagellum ferruginous within; the wings yellow to the apex of the externo-medial cell, beyond which they are fuscous and mottled with a number of semitransparent spots; the base of the stigma reddish-yellow. Abdomen and posterior legs black; the first segment of the abdomen at an oblique angle with the following segments, above, with a central and two lateral carinæ, outside of which it is yellow; the second and third segments longitudi-

nally rugose-striate; the following segments smooth and shining; the ovipositor ferruginous, the sheaths black and very pubescent.

Hab. Borneo (Sarawak).

This species, which has the posterior tarsi thickened and the abdomen angulated at the base, I have little doubt belongs to the genus *Myosoma* of Brullé.

3. *BRACON SUSPICIOSUS*. *B. capite thorace pedibus anticis et intermediis sanguineo-rubris, alis fuscis, abdomine nigro.*

Female. Length 8 lines, of the ovipositor 9 lines. Black; the head, scape of the antennæ, anterior legs, pro- and mesothorax, ferruginous; the head subquadrate, very smooth and shining; the clypeus emarginate its entire width, the tips of the mandibles black. The thorax highly polished above; the wings dark fuscous, with a semi-hyaline streak crossing the lower angle of the first submarginal cell; the posterior tibiæ and tarsi stout. The first segment of the abdomen at right angles with the following segments; the second and third segments longitudinally striated, the following segments smooth and shining.

Hab. Borneo (Sarawak).

This species in all probability belongs to Brullé's genus *Myosoma*.

4. *BRACON INSIGNIS*. *B. capite thorace pedibus anticis et intermediis ferrugineis, metathorace supra nigro, abdomine pedibusque posticis nigris, alis nigro-fuscis, ovipositore corpore quadruplo longiore.*

Female. Length of the body 11 lines, of the ovipositor 44 lines. Head, thorax, anterior and intermediate legs ferruginous; the head and thorax smooth and shining, the antennæ black; the metathorax, posterior legs, and abdomen, black, wings dark fuscous; beneath the first submarginal cell is a minute hyaline spot. Abdomen: the basal segment, and a triangular impressed shape at the base of the second in the middle, longitudinally striated; the second, third, and fourth segments with a rugose striation, radiating from the middle of each segment; the apical segments smooth and shining; the ovipositor ferruginous, the sheaths black and pubescent.

Hab. Borneo (Sarawak).

5. *BRACON CEPHALOTES*. *B. rufescenti-flavus, antennis et ovipositore nigris, alis flavo-hyalinis, macula nigra ad stigmatis basin, alteraque in cellula prima discoidali.*

Female. Length 8 lines. Rufo-flavous; antennæ and tips of the mandibles black; anterior margin of the clypeus entire; head wider than the thorax, quadrate, smooth, and shining. Thorax very smooth, shining; the mesothorax very convex anteriorly, with an oblique depression on each side anteriorly; the wings flavo-hyaline, with a black macula at the base of the stigma, and a smaller one at its apex, a third macula in the first discoidal cell, and an oblong stain beyond it on the margin of the wing; the posterior wings with their apex and inferior margin fuscous; the posterior tarsi slightly fuscous. Abdo-

men smooth and shining, the basal segment with a deep fovea anteriorly, and a convex shape beyond extending to the posterior margin; the two following segments with an oblique depression on each side.

Hab. Borneo (Sarawak).

This species resembles the *B. aculeata*, Fabr., but differs in not having the thorax narrowed anteriorly, and in having an additional spot on the wings; the head is also much larger, and in what I consider to be *B. aculeata*, the two basal joints of the antennæ are pale ferruginous.

6. *BRACON PERPLEXUS*. *B. flavus*, vertice macula triangulari notato, antennis tarsisque posticis et ovipositore nigris, alis fuscis, dimidio basali flavis.

Female. Length 6 lines. Yellow: the vertex with a large triangular shape, which extends to the insertion of the antennæ, the tips of the mandibles and the antennæ, black; the head smooth and shining; the thorax smooth and shining, with the posterior tarsi dusky; wings yellow-hyaline as far as the apex of the externo-medial cell, beyond which they are of a uniform black, not intense in colour, and with an oblong hyaline streak in the first submarginal cell and two ovate ones below; the stigma yellow at the base. Abdomen: the first segment with a central longitudinal convex shape in the middle, which, as well as the two following segments, is longitudinally striated; the ovipositor black.

Hab. Borneo (Sarawak).

7. *BRACON VAGATUS*. *B. capite thorace pedibusque anticis et intermediis ferrugineis, abdomine maculaque metathoracis nigris, alis flavescentibus.*

Female. Length 5 lines. Head, thorax and legs, smooth, shining, ferruginous, the antennæ black, a fuscous spot on the vertex. Thorax smooth and shining; the metathorax black above, and the posterior legs black; the wings flavo-hyaline; a black spot at each end of the stigma; the apex of the posterior wings and the apical portion of the inferior margin of the superior pair, slightly fuscous. Abdomen: the lateral and apical margins of the basal segment, and the apical margins of the third and following segments, yellow; the basal segment with a longitudinal deep lateral channel and a central carina; the second segment rugose, with the apical margin and three triangular spaces at the base, smooth, shining, black; the third segment with an oblique deeply impressed line on each side, the ovipositor black.

Hab. Malacca (Mount Ophir).

8. *BRACON INQUIETUS*. *B. capite thorace pedibusque anticis et intermediis ferrugineis, abdomine alis maculaque metathoracis nigris.*

Female. Length 9 lines. Head, thorax, anterior and intermediate legs, ferruginous; the face with a triangular flattened projecting appendage at the base of the clypeus; the antennæ black, the head quadrate, smooth and shining. Thorax smooth and shining, with a black spot on the metathorax above; the wings and posterior legs black. Ab-

domen finely rugose, the basal segment with two deeply impressed smooth longitudinal channels, the lateral margins yellow, beneath yellow; the ovipositor with its sheaths very pubescent.

Hab. Sarawak.

This species probably belongs to the genus *Myosoma* of Brullé.

9. **BRACON RUGIFRONS.** *B. niger*, capite thorace pedibusque anticis et intermediis ferrugineis, alis nigris.

Female. Length 5 lines. Black: head, thorax, anterior and intermediate legs ferruginous, the scape ferruginous; the thorax and the vertex smooth and shining, the face rugose; the head subquadrate; the thorax much narrowed towards the head; the mesothorax with two longitudinal smooth elongate impressed lines converging towards the scutellum; the wings of a uniform dark fuscous. Abdomen: the three basal segments longitudinally and irregularly striated; the basal segment margined laterally and having a central earina, the second segment with a central and two converging carinae; the third segment with a deep transverse depression, the apical margin smooth and shining; the fourth segment irregularly depressed and striated at the base.

Hab. Borneo (Sarawak).

10. **BRACON FLORALIS.** *B. niger*, capite thorace pedibusque anticis ferrugineis, antennis pedibusque intermediis et posterioribus, alis et abdomine maculaque metathoracis nigris.

Female. Length $6\frac{1}{2}$ lines. Head, scape of the antennae, thorax, anterior and intermediate legs, ferruginous; the head and thorax very smooth and shining; the thorax narrowed anteriorly into a neck; the mesothorax with two elongate converging smooth impressed lines; the metathorax dark rufo-piceous above, with a bright ferruginous line down the centre; the intermediate tibiae and tarsi black; wings dark brown, with a hyaline spot at the inferior angle of the first submarginal cell. Abdomen smooth and shining; the first segment with a deeply impressed channel on each side, and a central impressed line extending from the base half way towards the apex; the second segment with a spear-shaped elevation in the middle of its base, and a lateral deep longitudinal excavation at the sides; the third segment with an oblique impressed line at the sides.

Hab. Borneo (Sarawak).

11. **BRACON VULTUOSUS.** *B. capite thorace pedibusque anticis ferrugineis, abdomine pedibusque intermediis et posticis, abdomine maculaque metathoracis nigris.*

Female. Length 7 lines. Black: head, thorax and anterior legs, the scape and basal joints of the flagellum in front, ferruginous; the face with a projecting flattened appendage at the base of the clypeus; the scape fringed with black hairs on its inner margin. Thorax smooth and shining; the metathorax obscure, black in the middle and

rufo-piceous at the sides, above; wings fuscous, palest towards their apex, with the stigma yellow; the intermediate legs with the knees ferruginous. Abdomen opaque, finely rugose; the basal segment with a longitudinal striation, a deeply impressed space at the sides, with the extreme lateral margins, yellow; the second segment with a small arrow-headed raised shape in the middle of its base and an oblique impressed line on each side; the two following segments have also oblique impressed lines at the sides; the third and fourth segments with their apical margins straight in the middle and abruptly oblique at the sides.

Hab. Singapore.

12. *BRACON FOVEATUS*. *B. capite thorace pedibusque anticis ferrugineis, alis nigris, ovipositoreque elongato pubescentibus.*

Female. Length 7 lines. Black: head, thorax, scape in front and the anterior legs, ferruginous; the face punctured, the thorax smooth and shining; the mesothorax with two converging longitudinal depressions extending to the scutellum; the wings dark fuscous; the intermediate tibiæ at their apex in front obscurely ferruginous. Abdomen: the four basal segments longitudinally rugose; the basal segment with a longitudinal smooth shining depression on each side; the second segment with two triangular smooth depressions and a longitudinal one on each side running onwards and terminating in a large fovea; the third and fourth segments with a smooth shining fovea on each side, the fifth and sixth segments smooth and shining; the ovipositor more than twice the length of the insect, and very pubescent.

Hab. Singapore.

13. *BRACON LABORIOSUS*. *B. capite thoraceque flavo-variegatis, pedibus anterioribus et intermediis flavis, abdomine annulis flavo-marginatis.*

Female. Length 7 lines. Black: the face, mandibles and cheeks, of a reddish-yellow; a black triangular spot in the middle of the face. Thorax shining, much narrower towards the head; a line before the tegulæ uniting with a large spot beneath the wings, a transverse space between the posterior wings, the metathorax above, the tegulæ and legs, yellow; a transverse black patch at the base of the metathorax with a line running backwards from each extremity; the posterior legs black with the knees yellow; the wings yellowish-hyaline, the nervures pale ferruginous, the apex of the wing slightly fuscous, a black spot at the base of the first submarginal cell, the stigma pale ferruginous. Abdomen: the basal segment yellow, with a shining black spot in the middle; the apical margins of the four following segments yellow; the abdomen yellow beneath, with an elongate black line on each side of the segments.

Hab. Borneo (Sarawak).

14. *BRACON CRASSIPES*. *B. capite thorace pedibusque anticis ferrugineis,*

metathorace supra nigro-piceo, abdomine pedibusque intermediis et posticis nigris, alis hyalinis basi fuscis.

Female. Length 8 lines. Head smooth and shining; antennæ and tips of the mandibles black; clypeus deeply emarginate. Thorax: much narrowed towards the head, smooth and shining; the wings subhyaline, the posterior pair fuscous towards the base, the superior pair yellowish, the nervures pale ferruginous, the costal nervures dark ferruginous, the stigma pale; the legs thick, particularly the posterior pair, the intermediate tibiæ ferruginous at the base. Abdomen: the basal segment at right angles with the following segments; the base of the second segment with an impressed oblique line on each side, and a central carina, each extending to about the middle of the segment; all the segments of an opaque black, and margined posteriorly; the margin of the second segment curved and strongly crenulated, the abdomen yellow beneath.

Hab. Singapore.

Gen. AGATHIS, *Latr.*

1. *Agathis flavipennis*, *Brullé, Hym. iv. p. 484. 3.*

Hab. Singapore. India.

Gen. MICRODUS, *Esenbeck.*

1. *MICRODUS APICALIS.* *M.* capite thorace pedibusque anticis et intermediis pallide ferrugineis, abdomine pedibusque posticis, mesothorace trimaculati et metathorace supra nigris, alis flavescensibus apice fuscis.

Female. Length $5\frac{1}{2}$ lines. Head and thorax pale red; the antennæ, a spot enclosing the ocelli and the eyes, black. Thorax: the mesothorax divided into three elevations by two oblique converging deeply impressed lines, each division with a black stripe in the middle; wings yellow, fuscous beyond the apex of the stigma, the fuscous cloud inclining inwards and crossing both wings. Abdomen: the three basal segments longitudinally striated; their lateral margins and the apical margin of the basal segment, yellow; the abdomen yellow beneath. The ovipositor about the length of the insect.

Hab. Singapore.

Fam. CHALCIDIDÆ, *Walker.*

Gen. EPISTENIA, *Westwood.*

1. *EPISTENIA IMPERIALIS.* *E.* capite thoraceque purpureis rufè punctatis, alis hyalinis, abdomine versicolori, segmentis apicalibus basi testaceis.

Female. Length $7\frac{1}{2}$ lines. Head and thorax of a rich purple, the metathorax with tints of bright green; the legs black, the apex of the joints rufo-piceous as well as the apical joints of the tarsi. Abdomen: of

changeable hues, partaking of tints of blue, purple, violet or green, in different lights; the three basal segments deeply emarginate above, with central longitudinal depressions extending to their base; the ovipositor thick and pubescent, two-thirds of the length of the abdomen.

Hab. Borneo (Sarawak).

This beautiful insect appears to belong to the genus *Epistenia*, established by Westwood in Griffith's 'Animal Kingdom;' if not so, it is very closely allied.

Fam. CHRYSIDIDÆ, *Leach.*

Gen. HEDYCHRUM, *Latr.*

1. *HEDYCHRUM ORIENTALE*. *H. viridi-cyaneum*, capite thoraceque confertissime punctulatis, abdominis segmenti tertii margine apicali arcuato integerrimo, alis subhyalinis.

Length $2\frac{1}{2}$ lines. The head and thorax very coarsely punctured, the abdomen more delicately so; the abdomen of a bright green, with blue tints in different lights, the flagellum fusco-testaceous, the mandibles ferruginous at their apex; the deep concavity of the face, in which the scape rests in repose, delicately transversely striate; the tooth at the lateral angles of the metathorax acute; the abdomen nigro-æneous beneath, with a thin, short, glittering pale pubescence, the apical segment widely emarginate.

Hab. Singapore.

Gen. CHRYSIS, *Linn.*

2. *CHRYSIS MALACHITICA*. *C. crassissime punctata viridi-cyanea*, thorace viridi-aureo, alis fusco-hyalinis, abdominis segmentis apicalibus dentibus sex armatis.

Length $4\frac{1}{2}$ lines. Metallic green, splashed with gold on the thorax and sides of the abdomen; the flagellum, mandibles, and tarsi black; the hinder margin of the vertex tinged with blue. The disk of the thorax blue; the tegulæ and nervures of the wings with a purple tinge; the wings subhyaline and iridescent; the lateral posterior angles of the metathorax acute; the post-scutellum produced, the apex truncate. Abdomen: more finely punctured than the head and thorax, but most strongly so at the base; the basal margin with a deep excavation on each side, the lateral angles somewhat produced and obtuse; the basal margin of the second segment blue; the apical margin of the third segment armed with six acute teeth.

Hab. Borneo (Sarawak).

3. *CHRYSIS VESTIGATOR*. *C. viridis nitens purpureo variegata*, punctatissima, abdominis segmentis margine basali nigro-æneis, ano tridenticulato.

Length $3\frac{3}{4}$ lines. Green, with shades and spots of deep blue; the tarsi, flagellum and mandibles, black; the head and thorax coarsely and

deeply punctured, the abdomen more finely so; one or two of the basal joints of the flagellum green above; the region of the ocelli blue. Thorax: a transverse blue line in the middle of the prothorax; the mesothorax with an oblong-quadrate blue shape in the middle; the wings subhyaline with the nervures brown. The abdomen with a central longitudinal smooth line; the middle of the abdomen tinged with rich blue; the apex distinctly tridentate.

The valuable collection of *Hymenoptera* which I have described, and, by permission of the Society, have had the pleasure of laying before them, is the property of W. W. Saunders, Esq., Fellow of the Society, and is the most complete collection formed by Mr. Wallace. In addition to the interest attached to the description of new species, I have endeavoured to show the extent of the known geographical range of those already described. Of the family *Apidae*, forty-one species are enumerated, twenty-six of which are new. It is, however, to the *Formicidæ* that the most valuable additions are made: of the eighty-five species collected, only seven have been previously described; ten are added to the *Mutillidæ*, forty-one to the Fossorial group, and thirteen to the family *Vespidæ*. This enumeration will serve to give some idea of the valuable additions to science, resulting from the labours of Mr. Wallace, in collecting the insects of the Eastern Archipelago.

DESCRIPTION OF THE PLATES.

TAB. I.

Fig.

1. Tongue of *Ptenoplectra chalybea*. 1 a, labial palpi; 1 b, paraglossæ; 1 c, labium.
2. The maxilla of *Ptenoplectra chalybea*. 2 a, maxillary palpus.
3. The posterior leg of *Ptenoplectra*.
4. Calcar or spur on the posterior tibia of *Ptenoplectra*.
5. Anterior wing of *Ptenoplectra*.
6. *Myrmica longipes*, ♀.
7. The labial palpi of *Polyrhachis*.
8. Maxillary palpi of *Polyrhachis*.
9. Thorax and abdomen of *Polyrhachis bihamata*.
10. Labial palpi of *Heptacondylus*. 11. Maxillary palpi of the same.
12. Wing of the same. 13. Profile of the same. 14. Antennæ of the same.
15. Profile of *Physatta*. 16. Labial palpi of the same. 17. Maxillary palpi of the same. 18. Wing of the same. 19. Antennæ of the same.

Fig.

20. *Cerapachys oculus*. 21. Head of the same. 22. Wing of the same.
23. Antennæ of the same. 24. Abdomen of the same.
25. *Echinopla melanarctos*. 26. Section of the abdomen of the same,
showing the styles, or blunt spines, with hairs on their summits,
which cover the abdomen above. 27. Maxillary palpus of the same.
28. Mandible of the same. 29. Labial palpus of the same.

TABLE II.

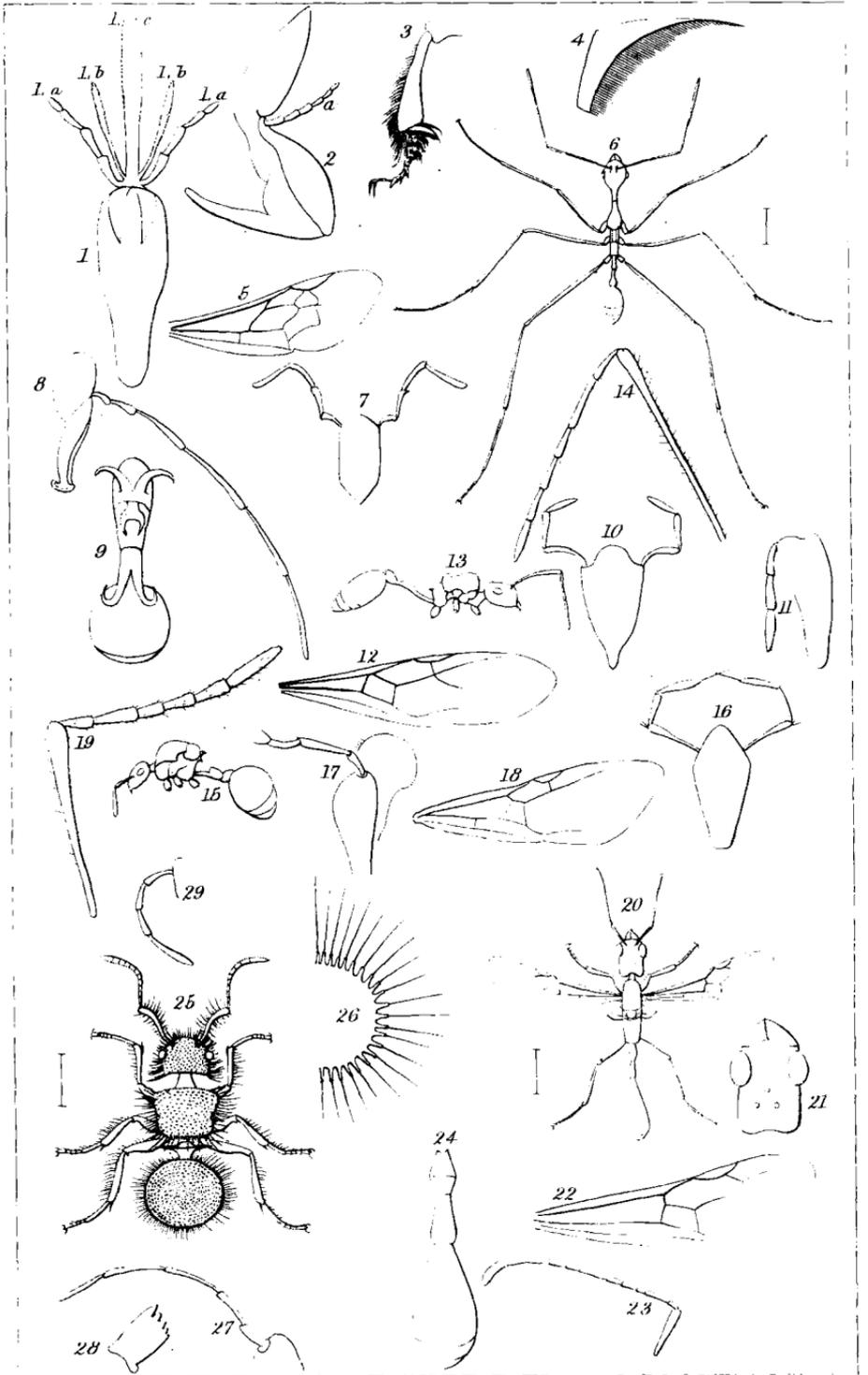
1. *Myrmosida paradoxa*. 1 a, antennæ; 1 b, wing.
2. *Crematogaster inflata*. 1 b, wing; 1 c, mandible.
3. *Cataulacus horridus*.
4. *Cataulacus insularis*. 4 a, anterior wing.
5. *Meranoplus cordatus*. 6. *Meranoplus mucronatus*.
7. *Meranoplus castaneus*. 8. *Cataulacus reticulatus*.
9. Tongue of *Gayella pulchella*. 9 a, labial palpi; 9 b, paraglossæ. 10. Maxilla. 10 a, maxillary palpi.
11. Anterior wing of *Gayella pulchella*.

On the general Geographical Distribution of the Members of the Class AVES. By PHILIP LUTLEY SCLATER, Esq., M.A., F.L.S.

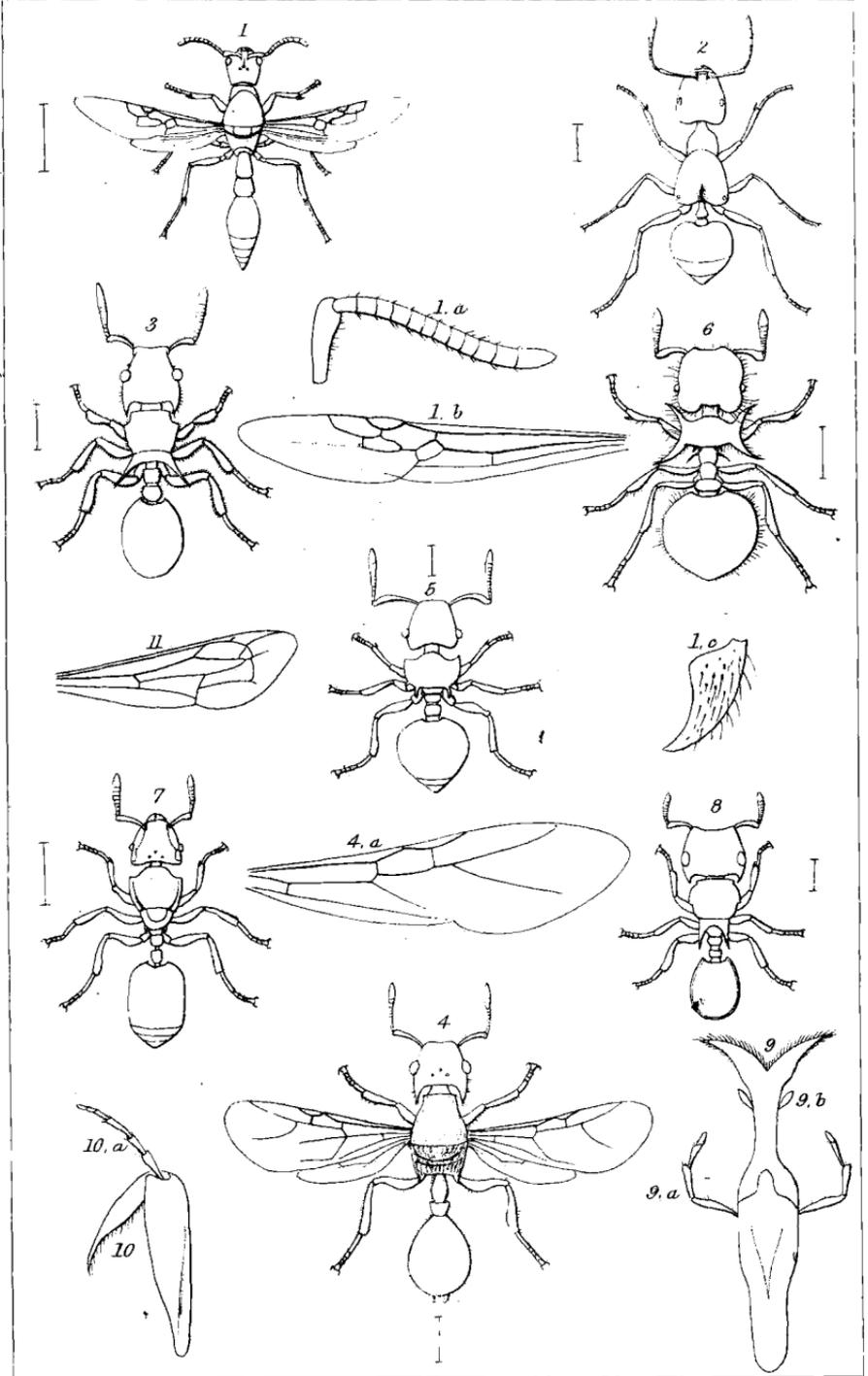
[Read June 16th, 1857.]

AN important problem in Natural History, and one that has hitherto been too little agitated, is that of ascertaining the most natural primary divisions of the earth's surface, taking the amount of similarity or dissimilarity of organized life solely as our guide. It is a well-known and universally acknowledged fact that we can choose two portions of the globe of which the respective Faunæ and Floræ shall be so different, that we should not be far wrong in supposing them to have been the result of distinct creations. Assuming then that there are, or may be, more areas of creation than one, the question naturally arises, how many of them are there, and what are their respective extents and boundaries, or in other words, what are the most natural primary ontological divisions of the earth's surface?

In the Physical Atlases lately published, which have deservedly attracted no small share of attention on the part of the public, too little regard appears to have been paid to the fact that the divisions of the earth's surface usually employed are not always those



Engrav. & Lith. by H. Smith.



Drawn & Etched by F. Smith.