

Descriptions of New Species of Hymenopterous Insects collected by Mr. A. R. Wallace at Celebes. By FREDERICK SMITH, Esq., Assistant in the Zoological Department of the British Museum. Communicated by W. W. SAUNDERS, Esq., F.R.S., V.P.L.S.

[Read November 3, 1859.]

THE present paper contains descriptions of upwards of 100 species of Hymenoptera new to science, which form part of the second collection made by Mr. Wallace at Celebes. Perhaps the most interesting species described belongs to the genus *Dolichurus*, a genus which previously contained only a single species, and that indigenous to Europe; the discovery of a second may be regarded as one of the most valuable additions which Mr. Wallace has made to this order of insects. The addition of a new species to the genus *Methoca* is also extremely interesting; of the previously known species, one is European, a second from Cuba, a third from Canada, and a fourth from Northern India, showing the extensive geographical range of this rare genus of solitary Heterogyna.

The two collections of Hymenoptera from Celebes contain no less than 164 new species, a number far exceeding that which I have found in any similar collection, made in any part of the New World.

#### Fam. AULACIDÆ, *Shuck.*

1. TRYGONALYS PICTIFRONS. *T. nitidus*, niger, distincte punctatus; capite pedibusque albo maculatis; alis hyalinis, apice fuscis.

*Female.* Length 5 lines. Black; head and thorax with coarse, shallow, confluent punctures; the mesothorax with two oblique longitudinal impressed lines, which enclose, in the middle, one-third of the disk, the lateral portions being irregularly striated longitudinally; the scutellum with a central depression, the metathorax rounded. The face with an ovate spot outside the insertion of the antennæ, two at the base of the clypeus, and an oblong one at the inner margin of the mandibles, white; the head a little wider than the thorax. Thorax: the tubercles, the anterior tibiæ in front, and the intermediate and posterior pairs at their base, white; wings hyaline and iridescent, with a dark fuscous cloud at the apex, commencing at the stigma. Abdomen shining, more finely punctured than the head and thorax, the base with a central longitudinal depression; beneath, more delicately and not quite so closely punctured.

*Male.* Length  $3\frac{1}{2}$  lines. Closely resembles the female, but rather more finely punctured; the extreme base of the femora and apex of the trochanters are pale, there is also a pale spot on each side of the scutellum and of the postscutellum; the second segment of the abdomen

has an ovate spot on each side at its apical margin, and the third segment a very minute one; beneath, the apical margin of the second segment is produced into a stout, obtuse, flattened spine.

*Hab.* Makassar.

Fam. EVANIADÆ, *Leach.*

Gen. EVANIA, *Fabr.*

1. EVANIA STRIATA. Tota nigra; facie argenteo-sericea; thorace punctato.

*Female.* Length  $3\frac{1}{2}$  lines. Black; the clypeus and lower portion of the cheeks longitudinally strongly striated, and covered with glittering cinereous pubescence; the antennæ longer than the body and obscurely fulvous beneath. Thorax coarsely punctured; the sides and truncated portion of the metathorax covered with cinereous pubescence; the anterior and intermediate tibiæ and tarsi as well as the apical portion of the anterior femora rufo-testaceous; the wings hyaline and iridescent, the nervures black; the lower posterior angle of the marginal cell rounded. Abdomen: the petiole two-thirds of the length of the thorax, the base striated.

*Hab.* Makassar.

Gen. FÆNATOPUS, *Smith.*

The head globose; the antennæ elongate, half the length of the body.

The prothorax elongated into a narrow neck; the wings with an angulated marginal cell, *the submarginal and discoidal cells obsolete*; the posterior tibiæ incrassate, with two or three stout teeth beneath, which have a number of finer denticulations between them. Abdomen elongate; the first segment formed into a long petiole.

This genus is characterized and formed for the reception of those species of *Megischus* in which the submarginal and discoidal cells are obsolete; all the species possess the characters of the genus *Megischus*, differing only in the neururation of the wings. Mr. Westwood described a species of this subdivision in his monograph of the family, under the name *Megischus indicus*. I am acquainted with six or seven species, inhabitants of Malacca, Borneo, and Port Natal.

1. FÆNATOPUS RUFICEPS. *F. niger*; capite ferrugineo; thorace abdominisque segmento primo rugosis; femoribus posticis denticulo armatis; alis hyalinis.

*Female.* Length  $6\frac{1}{2}$  lines, the ovipositor  $5\frac{1}{2}$  lines. Black; the head red, the vertex and clypeus black; the front and the vertex rugose; the cheeks smooth and shining. Thorax coarsely rugose; the anterior and intermediate legs ferruginous, with the base of the tibiæ and first joint of the tarsi white; the wings hyaline; the posterior femora

armed with three stout teeth, which have a number of small ones between them; the tibiæ reddish outside; the tarsi pale testaceous, with the claw-joint rufo-fuscous.

*Hab. Makassar.*

Gen. MEGISCHUS, *Brullé*.

1. MEGISCHUS DUCALIS, *Westw. Trans. Ent. Soc.* iii.

*Hab. Celebes; Java.*

Fam. ICHNEUMONIDÆ, *Leach*.

Gen. ICHNEUMON, *Linn.*

1. ICHNEUMON INSULARIS. *I. niger*; antennis medio scutelloque et abdominis apice albis; alis subhyalinis.

*Male.* Length  $4\frac{1}{2}$  lines. Black and shining; the anterior and intermediate legs dark rufo-piceous; the coxæ and articulations pale testaceous; the antennæ white in the middle. The wings slightly coloured, with the nervures dark fuscous; the scutellum white. Abdomen finely and closely punctured, the apical margins of the segments rufo-piceous, the apex white.

*Hab. Makassar.*

2. ICHNEUMON PRÆDATORIUS. *I. rufescenti-flavus*; alis hyalinis; tibiis posticis fuscis.

Length  $5\frac{1}{2}$  lines. Pale ferruginous, beneath yellowish; the antennæ white above in the middle; the posterior tarsi fuscous; the wings hyaline and iridescent, the nervures ferruginous; smooth, shining, and impunctate; the metathorax with two short spines.

*Hab. Makassar.*

3. ICHNEUMON EPHIPIUM. *I. ferrugineus*; capitis vertice, mesothorace, tarsisque posticis nigris.

*Female.* Length 6 lines. Ferruginous, with the vertex and mesothorax black; the orbits of the eyes, the face, mandibles, and body beneath, luteo-testaceous; the palpi paler; the antennæ fuscous, with several joints towards the apex white above. The mesothorax smooth and shining; the metathorax traversed by six longitudinal carinæ, the inner division on each side crossed in the middle by a transverse one, the enclosed spaces rugose; the wings hyaline and iridescent, the nervures testaceous; the posterior tarsi black.

*Hab. Makassar.*

Gen. TROGUS, *Grav.*

1. TROGUS BRUNNEIPENNIS. *T. niger, opacus*; antennis pedibusque obscure ferrugineis; alis fuscis, stigmatibus nigro.

Length 9 lines. Black, finely shagreened, and subopaque; the face, scape in front, and the anterior legs in front, pale testaceous-yellow;

the flagellum fulvous beneath; the mandibles, palpi, and cheeks testaceous; the intermediate legs in front and the posterior tibiæ in front rufo-testaceous, the coxæ and trochanters more obscure; the wings fuscous; the scutellum very convex and obscure rufo-testaceous. Abdomen: the three apical segments finely punctured and shining; the apical margins of the segments narrowly rufo-piceous.

*Hab.* Makassar.

Gen. *MESOSTENUS*, *Brullé*.

1. *MESOSTENUS INSIDIATOR*. *M. niger*; capite thoraceque flavo variis; pedibus ferrugineis flavo lavatis; segmentis abdominalibus flavo marginatis; alis hyalinis.

*Female*. Length 10 lines. Black and shining; the orbits of the eyes, the clypeus, mandibles, and a spot on the scape of the antennæ, yellow; the joints of the antennæ, from the fourth to the fifteenth, white. Thorax: the posterior margin of the prothorax, two large spots beneath the wings, two on the metathorax above, the scutellum, postscutellum, and a large patch on each side, as well as the tegulæ, yellow; the legs pale ferruginous, the anterior femora beneath, the tibiæ in front, the intermediate and posterior tibiæ and tarsi, as well as the coxæ, yellowish-white; the posterior coxæ black beneath. Abdomen: the basal segment forming a smooth shining petiole, the two following segments opaque, and the rest shining black, the five basal segments margined with yellow; the ovipositor one-third longer than the body.

*Hab.* Makassar.

Gen. *TRYPHON*, *Grav.*

1. *TRYPHON LUTORIUS*. *T. niger*, luteo varius; alis hyalinis iridescentibus.

Length  $6\frac{1}{4}$  lines. Black; the scape, tibiæ, tarsi, tegulæ, scutellum, and three basal segments of the abdomen, luteous; the flagellum fulvous beneath and fuscous above; the anterior and intermediate coxæ and trochanters luteous; the anterior femora luteous, with a dark stain behind; the intermediate femora luteous at their base and apex; the wings hyaline, faintly clouded towards their apex; the body smooth and shining, with the sides of the metathorax covered with cinereous pubescence.

*Hab.* Makassar.

Gen. *CRYPTUS*, *Fabr.*

1. *CRYPTUS OPACUS*. *C. niger*; antennis medio albis; alis fuscis, apice albo; pedibus ferrugineis.

*Female*. Length  $5\frac{1}{4}$  lines. Black and opaque, with the basal segment of the abdomen shining. The clypeus, a heart-shaped spot above it, and the joints of the antennæ above from the seventh to the eleventh, white. Thorax coarsely rugose; the scutellum with a white spot at

its apex ; wings dark brown, with their tips white ; the legs ferruginous, with the posterior coxæ fuscous. Abdomen petiolated, the petiole shining black, the following segments opaque, the apical one white.

*Hab.* Makassar.

2. *CRYPTUS SPOLIATOR*. *C. niger* ; abdominis marginibus, fasciis albis ; alis hyalinis.

*Female*. Length  $6\frac{1}{2}$  lines. Black ; the head with a number of deep striæ on the front between the ocelli and the insertion of the antennæ ; the clypeus, labrum, mandibles and palpi pale testaceous. Thorax : the sides and the metathorax, except its base, striated, the latter transversely so ; a pale testaceous spot on the scutellum and post-scutellum, a larger spot on each side of the latter, and the margin of the truncation of the metathorax, pale testaceous-yellow ; wings hyaline, faintly coloured towards their apex ; the anterior and intermediate legs pale testaceous, and stained with brown above ; the posterior legs dark fusco-ferruginous, with the tarsi white, except the base of the first joint ; the three basal segments margined with white, the apical one entirely so. The abdomen pale beneath and spotted with black ; the ovipositor the same length as the abdomen.

*Hab.* Makassar.

3. *CRYPTUS ALBO-PICTUS*. *C. niger* ; metathorace bispinoso ; antennis medio scutelloque et abdominis fasciis tribus albis ; alis hyalinis fusco fasciatis.

*Female*. Length  $4\frac{1}{2}$  lines. Black ; the antennæ in the middle, the anterior and intermediate coxæ, their trochanters, a spot on the posterior coxæ, and a fascia on the apical margin of the first and second segments of the abdomen, as well as the apical segment above, white ; the metathorax rugose, and with a transverse carina near its base, the spines on each side pale testaceous ; the wings hyaline, the anterior pair with a transverse fuscous fascia, their tips also fuscous ; the posterior tibiæ with a white spot at their base ; the anterior pair with a white line in front.

*Hab.* Makassar.

4. *CRYPTUS VARIEGATUS*. *C. niger* ; antennis medio tarsisque posticis albis ; capite, thorace abdomineque flavo variegatis ; alis hyalinis.

*Female*. Length  $4\frac{1}{2}$  lines. Black ; the inner orbit of the eyes, the front below the antennæ, the cheeks and mandibles, ochraceous. Thorax : the margin of the prothorax, a central spot on the mesothorax, the tegulæ, the scutellum, postscutellum, the apex of the metathorax and two spots at its base, the legs, and three spots on the sides of the thorax, ochraceous ; the wings hyaline and iridescent ; the posterior tarsi white, with the claw-joint and tip of the fourth black. Abdomen : the apical margin of all the segments with an ochraceous fascia ; the ovipositor shorter than the abdomen.

*Hab.* Makassar.

5. *CRYPTUS PETIOLATUS*. *C. niger*; antennis medio albis; thorace pedibusque flavo variegatis; alis hyalinis.

*Female*. Length  $4\frac{1}{2}$  lines. Black, smooth and shining; the anterior margin of the clypeus, the mandibles, palpi, the anterior and intermediate legs, the tegulæ, scutellum, postscutellum, the apical margin of the first and second segments, and the apical segment entirely, yellow; the eighth to the twelfth joints of the antennæ white; the wings hyaline and iridescent. The abdomen petiolated.

*Hab. Makassar.*

#### Gen. ISCHNOCERUS, Grav.

1. *ISCHNOCERUS MACULIPENNIS*. *I. niger*; abdomine longitudinaliter striato; pedibus ferrugineis; alis hyalinis, fasciis duabus fuscis.

*Female*. Length 4 lines. Black; the head and thorax coarsely punctured. The abdomen longitudinally irregularly striated. Antennæ fusco-ferruginous; the palpi testaceous. Wings hyaline; the anterior pair with a broad dark-brown fascia, which extends from the middle of the stigma nearly to the apex of the marginal cell, a narrower fascia crosses the wings at the apex of the externo-medial cell; the tips of the posterior wings brown; the legs ferruginous, with the coxæ and claw-joint of the tarsi black.

*Hab. Makassar.*

#### Gen. METOPIUS, Panz.

1. *METOPIUS CRASSIPES*. *M. niger*, rude punctatus et flavo variegatus; pedibus rufo-testaceis; alis hyalinis, apice fuscatis; abdomine flavo subinterrupte fasciato.

Length 6 lines. Black, and coarsely punctured; the front yellow, with a fuscous stain in the middle; the antennæ obscurely fulvous beneath; the scape yellow in front. Thorax: the wings hyaline, with a fuscous cloud extending from the middle of the marginal cell to the apex of the wings, the nervures dark brown; the legs rufo-testaceous, with the anterior and intermediate tibiæ and tarsi yellow; the posterior coxæ and base of the femora dark rufo-fuscous, also the claw-joint of the tarsi fuscous; the posterior legs incrassate. Abdomen yellow beneath; the three basal segments with narrow interrupted yellow marginal fasciæ.

*Hab. Makassar.*

#### Gen. GLYPTA, Grav.

1. *GLYPTA MACULIPENNIS*. *G. nigra*; capite nitido; pedibus abdomineque fasciis ferrugineis; alis hyalinis, maculis duabus fuscis.

*Female*. Length 7 lines. Black; the head smooth and shining; the clypeus, labrum, and a broad stripe behind the eyes luteo-testaceous; the antennæ setaceous, of a yellowish-white, the ninth, tenth, and three apical joints black; the scape luteous in front and fusco-ferruginous

above. Thorax rugose; the sides and beneath covered with cinereous pubescence; the mesothorax with a smooth shining space on each side; the scutellum, and a subquadrate space on each side of the metathorax above, shining; the legs ferruginous; the anterior and intermediate tibiæ in front and the posterior pair at their base yellowish-white; the posterior tarsi white and the tibiæ fuscous: the wings hyaline; the anterior pair with a transverse fuscous spot in the middle, and a second spot halfway between that and the apex of the wing, which is slightly clouded. Abdomen: the three basal segments finely rugose, with deep transverse waved depressions; the first and second with the basal half ferruginous, the third narrowly and obscurely so; the following segments smooth, with their apical margins more or less white.

*Hab.* Makassar.

2. *GLYPTA IRIDIPENNIS*. *G. capite thoraceque nigris; pedibus abdomineque pallide ferrugineis; alis hyalinis et pulcherrime iridescentibus.*

*Female.* Length  $5\frac{1}{4}$  lines. The head and thorax black; abdomen and legs pale ferruginous. Head smooth and shining; the scape of the antennæ, the clypeus, mandibles and palpi pale ferruginous; the flagellum fulvous beneath. The thorax opaque; the posterior margin of the prothorax, the tegulæ, scutellum, and legs, of a reddish-yellow; the wings hyaline and iridescent. Abdomen pale ferruginous; the second, third, and fourth segments with a longitudinal oblique impressed line on each side; the ovipositor the same length as the abdomen.

*Hab.* Makassar.

#### Gen. *PIMPLA*, *Fabr.*

1. *PIMPLA INFIRMA*. *P. rufescenti-flava; antennis et ovipositore nigris; alis flavo-hyalinis, apice fuscis.*

*Female.* Length  $7\frac{1}{2}$  lines. Of a reddish-yellow; the legs paler than the body; the antennæ ferruginous beneath. Thorax smooth and shining; the mesothorax with two longitudinal impressed lines; wings flavo-hyaline, the apical margins with a broad dark-fuscous border, the nervures pale ferruginous. Abdomen subopaque and closely punctured; the second and three following segments with a strongly impressed curved line; the apical margins of the fourth and fifth segments narrowly black.

*Hab.* Makassar.

2. *PIMPLA UNICOLOR*. *P. flavo-rufa; antennis apice fuscis; alis hyalinis.*

*Female.* Length  $4\frac{1}{4}$  lines. Reddish-yellow; the head, anterior and intermediate legs, as well as the posterior tibiæ and the scape of the antennæ, yellow; the apical portion of the antennæ fuscous

hyaline, with the nervures fuscous, becoming pale ferruginous at the base of the wings; legs incrassate. Abdomen: the segments with strong transverse impressed lines; the ovipositor short and black.

*Hab.* Makassar.

3. *PIMPLA INSOLENS*. *P. flavo-ferruginea*; vertice strigisque tribus mesothoracis nigris; abdomine nigro, marginibus apicalibus segmentorum flavo fasciatis.

*Female*. Length  $5\frac{1}{2}$  lines. Reddish-yellow; the head behind, and a spot enclosing the ocelli, black; a fuscous spot on the clypeus, and a prominent tubercle below the insertion of the antennæ. Thorax beneath, the sides, the base of the metathorax and three longitudinal stripes on the mesothorax, black; the scutellum elevated, with an acute tubercle at its base; the coxæ and femora beneath black, or dark rufo-fuscous; the wings hyaline, the nervures ferruginous. Abdomen nigro-piceous, with the apical margins of the segments flavo-testaceous; the abdomen thinly covered with a fine silky cinereous pile.

*Hab.* Makassar.

4. *PIMPLA MODESTA*. *P. ferruginea*; antennis et vertice nigris, alis hyalinis.

*Female*. Length  $5\frac{1}{2}$  lines. Ferruginous; the vertex and antennæ black, the face and thorax yellowish. Thorax: the wings hyaline, the nervures black, becoming yellowish at the base of the wings. Abdomen finely punctured, the two apical segments smooth and shining; the ovipositor black, and half the length of the body.

*Hab.* Celebes.

5. *PIMPLA VIRIDIPENNIS*. *P. capite, thorace, pedibus anticis et intermediis, femoribus posticis ferrugineis; alis fuscis, cupreo submicantibus*.

*Male*. Length 6 lines. Head, thorax, and legs ferruginous, the posterior tibiæ and tarsi fuscous; wings brown with a coppery effulgence; the antennæ fusco-ferruginous, with the scape ferruginous in front. The head and thorax smooth and shining, the abdomen closely punctured and subopaque; margins of the segments constricted.

*Var. a.* The basal segment of the abdomen red.

*Hab.* Makassar.

#### Gen. ANOMALON, Grav.

1. *ANOMALON FALCATOR*. *A. nigrum*; abdomine pedibusque rufo-ferrugineis; alis hyalinis.

Length  $7\frac{1}{2}$  lines. Head, thorax and antennæ black; the inner orbit of the eyes, a line behind them, the face and scape in front, reddish yellow; the flagellum black; the abdomen and legs ferruginous, the anterior legs yellowish. The thorax rugose; the metathorax produced at the apex, forming a blunt tubercle, which has a cavity above, in which the abdomen is inserted.

*Hab.* Makassar.



Fam. BRACONIDÆ, *Westw.*Gen. BRACON, *Fabr.*

1. **BRACON DECEPTOR.** *B. flavo-rufus*; antennis, pedibus posticis et abdominis dimidio posteriore nigris; alis fuscis, dimidio basali flavo-hyalinis.

*Female.* Length 5 lines. Black; the head, thorax, anterior and intermediate legs, the posterior femora and basal half of the abdomen, of a reddish yellow; the scape ferruginous. Thorax shining; the wings with the basal half flavo-hyaline, the apical portion brown, with a transverse hyaline spot at the base of the stigma; the posterior tibiæ and tarsi black and pubescent. Abdomen: the basal segment with two deeply impressed longitudinal lines; the two following segments with oblique lines, the space between which is obliquely striated from the centre, on the third segment not continued to the apical margin; the following segments smooth and shining.

2. **BRACON BELLICOSUS.** *B. capite, thorace, pedibus anticis et femoribus intermediis ferrugineis; metathorace supra nigro; alis nigro-fuscis.*

*Female.* Length 7 lines. Black; the head, scape, the anterior legs, the intermediate femora, and the pro- and mesothorax ferruginous; the wings dark fuscous with a small hyaline spot below the angle of the first submarginal cell. Abdomen: the first and second segments and the basal half of the third strongly sculptured with central and lateral oblique deeply impressed lines; the posterior legs densely pubescent; the ovipositor the length of the insect.

*Hab.* Makassar.

3. **BRACON COMBUSTUS.** *B. capite, thorace, pedibus anterioribus et intermediis ferrugineis; alis fuscis; metathorace nigro; abdomine apice pallide ferrugineo.*

*Female.* Length 6 lines. Black; the head, scape of the antennæ, pro- and meso-thorax, anterior and intermediate legs, and the four apical segments of the abdomen ferruginous; wings dark fuscous, with a narrow hyaline streak across the first submarginal cell; the posterior legs dark rufo-fuscous. Abdomen: the three basal segments rugose, with deep oblique depressions, their apical margins smooth and shining; the ovipositor nearly twice the length of the insect.

Gen. CENOCÆLIUS, *Halid.*

1. **CENOCÆLIUS CEPHALOTES.** *C. capite, thorace, pedibus anticis et intermediis ferrugineis; metathorace nigro; alis fuscis.*

*Female.* Length 5 lines. Black; the head, thorax, anterior and intermediate legs, as well as the two basal joints of the antennæ, ferruginous; the metathorax black; the palpi pale testaceous; the antennæ with a fulvous annulus near its apex; wings fuscous. The head as in

the thorax, quadrate, strongly punctured, with the vertex smooth and shining. Thorax coarsely punctured and produced anteriorly into elevated tubercles; the scutellum elevated; the metathorax coarsely punctured. Abdomen smooth and shining.

The male exactly agrees with the female in colour and form, but has more red joints at the base of the antennæ, and has no annulus at their extremity; the posterior legs are rufo-fuscous.

*Hab.* Makassar.

Gen. AGATHIS, *Latr.*

1. AGATHIS PENETRANS. *A.* flavo-ferruginea; antennis nigris; alis flavo-hyalinis, apice fuscis.

- *Female.* Length  $4\frac{1}{2}$  lines. Reddish yellow, with the eyes, flagellum, and ovipositor black; the scape ferruginous; the face finely punctured, with a deep fossulet on each side of the clypeus. The thorax with two oblique lines on the mesothorax, which meet at the base of the scutellum—between these are two longitudinal grooves; the scutellum prominent; the metathorax coarsely reticulated; the posterior tibiæ and tarsi wanting; wings yellowish hyaline, slightly fuscous towards their apex, and brilliantly iridescent, the nervures pale testaceous, the costa ferruginous. Abdomen smooth and shining.

2. AGATHIS RUGIFRONS. *A.* nigra; palpis, pedibus anterioribus et intermediis ferrugineis; alis fuscis, basi hyalinis.

*Male.* Length  $3\frac{1}{2}$  lines. Black; the labrum, mandibles, palpi, anterior and intermediate legs, pale ferruginous; the face coarsely punctured, with a deep fossulet on each side of the clypeus; the vertex and thorax anteriorly with large, deep punctures; the metathorax with three central broad grooves which have a few transverse carinæ; the sides of the metathorax, and the posterior legs, densely covered with short glittering hoary pubescence; the wings fuscous, with their base hyaline, the nervures and stigma black. The abdomen smooth and shining.

Fam. CHRYSIDIDÆ, *Leach.*

Gen. STILBUM, *Spin.*

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

*Hab.* Celebes; Aru; Java; Bengal; Madagascar; Senegal; Gambia; Cape of Good Hope, Port Natal.

Gen. CHRYSIS, *Latr.*

1. CHRYSIS APRICANS. *C.* viridi-cyanea, purpureo variegata; capite thoraceque confertissime punctatis; abdominis segmentis apicalibus dentibus sex armatis.

Length 5 lines. The head and thorax green, the former with the front blue and a black stain between the ocelli; the thorax with dashes of

blue; the abdomen blue, with tints of purple; the head and thorax coarsely punctured; the abdomen delicately so, the extreme base strongly punctured; beneath bright metallic green; wings slightly fuscous; the apical segment of the abdomen armed with six teeth.

*Hab.* Makassar.

2. *CHRYSIS OBSCURA*. *C. viridis, purpureo variegata*; capite thoraceque confertissime punctulatis, segmentis abdominis delicatule punctatis, apice sex-dentato; alis subhyalinis.

Length 5 lines. Green, with shades of blue and blue-black; beneath entirely of a brilliant green; the vertex with a large blue-black macula, which encloses the ocelli. The prothorax with a transverse black dash, and three on the mesothorax, the central one crosses the scutellum; the wings fuscous, the marginal cell enclosed. Abdomen blue-black with the apical margins of the segments bright green, the apex armed with six equal acute teeth; the postscutellum rounded.

*Hab.* Makassar.

This species is apparently most closely allied to the *C. Schiödtei* of Dahlbom, but it is much less brilliant in colour and has no vestige of a golden macula on the second segment of the abdomen; the teeth at the apex are very different, being of equal size and at equal distance from each other.

3. *CHRYSIS FUMIPENNIS*. *C. læte purpurea*; capite thoraceque fortiter, abdomine delicatule punctatis; alisusco-hyalinis.

Length  $4\frac{1}{2}$  lines. Opake purple-blue; the legs and two basal joints of the antennæ bright green; the abdomen green beneath, the vertex with a large triangular black macula; the postscutellum produced into a triangular acute tooth. Abdomen: the segments darkest at their base; the apical margin of the terminal segment rounded, and armed with four minute acute teeth.

*Hab.* Makassar.

This species is distinguished by a much broader and more depressed form than is usual in the genus.

4. *CHRYSIS SEDUCTA*. *C. viridis, nitens, cæruleo variegata, punctatissima*; ano tridentato.

Length  $3\frac{1}{2}$  lines. Opake green; head and thorax with strong separate punctures; the abdomen with much finer confluent punctures; the antennæ black; the tarsi fuscous, the basal joint green outside; the abdomen beneath and the legs smooth brilliant green; the wings hyaline, the nervures brown; the postscutellum rounded; the lateral angles of the metathorax acute. Abdomen: the segments blue-green, with the apical portion of each bright green, the margin of the apical one tridentate.

*Hab.* Makassar.

This species is closely allied to the *C. Bokemanni* of Dahlbom; but it is larger, more robust, and the apical segment of the abdomen is not

acutely angular in the middle, but produced into a distinct acute tooth.

Gen. HOLOPYGA, *Dahlb.*

1. HOLOPYGA PURPUREA. *H. purpurea*, nitens, violaceo variegata; metathorace crasse punctatissimo; abdominis margine apicali arcuato, integerrimo; alis subhyalinis.

Length  $3\frac{1}{2}$  lines. Dark blue, with tints of bright purple and green; the head, pro-, and mesothorax finely punctured, the prothorax with large coarse punctures at the sides; the metathorax with large deep fossulets at the sides; wings light brown, with their base hyaline. Abdomen delicately punctured, smooth and shining; the body brilliant green beneath.

*Hab.* Makassar.

Gen. FORMICA, *Linn.*

1. Formica smaragdina, *Fabr. Spec. Ins.* p. 488 ♀.

*Hab.* Celebes; Borneo; Malacca; Sumatra; Philippine Islands.

2. Formica pallida, *Smith, Proc. Linn. Soc.* vol. ii. p. 57 (*worker major*). The insect described in a former paper was the worker (*major*). The small worker, and also the female, have been received from Celebes. The female is of a blackish brown, with the flagellum, prothorax, scutellum, scale of the peduncle, legs, and sides of the thorax pale ferruginous; the wings hyaline, with the nervures pale testaceous; the apical margins of the segments of the abdomen pale; the scale of the peduncle rounded above. The *worker minor* is pale ferruginous, with the head a little darker and the abdomen blackish brown; the head a little wider than the thorax; the thorax compressed, and very narrow behind.

*Hab.* Celebes; Sarawak.

3. Formica gracilipes, *Smith, Proc. Linn. Soc.* vol. ii. p. 55. ♀.

*Hab.* Celebes; Singapore.

4. FORMICA FAMILIARIS. *F. rufo-flava*, lævis, nitida; alis subhyalinis, nervuris pallide testaceis; abdomine cinereo micante vestito.

*Female.* Length  $4\frac{1}{2}$  lines. Entirely of a pale reddish-yellow. Head: the sides behind the eyes straight; the posterior angles rounded, the hinder margin of the vertex slightly emarginate; the ocelli large and prominent; the clypeus and mandibles very smooth and shining, the latter with a row of black teeth on their inner margin. Thorax ovate, smooth and shining; wings subhyaline, the nervures pale testaceous, the discoidal cells obsolete. Abdomen wider than the thorax, covered with a thin, changeable, sericeous pile; the peduncle minute, obliquely inclined and fitting into a cavity at the base of the abdomen.

*Hab.* Makassar.

This insect bears a strong resemblance to *F. flava* of Europe.

Gen. *TAPINOMA*, *Foerster*.

1. *TAPINOMA THORACICA*. *T. nigra*, subnitida; capite abdomineque glabris; thorace rugoso; antennis pedibusque ferrugineis.

*Worker*. Length 2 lines. Black and slightly shining; the antennæ and legs obscure ferruginous. Thorax rugose above, deeply stragulated between the meso- and metathorax, the latter abruptly concave truncate; the peduncle of the abdomen inclining forwards, rounded in front; flat and oblique behind; abdomen ovate, produced anteriorly, and overhanging the peduncle.

*Hab.* Makassar.

2. *TAPINOMA NITIDA*. *T. nigra*, lævis, nitida; alis hyalinis, nervuris pallide testaceis.

*Female*. Length  $4\frac{1}{2}$  lines. Shining black; the antennæ and the head, before their insertion, ferruginous. Thorax oblong-ovate; the legs dark ferruginous, the tarsi palest; the wings hyaline, the nervures pale testaceous; the discoidal cell triangular. The scale of the peduncle inclining forwards and overhung by the base of the abdomen; the latter oblong-ovate, very smooth and shining.

*Hab.* Makassar.

Gen. *POLYRHACHIS*, *Smith*.

1. *POLYRHACHIS PHYLLOPHILUS*. *P. opacus*, niger; thorace spinis duabus acutis antice et postice armato; abdominis squamula spinis duabus arcuatis armata.

*Worker*. Length 4 lines. Opaque black, with the abdomen of an obscure rusty red; the palpi elongate and pale testaceous; eyes prominent; the two carinæ on the front, at the sides of which the antennæ are inserted, very much elevated and acute. Thorax: the spines on the prothorax long, acute, and diverging outwards; the metathorax compressed, the upper surface slightly concave, with the lateral margins raised, the carinæ continued into two long parallel spines which project over the peduncle of the abdomen; the legs slightly shining, destitute of spines and hairs, the calcaria pale. Abdomen obscurely red and slightly pilose; the peduncle armed above with two long acute curved spines, which project over the base of the abdomen.

*Hab.* Makassar.

2. *POLYRHACHIS COMPRESSICORNIS*. *P. niger* et vestitus pube cinerea; thorace spinis duabus acutis antice armato; abdominis squamula spinis duabus brevibus armata; pedibus ferrugineis.

*Female*. Length  $5\frac{1}{2}$  lines. Black and densely clothed with cinereous pile, which has a silvery brightness in certain lights; the mandibles shining black, and longitudinally striated; the antennæ inserted at the sides of two prominent carinæ; the scape compressed, much broader than usual, with the apex widest and thinly covered with short pale glittering pubescence. Thorax: the spines at the lateral angles of

the prothorax short, stout, and acute; the mesothorax very convex, with an abbreviated shining carina in the middle anteriorly; the metathorax transverse, abruptly truncated, slightly concave in the middle above; the legs ferruginous, with their articulations and tarsi fuscous. Abdomen ovate; the peduncle subtriangular, a stout, short, acute spine at the lateral angles.

*Worker.* Length  $4\frac{1}{2}$  lines. Only differs in having the thorax flattened above, with the lateral margins slightly raised; the scape of the antennæ compressed, as in the female.

3. *POLYRHACHIS RUGIFRONS.* *P.* capite thoraceque subopacis; abdomine sericeo vestito; thorace spinis duabus longis acutis antice et postice armato, squamis bispinosus.

*Female.* Length 7 lines. Black; the head oblong, rugose, and narrowed behind the eyes; the palpi pale testaceous. Thorax: the prothorax armed on each side with a short, stout, acute spine, directed outwards; the mesothorax with a short abbreviated carina in the middle anteriorly, where it is rugose; the metathorax less rugose and with a fine cinereous pile, at each lateral angle is a short, stout, acute spine, pointed outwards; the legs slightly pilose. Abdomen covered with a fine, shining, changeable silky pile, which has a faint golden lustre; the peduncle armed above on each side with a stout, acute, slightly curved spine which is directed outwards.

*Hab.* Makassar.

This species is of the same size as, and closely resembles, *P. sex-spinosus*, but differs in not having the head armed posteriorly with spines, and also in the length and direction of the spines on the thorax and peduncle; it is also much more strongly sculptured. The worker only differs in having the thorax narrower, the sides being more parallel, but rather wider anteriorly; the sculpture is the same, as well as the pilosity.

4. *POLYRHACHIS SCULPTURATUS.* *P.* capite, thorace abdomineque delicatule aciculatis; thorace spinis duabus elongatis acutis antice armato; abdominis squamula spinis duabus longis acutis, utraque ad basin minute unispinulosa.

*Female.* Length  $4\frac{1}{2}$  lines. Black, and very finely striated longitudinally; the eyes as well as the front of the head prominent; the mandibles shining and longitudinally striated. Thorax short and very convex above, armed in front with two stout acute spines; the wings fusco-hyaline, the nervures rufo-testaceous, the stigma black. The peduncle of the abdomen with two stout, upright, acute spines; at the base of each, outside, is a short minute spine. The entire insect thinly covered with erect black pubescence, which is most dense on the abdomen; the abdomen has also a thin covering of shorter pale pubescence.

*Worker.* Length 4 lines. Closely resembling the female, but with

the thorax flat above, the lateral margins being slightly notched at the divisions between the pro-, meso- and metathorax; otherwise like the female.

*Hab.* Makassar.

5. *POLYRHACHIS NUDATUS*. *P.* capite thoraceque opacis; abdomine nitido, lævissimo; thorace spinis duabus longis acutis antice et postice armato; squama spinis duabus longis curvatis.

*Worker*. Length 4 lines. Black; the head finely rugose; the mandibles stout and shining; the palpi fuscous. Thorax oblong, with two very stout conical spines in front, which curve obliquely outwards; the metathorax has also two similar spines, but rather longer, which diverge and are bent slightly downwards; the thorax rounded above; the legs shining black. The peduncle of the abdomen incrassate, quadrate, and armed above with two stout, long, curved, acute spines, which are directed backwards, and curve to the shape of the base of the abdomen.

*Hab.* Makassar.

6. *POLYRHACHIS PEREGRINUS*. *P.* niger, pallide aureo-sericeo vestitus; thorace spinis acutis antice et postice armato; abdominis squama spinis duabus longis acutis ad basin minute unispinulosis instructa.

*Female*. Length 4 lines. Black, and clothed with pale golden silky pubescence; anterior margin of the clypeus rounded; mandibles shining black; the palpi pale testaceous. Thorax: the prothorax with two acute spines in front, which are directed outwards; the metathorax has two longer spines, also pointing obliquely outwards. Abdomen ovate; the peduncle armed with two long, stout, slightly curved spines, which have at their base, within, a minute acute spine.

*Hab.* Makassar.

This species is easily distinguished by the minute spines within the long lateral ones.

7. *POLYRHACHIS VESTITUS*. *P.* niger, aureo-sericeo vestitus; thorace spinis duabus acutis antice armato; squama integra.

*Worker*. Length 6 lines. Black, and clothed with a pale golden sericeous pile; the legs naked; the mandibles stout, finely striated, the striæ interspersed with punctures; the front of the head very prominent. Thorax flattened above, the margins acute and slightly raised; the pro-, meso- and metathorax separated by strongly marked sutures; the prothorax armed at its anterior angles with a stout acute spine, which is compressed and broad at its base. Abdomen: the peduncle unarmed, its margin rounded.

*Hab.* Makassar.

This species is nearly three times the size of *P. inermis*, which it resembles in form, but is covered with silvery pile.

8. *POLYRHACHIS SÆVISSIMUS*. *P.* niger, tibiis ferrugineis; thorace spinis duabus acutis antice et postice armato; squama subquadrata, spinis duabus longis curvatis; abdomine lævigato, nitido.

*Worker.* Length 3 lines. Black, with the abdomen smooth and shining; the head and thorax subopaque, and thinly covered with cinereous pile; mandibles shining black; the palpi pale testaceous. Thorax armed in front with two stout acute spines, the metathorax with two, more slender and longer diverging spines; the peduncle has two long spines which curve round the base of the abdomen; the tibiæ ferruginous, but more or less obscure at their base.

*Hab.* Makassar.

Gen. PSEUDOMYRMA, *Guér.*

1. *Pseudomyrma læviceps*, *Smith, Proc. Linn. Soc.* 1859, iii. p. 145.

*Hab.* Celebes; Aru.

The specimens from Makassar are smaller than those from Aru, but I can detect no specific difference.

Fam. PONERIDÆ.

Gen. ODONTOMACHUS, *Latr.*

1. *Odontomachus simillimus*, *Smith, Cat. Hym. Ins. Form.* p. 80, pl. 5. figs. 8, 9.

This species closely resembles *O. hamatodes*, but may be known by the following differences: the mandibles are distinctly serrated throughout the entire length on the inner margin; the head narrower and the antennæ shorter in the worker; in the female the neuration of the wings is different.

*Hab.* Celebes (Makassar); Fidjee Islands; Ceylon.

Gen. PONERA, *Latr.*

1. *Ponera geometrica*, *Smith, Proc. Linn. Soc.* ii. p. 67.

*Hab.* Celebes (Makassar). Singapore.

2. *Ponera læviceps*, *Smith, Proc. Linn. Soc.* ii. p. 69.

*Hab.* Celebes (Makassar); Borneo (Sarawak).

The specimen from Celebes has a few indistinct traces of sculpture on the crown of the head and prothorax, but so closely agrees in all other respects, that I cannot see a good specific difference.

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

*Female.* Length  $2\frac{1}{2}$  lines. Black; the clypeus, antennæ, mandibles, legs, the apex of the metathorax and of the abdomen ferruginous; the eyes placed forward at the sides of the head, near the base of the mandibles; the head, thorax, and abdomen thinly covered with a fine, short, downy pile, which renders the body sub-opaque; the truncated portion of the metathorax very smooth and shining; the mesothorax with an obscure rufous tinge. The apical margins of the two basal



segments of the abdomen rufo-testaceous, the following segments entirely so.

*Hab. Makassar.*

4. *PONERA UNICOLOR*. *P. ochracea*; *antennis subfuscis, alis hyalinis*; *tibiis tarsisque fuscis*.

*Male*. Length 4 lines. Entirely ochraceous, with the antennæ and legs slightly fuscous; the mesothorax with two oblique impressed lines meeting in the middle of its disk; the wings hyaline and iridescent, the nervures and stigma rufo-fuscous. The node of the peduncle subglobose; a deep constriction between the first and second segments of the abdomen, and a slighter one between the second and third; the node of the peduncle with a tooth at its base beneath.

*Hab. Makassar.*

5. *PONERA PALLIDICORNIS*. *P. obscure rufo-fusca*; *antennis pedibusque pallide testaceis*; *alis hyalinis*.

*Male*. Length 3 lines. Shining rufo-fuscous; the head impunctate; the antennæ, mandibles, and palpi pale rufo-testaceous. The thorax delicately punctured; the scutellum prominent, smooth, and shining; the wings hyaline and iridescent, with the nervures colourless; the stigma pale testaceous; the legs rufo-fuscous, with the articulations and tarsi pale. Abdomen: the segments slightly constricted; the node of the peduncle conical, and with a tooth at its base beneath.

*Hab. Makassar.*

6. *PONERA PALLIDIPENNIS*. *P. nigra opaca*; *abdomine lævigato, nitido, chalybeo-iridescente*; *antennis pedibusque obscure ferrugineis*.

*Male*. Length 3 lines. Black; the head and thorax finely rugose and opaque, the metathorax coarsely rugose; the scape and basal joint of the flagellum bright ferruginous, the following joints obscurely so. Wings colourless, with the nervures pale testaceous, the stigma pale brown; the legs fusco-ferruginous, with the articulations and the tarsi pale rufo-testaceous. Abdomen smooth and shining, with a blue iridescence, the tip pale testaceous.

*Hab. Makassar.*

### Gen. *MYRMICA*, Latr.

1. *Myrmica molesta*, Say, *Bost. Journ. Nat. Hist.* i. 293. 6.

I have carefully examined several individuals of the worker of this species from Makassar, and compared them with specimens obtained from North America, Brazil, and from houses in London, and can detect no specific difference; the examples from Celebes are paler at the apex of the abdomen; beyond this, I see no difference. I consider *M. molesta* a cosmopolitan species, which has been carried in merchandize to all parts of the world.

2. *MYRMICA GRACILESCENS*. *M. rufo-ferruginea, gracilescens*; lævissima et politissima.

*Worker*. Length 1 line. Rufo-ferruginous, smooth and shining; the tarsi and the basal joints of the flagellum pale rufo-testaceous; the club of the antennæ 3-jointed; the antennæ nearly as long as the body. The metathorax with two short acute spines. Abdomen ovate; the basal node of the peduncle petiolated, and elevated above the second node, which is ovate-conical, the first being conical.

*Hab.* Makassar.

This elegant little ant closely resembles the *Myrmica lippula* of Europe.

#### Gen. CREMATOGASTER, *Lund*.

1. *CREMATOGASTER LÆVISSIMUS*. *C. pallide castaneo-rufus, lævis nitidusque*; alis hyalinis iridescentibus.

*Female*. Length 3 lines. Pale rufo-castaneous, highly polished, smooth, and impunctate. The antennæ and legs very pubescent; the head anteriorly and the mandibles slightly pubescent. Thorax oblong-ovate; the wings colourless and brilliantly iridescent, the nervures scarcely distinguishable. Abdomen oblong-ovate, the first node of the peduncle petiolate, the second subglobose.

*Hab.* Makassar.

#### Fam. ATTIDÆ, *Smith*.

#### Gen. SOLENOPSIS, *Westw.*

1. *SOLENOPSIS TRANSVERSALIS*. *S. ferruginea, capite oblongo-ovato longitudinaliter striato, postice transverse striato*; abdomine nitido.

*Worker major*. Length 2 lines. Ferruginous, with the head and abdomen darkest, the latter palest at the base, and smooth and shining. Head: oblong, subquadrate, the sides slightly rounded, longitudinally striated, and with a central longitudinal smooth impressed line; the vertex transversely striated and slightly emarginate. Thorax: deeply strangulated between the meso- and metathorax, the latter armed with two minute spines; the first node of the peduncle petiolated, conical, and elevated above the second node, which is globose.

*Hab.* Makassar.

#### Gen. PHEIDOLE, *Westw.*

1. *PHEIDOLE MILITARIS*. *P. ferruginea; capite maximo, antice fusco*.

*Worker major*. Length 3 lines. Ferruginous, smooth and shining; the head oblong-quadrate, more than twice the width of the abdomen, deeply emarginate behind, and with a central longitudinal impressed line; the head transversely wrinkled posteriorly, and with a few longitudinal short striæ at the anterior angles at the base of the mandibles; the angles, as well as the mandibles, dark fusco-ferruginous;

the mandibles with a single notch at their apex, not toothed; eyes very minute. The thorax, legs, and abdomen, paler than the head; the thorax much narrowed behind; the metathorax armed with two short acute spines; the intermediate and posterior tibiæ not spined at their apex.

*Worker minor.* Differs only in the form of the head, which is more rounded at the sides, and the mandibles are armed with two stout teeth at the apex, and with several smaller ones behind.

*Hab.* Makassar.

### Fam. CRYPTO CERIDÆ, *Smith*.

#### Gen. ECHINOPLA, *Smith*.

1. *Echinopla striata*, *Smith, Proc. Linn. Soc.* ii. 80. 2 ♀.

*Hab.* Celebes; Malacca.

### Fam. MUTILLIDÆ.

#### Gen. MUTILLA, *Linn.*

1. *Mutilla unimaculata*, *Smith, Cat. Hym.* pt. iii. p. 138 ♀.

The male has the head and abdomen black and shining; the thorax blood-red; the inner margin of the eyes notched; the vertex strongly punctate-striate. The thorax strongly punctured; the metathorax with larger and more distant punctures; the tegulæ red; the wings fusco-hyaline. Abdomen rather distantly punctured; the apical margin of the second and third segments thickly fringed with white pubescence; the following segments fringed with black.

*Hab.* Makassar.

The sexes of this species were taken *in coitu*.

2. *Mutilla Sibylla*, *Smith, Cat. Hym. Borneo, Proc. Linn. Soc.* ii. p. 86. 11 ♀.

*Mutilla suspiciosa*, *Smith, Cat. Hym. Borneo, Proc. Linn. Soc.* ii. p. 84. 5 ♂.

The sexes of this species were taken *in coitu*.

3. *MUTILLA MAURA*. *M. nigra* pubescens; alis fuscis; abdominis segmentis pube alba fasciatis.

*Male.* Length 5½ lines. Entirely black and shining; the head and thorax with large scattered punctures; the face and cheeks with a loose silvery pubescence; that on the vertex, and on the disk of the thorax, fuscous; the metathorax covered with large shallow punctures, and covered with short cinereous pubescence, having at the base, in the centre, a smooth, shallow, longitudinal channel extending half its length; the wings fuscous. Abdomen: campanulate, smooth, shining, and distantly punctured, with a scattered cinereous pubescence on the three basal segments, and with black on the four apical

ones; the apical margin of the second and third segments ciliated with glittering white hairs.

*Hab.* Celebes.

Resembling *Mutilla volatilis*, but at once distinguished by the channel at the base of the metathorax, by the longer and narrower basal segment of the abdomen, and by the latter being much more delicately punctured.

4. *MUTILLA FACILIS*. *M.* capite abdomineque nigris; thorace sanguineo; alis subhyalinis.

*Male.* Length  $3\frac{1}{2}$  lines. The head and thorax closely and finely punctured; the scape of the antennæ, the basal joint of the flagellum, and the mandibles, rufo-piceous. The metathorax covered with large shallow punctures; the wings fusco-hyaline, with the third submarginal cell obsolete; the legs rufo-testaceous. Abdomen blue-black, with the extreme base red; the apical margin of the second and following segments pale rufo-testaceous; very shining and delicately punctured, and with a number of scattered silvery-white hairs.

*Hab.* Celebes (Makassar).

5. *MUTILLA THORACICA*. *M.* thorace dorsoque sanguineis; alis fuscis.

*Male.* Length  $4\frac{1}{2}$  lines. Head and thorax strongly punctured and pubescent; the tops of the mandibles rufescent; the eyes slightly notched within. The metathorax with large shallow punctures, and covered with short cinereous pubescence; the wings fusco-hyaline and iridescent. Abdomen: the basal segment narrow and campanulate; the third segment with a band of thin white pubescence on its apical margin; the first and second segments with a few scattered white hairs; those on the third and following segments black.

*Hab.* Celebes (Makassar).

6. *MUTILLA NEGLECTA*. *M.* capite thoraceque rude punctatis; alis fusco-hyalinis; abdominis segmentis pube fulva fasciatis.

*Male.* Length  $7\frac{1}{2}$  lines. Black and punctured, the punctures on the disk of the thorax confluent, and running into striæ; the clypeus covered with long loose silvery pubescence; the head, thorax, and legs with a thin fulvous pubescence; the third and fourth joints of the antennæ bright orange-yellow beneath; the eyes slightly notched. The wings slightly fuscous, with their apical margins more deeply coloured; the nervures rufo-testaceous; the metathorax with a short cinereous pubescence, and covered with large shallow punctures. Abdomen very glossy and finely punctured; the basal segment narrow and campanulate; the apical margins of all the segments with a fringe of fulvous pubescence; the apex bright ferruginous.

*Hab.* Celebes (Makassar).

7. *MUTILLA FERVIDA*. *M.* capite thoraceque nigris; abdomine ferrugineo basi nigro; alis fuscis.

*Female.* Length 4-5 lines. Head and abdomen black; thorax red; the

legs black; the thorax roughly punctured, oblong-quadrate, with the metathorax obliquely truncate; the mandibles ferruginous in the middle. Abdomen with two ovate spots towards the base, and an interrupted band at the base of the third segment, of white pubescence; the apical segment longitudinally striated, and fringed at the sides with glittering yellowish-white hairs.

*Male.* Length 9 lines. The head and thorax coarsely punctured; the sides of the face anteriorly, and the base of the mandibles covered with silvery-white pubescence; the wings dark brown and shining. The first, base of the second, and the apical segment of the abdomen, black; the two former strongly punctured, beyond which it is finely and distantly punctured; the second and four following segments with a fringe of bright fulvous pubescence on their apical margins.

The female very closely resembles *Mutilla Sibylla*, but may be distinguished from it by its having the tubercles on which the antennæ are inserted black; in *M. Sibylla* they are ferruginous. The male resembles the same sex of *M. Sibylla*, but in that insect the segments of the abdomen are fringed with white pubescence.

#### Gen. METHOCA, Latr.

1. *METHOCA GRACILIS.* *M. nigra, nitida, immaculata; alis hyalinis.*

*Male.* Length  $3\frac{1}{2}$  lines. Shining black, slightly villose; the head closely and finely punctured, sparingly so on the vertex; the tips of the mandibles ferruginous. The prothorax smooth, the mesothorax punctured, and the metathorax coarsely rugose; the wings hyaline and splendidly iridescent; the legs rufo-piceous. Abdomen smooth and shining; the basal segment subpetiolate, and with a central longitudinal channel; the base of the segments much depressed, their margins constricted; the apical one with an acute upturned spine.

2. *METHOCA INSULARIS.* *M. nigra; antennis, mandibulis, pedibusque ferrugineis; abdomine rufo-piceo cingulato.*

*Female.* Length 3 lines. Black, smooth and shining; the antennæ, anterior margin of the clypeus, the mandibles, and palpi, ferruginous; a deeply impressed line runs from the base of the clypeus up to the anterior ocellus. Thorax: a deep constriction between the pro-, meso-, and metathorax; the apex of the latter rufo-piceous. Abdomen with a short petiole; the apical margin of the first and second segments, and the apical segment, entirely rufo-piceous.

*Hab.* Makassar.

Probably the female of *M. gracilis*; but I do not feel justified in uniting them.

#### Gen. SCLERODERMA, Latr.

1. *SCLERODERMA BICOLOR.* *S. capite thoraceque rufo-testaceis; abdomine nigro nitido.*

*Female.* Length  $1\frac{1}{2}$  line. The head oblong, rufo-piceous, smooth, &

shining; the antennæ and legs pale rufo-testaceous. Thorax pale ferruginous, with the metathorax flavo-testaceous. Abdomen smooth, shining black.

*Hab.* Makassar.

### Tribe FOSSORES, *Latr.*

#### Fam. SCOLIADÆ.

##### Gen. TIPHIA, *Fabr.*

1. *TIPHIA CARBONARIA*. *T. nitida*, atra, punctata; linea intermedia elevata metathoracis lineam transversam non attingente.

*Female*. Length 5 lines. Shining jet-black; the head, pro- and mesothorax strongly punctured; the clypeus truncated in the middle of its anterior margin; the antennæ obscurely fuscous beneath. The metathorax smooth and shining, truncate posteriorly; the margin of the truncation carinated, with three elevated longitudinal lines on its superior surface, the two lateral ones extending from the base to the verge of the truncation, the intermediate one extending only halfway from the base; the wings subhyaline, with a fuscous cloud below the stigma; the latter as well as the stigma, black; the anterior tibiæ ferruginous beneath. Abdomen: the two basal segments with fine scattered punctures; the following segments, each in succession more closely and strongly punctured, the apical one coarsely so.

*Hab.* Makassar.

#### Fam. POMPILIDÆ.

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

1. *POMPILUS CONFORMIS*. *P. niger*, pube cinerea vestitus; alis hyalinis unifasciatis.

*Female*. Length  $7\frac{1}{2}$  lines. Black, with a silky, silvery, changeable pile, which is most dense on the face, coxæ, and sides of the metathorax; the anterior margin of the clypeus rounded, slightly elevated, and very smooth and shining; the mandibles pilose at the base, smooth and polished at their apex, which is ferruginous, with their tips black. The posterior margin of the prothorax curved; the metathorax opaque, with shining silvery pile at the sides; the wings hyaline, with a fuscous band crossing them at the apex of the stigma, nearly as wide as the marginal cell; a slight fuscous stain at the base of the second discoidal-cell. Abdomen subpetiolate; the apical margins of the segments shining, not pilose.

*Hab.* Makassar.

2. *POMPILUS LIMBATUS*. *P. obscure* cæruleo-niger; prothoracis margine postica flava; alis fuscis basi subhyalinis.

*Male*. Length 7 lines. Obscure blue-black, the abdomen brightest;

the lower portion of the inner orbits of the eyes, the sides of the clypeus, and mandibles, testaceous-yellow; the apex of the latter ferruginous; the palpi pale; the antennæ fulvous beneath. The posterior margin of the prothorax testaceous-yellow; wings fuscous, palest towards their base; the intermediate and posterior tibiæ and the basal joint of their tarsi with long acute spines; the inner calcar at the apex of the tibiæ nearly as long as the basal joint of the tarsi. Abdomen elongate and slightly shining.

*Hab.* Makassar.

3. *POMPILUS NIGRO-CÆRULEUS*. *P.* obscure cæruleo-niger; alis fuscis, viridi et violaceo micantibus.

*Female*. Length 9-10 lines. Of an obscure blue-black; the face and clypeus slightly silvery, the anterior margin of the latter slightly emarginate; the mandibles obscurely ferruginous in the middle. The posterior margin of the prothorax subangular; the metathorax short, convex, and shining; wings dark fuscous, with a slight purple iridescence; the tibiæ and tarsi with strong sharp spines. Abdomen slightly shining, with bright blue tints in certain lights; the extreme apex ferruginous; the apical segment with rigid black hairs.

*Hab.* Makassar.

4. *POMPILUS INCERTUS*. *P.* ater; facie et thorace postice pube argentato-alba dense vestitis; alis hyalinis apice fuscis.

*Male*. Length 5 lines. Black: the face and clypeus covered with silvery pile, the anterior margin of the latter rounded; the tips of the mandibles rufo-testaceous; an impressed line running from the anterior ocellus to the base of the clypeus. Thorax: the posterior margin of the prothorax subangular; the metathorax with a thin silvery pile, on its sides and on the coxæ the pile is more dense and glittering; wings hyaline and iridescent, their apex fuscous beyond the stigma; the inner calcar at the apex of the intermediate and posterior tibiæ nearly as long as the basal joint of the tarsi. Abdomen shining, with a thin silky pile.

*Hab.* Makassar.

#### Gen. *PRIOCNEMIS*, *Schiodte*.

1. *PRIOCNEMIS FLAVIPENNIS*. *P.* niger; facie, antennis, tibiis, tarsisque ferrugineis; alis flavo-hyalinis.

*Female*. Length 10 lines. Black: the head and thorax opaque, the abdomen slightly shining; the front between the insertion of the antennæ and the ocelli, the tibiæ, tarsi, and tips of the femora ferruginous, the claw-joint of the tarsi fuscous; the intermediate and posterior tibia with a double row of serrations; all the tarsi strongly spinose; the wings clear reddish yellow, not bordered with fuscous; the metathorax transversely striated. Abdomen immaculate, thinly sprinkled with

long black hairs towards the apex; the apical segment punctured, and with short ferruginous pubescence at the tip.

*Hab.* Makassar.

This species resembles *P. rufifrons*, but is distinguished by its transversely striated metathorax, its wings not bordered with fuscous, and its entirely black abdomen.

Gen. *AGENIA*, *Schiodte*.

1. *Agenia Atalanta*, *Smith, Hym. Borneo, &c. ; Journ. Proc. Linn. Soc.* p. 94.

*Hab.* Celebes (Makassar); Borneo; Singapore.

2. *AGENIA HONESTA*. *A. atra*, pube argentata vestita; pedibus ferrugineis; alis hyalinis.

*Female*. Length 5 lines. Black, and covered with a thin silvery-white silky pile, which is most dense on the metathorax; the face silvery; the scape in front, the anterior margin of the clypeus narrowly, and the mandibles of a testaceous yellow, the tips of the latter ferruginous; the flagellum beneath, the palpi and legs, pale ferruginous. The posterior margin of the prothorax narrowly testaceous; the wings hyaline and iridescent, the nervures rufo-fuscous, the tegulæ pale testaceous. Abdomen shining; the apical margins of the segments rufo-piceous; a short petiole at the base of the first segment.

*Hab.* Makassar.

3. *AGENIA ASSIMILIS*. *A. nigra*; alis hyalinis fasciis duabus fuscis ornatis; pedibus nigro-piceis.

*Female*. Length 3 lines. Black and slightly shining; the antennæ slightly or obscurely fulvous beneath, the scape palest; tips of the mandibles ferruginous. The metathorax with a slight central longitudinal channel, which becomes deepest towards the apex; legs very obscurely piceous; the anterior tibiæ in front, their tarsi and the tips of the joints of the intermediate and posterior legs rufo-testaceous, the calcaria testaceous; wings hyaline and iridescent, with a broad fuscous fascia which nearly crosses the anterior wings beyond the stigma, and a much narrower one at the base of the first and second discoidal cells. Abdomen with a short petiole; the apical margins of the segments obscurely rufo-piceous.

*Hab.* Makassar.

This species closely resembles the European *Pompilus bifasciatus*.

4. *AGENIA NITIDIVENTRIS*. *A. atra*; capite thoraceque subopacis; abdomine nitido, alis hyalinis plaga nigro-fusca.

*Female*. Length 4 lines. Black: the face with a slight silvery pubescence; the clypeus emarginate anteriorly, forming a short tooth at the angles of the emargination; the tips of the mandibles ferruginous. Thorax: the posterior margin of the prothorax arched; the metathorax



transversely and finely rugose-striate; wings hyaline and iridescent, the nervures fusco-ferruginous, a dark stain beneath the stigma, entering the third discoidal cell. Abdomen shining black, with a very thin short downy pile, and with a short petiole at its base.

*Hab.* Makassar.

5. *AGENIA AGITATA*. *A. atra*; antennis subtus, mandibulis pedibusque pallide ferrugineis; alis hyalinis.

*Female*. Length  $4\frac{1}{4}$  lines. Black: the clypeus and face with a shining silvery pubescence; a narrow yellow line at the lower portion of the inner orbit of the eyes; the scape in front and the mandibles of a testaceous yellow; the flagellum beneath, the femora, tibiæ, and tarsi pale ferruginous; the posterior margin of the prothorax arched; the wings hyaline and iridescent, the tegulæ rufo-testaceous. Abdomen petiolated, smooth and shining.

*Hab.* Makassar.

This species is very closely allied to *A. honesta*, but it is much less pilose, the coxæ are black, the antennæ stouter, and the second submarginal cell shorter.

6. *AGENIA GRACILIPES*. *A. atra*; faciei lateribus, clypeo, palpisque testaceis; alis hyalinis; pedibus elongatis; abdomine petiolato.

*Male*. Length  $3\frac{1}{4}$  lines. Black: the clypeus, sides of the face, scape in front and the palpi yellowish-white; the face and clypeus silvery; the flagellum fulvous beneath. The thorax with a fine silvery white pile, which is most dense and glittering on the metathorax; the legs ferruginous, the posterior tibiæ and tarsi dusky; the wings clear hyaline and splendidly iridescent. Abdomen petiolated, the petiole with a pale testaceous ring in the middle; the tip of the abdomen white.

*Hab.* Makassar.

7. *AGENIA INGENUA*. *A. atra*; pedibus rufo-testaceis; abdomine petiolato; alis hyalinis.

*Female*. Length  $4\frac{1}{4}$  lines. Black: the face silvery; the clypeus produced into a blunt joint anteriorly; the tips of the mandibles ferruginous; the palpi testaceous; the antennæ obscurely fulvous beneath. Thorax: the posterior margin of the prothorax arched; the wings hyaline and iridescent; the tegula testaceous; the metathorax transversely and finely rugose-striate, and with a central longitudinal impressed line; the legs obscure rufo-testaceous. Abdomen petiolated, slightly pilose, and having an obscure rufo-testaceous tinge in certain lights.

8. *AGENIA FACILIS*. *A. nigra*, pilis sericeis vestita; alis hyalinis.

*Female*. Length  $7\frac{1}{4}$  lines. Black: the abdomen with an obscure blue tinge, thinly covered with cinereous pile; the face silvery; the anterior margin of the clypeus rounded; the tips of the mandibles

piceous. The posterior margin of the prothorax curved; the wings hyaline, faintly yellow, with the nervures ferruginous; the marginal cell triangular, the inferior angle at the apex of the second submarginal cell; the metathorax finely rugose and covered with short cinereous pubescence. Abdomen with a short petiole at its base, slightly shining; the apical segment smooth and shining in the middle.

*Hab.* Makassar.

9. *AGENIA NASUTA*. *A. atra*; alis hyalinis bifasciatis.

*Female.* Length  $6\frac{1}{2}$  lines. Black: covered with a thin cinereous pile; the face with silvery-grey pubescence; the anterior margin of the clypeus produced in the middle, forming a short blunt rufo-piceous beak or nose. The posterior margin of the prothorax arched; the wings hyaline; the anterior pair with a broad fuscous band at the apex of the stigma as wide as the second and third submarginal cells, an angulated band at the apex of the externo-medial cells; tips of the wings milky-white; the metathorax with a slight transverse rugose striation. Abdomen: the basal segment with a short petiole; the apical segment very smooth and shining.

*Hab.* Makassar.

10. *AGENIA JUCUNDA*. *A. atra*; capite thoraceque pube aurea vestitis; antennis, tibiis, tarsisque anticis et intermediis ferrugineis; alis hyalinis apice fuscis.

*Female.* Length 9 lines. Black; the face and clypeus covered with silvery pubescence, that on the head above the insertion of the antennæ of a pale golden colour; the antennæ and palpi pale ferruginous. Thorax: clothed above with a fine pale golden pubescence; on the metathorax it becomes silvery, as it is also on the sides and beneath; the posterior margin of the prothorax, the anterior and intermediate tibiæ, tarsi and apex of the femora, ferruginous; the apex of the posterior tibiæ and femora, and the tarsi beneath, ferruginous; wings flavo-hyaline, with a large dark fuscous spot at the apex of the anterior pair. Abdomen subpetiolate, covered with a fine thin changeable silvery downy pile; the apex rufo-testaceous.

*Hab.* Makassar.

Gen. *MYGNIMIA*, *Smith*.

1. *MYGNIMIA FERVIDA*. *M. capite thoraceque nigris*; abdomine pedibusque ferrugineis; alis obscure fuscis.

*Female.* Length 9 lines. The head, thorax, and coxæ black; the antennæ, labrum, mandibles, and palpi ferruginous; the clypeus emarginate. The prothorax transverse, its anterior lateral angles prominent; the metathorax transversely striated; wings dark fuscous or brown-black, with a bright violet iridescence, a semi-transparent lunate macula in the second discoidal cell at its base; the tibiæ and tarsi with

a number of short spines. Abdomen immaculate, ferruginous, with the extreme base fuscous.

*Male.* Length 6 lines. Differs in having the antennæ black above, the metathorax delicately striated, and the legs much less spinose.

*Hab.* Makassar.

Fam. SPHEGIDÆ, *Smith.*

Gen. AMPULEX, *Jurine.*

1. AMPULEX REGALIS. *A. fulgide purpureus*; abdomine viridi variegato; alis anticis obscure unifasciatis.

*Female.* Length 10 lines. Brilliant purple, with shades of violet and green; the anterior femora and tibiæ in front, and the intermediate and posterior femora, ferruginous; the anterior wings with a faint cloud crossing them beyond the stigma; the vertex, pro- and mesothorax finely and very sparingly punctured; the metathorax with fine longitudinal carinæ, the intermediate spaces transversely striated; the abdomen tinged with green at the apex.

*Hab.* Makassar.

This species so closely resembles *Ampulex compressus* that perhaps it will be regarded by some persons as only a local variety; I have separated it for the following reasons: in the first place, the head is rounded behind, whereas in *A. compressus* it is transverse with the angles obtuse, and the eyes are more closely approximate than in that species; the second lateral carina on the metathorax is simple, while in *A. compressus* it becomes double towards the apex: all the specimens from Makassar are brilliant purple in both sexes.

Gen. TRIROGMA, *Westw.*

1. TRIROGMA CÆRULEA.

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

*Hab.* India (Madras, Northern India), Singapore; Celebes (Makassar).

Gen. DOLICHURUS, *Latr.*

1. DOLICHURUS ABDOMINALIS. *D. niger*, capite thoraceque nitidis, pedibus ferrugineis, abdomine rude punctato.

*Male.* Length  $3\frac{1}{2}$  lines. Head: strongly punctured before the ocelli, and smooth and shining behind them; the front with a semicircular, flattened appendage, above the insertion of the antennæ, which is concave above; the antennæ fulvous beneath; the mandibles ferruginous at their apex; the palpi pale testaceous; the antennæ as long as the body. Thorax: the posterior angles of the prothorax tuberculate; the mesothorax shining, with two deeply impressed longitudinal lines; the metathorax rugose, with an enclosed horseshoe-shaped

space at its base; wings hyaline and iridescent; the legs obscure ferruginous. Abdomen coarsely rugose and subopaque, with the margins of the segments deeply depressed.

*Hab.* Makassar.

Fam. LARRIDÆ, *Leach*.

Gen. LARRADA, *Smith*.

LARRADA DUCALIS. *L. nigra*, nitida; metathorace opaco; facie aureo-pilosa; alis nigro-fuscis violaceo-iridescentibus.

*Female*. Length 10-13 lines. Black; the head slightly shining, impunctate; the sides of the face, the base of the mandibles and the lower portion of the cheeks with golden pubescence; the mandibles blunt at their apex, and not notched at their base beneath. Thorax slightly shining, with the metathorax subopaque and transversely striated; wings dark brown, with a slight violet iridescence. Abdomen with a faint blue iridescence in certain lights; the apical segment with a short fulvous velvety pubescence.

*Hab.* Makassar.

This fine species is the largest I have seen of the genus.

Fam. CRABRONIDÆ, *Leach*.

Gen. TRYPOXYLON, *Latr*.

1. TRYPOXYLON EXIMIUM, *Smith, Journ. Proc. Linn. Soc.* iii. p. 161.

*Hab.* Makassar; Key Island.

2. TRYPOXYLON ELEGANTULUM. *T. capite* thoraceque nigris nitidis; abdomine pedibusque pallide ferrugineis.

*Female*. Length 7 lines. Head smooth and shining; the clypeus, face as high as the sinus of the eyes and the cheeks, densely covered with glittering silvery pubescence; the antennæ pale ferruginous; the clypeus anteriorly, and the mandibles of a reddish-yellow, the tips of the latter ferruginous; the palpi white. Thorax smooth and shining; the hinder margin of the prothorax, the tegulæ, tubercles, and legs, pale rufo-testaceous; the wings hyaline and iridescent, the nervures ferruginous; the metathorax with silvery pubescence on its sides, and having in the centre of its base a slight longitudinal channel which joins a deeply impressed one at the verge of the oblique truncation, the latter continuing to its apex. Abdomen with a long slender petiole, and immaculate ferruginous.

*Hab.* Makassar.

3. TRYPOXYLON FEROX. *T. nigrum* nitidum, petiolo gracili elongato; antennis, pedibus, et abdomine ferrugineis, apice nigris.

*Female*. Length 6 lines. Head and thorax shining black; the antennæ, anterior margin of the clypeus, mandibles, legs, and tubercles pale ferruginous; the abdomen of a darker red than the legs, with the two

apical segments black; the palpi white. The sinus of the eyes, clypeus, and cheeks, clothed with silvery pubescence; a deep channel runs from the anterior ocellus to the base of the clypeus; the front very convex on each side of it. The thorax beneath, as well as the sides, with silvery pubescence; the metathorax with a central longitudinal impressed line, extending from the base to the apex; the wings hyaline and iridescent, the nervures dark fuscous.

*Hab.* Makassar.

Although the differences which separate this and the two preceding species are apparently slight, still they are, in my opinion, of full specific value; *T. ferox* is distinguished from *T. elegantulum* by the deeply impressed line down the centre of the metathorax, and by the dark nervures and stigma of the wings, and the latter may be at once known from *T. gracilescens* by the deep channel down the centre of the metathorax, and by its longer and black petiole.

4. *TRYPOXYLON GRACILESCENS*. *T. nigrum*, læve, nitidum; antennis pedibusque pallide ferrugineis; abdomine ferrugineo, petiolo nigro.

*Female*. Length  $6\frac{1}{2}$  lines. Head, thorax, and petiole of the abdomen, shining black; the antennæ, anterior margin of the clypeus, mandibles, and legs pale ferruginous; abdomen, except the petiole, ferruginous. The face and clypeus, the sinus of the eyes, and the cheeks, covered with silvery pubescence. The posterior margin of the prothorax narrowly pale testaceous and fringed with short silvery hairs; the sides of the metathorax and the pectus silvery; the metathorax with a deeply impressed central longitudinal line extending from the base to the apex; wings hyaline and iridescent, the nervures and tegulæ pale rufo-testaceous.

*Hab.* Makassar.

#### Gen. *PSEN*, Latr.

1. *PSEN ERRATICUS*. *P. ater*; pedibus abdomineque ferrugineis, petiolo nigro.

*Female*. Length 5 lines. Head, thorax, and petiole of the abdomen black; the abdomen and legs ferruginous, the latter palest. The head and thorax covered with short silvery-white pubescence; the mandibles and antennæ pale ferruginous, the latter fuscous above, becoming black towards the apex; the scape yellowish in front. The wings hyaline and brilliantly iridescent; the nervures and stigma pale ferruginous; the coxæ fuscous above. Abdomen shining and impunctate; the petiole wider at its extremity than at its base, curved, and very smooth and shining.

*Hab.* Makassar.

The discovery of a species of *Psen* in Celebes is highly interesting; previously only a single species from Brazil had been discovered out of Europe.

## Tribe DIPLOPTERA:

## Group 1. Solitary Wasps.

## Gen. EUMENES.

## 1. EUMENES ESURIENS.

*Eumenes esuriens*, *Fabr. Syst. Piez.* 286. 7.

*Eumenes gracilis*, *Sauss. (var.) Mon. Guêpes Sol.* 56. 40. t. 11. f. 2.

*Hab.* India ; Persia ; Africa (Sierra Leone) ; Senegal ; Egypt ; New Guinea (Triton Bay).

2. EUMENES PICTIFRONS. *E. nigra* ; capite flavo-variegato ; alis subhyalinis et iridescentibus.

*Female.* Length 13-14 lines. Shining black ; the head transverse-quadrate above, covered with fine confluent punctures ; the base of the clypeus yellow, forming a transverse broad lunate spot, and two indistinct spots near the apical margin, a stripe behind the eyes, and another in their sinus, a pear-shaped spot between the antennæ, with a narrow line running upwards from it to the anterior ocellus, and a minute spot at the side of each of the superior ocelli, yellow ; the antennæ ferruginous beneath. The prothorax strongly punctured, the meso- and metathorax finely and sparingly so ; the tips of the anterior femora beneath, the tibiæ and tarsi, the intermediate femora at their apex beneath, and the apex of the two posterior pair of tibiæ with a yellow stripe outside ; wings subhyaline, the anterior margin of the superior pair fulvous. Abdomen : the petiole gradually thickened from the base to the apex, and with a central longitudinal slightly impressed line ; the following segments finely punctured.

*Hab.* Makassar.

This and the two following species belong to the first division of Sausure's monograph of the genus *Eumenes*, div. *Paraeumenes*, in which the mandibles are short and blunt, with two or three teeth, and the petiole of the abdomen regularly widened from the base to its apex.

3. EUMENES ARTIFEX. *E. niger* ; capite thoraceque flavo-variegatis ; pedibus ferrugineis ; alis subhyalinis et iridescentibus.

*Female.* Length 7-8 lines. Black, punctured, and slightly shining ; the clypeus, a spot between the antennæ, another in the sinus of the eyes, a minute one at the base of the mandibles, the scape in front, and a short line behind the eyes, yellow ; a pear-shaped black spot on the clypeus. A spot on each side of the prothorax, the tegulæ, a minute spot behind, and a short narrow stripe in front of them on the mesothorax, the scutellum and postscutellum with a spot on each side, and a triangular one beneath the wings, yellow ; the legs ferruginous, with the coxæ, trochanters, and extreme base of the femora, more or less ferruginous ; wings subhyaline, with a slight violet iridescence. Abdomen : the basal segment clavate ; the apical margin of the second

segment with a narrow subinterrupted yellow fascia, not continued beneath.

*Hab.* Makassar.

4. *EUMENES LABORIOSUS*. *E. niger*; clypeo, prothoracis margine, scutello, punctisque duabus, flavis; alis subhyalinis et iridescentibus.

*Female*. Length  $6\frac{1}{2}$  lines. Black, punctured, and shining; the clypeus, a spot above, and a narrow line emanating from it and extending to the anterior ocellus, a spot in the sinus of the eyes, and a minute one behind them, and also the scape in front, yellow; the mandibles ferruginous, their extreme base black; the flagellum fulvous beneath. Thorax: the anterior margin of the prothorax, the tegulæ, a minute spot behind them and two on the scutellum, a narrow abbreviated line on each side of the insertion of the abdomen, and a spot beneath the wings, yellow; legs ferruginous, the posterior tibiæ above, and the intermediate and posterior tarsi above, slightly fuscous; wings as in the preceding species. Abdomen: the first segment clavate; an interrupted, indistinct, narrow fascia on the apical margin of the second segment; the following segments with a thin cinereous pile.

*Hab.* Makassar.

Closely resembling the preceding species, but with the basal segment longer and much narrower; the abdomen is finely punctured in this species, but strongly so in the preceding.

5. *EUMENES TRICOLOR*. *E. niger*; clypeo basi flavo; pedibus thoraceque ferrugineo-variegatis; alis subhyalinis et iridescentibus.

*Female*. Length 8 lines. Black, strongly and closely punctured; the base of the clypeus, a pear-shaped spot above, and its extreme apex, yellow; a yellow spot in the sinus of the eyes, and a short narrow line behind them; the mandibles ferruginous. Thorax: a broad stripe on the anterior margin of the prothorax, a narrow one on its posterior margin, a spot beneath the wings, the tegulæ, an oblique line in front of them on the mesothorax, two ovate spots on the scutellum, the postscutellum, and the lateral margins of the metathorax, ferruginous; the legs ferruginous, with the intermediate and posterior tarsi fuscous; the wings subhyaline and iridescent. Abdomen: a narrow yellow fascia at the apex of the petiole.

*Hab.* Makassar.

This species, as well as the following, belongs to Saussure's division *Alpha*, in which the petiole is more or less elongate and campanulate.

#### Gen. ODYNERUS, Latr.

1. *ODYNERUS IGNOBILIS*. *O. capite thoraceque rude punctatis, et flavo-variegatis, abdomine delicatule punctato; alis hyalinis apice fusco maculatis; pedibus ferrugineis.*

*Female*. Length  $4\frac{1}{2}$  lines. Black; the margins of the clypeus, a spot above, the sinus of the eyes, a spot behind them, and the mandibles,

reddish-yellow; the clypeus produced, forming a kind of beak, truncate at the apex; the terminal joints of the flagellum fulvous beneath. The prothorax anteriorly, the tegulæ, a spot beneath the wings, the scutellum, and a spot at the sides of the metathorax, reddish-yellow; the wings subhyaline, with a dark fuscous spot in the marginal cell; legs ferruginous. Abdomen: the first segment short, transverse, and bell-shaped, its posterior margin, as well as that of the following segment, yellow, the latter continued beneath, the anterior margin of the yellow border waved, the margins of the two following segments narrowly rufo-piceous.

*Hab. Makassar.*

This species belongs to Saussure's fifth division, in which the metathorax is rounded at the sides, and the clypeus more or less pyriform; the second submarginal cell is much narrowed towards the marginal.

2. *ODYNERUS FACILIS*. *O. niger*, capite thoraceque flavo-variegatis; pedibus flavis; abdomine flavo-fasciato.

*Male*. Length  $4\frac{1}{2}$  lines. Black; the mandibles, clypeus, an elongate spot above nearly extending to the anterior ocellus, the sinus of the eyes, and a narrow line behind them, and also the scape in front, yellow; the flagellum ferruginous, slightly fuscous above. The prothorax anteriorly, two spots beneath the wings, the tegulæ, a narrow line at the base of the scutellum, the postscutellum and sides of the metathorax, yellow; the legs yellow, with a few ferruginous stains; the wings subhyaline, their apical margins clouded with a darker stain in the marginal cell. Abdomen: a yellow fascia at the *basal margin* of the first segment, a similar fascia near the base of the second, and a very narrow one on the *apical margins* of the two following segments.

*Hab. Makassar.*

This species belongs to the subgenus *Ancistrocerus* of Wesmæl; the metathorax is truncate, its sides a little rounded; it is readily distinguished by the fasciæ at the base of the first two segments.

3. *ODYNERUS CIRCUMSPECTUS*. *O. niger*, flavo et aurantio variegatus; alis hyalinis apice nigra unimaculatis.

*Female*. Length 5 lines. Black; the clypeus, a spot above it, the scape in front, a line at the lower margin of the sinus of the eyes, and a line behind them, yellow; the flagellum fulvous beneath; the mandibles ferruginous. The anterior margin of the prothorax with a narrow yellow line, and a large ferruginous spot on each side; a red and yellow spot beneath the wings, the tegulæ yellow; the metathorax red at the sides, with the edge of the truncation yellow; the postscutellum yellow, and the legs red; the wings subhyaline with a dark fuscous spot in the marginal cell. Abdomen: the first segment ferruginous, with the base and a central line black, its apical margin as well as that of the second segment with a yellow fascia.

*Hab. Makassar.*

This species also belongs to the subgenus *Ancistrocerus*.



4. *ODYNERUS PETULANS*. *O. niger*, punctatus; capite thoraceque flavo-guttatis; abdomine fasciis duabus flavis ornato.

*Female*. Length 5 lines. Black; the clypeus yellow with a transverse biarcuate black line a little before the apex, which is produced and bidentate in front; the mandibles, scape beneath, the sinus of the eyes, a spot between the antennæ, and another behind the eyes, yellow; the tips of the mandibles ferruginous. Thorax: the anterior margin of the prothorax, a spot beneath the wings, another on the tegulæ behind, two minute spots on the scutellum, and one on each side of the metathorax, yellow; the anterior and intermediate femora towards their apex outside, the tibiæ, and the posterior pair at their base outside, yellow; the tarsi rufo-fuscous; the wings subhyaline, with their margins narrowly fuscous, a dark fuscous cloud occupying the marginal cell and passing a little beyond. Abdomen: the first segment very much narrower than the second, campanulate and with a short petiole; its apical margin, as well as that of the following segment, with a narrow yellow fascia; a subovate yellow spot on each side of the second segment near its base.

*Hab.* Makassar.

#### Gen. *ISCHNOGASTER*, Guérin.

1. *ISCHNOGASTER PICTUS*. *I. niger*, flavo et ferrugineo variegatus; cellulis prima secundaque submarginalibus æquis, tertia brevior et ad cellulam marginalem angustata.

*Female*. Length 8 lines. Black; the clypeus, mandibles, and antennæ, ferruginous, the hinder margin of the vertex obscurely so; the clypeus produced in front, terminating in an acute spine, and with its lateral margin yellow. Thorax globose; the sides of the prothorax ferruginous above, and the legs also ferruginous; the posterior margin of the prothorax, a spot on the tegulæ in front, the scutellum, post-scutellum, a spot at the insertion of the petiole and the anterior and intermediate tibiæ outside, yellow; wings hyaline with a dark cloud in the marginal cell. Abdomen ferruginous, the segments more or less fuscous in the middle; an elongate spot on each side of the third segment at its basal margin, a smaller one at the extreme lateral margin of the second, and two longitudinal stripes on the same beneath, yellow; the petiole one-third longer than the head and thorax.

*Hab.* Makassar.

2. *ISCHNOGASTER AGILIS*. *I. niger* flavo variegatus; cellulis prima secundaque submarginalibus æquis, tertia quadrata.

*Male*. Length  $10\frac{1}{4}$  lines. Black; the clypeus and two oblique subquadrate spots above nearly touching the eyes, yellow; the clypeus produced into an acute point; the tops of the mandibles and the antennæ beneath ferruginous. Thorax: the posterior margin of the prothorax, a pear-shaped spot beneath the wings, a large lunate one on the sides

of the pectus, the anterior tibiæ outside, a spot on the tegulæ, two ovate ones on the scutellum, the post-scutellum and the sides of the metathorax, yellow; the legs ferruginous, with the coxæ yellow behind; the tarsi and posterior tibiæ dusky above. Abdomen: the petiole beneath and towards the base above ferruginous; the following segments with a fine blue changeable iridescence; a transverse yellow spot at the base of the segment next the petiole, and an elongate one on each side of the following segment at the sides of its base; beneath the first and second segments with a yellow spot on each side; the wings are slightly coloured, beautifully iridescent, and faintly clouded at their apical margins.

*Hab.* Makassar.

Gen. POLYBIA, *Sauss.*

1. POLYBIA ARTIFEX. *P. rufo-ferruginea, flavo multum decorata; alis hyalinis, margine antice obscurato.*

*Female.* Length 6 lines. Rufo-ferruginous; the head behind the eyes, a line on their inner orbits extending from the clypeus to their sinus, the clypeus, scape in front and the mandibles, yellow; a fusco-ferruginous pear-shaped spot on the clypeus, which terminates at its apex in an acute point. The anterior and posterior margin of the prothorax, a spot beneath the wings, the inner margin of the tegulæ, a line behind them, the extreme base of the scutellum, the postscutellum, and two oblong central spots on the metathorax, yellow; the legs variegated with yellow; the wings hyaline, the nervures and stigma ferruginous. Abdomen petiolate and slightly swollen at the apex; a yellow line on each side of the apical portion which unites with a transverse one at the end, and a yellow transverse spot on each side of the second segment, with also two beneath.

*Hab.* Makassar.

2. POLYBIA MATHEMATICA. *P. ferruginea, flavo ornata; abdominis secundo segmento maculis duabus flavis ornato, et ad apicem fascia tenui flava marginato.*

*Female.* Length 5 lines. Ferruginous, with the pectus and second segment of the abdomen more or less fuscous. The sides of the clypeus and the mandibles yellow, the latter produced into an acute point at the apex. Thorax: the anterior margin of the prothorax, the scutellum, post-scutellum, a large oblong-quadrate spot in the middle of the metathorax and a broad stripe at its lateral margins, yellow; the anterior and intermediate coxæ beneath and the posterior pair outside, yellow; wings hyaline, the nervures ferruginous, the stigma yellow, and a dark fuscous cloud in the marginal cell. Abdomen: a large ovate spot on each side of the second segment at its base, and the apical margin with a narrow yellow fascia; beneath, immaculate.

*Hab.* Makassar.

Tribe IV. ANTHOPHILA, *Latr.*Fam. 1. ANDRENIDÆ, *Leach.*Gen. HALICTUS, *Latr.*

1. HALICTUS FRATERNUS. *H. æneus*, metathorace cærulescente; alis hyalinis iridescentibus.

*Female.* Length  $2\frac{1}{2}$  lines. Head and thorax brassy-green, shining and impunctate; antennæ slightly fulvous towards their apex beneath. The metathorax blue-green; at the base is a finely rugose semicircular space which is enclosed by a smooth shining limb; wings hyaline and brilliantly iridescent; the legs obscure rufo-fuscous, with the tarsi pale testaceous. Abdomen black, smooth and shining, and with a few glittering silvery hairs at its apex.

*Hab.* Makassar.

This species very closely resembles the British species *Halictus morio*, but it is not punctured on the head and thorax, the clypeus is much less produced, and the base of the metathorax has no striation in the enclosed space.

Gen. NOMIA, *Latr.*

1. NOMIA CONCINNA. *N. nigra*; capite thoraceque punctatis subopacis; abdomine nitido, segmentis ad marginem apicalem albo fasciatis.

*Female.* Length 5 lines. Black; the face densely clothed with silvery-white pubescence; the head behind and the cheeks more thinly covered; the scape, two basal joints of the flagellum, the anterior margin of the clypeus and the mandibles rufo-fulvous. Thorax: the posterior margin of the prothorax, as well as that of the postscutellum, fringed with short pale fulvous pubescence; the sides of the thorax and the legs covered with a pale fulvous pubescence; the legs pale ferruginous; the wings hyaline, shining and iridescent, the tegulæ pale rufo-testaceous. Abdomen shining and finely punctured, the apical margins of the segments white, the two basal fasciæ yellowish.

The *Male* is rather smaller, and has the scape black, and the flagellum fulvous beneath; the mandibles ferruginous at their apex; the apical portion of the wings clouded, the femora and tibiæ rufo-fuscous; the abdomen ferruginous beneath and obscurely so above, brightest towards the base; the segments with white fasciæ, which are covered with white pubescence.

*Hab.* Makassar.

## Fam. 2. APIDÆ.

Gen. CTENOPLECTRA, *Smith.*

1. Ctenoplectra chalybea, *Smith, Journ. Proc. Linn. Soc.* ii. 45.

*Hab.* Celebes (Makassar). Malacca (Mount Ophir).

Gen. CÆLIOXYS, *Latr.*

1. CÆLIOXYS INTRUDENS. *C. atra*; scutello utrinque dentato, margine postico rotundato; abdomine conico segmentis fascia marginatis flavo-albida.

*Female.* Length  $4\frac{1}{4}$  lines. Black; the head and thorax covered with coarse confluent punctures; the face densely clothed with short yellowish-white pubescence; the posterior margin of the prothorax and the base of the scutellum with a narrow line of short yellowish-white pubescence; a similar line over the tegulæ; the thorax and femora beneath clothed with similar pubescence. Abdomen: the apical margin of all the segments, with a fascia of short white pubescence which is continued beneath; above, the fasciæ are narrowest in the middle, the basal segment has the fascia continued up the sides.

*Hab.* Makassar.

Gen. CERATINA, *Latr.*

1. CERATINA PICTIFRONS. *C. atra*; capite thoraceque flavo-pictis; abdomine fasciisque flavo-testaceis; pedibus rufo-pallidis.

*Female.* Length 5 lines. Head: the inner orbit of the eyes with a broad stripe, the clypeus, scape, labrum, mandibles and the head behind the eyes, yellow; the face punctured and with a broad deep sulcation in front of the ocelli; the base of the flagellum fulvous. The thorax yellow, with the mesothorax above and the base of the metathorax black; the mesothorax with a yellow stripe over the tegulæ, and two narrower ones in the middle of the disk; a fuscous patch on each side of the pectus; wings hyaline, the nervures ferruginous. Abdomen: the basal segment entirely of a reddish yellow, and the apical margins of the four following segments rufo-testaceous; above delicately punctured, beneath more strongly so.

*Hab.* Makassar.

Gen. ANTHOPHORA, *Latr.*

1. ANTHOPHORA VIGILANS. *A. nigra*, pube fulvâ vestita, pedibus ferrugineis.

*Female.* Length  $6\frac{1}{2}$  lines. Black; the clypeus, face on each side, labrum and mandibles, pale rufo-testaceous; the clypeus with two oblong black maculæ not extending to its apex; the tips of the mandibles, rufo-piceous; the flagellum fulvous beneath; the cheeks clothed with white pubescence. Thorax clothed above with fulvous pubescence, which on the sides and beneath is paler; the legs ferruginous and clothed with short fulvous pubescence; wings subhyaline, their apical margins faintly clouded, the nervures fusco-ferruginous, the tegulæ rufo-testaceous. Abdomen thinly clothed with short fulvous pubescence, the pubescence paler and denser on the apical margins of the segments, which are pale rufo-testaceous; the apical

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

*Hab.* Makassar.

Gen. *APIS*, *Linn.*

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

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

*Hab.* Makassar.

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

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

[Read May 3, 1860.]

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

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

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