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## IV. Hymenoptera

Peter Cameron

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THE PERCY SLADEN TRUST EXPEDITION  
TO  
THE INDIAN OCEAN IN 1905,

UNDER THE LEADERSHIP OF  
MR. J. STANLEY GARDINER.

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No. IV.—HYMENOPTERA.

By P. CAMERON.

(Communicated by J. STANLEY GARDINER, M.A., F.L.S.)



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## No. IV.—HYMENOPTERA.

By P. CAMERON.

(Communicated by J. STANLEY GARDINER, M.A., F.L.S.)

Read 21st February, 1907.

IN this paper I have described and enumerated all the Hymenoptera collected by Mr. Gardiner in the Seychelles, except the Ants. Up till now our information regarding the species inhabiting this group we owe to two papers by MM. Emery & Pérez, published in the Annales de la Soc. Ent. de France in 1894, based on the collections made by Mr. Ch. Alluaud. Mr. Gardiner has added considerably to our knowledge of the Hymenoptera of the islands alike in the Aculeate and the Terebrant sections of the Order. Of the known species *Apis unicolor* is a Madagascar form; *Xylocopa caffra* and *Sceliphron hemipterum* are African; while *Megachile disjuncta*, *M. mystacea*, *Polistes hebraeus*, *Sphex umbrosus*, *Sceliphron bengalense*, *Ampulex compressa*, and *Ophion rufus* are common Oriental species but found also in Africa; *Evania appendigaster* is cosmopolitan. The Ichneumon genus *Echthromorpha* is noteworthy for its wide distribution in oceanic islands. *Braunsia* and *Campocentrus* are genera not uncommon in Africa.

As regards the habits of the species found in the Islands it is suggestive that so many of them belong to genera of which many, if not most, of the species prey on Orthoptera. Thus *Evania appendigaster* lives in the egg-cases of the Cockroach. Réaumur long ago stated that *Ampulex* collected Blattæ for its nests as food for the larvæ; a fact confirmed by later observers. *Sphex umbrosus* has been observed to prey on Crickets, which are also used by the Larridæ (*Notogonia* &c.) as food for their young.

Mr. Gardiner, it may be added, collected from October to December in the Seychelles.

## ANTHOPHILA.

1. *Apis unicolor*, Latr.

Ann. Mus. Hist. Nat. v. 168; Lepeletier de St.-Fargeau, Hist. Nat. d. Ins. Hymén. i. 403;

Ashmead, Proc. Ent. Soc. Wash. iv. 122; Pérez, Ann. Soc. Ent. Fr. lxiv. 1895, 205.

*Apis indica*, var. *unicolor*, Bingham, Fauna of Br. India, Hymen. i. 558.

*Localities.* Seychelles, Mahé, Coetivy; Amirantes, Eagle Island, Poivre Island; Chagos, Diego Garcia, Peros Banhos. Recorded from Rodriguez. Commoner in Madagascar.

One example has the basal two segments of the abdomen rufo-testaceous. The drone has the abdomen rufo-testaceous, with the segments more or less black at the base; the scutellum and metanotum are dark testaceous. The hair on the head and thorax is rufo-testaceous.



2. *Koptorthosoma caffrum*, Linn.*Xylocopa caffra*, Smith, Trans. Ent. Soc. 1874, 258.*Koptorthosoma caffra*, Vachal, Miscell. Ent. vii. 27.*Xylocopa caffra*, Pérez, Ann. Soc. Ent. Fr. lxiv. 1895, 205.*Locality.* Seychelles, Mahé (*De Gaye*). Common. An abundant species in Central and South Africa.3. *Halictus mahensis*, sp. nov.

Black; the basal two or three segments of the abdomen broadly on the sides and the legs, except the fore coxæ, deep rufous. Wings almost hyaline, the stigma and costa dark fuscous, the nervures blackish; tegulæ piceous; the metanotal area with a narrow striated band at the base, the middle with twisted striæ which reach near to the apex. Abdomen smooth, impunctate; the base of the segments with a pubescent band, probably also the apex in fresh specimens. Anal rima piceous. Collar with a band of depressed white pubescence which curls round the tubercles; the part under the pin is rufous. Head and thorax alutaceous; the clypeus with distinct scattered punctures at its apex fringed with golden hair. Middle of mandibles broadly rufous. The head is longish, flat; the face distinctly raised in the middle; the eyes converge above distinctly. Postscutellum thickly covered with pale pubescence.

The male has the apex of clypeus broadly white; the middle joints of the antennæ are nodose; the legs are paler in colour, and the four anterior femora may be broadly black.

The metanotum is bordered laterally by a distinct keel on the apical slope; its middle is furrowed, keeled below. The first recurrent nervure is interstitial; the second and third abscissæ are almost equal in length. The amount of red on the basal segments of the abdomen varies, so does also the amount of black on the legs; in one male the femora and tibiæ are black. In all the specimens the wings are very iridescent, some have them darker coloured than others.

*Locality.* Seychelles, Mahé. Common.4. *Megachile disjuncta*, Fabr.*Apis disjuncta*, Fabr. Syst. Ent. ii. 328.*Megachile disjuncta*, Bingham, Fauna of Brit. India, Hymen. i. 480; Pérez, Ann. Soc. Ent. Fr. lxiv. 1895, 206.*Locality.* Three specimens from Seychelles, Mahé. Common in India. Recorded also from Mauritius.5. *Megachile mystacea*, Fabr.*Apis mystacea*, Fabr. Syst. Ent. 385.*Megachile rufiventris*, Guér. Voy. Bélanger, Zool. 502; Pérez, Ann. Soc. Ent. Fr. lxiv. 1895, 206.*Megachile mystacea*, Bingham, *l. c.* 479.*Localities.* Seychelles, Mahé, Praslin. Common. Port Louis, Mauritius. It is known also from East and South Africa and from Rodriguez.



6. *Megachile seychellensis*, sp. nov.

Black; the pubescence, including the scopa, white; the wings hyaline, iridescent, slightly tinged with violaceous, the nervures black. Front, vertex, thorax, and abdomen closely, distinctly, somewhat strongly punctured; the puncturation on the face and clypeus is stronger, but not so close; there is a smooth space in the middle of the face and in the middle of the upper half of the clypeus. The outer side of the mandibles closely rugosely punctured; the inner part with scattered elongated punctures on the basal half, the two divisions being separated by two keels of which the outer is the more distinct; the apex ends in two broad, distinct teeth, the apical being slightly the larger; the basal inner edge is broadly roundly curved. The base of metatarsus is not much more than half the width of the apex of the tibiæ. Head wider than the thorax. Apex of clypeus smooth, shining; its centre slightly arched inwardly, not transverse or rounded outwardly; it is about one-fourth wider than long. Tegulæ black on the inner, lead-coloured on the outer side. The hair on the head and pleuræ is long and dense. The outer edge of the apex of the hind tibiæ is roundly incised. Metanotal area clearly defined, aciculated, depressed in the middle.

The male has the incision in the centre of apical segment large, wider at the apex than it is long in the middle; the middle at the base sharp; not broadly rounded; the lateral apical angles triangular. Flagellum of antennæ piceous below. Fore coxæ with a short triangular tooth on the inner side. The male appears to have the apical half of the wings much more deeply violaceous than the female; the wings in the latter vary, some having the violet tint more distinct than others.

The hair on the underside of the hinder metatarsus may be tinged with rufous, as may also the scopa.

Length 9-10; breadth 3-4 mm.

*Localities.* Seychelles, Praslin, Mahé. Farquhar Atoll.

**Vespidæ.**7. *Polistes hebræus*, Fabr.

Saussure, Mon. Guép. Soc. 53; Bingham, Fauna of Br. India, Hym. i. 398; Pérez, Ann. Soc. Ent. Fr. lxiv. 1895, 206 (May to December).

*Localities.* A wide-ranging species. Seychelles, Mahé, Praslin. Amirantes, Desroches Island, Poivre Island, Darros Island. Chagos, Salomon Islands (Île Anglaise), Diego Garcia (July). Mauritius, Black River (August). Known from Rodriguez.

Most of the specimens are lighter-coloured than usual, the waved abdominal lines are distinct and the base of the hind tibiæ and of the hind tarsi may be broadly black. Mr. Gardiner found its nest (of the usual form) under the leaf of a coco-plant.

8. *Eumenes alluaudi*, Pérez.

Ann. Soc. Ent. Fr. lxiv. 1895, 206.

*Localities.* Seychelles, Praslin, Mahé. Common.

9. *Odynerus cylindricus*, Pérez.

Ann. Soc. Ent. Fr. lxiv. 1895, 207.

*Localities.* Seychelles, Praslin, Mahé. Amirantes, Poivre, Darros.

The male not having been described I give a description of it:—Black, the clypeus, labrum, mandible (except at the apex), a transverse oval mark over the antennæ, the eye-incision (except narrowly on the inner side above), a broad line on the upper half of the outer orbits in the middle, the basal two joints of the antennæ, a large, broad mark on the pronotum (rounded at the apex, where, on the outer side, it reaches close to the tegulæ; on the inner side it is continued as a narrow line to the apex, leaving an elongated transverse triangular mark on the inner apical half, its base being at the tegulæ), an oblique conical mark on the pleuræ below the tegulæ, postscutellum, the sides of metanotum broadly and the first abdominal segment, except the basal slope, a broad line down the centre of the basal two-thirds, and the legs, orange-red; the tegulæ of a paler orange, with a fuscous spot near the base. Underside of flagellum brownish red, this colour being more extended on the apical joints; the hook is of a paler orange, it is moderately stout and reaches to the base of the penultimate segment. Clypeus clearly longer than wide, the middle above transverse, with the sides rounded; there is a distinct apical incision, longer than wide, rounded above and of equal width. There is a stout keel between the antennæ, which, on the inner side, are bordered by a curved one. Wings fuscous violaceous, darker in front, paler at the base. The basal slope of the first abdominal segment is shining, almost impunctate; the puncturation is sparser on the top of the slope, at the junction with the stoutly punctured posterior part; the second segment becomes more strongly punctured towards the apex, which is distinctly curled up, it is longer than wide and is not narrowed towards the base or apex. The sides of the metanotum are bordered by a keel, commencing on the inner side near the outer edge of the postscutellum; below the middle are two short, stout teeth; the space between them is curved. The apex of the postscutellum is smooth, shining, and transverse.

10. *Odynerus cænocephalus*, sp. nov.

Black, the upper half of the clypeus, the yellow at the sides extending lower down than in the centre, a mark, broader than long, with the sides rounded and broadly furrowed in the middle, a line on the base of the pronotum, narrowed in the middle, two oblique lines (sometimes absent) on the base of mesonotum in the middle, basal half of postscutellum, an irregular mark on the pleuræ below the tegulæ, a broad line, incised in the middle, on the apex of the first abdominal segment, at the sides dilated to the top of the apical slope, and slightly narrower bands on the apices of the following three segments, yellow. Legs black, except for a yellow line on the underside of the four anterior femora. Wings fuscous violaceous, the nervures and stigma black. ♀.

Length 10–13 mm.

*Localities.* Chagos, Salomon Islands (I. Boddam and Sel), Egmont Islands, Peros Banhos. Common.

Head and thorax strongly, closely punctured, the mesopleuræ more or less reticulated, the propleuræ with stout striæ below the middle; the lower two-thirds of the metanotum closely striated, the striæ roundly curved, the upper part sparsely punctured. Clypeus pyriform, broadly rounded above, the apex projecting, with a shallow incision, the sides slightly projecting. Inside the outer ocelli is a large, rounded, curved keel or projection, completely covering them on the inner and, to a less extent, on the outer side; in front, immediately behind the anterior ocellus, are two stout teeth, the part between is smooth and depressed. On the hinder part of the vertex in the middle is a depression, bordered behind by an irregular keel. Sides of metanotum rounded, without teeth or angles. First abdominal segment cup-shaped; the second slightly longer than wide and with the apical margin reflexed.

The male has the clypeus, labrum, and mandibles yellow; there is an irregular mark or marks on the sides of the metanotum; the lines on the apices of the abdominal segments are wider, there is a broad one on the fifth and two large roundish spots on the second ventral; the legs are for the greater part yellow. Underside of antennal scape yellow; the apical joints are brownish: the hook testaceous, paler towards the apex; it is stout and does not quite reach to the base of the penultimate joint.

The size and shape of the frontal keels and teeth appear to vary. There may be a small spot behind the eyes.

#### 11. *Odynerus chagosensis*, sp. nov.

Black, the clypeus, except at the apex, a small triangular spot at base of mandibles, a spot, as wide as long, rounded below and slightly incised in the middle above, over the antennæ, a small spot near the eyes behind, a line on the apex of the pronotum, a small irregular spot on the sides of scutellum, postscutellum, two oblique lines on the base of mesonotum in the centre, an irregular, slightly oblique mark, straight, oblique above, rounded below, on the pleuræ under the tegulæ, a broad line on the sides of the metanotum on the upper two-thirds, a broad band on the apex of the 1st abdominal segment, laterally broadly dilated backwards and more narrowly and obliquely towards the centre of the segment, broad bands on the 2nd, 3rd, and 4th segments and a narrow one in the middle of the 5th, yellow. Legs black, a broad yellow line on the apices of the four anterior femora below. Wings fuscous violaceous, paler at the base. ♀.

Length 13 mm.

*Localities.* Chagos, Salomon Islands, ♀; Peros Banhos, ♂.

Clypeus broadly pyriform, not much longer than wide, broadly rounded above, the apex only very slightly incised, depressed. Head, pro- and mesothorax closely, strongly punctured. On the inner side of the hinder ocelli is a longish rounded keel; the space between smooth; behind the anterior are two stout, blunt teeth; the parts at the sides and in front of the ocelli smooth and shining; the centre of the vertex at the end has a small depression in which are two stout keels united behind and curved. Base of thorax

transverse, the sides not projecting. Apex of postscutellum smooth, transverse. Sides of metanotum broadly rounded; at the outer side above is a pale, oblique, curved keel. Base of metapleuræ aciculated, finely weakly striated; the rest irregularly reticulated at the base below, finely obliquely striated. First abdominal segment cup-shaped; the top of the basal slope roughened; the second segment is slightly wider than long. The antennal scape is yellow below.

The male has the puncturation stronger; the mandibles are for the greater part yellow; the frontal mark is long, dilated at the top, rounded and slightly incised in the middle; there are two minute spots on the scutellum and two large ones on the ventral surface of the second abdominal segment. Clypeus longer than wide, strongly punctured, the apex transverse almost, the curve being very slight; above it is a depression. Legs yellow, the coxæ behind, the four anterior femora above and the posterior entirely, black. In both sexes the tegulæ are yellow, with a large black mark in the middle. The male wants the depression found on the vertex of the female.

12. *Odynerus farquharensis*, sp. nov.

Black, the upper half of the clypeus on the sides broadly, a mark shortly above the apex, its top with a rounded, the bottom with a triangular incision, a line on the lower part of the eye-incision, dilated above, a line, gradually narrowed to a fine point, on the base of the mandibles, a mark, as long as wide, rounded above, transverse below, over the antennæ, a broad line behind the eyes, a line on the base of thorax, tegulæ except for a large black spot, a mark on the sides of scutellum, postscutellum, the sides of metanotum broadly, an oval mark below the tegulæ, a line on the apex of the first abdominal segment above and on the second all round, yellow. Legs red, the fore coxæ and the four posterior above black, the latter red, marked with yellow below. Wings hyaline, tinged with fuscous, the apex fuscous violaceous. ♀.

Length 12 mm.

*Locality.* Farquhar Atoll.

Head and thorax strongly, closely punctured. Clypeus pyriform, not much longer than wide, rounded above, the apex depressed, almost transverse. Postscutellum and metanotum in one steep slope; the sides keeled, broadly bidentate below the middle. First abdominal segment cup-shaped, the second square, not raised at the apex.

The male has the antennæ stouter, especially towards the apex; the scape is yellow, the flagellum brownish below; the hook short, thick, not reaching to the base of the last joint. Clypeus longer than wide, rounded above, the apex roundly incised. The yellow colour on the femora is more extended; the apex of the tibiæ yellow on the outer side and the coxæ are yellow below. The pubescence in both sexes is white and dense; and the eye-incision is densely covered with silvery-white pubescence.

## Sphegidæ.

13. *Sphex umbrosus*, Christ.

Bingham, Fauna of Brit. India, Hymen. i. 250; Kohl, Denkschrift d. kaiser. Akad. d. Wissensch., Math.-naturwiss. Classe, lxxi. 199; Ann. d. k.-k. Hofmus. v. 408.

*Sphex erebus*, Kirby, Bull. Liverp. Mus. iii. no. 10, p. 15.

*Localities.* Seychelles, Mahé.

The hair on the thorax in all the specimens is white, as in Kohl's var. 1 = *umbrosus*, Christ, = *argentifrons*, Lep.; in most of them the hair on the head is black, as in the North African var. *taschenbergi*, Magretti. The wings are more or less clouded, especially at the apex, in all the specimens. The pubescence and hair long and dense. The wing-nervures, except the first and second transverse cubitals, are black.

I presume that *Sphex rufinervis*, Pérez (Ann. Soc. Ent. Fr. 1895, p. 209), from the Seychelles (Praslin), is only a form of the very variable *S. umbrosus*, which is a common species in the Ethiopian, Oriental, and Australian Zoological Regions, as well as in the Southern Palæarctic. The species is found in the Mauritius.

14. *Sceliphron hemipterum* (Fabr.).

*Pelopæus hemipterus*, Fabr. Syst. Piez. 204. 7; St.-Fargeau, Hist. Natur. des Ins. Hymén. iii. 311.

*Sceliphron hemipterum*, Pérez, Ann. Soc. Ent. Fr. lxiv. 1895, 210.

*Localities.* Described from the Mauritius, Seychelles, Mahé, Praslin. Not uncommon.

As the species has only been briefly described I give some structural details:—The pro- and mesothorax are closely punctured, the upper part more closely than the sides; the scutellums are closely, distinctly, longitudinally striated. The middle area of metanotum clearly defined, furrowed down the middle, the furrow widest at the apex, with an irregular keel down the middle; it is closely, uniformly, somewhat strongly obliquely striated; the upper half of the apical slope is longitudinally striated in the middle, the sides more strongly obliquely striated, almost reticulated; the apex stoutly transversely striated, the striæ closer above than below, broadly depressed in the middle. The metapleuræ closely, somewhat strongly obliquely striated; the propleuræ much more finely, regularly, obliquely striated; the mesopleuræ distinctly, but not closely punctured. Front irregularly longitudinally striated, more or less punctured above. Head and thorax densely covered with longish black hair, which is longer on the head and metanotum than on the mesothorax; the abdominal petiole is sparsely haired; the rest of the abdomen pruinose, the last segment punctured, sparsely covered with long black hair. Antennæ short; the scape rufous below; the third joint is clearly longer than the fourth, which is slightly longer than the scape and pedicel united. Clypeus slightly wider than long, the apex broadly rounded, margined below, slightly, broadly incurved in the middle. Wings yellowish hyaline, the nervures, stigma, and costa reddish fulvous; the tegulæ piceous to black.

The eyes distinctly converge above; the hind ocelli are separated from each other by



a less distance than they are from the anterior; they are separated from each other by a less distance than they are from the eyes. The clypeus and more or less of the pro- and mesothorax are rufous; the calcaria rufous, as may be also the joints of the legs. The mandibles are rufous. In the female the narrowed basal part of the abdomen is slightly shorter than the dilated part; in the male it is distinctly longer than it. The largest specimens are 25 mm. long; the smallest male is 17 mm. The males have the wings clearer than they are in the females, the yellow tint not being so deep.

Pérez (*l. c. supra*) states that this species is found in "Southern Africa, in the Islands of the Indian Ocean and in India." I have never seen the species in any of the collections I have examined from India or Malaya, nor does Bingham describe it in his work on the Hymenoptera of British India. I believe the species is confined to Middle East Africa and the East African Islands.

15. *Sceliphron bengalense*, Dahlbom.

*Chalybion bengalensis*, Dahlbom, Hym. Eur. i. 433.

*Sceliphron violaceum*, Bingham, Fauna of Brit. India, Hymen. i. 240.

*Sceliphron bengalense*, Kohl, Denkschrift d. kaiser. Akad. d. Wissen., Math.-naturwiss. Classe, lxxi. 194 & 197.

*Localities.* Seychelles, Mahé, Chagos, Salomon Islands, Peros Banhos, occurring also in Mauritius. A common species in all parts of the Oriental Zoological Region, extending into Syria and the Ural District. I have used the name as given by Kohl in his excellent revision of the genus in the work cited above.

16. *Ampulex compressa*, Fabr.

Kohl, Ann. k.-k. Hofmus. viii. 491; Pérez, Ann. Soc. Ent. Fr. 1895, 210.

*Localities.* Chagos, Peros Banhos, Salomon Islands, in May. Several specimens. The species is found from Eastern Europe to China; also in Africa. It stores its nest with coachroaches.

17. *Trypoxylon gardineri*, sp. nov.

Black, the base and apex of the second and third abdominal segments broadly, irregularly red; the greater part of the anterior tibiae, a clear band on the base of the four posterior (the band on the last broader than that on the middle pair), and the four anterior tarsi, white; abdominal petiole longer than the head and thorax united and clearly longer than the rest of the abdomen. Wings hyaline, slightly infuscated at the apex, the nervures black. ♀.

Length 10 mm.

*Localities.* Seychelles, Coetivy.

Face and clypeus densely covered with silvery hair. Front punctured, but neither closely nor very strongly, furrowed down the centre, the sides roundly raised, separated from the eye-incision; below the furrow is a short keel, which is depressed at the base and apex. Apex of clypeus broadly rounded, separated, a small indistinct incision in the middle. Mandibles reddish, tinged with yellow at the base, blackish at the apex.



Palpi pale yellow. The apex of the scape and the pedicle are testaceous; the third joint is nearly as long as the following two united. Ocelli in a triangle; the hinder close to the eyes. Pro- and mesothorax smooth; the metanotal area clearly defined, the lateral furrows distinct, curved, irregularly crenulated; the central furrow is wider, becomes widened towards the apex, and is closely, stoutly, transversely striated; the furrow on the apical slope is narrower, deep, with obliquely sloped sides; the basal transverse furrow is crenulated. The pubescence on the head and thorax is dense and silvery.

The wings are short and do not reach to the apex of the second abdominal segment; the basal abscissa of the radius is straight, oblique, the apical slightly roundly curved towards the costa, reaching to the apex of the wing. The second and third segments of the abdomen are almost equal in length; the last is compressed, laterally forming a triangle, ending in a sharp point, acute above but not keeled. The abdomen is distinctly more than twice longer than the thorax. The undersides of the trochanters are pale. The thorax is as long as it is wide at the apex; the face is furrowed narrowly on the sides.

It is worthy of remark that Saussure (Reise d. Novara, Hymen. p. 84) describes a species closely related to that here described and with a long abdominal petiole (but only of the length of the thorax), the locality of which is given as "Mauritius? vel Brasilia?"

The petiole in the present species is longer than usual; its apex, seen from the sides, forms a longish triangle; it is not much dilated laterally.

18. *Notogonia seychellensis*, sp. nov.

Black, the hind femora red, the apex of the hind tibiæ narrowly and the basal four joints of the hind tarsi of a paler red; wings hyaline tinged with yellow at the base, the rest pale fuscous violaceous, the nervures and stigma black. ♀ & ♂.

Length 12 mm.

*Localities.* Seychelles, Mahé (*H. P. Thomasset*).

Covered with silvery pile and more sparsely with short white hair. Eyes large, distinctly converging above, at the top separated by two-thirds of the length of the third antennal joint. Occiput transverse; the temples almost obsolete. Pro- and mesothorax shining, smooth. Metanotum opaque, bare; the base with a stout keel down the centre of the basal three-fourths; the apical half is finely, obscurely, obliquely striated. The apical slope is irregularly, sparsely obliquely striated; the rest more closely, finely, transversely striated. Metapleuræ opaque, alutaceous. Apex of abdominal segments with a band of white pile. Pygidium rough, as if longitudinally striated, sparsely covered with black hair; in fresh specimens probably covered with white or silvery pile; it becomes gradually narrowed towards the apex, which is bluntly rounded; it is clearly longer than it is wide at the base. Legs stout; on the outer side of the tibiæ, on the apical half, are at least three stout spines (probably more in fresh examples); on the apex are three long, stout spines; the tarsi are stout; the apices of all the joints and the apical half of the metatarsus bear stout, longish spines; the third joint becomes slightly gradually widened towards the apex, which is transverse; the fourth becomes gradually distinctly widened towards the apex, which has a wide

triangular incision; the apex is fully four times as wide as the base; claws large, stout, as long as the last joint. The third joint of the antennæ is slightly, but distinctly, longer than the fourth. Both the recurrent nervures are received before the middle of the cellule, close to each other; the second abscissa of radius distinctly shorter than the third—about half its length; the apical is almost straight, with only a very slight, oblique slope. The sides of the metanotum, from the spiracles, are keeled, the keel going round the apex. The abdomen is shorter than the thorax, narrowed at the base and apex.

It is not unlike the widespread Oriental *N. subtessellata*, Sm.; but may be at once known by the stouter, reddish tarsi, with long and stouter spines, by the shorter abdomen and differently coloured wings.

19. *Notogonia rufo-femorata*, sp. nov.

Black; the anterior femora slightly in front, the four posterior, the apex of the tibiæ, and the basal joints of the four hind tarsi, red; wings fuscous violaceous, iridescent, the nervures black. ♂.

Length 10 mm.

*Localities.* Seychelles, Mahé (*H. P. Thomasset*).

Lower part of front, face, and clypeus densely covered with silvery pubescence. Clypeus keeled in the middle; on the apex, on either side of the central third, is a minute tubercle. Eyes distinctly converging above, separated there by slightly more than the length of the third antennal joint. The third antennal joint is distinctly shorter than the fourth. Metanotum alutaceous, keeled down the middle from the base to the apex, the apical slope has a distinct furrow and is irregularly striated at the apex. Pygidium closely punctured, covered with a silvery pile, its apex broadly rounded. Tibiæ and tarsi stoutly spinose; the base of the fourth joint of the hind tarsi one-third of the length of the apex, which is roundly, somewhat deeply incised; the pile on the underside is pale golden; the claws dark piceous, not quite so long as the joint. Both the recurrent nervures are received distinctly before the middle; they are separated by slightly more than the length of the second abscissa of the radius, which is about one-third of the length of the third; the apical abscissa is straight, with a distinct, oblique slope. In fresh specimens the silvery pubescence would be probably dense.

20. *Notogonia mahensis*, sp. nov.

Black, the wings light fuscous, the nervures black; the metanotum finely, distinctly transversely reticulated, *i. e.* the transverse striæ are stronger than the longitudinal; the apical slope is distinctly reticulated above, the rest somewhat strongly transversely striated; the metapleuræ stronger, closely, regularly striated; above the middle of the mesopleuræ is a distinct, slightly curved furrow. ♂.

Length 9 mm.

*Localities.* Seychelles, Mahé (*H. P. Thomasset*).

The head is unfortunately missing, but the length of the metanotum and the pubescent pygidium show that the species is a *Notogonia*; and the claws, too, are long as in

that genus. The second and third abscissæ of the radius are of almost equal length, the apical almost straight; both the recurrent nervures are received before the middle and are separated by slightly less than the length of the second abscissa of the radius. Tibial and tarsal spines stout, black; the fourth joint of the hind tarsi is nearly as long as the third, it becomes gradually thicker from the base to the apex, which is roundly incised. Pygidium closely punctured, covered with a grey pile; bluntly rounded at the apex, half the width there of the base. The mesopleural furrow is deeper and more distinctly defined than usual.

### Ichneumonidæ.

#### 21. *Ophion rufus*, Brullé.

Hist. Nat. Ins. Hym. iv. 149.

*Localities.* A single female from Mahé (Cascade) and another from Trou aux Cerfs, Mauritius, August, may be this species.

They have, however, only one horny point in the fore wings, while, according to Brullé, *rufus* has two, or, as he says, "avec une lunule et un point, ou simplement avec deux points roux." I have seen African specimens with one or two horny points; the amount of yellow on the head varies. Smith records *rufus* from Rodriguez.

#### 22. *Echthromorpha rufo-maculata*, sp. nov.

Head and thorax yellow; a spot covering the ocelli, a large mark in the middle of front, united to the ocellar spot by a short line, the centre of occiput, a broad line, narrowed at the apex, down the middle of mesonotum, extending from the base to the apex, a similar line on the sides on the apical three-fourths, a broad line down the middle of metanotum, one on the upper apical half of mesopleuræ, a spot on the sides of mesosternum at the apex, and one on the base of metapleuræ below, black; the apex of propleuræ, base and apex of mesopleuræ, the latter broadly below, the sides of mesosternum broadly and the base of median segment broadly, rufous; the abdomen of a darker reddish colour; a spot, longer than wide, obliquely narrowed at the base, on the sides at the apex of the first segment, narrow, complete, yellow lines on the apices of the second and third segments, a similar line on the sides of the fourth, a line on the outer third of the fourth; the base of the third and following segments blackish. Legs rufous, the four anterior coxæ, trochanters, and underside of femora, the top and bottom of hind coxæ and the underside of the hind femora (broadly at the apex), yellow. Wings hyaline, a dark violaceous cloud at the apex, halfway in front of and half behind the radius; the stigma fuscous, the nervures and costa black. Antennæ dark brownish red, the scape yellow below. ♀.

Length 13 mm.; terebra 4 mm.

*Localities.* Seychelles, Coetivy.

Head smooth, the sides of the face sparsely punctured. Mesonotum closely, strongly punctured; metanotum still more strongly and closely punctured, except the black line in the middle which is smooth; the scutellums smooth. Propleuræ smooth, irregularly striated in the middle; the mesopleuræ sparsely punctured above, more

closely and strongly at the base and below; the metapleuræ much more strongly and closely punctured. The first abdominal segment is smooth and shining; the others closely and strongly punctured. Median segment thickly covered with white pubescence. Mandibles yellow at the base, narrowly red in the middle, black at the apex. Tarsi below thickly, stoutly spinose; the spines dark red.

What is no doubt the male has the body for the greater part yellowish, there is a long fuscous line in the centre of the mesonotum and a shorter one on the sides; there is a broad reddish line down the middle of the metanotum, the basal three segments of the abdomen are yellowish, slightly suffused with rufous, the apical darker rufous, more or less yellow on the sides and apex; the antennæ are dark brownish red, darker at the apices of the joints, where they are slightly dilated. The legs are much more largely suffused with yellow, which predominates over the red. The black lines on the thorax in the female are in the male reddish. I should think that the males vary considerably in the amount of red and yellow which they bear.

23. *Echthromorpha rufa*, sp. nov.

Red, the face and clypeus paler, more yellowish; the flagellum of antennæ from near the base infuscated; wings hyaline, the nervures and stigma black, the apical cloud faint. ♀ & ♂.

Length 13 mm.; terebra 4 mm.

*Localities.* Seychelles, Mahé.

Head smooth, the face and clypeus densely covered with white pubescence; the front depressed, furrowed down the centre. Mesonotum strongly, closely punctured. Scutellum roundly convex, keeled at the base. Metanotum closely, distinctly transversely striated, depressed laterally at the base; the metapleuræ coarsely rugosely punctured, finely closely striated at the apex. Propleuræ for the most part closely striated. Mesopleuræ smooth, sparsely punctured on the upper, closely, somewhat strongly punctured on the lower half. Metapleuræ coarsely rugosely punctured, smooth at the base. First abdominal segment furrowed in the middle of basal half, the furrow smooth, the sides closely finely transversely striated; the apex smooth in the middle, the sides closely punctured; it is nearly twice longer than it is wide at the apex. The second and following segments are closely, somewhat strongly punctured; the second segment is longer than wide, the others wider than long.

The metanotum has a gradually rounded slope, the base closely rugose, the apex finely closely striated and depressed on either side of the middle. The male is similarly coloured; the flagellum of antennæ is black, with the joints nodose; the hind tarsi are darker-coloured than they are in the female, being almost black.

The coloration of this species is very different from what it is in the Oriental and African species of *Echthromorpha*; it has also the scutellum more convex; the first abdominal segment is longer and narrower; and the wings have the apical cloud much fainter than in the typical species. It possesses, however, the main generic characteristics of the genus.

Brullé (Hymén. iv. 89) describes, under *Pimpla*, two species (*macula* and *vittata*) from Bourbon, which clearly are to be referred to *Echthromorpha*. Both are closely related to the present species.

The distribution of *Echthromorpha* is peculiar; species are found in the Indo-Malay Subregion of the Oriental, in Indo- and Austro-Malaya, in South Africa, Australia, and the genus is widely spread in Oceanic Islands—in Tahiti, the Sandwich Islands, Saint Helena, and Ascension. For a genus containing less than 20 species (so far as known) the distribution is certainly very extensive.

24. *Echthromorpha latibalteata*, sp. nov.

Yellow, with the following parts black: the centre of the front broadly, the ocellar region (the black on it united to the black on the front), the occiput (except at the sides), three lines on the mesonotum (the longer central narrower than the lateral), a broad line down the middle of the metanotum, propleuræ except at the base (the mark continued under the tubercles and united to a line down the apex of mesopleuræ, the latter obliquely dilated below forwards and obliquely backwards on to the mesosternum), a line on the metapleuræ above the spiracles, enclosing them narrowly down the sides, a large mark, rounded at the base, dilated at the apex, on the middle of the first abdominal segment, the basal two-thirds of the five following and the base of the last broadly. Legs yellow, tinged with rufous, the red on the posterior more largely developed than on the others; the hind coxæ on the inner side to near the apex, a spot on the outer half in the centre, narrowed behind, a broad line on the inner side of the femora and a shorter, more irregular one on the outer, black. Antennæ black, brownish at the base of the flagellum below; the scape yellow, black above. Wings hyaline, suffused with fulvous at the base, the stigma fuscous; the cloud occupies the apex of the radial cellule entirely and extends into the cubital, in which it is narrowed at the apex. Smooth; the mesonotum sparsely punctured in the middle. Metapleuræ sparsely punctured at the base. The third and fourth segments of the abdomen are punctured distinctly in the middle; the last segment has the apical half brownish rufous. Antennal joints distinctly nodose beyond the middle. ♂.

Length 13–14 mm.

*Localities.* Chagos, Peros Banhos, in June.

The basal segment of the abdomen is slightly, roundly narrowed to the spiracles; the oblique furrows on the sides of the segments are distinct.

**Braconidæ. BRACONINÆ.**

[25. *Iphiaulax fletcheri*, sp. nov.

Black, the head, pro- and mesothorax, and the front legs red; the palpi black, densely covered with white hair; wings dark fuscous, the stigma to the radial nervure pale ochraceous, the rest of it and the nervures black. ♀.

Length 10 mm.; terebra 5 mm.

*Localities.* Mirza Sheikh el Barut (now Port Sudan), Red Sea (January).



Abdomen as long as the head and thorax united; its first segment twice longer than it is wide at the apex; the central part closely finely striated, the striæ intermixing; before the apex depressed, with a stout keel on the sides and a stouter one down the middle, the following three segments closely strongly striated; the area on second segment closely striated, followed by a large, wider than long, depression, separated in the middle by a sharp keel; a roundly curved keel on either side, leading from the base to the suturiform articulation, which is wider than usual, especially in the middle, and with widely separated stout striæ; the oblique lateral depression is wide and shallow; the apices of the second, third, and fourth segments are narrowly smooth, raised; there is a narrow obscure furrow on the apex of the fifth. The second cubital cellule is twice longer than wide; there is a small, distinct, triangular cloud at the apex of the recurrent nervure below the cubitus. Temples wide, as long as the eyes, broadly rounded, slightly narrowed behind. Face coarsely, transversely, rugosely punctured, sparsely covered with long black hair. Mandibles yellowish at the base.]

#### AGATHIDINÆ.

##### 26. *Megagathis testacea*, sp. nov.

Testaceous, darker towards the apex of the abdomen; the antennæ, apex of hind tibiæ, and the hinder tarsi black; wings hyaline, the costa and stigma black, the nervures yellowish testaceous. ♀.

Length 7 mm.; terebra 1 mm.

*Localities.* Seychelles, Coetivy.

Face closely and strongly punctured, especially above; the clypeus more weakly punctured, its apex smooth, as is also the broadly rounded large labrum. Front and vertex smooth, the former bordered by a curved keel. Ocelli large, reddish as in *Ophion* and other nocturnal forms; the anterior smaller than the two posterior. Eyes large, the malar space as long as the thickness of the antennal scape. Temples very short, narrowed. Mesonotum trilobate, closely strongly punctured; the middle lobe with a narrow furrow down the middle. Scutellar depression with three stout keels. Scutellum raised, strongly punctured; the postscutellum bordered by roundly curved keels meeting at the apex, where they are raised. Metanotum with a central area, widened in the middle, gradually narrowed to a sharp point at the base and apex; in the centre are two widely separated stout keels; the base laterally is irregularly areolated, on the apex, side by side, are two large squarish areæ; there is a keel outside the linear spiracles; the metapleuræ closely rugosely punctured. Propleuræ smooth; the mesopleuræ closely, but not strongly punctured; the metapleuræ irregularly rugosely striated, punctured. Abdomen smooth, shining, bare; its first segment three times longer than it is wide at the apex; the latter twice the width of the base, which has a triangular depression. Ovipositor curved. Radial cellule long, narrow, reaching to the apex, the areolet 4-angled, narrowed in front but with the nervures widely separated; the transverse median nervure placed shortly behind the transverse basal. The long spur of the hind tibiæ two-thirds of the length of the metatarsus.



This is a smaller species than the type of the genus, *M. natalensis*, Kriech., from Natal; that species has the terebra 7 mm. long.

27. *Braunsia melanoptera*, sp. nov.

Ferruginous, the apical segments of the abdomen more or less, the hind tibiæ (except at the base) and the hind tarsi, black, as are also the antennæ and the sheaths of the ovipositor; wings dark fuscous, a hyaline cloud between the radius and transverse basal nervure, extending right across the wing, the stigma and nervures black. ♀.

Length 8–10 mm., ovipositor as long as the body.

*Localities.* Seychelles, Coetivy.

Antennæ longer than the body, densely covered with stiff black pubescence. Malar space yellowish, two-thirds of the length of the eyes. Mesonotum distinctly trilobate the middle lobe stoutly keeled down the apical half, the keel prolonged into the apical depression. Apex of scutellum with a narrow keel, broadly rounded laterally and with a slight incision in the middle; the basal lateral keels roundly curved. In the centre of metanotum, on the apical slope, are two stout parallel keels, forming an area twice longer than wide; the sides are closely, irregularly, somewhat obliquely striated. There is a curved keel near the bottom of the propleuræ; a depression, straight above, rounded below, under the middle of the mesopleuræ. First abdominal segment about two and a half times longer than it is wide at the apex, which is twice wider than the base; the latter is smooth, bare, and shining to beyond the middle; the base and apex depressed, the centre roundly raised; the sides stoutly keeled; the apex is striated, the striæ stout, more or less twisted; the middle segments closely, regularly, longitudinally striated, the apical three smooth; the suturiform articulation wide, curved, crenulated. Hind tibiæ and tarsi densely haired. Areolet almost triangular, the nervures almost touching, the apical rounded.

Most of the known species of *Braunsia* are African, but many are found in Malaya, and one is European.

#### RHOGADINÆ.

28. *Camptocentrus annulipes*, sp. nov.

Black, the base of the tibiæ broadly clear white; the base of metatarsus paler than the rest. Wings hyaline, the stigma and nervures black; highly iridescent, a narrow irregular cloud along the transverse basal nervure, a broader one on either side of the base of radius, broader on the outer than on the inner side; sparsely covered with white hairs. Closely punctured, the apical half of the second abdominal segment and the whole of the others smooth, shining, and with a plumbeous hue. Base of mandibles and oral region dull rufous. ♀.

Length 4 mm.; terebra 1.5 mm.

*Localities.* Seychelles, Mahé.

Head alutaceous, opaque; the face densely covered with short pubescence; the malar space tinged with fuscous; palpi long, black. Thorax more coarsely alutaceous than

the head, almost minutely punctured; there is a deep, clearly defined, crenulated furrow below the middle of the propleuræ. Parapsidal furrow narrow, obscurely crenulated; the apex of the metanotum is more roughly punctured than the rest, almost finely reticulated; in its centre are two stout, parallel keels. The basal segment of the abdomen is one-half longer than it is wide at the apex; it is closely, finely, longitudinally punctured; bordering the middle of the base are two keels, the basal half of the second is more finely punctured; the second segment is as long as the following two segments united; the apex of the punctured basal part is rounded. The wing-nervures are stout, deep black; the base of the stigma is broadly clear white; the basal abscissa of radius slightly more than one-third of the length of the second. Antennæ longer than the body, slender, the base of the flagellum fuscous.

This species seems to be a *Camptocentrus* as defined by Kriechbaumer (Berl. ent. Zeit. xxxix. 61); but Szépligeti (Gen. Ins., Braconidæ, 84) sinks it in *Rhogas*. The species referred to it are African.

### ALYSIINÆ.

#### *TOLBIA*, gen. nov.

Antennæ longer than the body, of equal thickness; the third and fourth joints almost equal in length; there are 25 joints. Stigma large, thick, long, becoming gradually narrowed to a point at the apex; the radius issues from near its base. Radial cellule long, extending to the apex; the first abscissa of the radius minute, the second about one-fourth of the length of the third; there are three cubital cellules—the first wider than long, the second twice longer than it is wide at the apex, it receives the recurrent nervure close to its base; the transverse median nervure interstitial. In the hind wings the only closed cellule is the costal, which becomes widened towards the apex. Head as wide as the thorax; the temples wide, roundly narrowed; the occiput not margined, not transverse. Scutellum large, raised, rounded, the basal transverse furrow distinct, crenulated. Postscutellum flat. Metanotum large, broadly rounded at the apex. Abdomen broad, narrowed at base and apex; the first segment triangular, becoming gradually widened towards the apex, the base narrowed to a point. Legs long, slender, the spurs minute, the hinder metatarsus as long as the following two joints united. The first cubital and the first discoidal cellules are separated. The second and third segments of the abdomen are aciculated; they are both large; the suture separating them narrow, but distinct. The abdomen is hardly so long as the thorax; there are at least six segments. The second abscissa of the radius is distinctly longer than either of the transverse cubitals; it does not form an angle with the first. There are no parapsidal furrows; the radial cellule and the second discoidal cellules are closed; the former is closed in front by a distinct nervure; there is a distinct parastigma.

Comes near to *Sathra*, Foer.; in that group the first abscissa of the radius is wanting entirely. In the recurrent nervure being received in the second cubital cellule it agrees with *Misophthora*, Foer.; but in that genus the stigma is not thickened as it is in the present.

29. *Tolbia scævolæ*, sp. nov.

Rufo-testaceous, the abdomen paler, the sides and base of mesonotum infuscated; the head, pro- and mesothorax smooth and shining; the metanotum aciculated, with some indications of reticulations at the base; the abdomen aciculated, the apical segments smoother, more shining, and banded broadly with black. Legs covered with white pubescence. Wings hyaline, very iridescent, the stigma and nervures black. ♀.

Length 2 mm.

*Localities.* Chagos, Salomon Atoll (Isle de la Passe) in July. Bred from mines in *Scævola*. As the group to which the species belongs are known to be parasites on Dipterous leaf-miners, doubtless the *Scævola* miner is a dipteron.

**Evaniidæ.**30. *Evania appendigaster*, Linn.

Schletterer, Ann. d. k.-k. Hofmus. iv. 136.

*Localities.* A cosmopolitan parasite of the cockroach. Chagos, Diego Garcia (23rd July), Egmont Islands, Peros Banhos. Seychelles, Coetivy, Mahé (*H. P. Thomasset*).

**Chalcididæ. EUCHARINÆ.**31. *Stibula insularis*, sp. nov.

Green, largely variegated with blue, brassy, and purple tints; the antennæ testaceous, darker at the base; the legs paler, yellower, tinged with fulvous; the abdominal petiole pale fuscous, the apex pale yellow, the rest blackish purple. Wings hyaline, tinged with fulvous at the base, the nervures dark fuscous. ♂.

Length 3 mm.

*Localities.* Chagos, Egmont Island, in July.

Head bare, shining; the face closely covered with roundly curved striæ, which become weaker below; there is a smooth line or keel down its centre. Clypeus bordered laterally by deep oblique furrows. Malar space with weak curved striæ. Palpi and apex of mandibles yellowish testaceous, the base of the latter blackish. Antennæ thickly covered with stiff fuscous hair. Pro- and mesothorax rugosely reticulated, punctured, with variegated tints; the middle lobe of mesonotum clearly defined by furrows, triangular. Scutellar process thick and broad at the base; the spines narrowed towards the apex, longer than thick, oblique. Median segment irregularly reticulated, not closely or strongly, the keels not strong. Abdominal petiole not quite so long as the rest of the abdomen, smooth and shining.

The Eucharinæ, to which *Stibula* belongs, so far as their habits are known, are parasites on ants.

## CHALCIDINÆ.

32. *Hockeria testaceitarsis*, sp. nov.

Black, shining, the knees, anterior trochanters, apex of tibiæ, and tarsi testaceous; wings hyaline, darker towards the apex, the nervures testaceous; apex of pronotum and the sides of mesonotum at the scutellum fringed with pale fulvous hair. Antennæ as long as the body; the scape testaceous, black above. ♂.

Length 2 mm.

*Localities.* Cargados, Establishment Island (28th August).

Head closely, somewhat strongly punctured, the occiput smooth behind the inner side of the eyes. Pro- and mesonotum punctured, distinctly, but not very strongly or closely; the scutellum more closely and strongly punctured, its apex projecting in the middle, the sides of the projection broadly rounded, the middle with a shallow incision. Metanotum closely rugosely punctured; there is a  $\Lambda$ -shaped keel in the centre of the base. Pro- and mesopleuræ closely punctured; the latter with a smooth space, with three foveæ on the upper apical part. Metapleuræ closely, finely reticulated. Abdomen smooth, shining, the apical segments finely aciculated. Femoral tooth broad, blunt, longer on the apical than on the basal side.

In typical *Hockeria* the apex of the scutellum is bidentate, not with a slight rounded incision as in the present species.

33. *Chalcis amenocles*, Walker.

A single example from Mahé is doubtfully referred by Pérez (Ann. Soc. Ent. Fr. 1894, p. 211) to the above species, which was described by Walker ('List of the Specimens of Hymenopterous Insects in the Collection of the British Museum: Part 1. Chalcidites,' p. 84) from Sierra Leone.



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	Part	VII. 1907. ....	0	3	0	0	2	3
		(In Progress.)						
XII.	Part	I. 1907. ....	1	8	0	1	1	0

W. E. LaBerge