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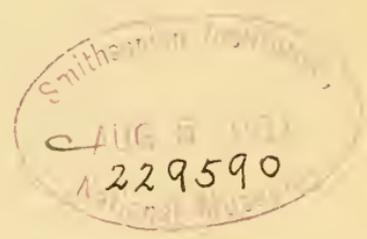
A REVISION OF THE  
**ICHNEUMONIDAE**

BASED ON THE COLLECTION IN THE  
BRITISH MUSEUM (NATURAL HISTORY)

PART III.

TRIBES PIMPLIDES AND BASSIDES

BY  
CLAUDE MORLEY, F.Z.S., F.E.S.



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## PREFACE.

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Mr. Claude Morley has continued in the present work, the "Revision" commenced by him in 1913, and of which Part II was published in 1913. He deals here with the Tribes Pimplides and Bassides.

The thanks of the Trustees are again due to Mr. Rupert Stenton, who has drawn and presented the figure from which the Plate illustrating this Part was reproduced.

CHARLES J. GAHAN.

BRITISH MUSEUM (NATURAL HISTORY),

*March*, 1914.



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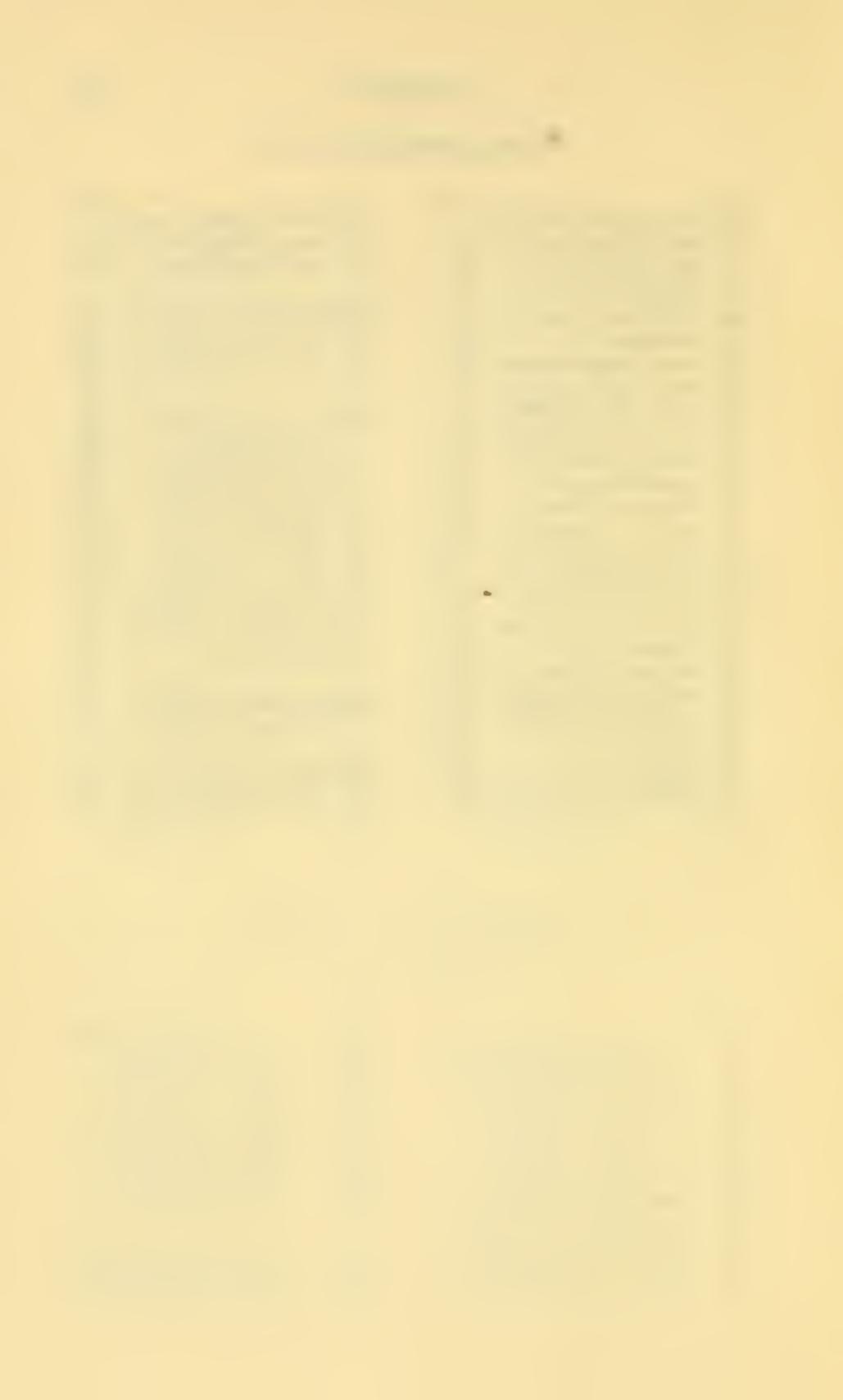
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BROUGHT FORWARD AS NEW.

---

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  brevis.
- Exeristes, Först.  
  elongatula.  
  consimilis.
- Apechtis, Thoms.  
  [japonica.]  
  rugulosa.
- ERIOSTETHUS.  
  pulcherrimus.
- [POECILOPIMPLA.]  
  inflexa.
- Theronia, Holmgr.  
  melanosoma.  
  flavistigma.  
  fumipennis.  
  viridicans.  
  claripennis.
- Neotheronia, Krieg.  
  mexicana.
- Pimpla, Fab.  
  viridescens.  
  [cyanator.]  
  glaucoptera.  
  tuberculata.  
  calliphora.  
  videonis.  
  glabra.  
  thoracica.
- Itoplectis, Thoms.  
  platana.
- Epiurus, Thoms.  
  [culpator.]  
  albitibia.
- Hemipimpla, Sauss.  
  medioflava.  
  megaloura.  
  clotho.  
  atropos.  
  lachesis.  
  philippina.  
  maxima.  
  recta.  
  melanoptera.  
  flavicaput.  
  rubrithorax.  
  pseudoptera.  
  verticalis.  
  verticella.  
  simillima.  
  pulchra.  
  divisella.  
  bifasciata.  
  umbrata.  
  umbraticula.
- Tromatobia, Thoms.  
  lineiger.
- Clistopyga, Grav.  
  plana.
- Glypta, Grav.  
  suturalis.  
  annulicornis.
- Apophua, Morl.  
  concinna.
- Telcutaea, Först.  
  occidentalis.
- Sjöstedtiella, Szépl.  
  plicata.



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° A REVISION  
OF THE ICHNEUMONIDAE.

PART III.



## SUB-FAMILY PIMPLINAE.

### TRIBE.—PIMPLIDES.

The very numerous members of this Tribe are at once known from the whole of the remainder of the Ichneumonidae, including the other Tribes of *Pimplinae*, by the more or less distinct tubercles always visible on either side of the middle abdominal segments, rendering the surface, which is also generally transimpressed before their apex and in a few genera also obliquely from their base, of very uneven appearance; this feature is shared only by the *Rhyssides*, which differ in having the mesonotum distinctly transcarinate, and the *Echthromorphides*, which may be known both by their rostriform mouth and the interception of the nervellus of the lower wings at its upper extremity. The genera of the *Pimplides* are so natural in their superficial facies, and so easily recognised at a glance, that I was astonished at the difficulty experienced when an attempt was made to throw them into tabular form; however, in the following table, it is hoped that constant characters have been selected, though its main object has been to present the genera herein treated of in their most natural order of affinity. Many other genera—such as *Acrodactyla*, Hal.; *Schizopyga*, Grav.; *Colpomeria*, Holmgr.; *Lycorina*, Holmgr.; *Lissotheronia* and *Eyrthrotheronia*, Cam.—are contained in the British Museum; but, as all these have been so recently treated of by me\* and their representatives there add nothing descriptively or distributionally to our knowledge, their insertion appears superfluous. *Xanthopimpla* is so difficult to deal with owing to Cameron's descriptions, that it is reserved for a separate paper; this genus is doubtless a very large one (it is known from the tropics all round the world and India alone possesses thirty species) and demands especial elucidation.

\* Ichneumonologia Britannica III, 1908, and Fauna Brit. Ind., Hymenoptera III, 1913.

## TABLE OF GENERA.

- (12) 1. Third abdominal segment longer than broad; terebra usually at least as long as the abdomen.
- (3) 2. Head posteriorly and prothorax colliformly constricted; terebra shorter than abdomen. EPIMECIS, Brullé.
- (2) 3. Head and prothorax not colliformly constricted; terebra at least as long as abdomen.
- (5) 4. Second to sixth segments obliquely impressed and elongated; ♂ flagellum centrally explanate. CLOSTROCEROS, Htg.
- (4) 5. Central segments not obliquely impressed, fourth transverse; ♂ flagellum normal.
- (7) 6. Apical hind tarsal joint thrice as long as penultimate; claws of ♀ not basally lobate. PERITHOUS, Holmgr.
- (6) 7. Apical hind tarsal joint little longer than penultimate; claws of ♀ basally lobate.
- (9) 8. Nervellus intercepted at or below its centre; metathoracic spiracles small and circular. CALLEPHIALTES, Ashm.
- (8) 9. Nervellus intercepted above its centre; metathoracic spiracles oval or elongate.
- (11) 10. Metapleurae basally subtuberculiform; second segment laterally sulcate; terebra six times length of body. DOLICHOMITUS, Smith.
- (10) 11. Metapleurae not basally inflated; second segment not sulcate; terebra not double length of body. EPHIALTES, Schr.
- (1) 12. Third abdominal segment not longer than broad; terebra rarely as long as abdomen.
- (42) 13. Central abdominal segments not obliquely impressed throughout.
- (39) 14. Wings with areolet complete and entire.
- (38) 15. Clypeus centrally impressed at apex.
- (27) 16. Tarsal claws of ♀ basally lobate.
- (18) 17. Abdomen roughly sculptured, hardly longer than terebra. EXERISTES, Först.
- (17) 18. Abdomen finely sculptured, double length of terebra. APECHTIS, Thoms.
- (26) 19. Abdomen glabrous and entirely impunctate throughout.
- (21) 20. Prothorax colliformly constricted; metanotum without carinae. ERIOSTETHUS, Morl., gen. nov.
- (20) 21. Prothorax not constricted; metanotum with carinae.
- (23) 22. Metathorax very short; antennae apically subclavate. POECILOPIIMPLA, Morl.



## EPIMECIS, Brullé.

Hist. Nat. Ins. Hym. iv, 1846, p. 112.

The relationship of this peculiar and specialised genus to *Ephialtes* was well shown by its author, who says that the body is narrow and elongate with the six first segments longer than broad and, for the most part, tuberculate. From all other *Pimplides* it differs in having the head and prothorax colliformly constricted. The areolet is usually, though not always, entirely wanting; the terebra is never longer than half the abdomen (except in the somewhat fabulous *E. caloptera*, Perty). Brullé knew the females of but two species: *E. bicolor*, with apices of the front wings infumate, from Brazil, and *E. fasciata*, with a central brunneous alar fascia, and the front wings broadly concolorous at their apices, from South America. The former has since only been referred to by Rev. T. A. Marshall (Ann. Soc. Ent. France 1892, p. 65, pl. iii, fig. 6), whose excellent figure gives a capital representation of the genus as a whole; a form of the latter is simply said by Kriechbaumer (Ann. Nat. Hofmus. Wien 1890, p. 490) to exist in Sturm's Museum at Monaco. *E. heteropus*, first described (l.c., 491) by Kriechbaumer, agrees with the former in its mainly black abdomen, and with the latter in its centrally fasciated wings, though differing from both in its smaller size of but ten millimetres, entirely black hind legs and more narrowly infumate alar apices; it was described from a female in the Vienna Museum, and taken in 1885 about Blumenau in Brazil.

Four Cuban species were brought forward by Cresson (Proc. Ent. Soc. Philad. 1865, p. 33), of which *E. atriceps* is known by its hyaline wings, and *E. fuscipennis* by having them evenly infumate throughout; in *E. ferruginosa* only their apices are dark, and in *E. fasciipennis* there is also a central infusate band. In 1870 the same author (Trans. Amer. Ent. Soc. III, p. 143) described from Ohio *E. willti*, differing from the last-named species in its larger size of seven lines, distinctly emarginate outer margin of the alar fascia and entirely infusate hind tibiae; and in 1873 he added (Proc. Acad. Philad., p. 395), *E. thoracicus* from Orizaba, marked with a query as though being only doubtfully relegated to the present genus, where it agrees only with *E. atriceps* in its hyaline wings.

No one has since mentioned the genus but Cameron, who, in 1886 (Biol. Centr. Amer. 1886, p. 270) appears ignorant of Cresson's earlier papers, for his *E. tibialis*—well figured l.c., pl. xii, fig. 1—is certainly the latter's *E. willti*, with its



3. *Epimecis wilti*, Cress.

The type and three co-types of Cameron's *E. tibialis* from Valladolid in Yucatan ( $\sigma^{\circ}$  Gaumer), David in Chiriqui and San Geronimo in Guatemala (Champion) are in the British Museum; and two females were subsequently taken at Temax in northern Yucatan (Gaumer) and Atoyac in Vera Cruz (H. H. Smith). The length of both sexes varies considerably, 14-20 mm.; the  $\sigma^{\circ}$  differs only in its less setiferous flagellar joints.

4. *Epimecis heteropus*, Kriech.

Three females, captured by H. W. Bates at Ega and Para on the Amazon, agree very well with Kriechbaumer's short description, and are excluded from Perty's species only by his "oviscaptus corporis totius fere longitudine . . . Antennae corpore multo longiores." Length, 13-16 mm.

6. *Epimecis caloptera*, Perty.

*Pimpla caloptera*, Perty, Delect. Anim. Artic. Brasil 1833, p. 133; pl. xxvi, fig. 12,  $\sigma^{\circ}$ .

Since this book is to be met with in very few entomological libraries, I give a translation of Perty's description of this "species insignis, amoena": Head black, globulose and shining, with the ocelli flavidous. Antennae black and much longer than the body. Abdomen ferruginous-fulvous and shining, becoming apically nigrescent; terebra black and nearly as long as the whole body. Anterior legs luteous; the hind ones with their coxae black and inflated, their femora black and basally badius, and their tibiae and tarsi both infusate-badius throughout. Wings shining and hyaline whitish-flavescent, with a central fascia and the apex broadly infusate. Length,  $8\frac{1}{2}$ ''' ; alar expanse,  $15\frac{1}{2}$ ''' ; occurrit satis minor. Habitat in Serra do Caraça, Prov. Minarum.—In the figure no attempt is made to follow the correct neuration, the apices of the hind wings are not infumate, the legs are conspicuously pilose, the anus is longitudinally white-dotted (perhaps only "shaded") from the fourth segment, and the scutellum bears a white dot with another on either side and a fourth on the centre of the mesonotum; all the white-marks probably only represent reflected light. I have seen nothing at all like it, though the figure is sufficiently good to render its inclusion in the present genus pretty certain.

9. *Epimecis fuscipennis*, Cress.

*Epimecis fuscipennis*, Cress., Proc. Ent. Soc. Philad. iv, 1865, p. 34, ♂ ;  
Cam., Timehri 1911, p. 176.

Cameron seems quite ignorant of the fact that Cresson had already described a species of this genus under the present name; nevertheless I consider the two descriptions to apply to a single species. There is one specimen in the British Museum, taken in Brazil by Mr. Mornay about 1840.

## CLOSTERO CEROS, Hartig.

Ber. Naturw. Ver. Harz. 1847, col. 18.

In the very rare "Bericht naturwissenschaftlichen Vereins des Harzes für die Jahre 1846-7," column 18, in his "Über einige parasitische Hymenopteren des Harzes," Dr. Th. Hartig apologises for erecting a new genus upon a single male specimen, found in the Claus Valley of the Hartz Mountains, and pleads in excuse its capture by the recently deceased Herr Saxesen. The descriptions of both genus and species have remained unquoted since that time; it would be interesting to discover to what insect they refer, and to know if the type be still extant. Hartig's description may be thus rendered:—

Head with the mandibles apically bidentate; labium emarginate, appendiculate, nearly orbiculate and exserted; maxillary palpi 5-jointed, with the second and third joints longer and broader than the remainder; labial palpi three-jointed. Antennae fusiform, with the second joint [scape] elongate and externally excised; the eleventh to twenty-second joints incrassate and compressed (as in *Euceros*, Grav.), with their basal but two-thirds of their apical breadth. Abdomen sessile, with the six basal segments longer than broad; the first subtri [sic] mose, punctate, bicarinate, parallel-sided, more than double longer than broad, with its lateral tubercles situated before the base; segments two to six smooth, with oblique impressed lateral lines. Wings with areolet as in *Ephialtes manifestator*. Whole facies similar to *Ephialtes*.

Great stress, as in Nees von Esenbeck's work, is laid upon the structure of the mouth-parts, which conveys nothing unusual to me; on the other hand, the conjunction of the centrally explanate flagellum with obliquely impressed abdominal segments is so striking that one regrets the futility of trying to recall such a one to mind. The single species is shortly diagnosed:—

1. *Closteroceros sericeus*, Htg., l.c.

Black. Head, with the face grey-pilose, and both labrum and palpi flavous. Antennae with the second joint [scape] flavous beneath, and the eleventh to twenty-second externally white-marked. Thorax grey-pilose. Abdomen with the basal segment grey-pilose. Legs red, with the front coxae and all the trochanters flavous, hind tibiae and tarsi infusate. Wings flavescent-hyaline, with the red stigma basally hyaline and the tegulae flavous. Length, 15 mm. ♂ only.

Bred on 5th July, 1837, from elder-wood. The larva had, in all probability, been parasitic upon that of some *Cerambyx* [Longicorn beetle].

OPHIOGASTRA, Ashmead.—Canad. Entom. 1900, p. 368; *Ophiodes*, Htg. Ber. Naturw. Ver. Harz. 1847, col. 18 (*nec* Wag. 1828).—This genus, like *Closteroceros*, has been entirely neglected since first erected. Though its author expressly says "Habitus: *inter Ephialtidum, Lissonothidum* [sic] *Xorididumque*," Dalla Torre places this among his "genera sedis incertae" in 1902; Ashmead, in 1900, had no knowledge of it, and did nothing but alter the preoccupied name, which he misquotes as 1840. Hartig's description may be translated: Head transverse and broader than the thorax, with the mandibles apically narrow and bidentate; labium rotundate, appendiculate and concealed; maxillary palpi with five setaceous joints, the labial three-jointed. Antennae slender, filiform, twice or in ♂ thrice the length of the thorax. Thorax elongate, narrow and sub-cylindrical with especially the metathorax elongate and subconical. Abdomen double the length of the thorax, slender and cylindrical; of ♀ with the five basal segments double or more as long as broad, and the terebra elongately exerted with small cerci; of ♂ with the second to fourth segments one-and-a-half times as long as broad; basal segment of ♂ more than thrice, and of ♀ [misprinted ♂] more than twice as long as broad, gradually constricted towards the base, with lateral tubercles before its centre. Legs slender. Wings with areolet petiolate and irregularly rhomboidal.

1. OPHIOGASTRA MONTANA, Hartig.—*Ophiodes montanus*, Htg. Ber. Naturw. Ver. Harz. 1847, col. 19, ♂ ♀—♂ ♀. Black and subsericeous; head flavous-marked; thorax flavous-marked; legs red, with the anterior coxae and trochanters flavous; length 13 millimetres. ♂: Head with the face, mouth and frontal orbits flavous; antennae red, basally black, with scape flavous beneath; thorax with mesosternum and lines before radices flavous; legs red with anterior coxae and trochanters flavous, hind trochanters and tibiae and tarsi partly infusate. ♀: Head with palpi whitish; antennae infusate, with scape flavous beneath; thorax with lateral prothoracic lines whitish; terebra as long as the abdomen; legs red with anterior coxae flavous, hind trochanters and tibiae and all tarsi infusate; tegulae whitish. The species is said to have been repeatedly taken by Herr Saxesen in the Hartz Mountains; but Hartig was uncertain respecting the correct association of the above sexes.

[There is not the smallest doubt in my own mind that at least the FEMALE of this species is synonymous with *Pyracmon* (Holmgren, Sv. Ak. Handl. 1858, p. 101. with priority over Ashmead's name) *melanurus*, Holmgr. l.c. p. 102. Both names may, at some future time, have to fall to *Campoplex megacephalus*, Grav. Ichn. Europ. III, p. 502.]

### PERITHOUS, Holmgren.

Öfv. 1859, p. 123 ; Sv. Ak. Handl. 1860, no. 10, p. 15.

A genus of strongly elongate and shining insects, very closely allied to *Ephialtes*, and differing mainly in the glabrous and not punctate abdomen, mutic and not basally lobate ♀ claws, and at once known by the profuse white and usually broadly red thorax. Only some half-dozen species have been described, and these are all parasitic upon fossorial Hymenoptera in dead twigs.

#### TABLE OF SPECIES.

- |     |  |                               |
|-----|--|-------------------------------|
| (2) | 1. Thorax not at all red marked.                               | 1. <i>albicinctus</i> , Grav. |
| (1) | 2. Thorax mainly red.  |                               |
| (8) | 3. Terebra as long as body ; ♂ clypeus not strongly depressed. |                               |
| (7) | 4. Clypeus apically emarginate ; cubital nervure angled.       |                               |
| (6) | 5. Legs nearly entirely red.                                   | 2. <i>mediator</i> , Fab.     |
| (5) | 6. Legs whitish, with hind ones broadly black-marked.          | 3. <i>pleuralis</i> , Cress.  |
| (4) | 7. Clypeus apically truncate ; cubital nervure curved.         | 4. <i>variis</i> , Grav.      |
| (3) | 8. Terebra as long as abdomen ; ♂ clypeus foveiform.           | 5. <i>divinator</i> , Rossi.  |

#### 1. *Perithous albicinctus*, Grav.

*Ephialtes albicinctus*, Grav., Ichn. Europ. III, p. 259, ♀ ; Desv., Trans. Ent. Soc. 1862, p. 226, ♂.

*Ichneumon annulatorius*, Fab. Syst. Ent. p. 330 ; Syst. Piez. 62, ♂ ; has been ascribed to this species by me (Ichn. Brit. III, p. 45) with a query, but my researches into Fabricius' types in the Banksian Collection (Entom. 1909, p. 133) proved *I. annulatorius* to be *Amblyteles palliatorius*, Grav., or a closely allied species. Dr. Habermehl has recently (Deut. Ent. Zeit. 1909, p. 628) described the male of Gravenhorst's species as new, but this was done by Thomas Desvignes as long ago as 1862 ! Bucheker took a ♀ in Bavaria, 30th June.

2. *Perithous mediator*, Fab.

*Pimpla mediator*, Fab., Syst. Piez. 117, ♀; *Ephialtes senator*, Hal., Ann. Nat. Hist. 1839, p. 116.

3. *Perithous pleuralis*, Cress.

Canad. Entom. I, 1868, p. 36, ♀.

Taken by Pettit at Grimsby in Canada, and is in coll. Amer. Ent. Soc. It "closely resembles the European *P. mediator*, but differs in the ornamentation of the legs," which have "tibiae and tarsi whitish, tips of posterior femora, a line on outside of all the tibiae, encircling the apex of posterior pair, and tips of tarsal joints, blackish"; terebra longer than body; length  $4\frac{1}{2}$ - $6\frac{1}{2}$  lines.

4. *Perithous varius*, Grav. 5. *Perithous divinator*, Rossi.

Only English and German examples in the British Museum—cf. Morl. Ichn. Brit. III, pp. 47-50.

## CALLEPHIALTES, Ashmead.

*Callephialtes*, Ashm., Proc. U.S. Nat. Mus. 1900, p. 54.

Head broadly buccate behind the eyes, which in ♂ are not distinctly emarginate internally. Third to fifth antennal joints not externally serrate. Mesonotum not trans-strigose; metathoracic spiracles small and quite circular. Abdomen subparallel-sided, and not centrally explanate, with the anterior segments not more strongly sculptured than the posterior; second segment of ♀ longer than broad; terebra longer than body. Hind tarsi of ♀ with the apical joint longer than penultimate, and claws strongly lobate basally. Wings with the nervelet wanting; and the first recurrent of lower wings intercepted in the centre.

Only two species of this genus are known, and those from the two hemispheres.

## TABLE OF SPECIES.

- (2) 1. Black with pro- and meso-thorax fulvidous.  
1. *xanthothorax*, Ashm.
- (1) 2. Flavous with black antennae and markings.  
2. *xanthosoma*, Morl.

1. *Callephialtes xanthothorax*, Ashm.

*Pimpla xanthothorax*, Ashm., Proc. U.S. Nat. Mus. 1890, p. 446, ♂ ♀.

Ashmead first described the typical species of this genus, which is black, with the pro- and meso-thorax fulvidous, under *Pimpla*, in both sexes (and not ♀ only, as given by Dalla Torre), from Kirkwood, Mo., where they were reared on 24th February, 1872, from the Tenthredinid *Euvura S-nodus*, Walsh, found upon willow.

2. *Callephialtes xanthosoma*, Morl.

Fauna Brit. India, Ichn. I, 1913, p. 86, ♂.

Colonel Bingham captured, in Sikkim, a single specimen, which is in the British Museum.

## DOLICHOMITUS, Smith.

Proc. Zool. Soc. 1877, p. 411.

This genus is but slightly removed from true *Ephialtes*-species in the strong lateral sulci of the two basal segments, the more slender petiole, subglabrous thorax, basally sub-tuberculiform metapleurae, lack of metanotal carinae and also, perhaps, in its enormously elongate terebra, basally flavous abdomen and costally infumate wings. This is one of the unlucky thirteen "Genera Ichneumoninarum sedis incertae" of Dalla Torre's Catalogus, among which I have had the good fortune to ascertain the position of *Cryptocentrum* (Entom. 1910, p. 243), *Microleptes* (Ichn. Brit. IV, 1911, p. 22\*), *Tilgida* (Fauna Brit. India Ichn. I, 1913, p. 317), and the present genus, of which but a single species is known.

1. *Dolichomitus longicauda*, Smith.

Proc. Zool. Soc. 1877, p. 412, pl. XLIV, figg. 2 et 2a, ♀.

This remarkable and beautiful insect varies in length from 18-25 mm. ; the largest specimen in the British Museum is Smith's type, whose terebra is exactly 150 mm. in length,

\* Herr K. Pfankuch applied to the authorities of the Breslau Museum for permission to examine the type of *Microleptes splendidulus*, Grav., but, he writes me on 20th March, 1912, "doch ist derselbe total defekt, so dass er mir nicht mehr mitgeschickt werden konnte. . . Mir ist sie ganz unbekannt" (cf. also Deut. Ent. Zeit. 1912, p. 459). M. Roman of Upsala tells me, *in lit.* May, 1912, that he considers it to be the same species as *Miomis glabricentris*, Thoms. Opusc. Ent. XII, p. 1317.

and another specimen of 21 mm. has the terebra 142 mm. in length. The type was obtained through Parzudaki in 1853, and is from Colombia, whence Lord Avebury presented another taken by Dr. J. D. Mallerins in 1902; in 1889 Señor Vergara presented five from Bogota, and another came in from Mr. Harold Hodge in 1909, from the State of Darien, also in Colombia. I have seen a specimen in the Warrington Museum from the same locality; and M. Jules de Gaulle has kindly allowed me to examine others in his collection from Santé Fé de Bogota and Ibagué in Colombia; neither the male nor the species' economy seem yet to be known, though in all probability it preys, like *Ephialtes*, upon Longicorn Coleoptera deep buried in the wood of trees and only to be reached by a specialised ovipositing apparatus.

The remarkable resemblance should here be noted between the above Ichneumonid and the Braconid, "*Bracon*" *dolichurus*, Cam. (Manchester Memoirs [4] 1, 1888, p. 176, ♀), also from Bogota; the body of the type, in the British Museum, is 11½ mm. in length, and the terebra measures exactly 150 mm., and even then a close examination proves it to have been broken off!

### EPHIALTES, Schrank.

Schr. Fauna Boica II, 1802, p. 316 (*nec* Keys, Blas. Aves, 1840).

A genus of strongly elongate, subparallel-sided insects, usually black, sometimes dark red, and very rarely flavidous with black markings; usually with terebra as long as, or longer than, the whole body; and invariably with the third abdominal segment longer than broad, by which character alone the shorter species are to be distinguished from *Exeristes*, as I have indicated under the latter genus. The species are numerous, as is usually the case of an old genus, and prey upon all kinds of lignivorous larvae, both Coleopterous and Lepidopterous. Four Indian species described under this genus by Cameron (*E. latiamulatus*, Tijds. v. Ent. 1907, p. 96, ♀; *E. longiventris*, Zeits. Hym.-Dipt. 1908, p. 37, ♀; and the possibly synonymous *E. nigritarsis* and *E. nigromaculatus*, Manch. Mem. 1899, pp. 148, 150, ♂♀) I have not seen, and have simply reproduced the original descriptions in my Fauna of India; the elongate *Pimpla gayi*, of which Spinola has given so lively a figure (Gay, Hist. fis. Chile Zool. VI, 1851, p. 502, pl. iv, fig. 2) is referable to the *Xoridides*, as is proved by several examples I have examined.

## TABLE OF SPECIES.

- (14) 1. Abdomen red or ferruginous, at least towards the anus.
- (3) 2. Mesothorax red, with scape and callosity at tegulae white.  
1. *atriceps*, Cress.
- (2) 3. Mesothorax not red, nor scape and radical callosity white.
- (9) 4. Central mesonotal lobe neither longitudinally sulcate nor apically produced; wings hyaline.
- (6) 5. Basal radial abscissa of lower wings not longer than its recurrent nervure; metathorax nitidulous.  
2. *lateralis*, Woll.
- (5) 6. Basal radial abscissa much longer; metathorax dull.
- (8) 7. Stigma pale; metathorax bicarinate; terebra as long as abdomen.  
3. *arundinis*, Kriech.
- (7) 8. Stigma nigrescent; metathorax transaciculate throughout; terebra as long as body.  
4. *irritator*, Fab.
- (4) 9. Central mesonotal lobe deeply sulcate and apically strongly produced; front wings costally flavous; external radial abscissa continuous with inner areolar nervure; basal radial abscissa of lower wings double length of recurrent; vertex pale-banded (subgenus *MESEPHIALTES*, Schm., Opuse. Ichn. 1906, p. 1014).
- (11) 10. Terebra very short (body 20 mm.; terebra 2.5 mm.).  
5. *coracinus*, Schm.
- (10) 11. Terebra as long as body.
- (13) 12. Metathorax not apically carinate, nor flagellum pale-banded; mesopleurae sanguineous.  
6. *bicolor*, Brullé.
- (12) 13. Metathorax bicarinate throughout; flagellum pale-banded; mesopleurae flavous.  
7. *annulicornis*, Cam.
- (1) 14. Abdomen entirely black throughout.
- (32) 15. Basal radial abscissa of hind wing much longer than its recurrent nervure; nervellus intercepted far above its centre.
- (23) 16. Apical hind tarsal joint ~~not~~ double length of penultimate.
- (22) 17. Tubercles of abdomen obsolete; terebra hardly longer than body.
- (21) 18. Stigma nigrescent; hind tarsi longer than their tibiae.
- (20) 19. Clypeus apically produced; head strongly punctate.  
8. *manifestator*, Linn.
- (19) 20. Clypeus not produced; head but finely punctate.  
9. *iridipennis*, Morl.
- (18) 21. Stigma fulvous; hind tarsi not longer than tibiae.  
10. *mesocentrus*, Grav.

- (17) 22. Tubercles of abdomen strong; terebra 5 times length of body. 11. *longicauda*, Mocs.
- (16) 23. Apical hind tarsal joint thrice length of penultimate.
- (27) 24. Metapleurae nitidulous; stigma and hind tibiae infuscate.
- (26) 25. Clypeus black and the hind legs mainly red. 12. *tuberculatus*, Fourc.
- (25) 26. Clypeus red and the hind legs entirely black. 13. *tinctipennis*, Cam.
- (24) 27. Metapleurae dull; stigma and the hind tibiae fulvidous.
- (31) 28. Metathorax not apically reflexed; terebra hardly longer than body.
- (30) 29. Abdomen sparsely punctate, with tubercles weak. 14. *heteropus*, Thoms.
- (29) 30. Abdomen closely punctate, with tubercles acute. 15. *crassus*, Morl.
- (28) 31. Metathorax apically strongly reflexed; terebra more than double length of body. 16. *reflexus*, sp.n.
- (15) 32. Basal radial abscissa of hind wings but slightly longer than its recurrent nervure; nervellus intercepted only slightly above centre.
- (42) 33. Mesosternum black.
- (37) 34. Head distinctly transverse; radical callosities pale.
- (36) 35. Basal segment transverse; terebra half as long again as body. 17. *carbonarius*, Chr.
- (35) 36. Basal segment elongate; terebra double length of body. 18. *pusio*, Walsh.
- (34) 37. Head cubical; radical callosities black.
- (41) 38. Metathorax of normal length; basal segment elongate.
- (40) 39. Both thorax and legs of normal length; Europe. 19. *strobilorum*, Ratz.
- (39) 40. Both thorax and legs very short; Burma. 20. *lachesis*, Morl.
- (38) 41. Metathorax and basal segment peculiarly short. 21. *brevis*, sp. n.
- (33) 42. Mesosternum pale.
- (44) 43. Head transverse; scutellum and spicula red. 22. *ruficollis*, Desv.
- (43) 44. Head cubical; scutellum black and spicula white. 23. *albispiculus*, Morl.

### I. *Ephialtes atriceps*, Cress.

Proc. Acad. Philad. 1873, p. 394, ♀.

cf. *E. irritator*, Fab.

2. *Ephialtes lateralis*, Woll.

Ann. Nat. Hist. 1, 1858, p. 11, ♀.

The type and two co-types of this distinct Madeiran species, with its short and slender antennae, broad and elongate preradical callosities and tegulae, evenly punctate face and mainly rich red abdomen, are in the British Museum, including "the specimen figured by Westwood" (Ann. Nat. Hist. 1, 1858, pl. iv, fig. 3, ♀).

3. *Ephialtes arundinis*, Kriech.

Ent. Nachr. XIII, 1887, p. 253, ♂ ♀.

"Nachdem mein College Hiendlmayr diese Art mehrmals aus angeschwollenen Schilfstengeln gezogen, erhielt auch ich aus solchen von Schleissheim am 9. 6. 84 ein ♂ und am 11. 7. darauf ein ♀. Ob das Thier ein Parasit der die Anschwellungen verursachenden Lipara-Larven [Dipteron] oder eines späteren Einmiethers in die verlassenen Räume ist, muss erst noch ermittelt werden"—Kriech., l.c. This was in a swamp at Dachauer Moos, near Munich; and in the British Museum is a beautiful series of eighteen females, all labelled "Moos" by Bucheker, who captured them on the 8th, 18th, and 21st August, and on 11th September; one is labelled "*arundinis*, Buch.," from whom Kriechbaumer probably adopted his specific name, since these examples were received in 1881.

4. *Ephialtes irritator*, Fab.

*Ichneumon irritator*, Fab., Syst. Ent. 1775, p. 336; *Ephialtes nigricans* Cam. Biol. Centr.-Amer., p. 263, pl. xi, f. 5 (1886), var.

"*Ichneumon niger*, abdomine ferrugineo: primo segmento toto, reliquis punctis duobus nigris. Habitat in America, Mus. Banks." Fabricius' diagnosis does not fit this species exactly, for the abdomen is mainly clear ferruginous, with only its base—unlike Cresson's Cuban *E. rufescens* (Philad. Soc. 1865, p. 38)—more or less nigrescent; however, the type, which is still extant in the Banks Cabinet in the British Museum, leaves no doubt upon its identity, as I pointed out (Entom. 1909, p. 135). It is strange that Cresson nowhere mentions this species, though—at Proc. Acad. Philad. 1873, p. 394—he brings forward a similar female from Orizaba in Mexico as *E. atriceps*; but the latter has most of the thorax also ferruginous, and the second to fifth abdominal segments apically black on either side. *E. irritator* is recorded from

Carolina and other North American localities; in the British Museum are a couple of females from Michigan (Rev. T. A. Marshall) and New York. Walsh (Proc. Acad. St. Louis 1873, pp. 110-112) remarks that some females are double the size of others; he did not know the male which is still, I believe, undescribed. I have examined the type of *E. nigricans*, Cam. (Biol. Centr.-Amer. 1886, p. 263, pl. xi, fig. 5), taken by Champion at San Geronimo in Guatemala, and find it to be nothing but a form of the present species with the abdominal nigrescence more extensive and the hind femora concolorous; in a series of a dozen examples of both sexes, subsequently taken by H. H. Smith at Omilteme, Xucumantlan and Amula in Guerrero, at 6-8,000 ft. in July and September, I find the hind femora are partly, entirely, or not at all, black, the abdominal nigrescence variable in extent and the anterior legs are pale stramineous with only their coxae black.

#### 6. *Ephialtes bicolor*, Brullé.

Nat. Hist. Ins. Hym. iv, 1846, p. 82, ♀.

A dull ferrugineous species with the mesopleurae sanguineous, orbits and part of legs stramineous, and the front wings costally flavescens. Head subcubical and not constricted behind the internally emarginate eyes, black with all the orbits except at vertex distinctly stramineous and a band across the vertex, behind the ocelli, concolorous; frons subglabrous and not carinate; face infusate-pilose and sparsely punctate, with its centre elevated and apex discreted from the impressed clypeus; mandibular teeth obtuse and subequal in length; palpi not pale. Antennae black, with scape not pale beneath. Thorax ferrugineous, nitidulous and but finely punctate; prothorax and sutures darker, mesopleurae and scutellum paler, red; notauli remarkably deeply impressed, with the central lobe apically produced and longitudinally sulcate throughout; meta-thorax smooth, but somewhat distinctly and divergently bicarinate from centre of its base; petiolar area laterally elevated apically on either side; lateral carinae entire, spiracles elongate-oval. Abdomen dull ferrugineous and closely punctate with apices of three first segments indefinitely nigrescent and the third subapically flavidous; tubercles of third to fifth segments distinct, though not very strong; basal segment nearly impunctate, both discally and laterally sulcate throughout, slender and nearly double as long as broad; the following but slightly longer than broad, the

second apically explanate with strong and linear basal gastrocoeli; terebra as long as whole body, black with spicula rufescent. Legs indistinctly flavidous, with the femora and tibiae more or less red-lined beneath; all the coxae ferrugineous. Wings not broad, subhyaline with the costal margin of front ones strongly flavescent; radix and tegulae dark ferrugineous, stigma bright fulvous; areolet triangular, broader than high, subsessile with the inner nervure continuous with the outer radial abscissa, emitting the evenly curved recurrent nervure from its apical fourth; lower wings with recurrent but half the length of the internal radial abscissa; nervellus intercepted at its upper fourth. Length, 18 mm. ♀ only.

Brullé says the wings are hyaline, the thorax discally smooth and the legs more profusely ornamented; but the salient features of his species, which has not been referred to in literature since first published, agree to a satisfactory extent. His type came from Minas Geraes (Aug. Saint-Hilaire); and the specimen above more adequately described was obtained by the British Museum in 1888, through Herr Fruhstorfer, who captured it at Theresopolis, near Desterro, in Brazil, on 25th October, 1887.

### 7. *Ephialtes annulicornis*, Cam.

Biol. Centr.-Amer. 1886, p. 262, ♀.

Cameron only knew four females of this species, though he indicates no sex; these are from San Geronimo, at 2-3,000 feet at San Isidro in Guatemala, and at 2-5,000 feet on the Volcan de Chiriqui in Panama (Champion); M. Sallé found a large example of the same sex at Oajaca in Mexico in 1858; and Herbert Smith subsequently discovered two or three at Teapa in Tabasco during February and March. The pale-banded antennae are unique in the present genus, and the position of the band, at the basal third of the flagellum, very unusual among Ichneumonidae.

### 8. *Ephialtes manifestator*, Linn.

*Ichneumon manifestator*, Linn., Syst. Nat. 1758, p. 564; *Ephialtes imperator*, Kriech., Stett. Ent. Zeit. 1854, p. 156; *E. occidentalis*, Cress., Proc. Ent. Soc. Philad. 1865, p. 269, ♀.

Not uncommon in northern Europe, and well represented with us; in Britain it appears commonest in the Scottish pine woods; Switzerland; Germany; Sundalen in Norway

in July, 1901 (W. F. Kirby). A female, captured by H. Edwards at the summit (14,898 feet) of the Sierra Nevada in California, and presented to the British Museum in 1884, differs in no way from European examples ; it agrees exactly with Cresson's account of his *E. occidentalis*, though the hind legs and ovipositor are no longer, the abdomen is no narrower, and its segments are no longer than in *E. manifestator*. I would suggest that the abdomen of his single Coloradan female was artificially compressed.

### 9. *Ephialtes iridipennis*, Morl.

Fauna Brit. India, Ichn. I, 1913, p. 182, ♂ ♀.

Known from Tenasserim and the Punjab. Bred from species of the Buprestid genus *Chrysobothrus* in deodar.

### 10. *Ephialtes mesocentrus*, Grav.

Grav., Ichn. Europ. III, p. 232.

At once recognised by its large size, pale stigma and comparatively smooth abdomen. Much commoner on the Continent than in Britain. Munich, and bred in Germany from *Sesia culiciformis* (sec. Ruthe coll.); Algeria in 1849 (Parzudaki); Zürich (Buchecker); and France (F. Walker).

### 11. *Ephialtes longicauda*, Moes.

Term. Füz. xx, 1897, p. 644, ♀.

Moscáry gives the length of the body at 18 mm., and that of the terebra at 96 mm.; his single female was captured by Professor J. Kovács at Debreczin in Hungary. In the British Museum is a second female, agreeing with the description in every way, though rather smaller—length of body 16 mm., and of terebra 72 mm., which is in about the same proportion. It was captured, about 1871, on the Angara River in Siberia.

### 12. *Ephialtes tuberculatus*, Fourc.

*Ichneumon tuberculatus*, Fourc. E. P. II, p. 395; *E. gigas*, Walsh, Trans. Acad. Louis 1873, p. 110.

Only three European females are in the British Museum, from the Entomological Club in 1844, with a MS. name in F. Walker's writing; and two from Germany ex coll. Ruthe.

No doubt can remain that four American females in the British Museum belong to *E. gigas*, Walsh, who says that the abdomen has "the usual tubercles very distinct on joints 3-5"—Schmiedeknecht's mit starken Höckern—and "2e segment abdominal à peu près égal au premier"; these examples are from the United States in 1891 (Miss Phipson), Lake Huron (Dr. Bigsby, ex Vigors coll. 1859) and Nova Scotia (Redman), and differ in no way whatever from normal *E. tuberculatus*, with which I consequently venture to synonymise Walsh's species.

### 13. *Ephialtes tinctipennis*, Cam.

Manch. Mem. 1899, p. 151.

The unique Assam specimen is said by its author to be a ♂, but it now stands in a damaged condition in the British Museum.

### 14. *Ephialtes heteropus*, Thoms.

Opusc. Ent. xii, p. 1249.

Much commoner than *E. tuberculatus*, with which it was for so long confused. The British Museum possesses examples from Paris, 30th June, 1835 (F. Walker), Switzerland (Buchecker), Italy (Leach), Germany (Ruthe), Bialatzarkof in Polish Ukraine in 1843 (Dr. Dowler), Laerdal in Norway, 1909 (W. H. St. Quintin), and Salan in Siberia.

### 15. *Ephialtes crassus*, Morl.

Fauna Brit. India, Ichn. i, 1913, p. 181, ♀.

The unique specimen is in Colonel Nurse's collection, and was captured by him in the Punjab.

### 16. *Ephialtes reflexus*, sp. n.

This female has all the characters ascribed to *E. heteropus* by Schmiedeknecht (Opusc. Ich. p. 1117), but cannot, I think, be allowed to constitute an abnormal form of that species, on account of its very strongly elongate terebra and distinctly longer antennae; the metathoracic petiolar area is more definitely glabrous with its apex strongly and conspicuously

reflexed, the nervellus is intercepted nearer its centre, the areolet is distinctly petiolate and more curved at its outer fenestra; in general facies it more closely resembles *E. cephalotes*, Holmgr., though twice its size; the type is labelled by Rnthe "*E. carbonarius*?; length  $10\frac{1}{4}$ ''"; terebra  $27\frac{1}{4}$ ''", with an undecipherable German locality; the actual length is: body  $23\frac{1}{2}$  mm., terebra  $55\frac{1}{2}$  mm., and the antennae 19 mm. Another female from the same source is 21, with terebra 53, and the antennae 17 mm. in length. It is a stout species, with strong abdominal tubercles, the stigma pale, apical hind tarsal joint fully thrice the length of the very short penultimate; the metanotum longitudinally bicarinate, basal segment double as long as apically broad; head not posteriorly constricted; basal nervure exactly continuous through the median; basal abscissa of radius in lower wing distinctly a little longer than the recurrent nervure, and the nervellus strongly intercepted somewhat above its centre.

### 17. *Ephialtes carbonarius*, Chr.

*Ichneumon carbonarius*, Chr., Naturg. Ins. 1791, p. 365, pl. xxviii, fig 5.

There are many females in the British Museum from Central Europe, but no males. Another female, probably belonging to the allied *E. longisetata*, Ratz., Ichn. d. Forst. I, 1844, p. 117, was captured by Bucheker at "Appl." (probably in Switzerland) and is labelled by him "*Ephialtes longisetata*, Buch., 30 July."

### 18. *Ephialtes pusio*, Walsh.

Trans. Acad. St. Louis 1873, p. 111, ♀; (?) *E. macer*, Cress., Canad. Entom. I, 1868, p. 35.

Two female examples in the British Museum appear referable to Walsh's species, though the terebra seems longer in proportion; Walsh gives the length as .60 inch, and ovipositor .85 inch; here the body is 10 mm. and the ovipositor in one 15 mm., and in the second as much as 24 mm. All other characters agree perfectly. The second form may be *E. macer*, which Cresson says has the body 4-5 lines and terebra 11-19 lines in length; he records it from Illinois. The present females are from Colorado in 1891 (Cockerell), and the Monacknoch Mountains of New Hampshire in 1911.

20. *Ephialtes lachesis*, Morl.

Fauna Brit. India, Ichn. I, 1913, p. 180, ♂ ♀.

A Burmese species, of which the ♂ and ♀ types are in the Genoa Museum.

21. *Ephialtes brevis*, sp. n.

Doubtless hitherto mixed with *E. pygmaeus*, Walsh, who gives the length of his species as .58 to .63 inch, with its terebra .73 to .83 inch. Here the length is 15 mm., with terebra as much as 38 mm. It is by no means clear which is referred to under Walsh's name by Provancher (Nat. Canad. 1880, p. 20, and Faun. Ent. Canad. 1883, p. 452), for he simply says "tarrière plus longue que l'abdomen," though the second segment is distinctly shorter than the first, which is not here the case. The present species appears distinct to me in its remarkably short thorax and basal segment. Of the palaearctic kinds, it possesses all the features of *E. carbonarius* excepting the very short and abruptly declivous metathorax, laterally broadly rounded basal segment, which is but three-fifths the length of the second, with the third and fourth distinctly a little longer than broad; the legs and antennae are short, with the latter extending only to the centre of the second segment; and the terebra is very strongly elongate. Two females in bad condition were presented to the British Museum in 1844 by George Barnston from the district of Hudson's Bay (Albany River, St. Martin's Falls, etc.).

22. *Ephialtes ruficollis*, Desv.

Cat. Ichn. Brit. Mus. 1856, p. 88, ♀; Bridg., Trans. Ent. Soc. 1887, p. 376, ♂.

The type is in the British collection, along with other examples from the New Forest (T. A. Marshall), Stephens's coll., etc. Bucheker found it at Zürich, and Ruthe took a female in Germany on 11th June, 1856.

23. *Ephialtes albispiculus*, Morl.

Ichn. Brit. III, 1908, p. 42, ♀.

The unique was bred from *Sesia tipuliformis* at Bristol, and is in the author's collection.

## EXERISTES, Förster.

Verh. pr. Rheinl. 1868, p. 164; *Charitopimpla*, Cameron, Journ. Str. Br. R. Asiatic Soc. 1902, p. 48.

Eyes not or hardly pilose, nor internally emarginate; clypeus apically impressed in the centre, and basally discreted from the face. Apical flagellar joint not longer than the two penultimate. Mesonotum not trans-strigose; meta-thoracic spiracles oval, and areae entirely wanting. Abdomen distinctly punctate; segments transimpressed before their apices, and the second not elongate; spicula apically straight and terebra usually elongate. Apical joint of hind tarsi fully twice as long as penultimate; claws not pectinate, those of ♀ strongly lobate basally. Wings with areolet entire; internal cubital nervure not pellucid; first recurrent of hind wings not straight throughout.

Species of this genus are most closely allied to *Ephialtes* of all Pimplides, and Thomson seems unable to discriminate between that genus and *E. roborator*; the distinction may not be a natural one, but it is at least convenient; here I have adopted the relative length of the third abdominal segment, and place those species with this segment longer than broad in *Ephialtes* and those with it quadrate or broader than long in the present genus.

## TABLE OF SPECIES.

- (26) 1. Terebra at least nearly as long as the whole abdomen.  
 (5) 2. Mesosternum and sides of mesonotum sanguineous red.  
 (4) 3. Front legs red; metanotum centrally subglabrous.  
     1. *notanda*, Cress.  
 (3) 4. Front legs white; metanotum punctate throughout.  
     2. *petulca*, Cress.  
 (2) 5. Mesosternum and sides of mesonotum not, or not alone, red.  
 (19) 6. Scutellum and abdominal petiole black, or at least infuscate.  
 (10) 7. Terebra as long as body; front legs bright fulvous.  
 (9) 8. Posterior legs entirely black; first segment longer than  
     broad.  
     3. *elongatula*, sp. n.  
 (8) 9. Posterior legs mainly red; first segment subquadrate.  
     4. *pygmaea*, Walsh.  
 (7) 10. Terebra not as long as body; legs usually red or white-  
     marked.

- (14) 11. Abdomen very distinctly white-banded.
- (13) 12. Basal segment broader than long; hind femora red.  
5. *albicincta*, Morl.
- (12) 13. Basal segment longer than broad; hind femora black.  
6. *consimilis*, sp. n.
- (11) 14. Abdomen not at all pale-banded.
- (16) 15. Hind tibiae red; stigma basally pale; abdominal tubercles obsolete.  
7. *roborator*, Fab.
- (15) 16. Hind tibiae mainly white; stigma unicolorous; abdominal tubercles strong.
- (18) 17. Antennae fully half length of body; stigma nigrescent; hind coxae black-marked.  
8. *tibialis*, Morl.
- (17) 18. Antennae shorter than half body; stigma rufescent; all coxae pale.  
9. *ruficollis*, Grav.
- (6) 19. Scutellum and abdominal petiole not black.
- (21) 20. Metanotum closely punctate; areolet sessile.  
10. *flavoscutis*, Cam.
- (20) 21. Metanotum very sparsely punctate; areolet subpetiolate.
- (25) 22. Red with black markings; legs entirely pale.
- (24) 23. Stigma flavous; metathorax and petiole black.  
11. *coxata*, Smith.
- (23) 24. Stigma nigrescent; frenum and segmental apices black.  
12. *lineata*, Woll.
- (22) 25. Black with flavous markings; legs mainly black.  
13. *leucostoma*, Cam.
- (1) 26. Terebra nearly always very distinctly shorter than abdomen.
- (28) 27. Scutellum entirely black.  
14. *nigroscutis*, Cam.
- (27) 28. Scutellum always more or less broadly flavous.
- (30) 29. Hind legs mainly black; abdominal pale bands not entire.  
15. *flavipalpis*, Cam.
- (29) 30. Hind legs mainly pale; abdominal pale bands entire.
- (34) 31. Wings not apically infumate; mesonotum immaculate.
- (33) 32. Frons centrally simple; wings entirely hyaline.  
16. *pulchella*, Morl.
- (32) 33. Frons centrally carinate; wings basally fulvescent.  
17. *carinifrons*, Cam.
- (31) 34. Wings apically infumate; mesonotum with flavous vittae.  
18. *pulchrimaculata*, Cam.

1. *Exeristes notanda*, Cress.

*Pimpla notanda*, Cress., Trans. Amer. Ent. Soc. 1870, p. 148, ♂ ♀.

As its author there remarks, it is "easily distinguished by the handsome ornamentation of the thorax," black with the mesosternum and pleurae entirely, sides of the mesonotum broadly, and apices of metapleurae, with scutellum and postscutellum, sanguineous red; the terebra is 10 mm., and the body 11 mm. in length. It is recorded from Pennsylvania, New Jersey and Colorado; a pair in the British Museum was received through Riley in 1888 by Rev. T. A. Marshall, from the United States National Museum, the male from Texas (Belfrage) and the female was "Parasitic on *Gelechia* [*Gnorimoschema*] *gallae-solidaginis* [Riley,] emerged September 11th, 1883"—cf. Bull. U.S. Nat. Mus. LII, 1902, p. 502. A female was taken by Edward Doubleday in the United States about 1843.

2. *Exeristes petulca*, Cress.

*Pimpla petulca*, Cress., Trans. Amer. Ent. Soc. 1872, p. 165, ♀.

A female, taken in Texas by G. W. Belfrage, and received by the British Museum in 1873, is almost certainly the type of this species [cf. Revision Ichn. II, p. 98, *Hymenopharsalia texana*]; it will probably prove to be no more than a small form of the last, with the anterior legs paler and the body more slender.

3. *Exeristes elongatula*, sp. n.

A strongly elongate black species with blue reflection, and nothing but the front legs pale. Head posteriorly subbuccate, with the vertex broad; frons basally scabriculous, apically glabrous, with neither carinae nor trans-striation; face distinctly punctate, more closely at its elevated centre, with the orbits subglabrous; clypeus concave, basally discreted and apically broadly rounded, with mandibular teeth obtuse, the lower somewhat the longer; palpi black. Antennae immaculate, slightly longer than half the body and basally, but not apically, subattenuate. Thorax closely and subconfluently punctate and dull, with mesonotum shining and very sparsely punctate, its notauli deeply impressed; sternauli wanting; metathorax more shining and finely sculptured below the strong metapleural carinae; petiolar area laterally indicated, areae wanting and spiracles

both circular and prominent. Scutellum black and nitidulous. Abdomen very strongly elongate and not broader than the thorax, closely coriaceous and dull, with only the apices of all the segments glabrous and nitidulous; basal segment half as long again as apically broad, smooth, with short basal carinae; second not longer than broad, with distinct gastrocoeli before its prominent basal angles; third distinctly a little transverse, and, like the second and fourth, with weak lateral tubercles; terebra strongly pilose and exactly as long as the whole body. Legs neither stout nor elongate, black with only the front femora and tibiae bright orange; claws small, simple and basally lobate. Wings uniformly silicious and transparent with the stigma, radix, tegulae and nervures black; basal nervure continuous through the median; areolet large, triangular and sessile, emitting recurrent shortly before its apex; nervellus opposite, and but slightly geniculate at its lower third. Length, 15 mm. ♀ only. It has much the facies of *Ephialtes*, but the central segments are not elongate. The type was captured by S. A. Neave to the north of Mount Ruwenzori in the Uganda Protectorate (6-8,000 ft.) November, 1911.

#### 4. *Exeristes pygmaea*, Walsh.

*Ephialtes pygmaeus*, Walsh, Trans. Acad. St. Louis 1873, p. 111, ♀.

A female of this species, named and sent by Professor Riley to Rev. T. A. Marshall, must be relegated to the present genus on account of its distinctly quadrate third segment. A second female, also in the British Museum, was received from western Canada from Captain Ibbetson in 1854. Herbert Smith took, at Xucumanatlan in Guerrero, Mexico, a female of some 9 mm., with terebra as long as the body, which appears identical with this Canadian species.

#### 5. *Exeristes albicincta*, Morl.

Fauna Brit. India, Ichm. I, 1913, p. 196, ♀.

Bingham's two Sikkim females are in the British Museum.

#### 6. *Exeristes consimilis*, sp. n.

A long series of Australian specimens so closely resemble the last species from the Himalayas that it is only by close examination that I am convinced of true distinction, though the colour of the hind femora at once separates them in

a superficial manner. The present insect has the hind femora black in place of red, the tibiae are frequently, though not always, immaculate before the base, the terebra is a trifle shorter, the metanotum not at all impressed, and the basal segment is not broader than long, with its disc conspicuously bicarinate.

The ♂ of *E. albicincta* is unknown, but that of the present species differs only sexually from its ♀, and in having the sides of the seventh segment also apically flavous. This is apparently a very common kind, and widely distributed in Australia. Others are recorded from "Australasia" in 1844, New Hebrides (J. J. Walker), East Australia (Dr. T. P. Lucas), Mackay (Turner), bred at Townsville in Queensland from Psychids (F. P. Dodd), bred from gum leaves rolled by larvae of Lepidoptera at Botany, New South Wales and at Sydney (Froggatt), Champion Bay in Western Australia in 1866 (H. du Boulay), Victoria in February, August, September, and bred there from the Lasiocampid *Entomela ignobilis* and the Psychid *Metura elongata* (C. French).

### 7. *Exeristes roborator*, Fab.

*Ichneumon roborator*, Fab., Ent. Syst. II, p. 170; *Pimpla blattifera*, Tosq., Mém. Soc. Ent. Belg. 1896, p. 310, ♀.

By far the stoutest and most thick-set of all the normally elongate species of this genus. In the British Collection are a couple of ♀♀ named by Gravenhorst, ex coll. Linn. Soc.; these are quite distinct from the slender species described under the present name by me (Ichn. Brit. III, p. 56) and I am extremely doubtful if the true *roborator* be British, since the above two ♀♀ (with no locality) are the only examples purporting to be indigenous that I have seen. It is represented in the General Collection from Nantes, the sea-shore at Ajaccio in Corsica (Rev. T. A. Marshall), Crete in 1910 (Miss D. M. Bate), Polish Ukraine in 1843 (Dr. Dowler), Estoril near Lisbon, March, 1896 (Colonel Yerbury), both sexes in Corfu in May, 1889 (Schmiedeknecht), Dalmatia, Zürich, Germany, extending to Tunis (F. Walker), and Baruff in south-west Persia (Escalera). It would appear to occur in northern Europe, and should be found with us, since both Holmgren and Thomson knew it as Swedish. I regard the hosts ascribed by Dalla Torre to this species with great suspicion. I have seen it from both Dalmatia and Sicily in Frederick Smith's collection; it is at least much commoner in southern than northern Europe.

8. *Exeristes tibialis*, Morl.

Fauna Brit. India, Ichn. I, 1913, p. 198, ♀.

Bingham's type from Sikkim is in the British Museum.

9. *Exeristes ruficollis*, Grav.

*Pimpla ruficollis*, Grav., Ichn. Europ. III, p. 153, ♀.

Apparently rare, but at once known among other palae-arctic species by the rufescent coloration. Outside Britain I have only seen five German examples, with correctly named females from Stephens' and Desvignes' collections; the latter first introduced it as indigenous (Ent. Mo. Mag. 1868, p. 174, synonymising it with *Pimpla variegata*, Ratz., which association is still uncertain, though I know no other male description), on the strength of three females, still preserved in the British Museum, bred by Barrett at Bournemouth; they were parasitic upon the larva of *Tortrix turionella*, and bred from pine shoots containing cocoons of the moth; it appears nearly confined to the genus *Retinia* (cf. Ichn. Brit. III, p. 58.)

10. *Exeristes flavoscutis*, Cam.

*Charitopimpla flavoscutis*, Cam., Tijds. v. Ent. 1907, p. 97, ♀.

This Sikkim species is unknown to me, and is ascribed to the present genus with uncertainty.

11. *Exeristes coxata*, Smith.

*Pimpla coxata*, Smith, Descript. Hym. Brit. Mus. 1879, p. 229, ♀;  
*Epiurus flavipes*, Cam., Trans. Amer. Ent. Soc. xxx, p. 258, ♀ (1904).

The type was captured by H. Rogers at Irazu in Costa Rica at an altitude of 6-7,000 feet, and is in the British Museum together with the type of Cameron's synonymous "*Epiurus*" *flavipes* from "Mexico," which is by no means black as described; but the species is remarkable for its nearly entirely brunneous body, and entirely ochraceous legs; in both these specimens, and in a third captured by M. Sallé about the Orizaba crater in 1855, the second recurrent nervure is emitted distinctly before the apex of the areolet.

12. *Exeristes lineata*, Woll.

*Ephialtes lineatus*, Wollaston, Ann. Nat. Hist. 1858, p. 22, ♀.

I have already pointed out (Entom. 1911, p. 212) that this female belongs to the present genus; but the ♂—originally termed that of *Ephialtes linearis*—is certainly its other sex, and not that (assigned it by Francis Walker in MS. and) there associated with it. Three ♀♀ and two ♂♂, including the type, are in the British Museum from Madeira.

13. *Exeristes leucostoma*, Cam.

Morl., Fauna Brit. India, Ichn. I, 1913, p. 199; *Charitopimpla leucostoma*, Cam., Tijds. v. Ent. 1907, p. 97.

Sikkim and Ceylon; the ♂ is still unknown.

14. *Exeristes nigroscutis*, Cam.

*Charitopimpla nigroscutis*, Cam., Tijds. v. Ent. 1907, p. 98, ♀; Morl., l.c.

Unknown to me, and uncertainly ascribed to this genus. Sikkim.

15. *Exeristes flavipalpis*, Cam.

*Pimpla flavipalpis*, Cam., Manch. Mem. 1899, p. 174, ♂♀; Morl., l.c.

The position of this species, also, is uncertain. Assam.

16. *Exeristes pulchella*, Morl.

Fauna Brit. India, Ichn. I, 1913, p. 201, ♀.

Only two females, from Sikkim and Assam, are known; both are in the British Museum.

17. *Exeristes carinifrons*, Cam.

*Pimpla carinifrons*, Cam., Manch. Mem. 1899, p. 172, ♀.

I place this species here for the sake of convenience; it is from Assam, and the type in the British Museum seems to be the only known specimen; this has lost its white-banded, black abdomen. But the nervellus is intercepted distinctly above its centre (exactly as in *Habropimpla*), the antennae are peculiarly slender, and the metanotum trans-striate. I

have no doubt, that when sufficient material becomes available, the species will be relegated to the genus *Pimpla* as here restricted by me.

### APECHTIS, Thomson.

Opusc. Ent. p. 1410; (?) Förster, Verh. pr. Rheinl. 1868, p. 164.

Clypeus apically impressed, but not emarginate, basally discreted; eyes internally deeply emarginate; cheeks very short; frontal orbits not or very rarely pale; flagellum basally attenuate; mesonotum subglabrous and usually flavous-lined, notauli obsolete; metathoracic spiracles small and oval; areae wanting; abdominal impressions not oblique; hind tibiae not tricoloured; ♀ with tarsal claws not pectinate, but basally lobate on the inner side; areolet entire; nervellus always intercepted above its centre.

At least some of the Cuban species, described under *Pimpla* by Cresson (Proc. Ent. Soc. Philad. 1865, p. 35), almost certainly belong to this genus.

#### TABLE OF SPECIES.

- (4) 1. Hind tibiae not at all infusate.
- (3) 2. Basal segment more deeply sulcate; flavous marks sparse.  
1. *brassicariae*, Poda.
- (2) 3. Basal segment less deeply sulcate; flavous marks profuse.  
2. *rufata*, Gmel.
- (1) 4. Hind tibiae very distinctly infusate-banded.
- (6) 5. Metathorax bicarinate throughout; face and scutellum broadly flavous.  
3. *japonica*, Morl., n.n.
- (5) 6. Metathorax bicarinate only at base; face and scutellum not or hardly pale.
- (8) 7. All the abdominal segments apically white.  
4. *conquisitor*, Say.
- (7) 8. No abdominal segment pale-marked.
- (12) 9. Abdomen fusiform and somewhat smooth; coxae red.
- (11) 10. Hind tarsi basally fulvous, their tibiae broadly pale.  
5. *annulicornis*, Cress.
- (10) 11. Hind tarsal first joint broadly white, tibiae narrowly pale.  
6. *ontario*, Cress.
- (9) 12. Abdomen cylindrical and rugulose; coxae black.  
7. *rugulosa*, sp.n.

1. *Apechtis brassicariae*, Poda.

*Ichneumon brassicariae*, Poda, Ins. Graec. 1761, p. 105; *Pimpla rufata*, Hlmgr. Sv. Handl. 1860, p. 20.

Common throughout Europe; I have seen many from Switzerland, and one female thence bred by Bucheker from *Vanessa Io*; Germany from July to October, sometimes on oak trunks. *Pimpla picticornis*, Cress. (Trans. Amer. Ent. Soc. III, 1870, p. 147, ♂), which I do not know, seems to differ but little from this species.

2. *Apechtis rufata*, Gmel.

*Ichneumon rufatus*, Gmel., Linn. Syst. Nat. 1790, p. 2684; *Pimpla flavotata*, Hlmgr., Sv. Handl. 1860, p. 19.

This species occurs with the last and is, in my opinion, very doubtfully distinct; it is probably of equally frequent occurrence in the palaeartic region; Rev. T. A. Marshall received it in 1891 from M. l'Abbé J. Dominique, who took it about Nantes.

3. *Apechtis japonica*, nom. nov. *This name first used by Dallas 1896*

*Pimpla destructor*, Smith, Trans. Ent. Soc. 1874, p. 394 (nec Smith, Proc. Linn. Soc. Zool. VII, 1863, p. 9).

Frederick Smith described the male, female, and a female variety of this species; only the typical female, from Hiogo in Japan, is indicated in the British Museum, though a broken male from the same source labelled "var. *investigator*" (a MS. name) seems doubtless the male referred to. The species is extremely like a true *Pimpla*, but the tarsal claws are strongly lobate, and the flagellum is not filiform; the flavous-and-black posterior coxae, pale scutellum and stoutly bicarinate metathorax are noteworthy; the hind knees are black as in *Pimpla indra*, but the centre of their tibiae, the anterior legs, tegulae and sides of the face are flavous, which instantly distinguishes it from *P. luctuosa*, Smith, described from the same locality.

4. *Apechtis conquisitor*, Say.

*Cryptus conquisitor*, Say, Boston Journ. Nat. Hist. I. 1836, p. 232, ♀; *C. pleurivinctus*, Say, l.c. p. 235, ♂ ♀.

Benjamin D. Walsh has given us an excellent account of this species in his "Descriptions of North American Hymenoptera" (Trans. Acad. St. Louis, 1873, pp. 65-166), but he failed to note the peculiarly elongate form and much

more nitidulous abdomen of the ♂, resembling in these respects that of *Epiurus dilutus*, Ratz. He bred it in early June from a Lepidopterous pupa; Say (l.c.) bred it from a *Bombyx* cocoon, probably that of *Clisiocampa americana*, referred to by Leconte (Writings of Th. Say, Entom. II, 1859, p. 692) in Maryland, and Cresson (Practical Entomologist I, p. 19) raised it from the same kind of host, while Riley and Weed have ascertained eight other hosts. It is recorded from Indiana, Canada, etc.; in the British Museum is a good series from Georgia (Doubleday), Boston in Massachusetts and New York (H. Edwards), the Maine coast (R. E. Danfurth), Nova Scotia (Redman), Western Canada (Capt. Ibbetson in 1854), Slingerland in June, 1900, Albany in June, 1899, and Glens Fall, early in July, 1899, all in New York (N.Y.S. coll.); and two females bred by Professor Riley early in November, 1882, from *Thyridiopteryx ephemeraeformis* (Rev. T. A. Marshall). The intermediate tibiae of only the larger females are black at both extremities, as described (Faun. Ent. Canad. Hym. 1883, p. 463) by Provancher, who considers it very distinct in the white apices of the abdominal segments. An otherwise typical female, the only one captured by H. H. Smith at 8,000 feet during July at Omilteme in Mexico, differs in its extensively black-marked and not banded hind tibiae.

##### 5. *Apechtis annulicornis*, Cress.

Trans. Amer. Ent. Soc. III, 1870, p. 147, ♂ ♀.

A typical species of *Apechtis*, with the scutellum apically transversely pale and ♀ tarsal claws strongly dentate basally. Cresson's description needs amending on three points: The front and not the anterior coxae are basally black; the basal hind tarsal joints are fulvous and not (except possibly in life) yellowish; and the base, not disc, of the metathorax is bicarinate. He records it from Pennsylvania and Illinois, and Provancher found it in Canada. The abdomen is much more convex and laterally rounded than in *A. brassicariae*, though the difference is small. I have seen four Canadian females from Nova Scotia, Hudson's Bay in 1844, etc.

##### 6. *Apechtis ontario*, Cress.

Trans. Amer. Ent. Soc. III, 1870, p. 146, ♂.

Only recorded from Canada; Provancher remarks (Natural Canad. XII, 1880, p. 37) in describing the female, upon the brevity of its terebra, which is little more than a quarter

of the abdominal length. Two females in the British Museum are labelled "Dr. Richardson" and "Nova Scotia, Redman"; they appear to differ in no marked degree from the last species.

### 7. *Apechtis rugulosa*, sp. n.

A small black species with only the extreme apex of the scutellum pale, and the abdomen unusually rugose. Head small and black with a vertical orbital dot on either side, and the sides of the face very narrowly, pale; clypeus impressed before its apex, strongly transverse and basally deeply discreted; antennae black and basally subattenuate. Notauli obsolete; metathorax convex and strongly punctate with the apical declivity strongly impressed on either side and the glabrous areola sulciform; scutellum and post-scutellum both narrowly flavous apically. Abdomen black and strongly punctate with the segments transimpressed before their smooth apices, with distinct lateral tubercles, and the second segment basally deeply impressed; terebra a third of the abdominal length. Legs fulvidous with the coxae, hind trochanters, disc of hind femora apically, their tibiae apically and before base, with apices of their tarsal joints, nigrescent; posterior tibiae centrally flavescens. Wings hyaline with stigma entirely black, areolet small and nervelet distinct; nervellus intercepted but slightly above its centre. Length, 10 mm. ♀ only. Very like species of *Epirurus*, but with the clypeus not apically emarginate and metathoracic spiracles oval. It appears quite unlike anything described by Cresson or Provancher. The type, which alone I have seen, was presented to the British Museum in 1890 by the Rev. J. H. Keen, and collected by him at Inverness, Woodcock's Landing, at the mouth of the River Skeena, in British Columbia.

### ERIOSTETHUS, gen. nov.

Head small and not cubical, posteriorly constricted; mandibles not prominent; eyes not at all emarginate next scrobes. Antennae as long as the body. Prothorax distinctly elongate and colliform; mesonotum not transrugose; metathorax small, convex, glabrous, strongly nitidulous, with no carinae; spiracles circular and very small. Abdomen glabrous, nitidulous and impunctate, not apically compressed, the second segment not longer than apically broad; central

segments with strong lateral tubercles; hypopygium neither cultriform nor prominent, not extending to anus; terebra shorter than half abdomen. Legs slender and not elongate, with pulvilli fully double length of the tarsal claws; hind coxae not unusually elongate. Wings with the areolet wanting; nervelet small and distinct; second recurrent emitted from cubital further from submarginal nervure than length of the latter; central nervure of hind wing strong to base; nervellus wanting.

Certainly closely related in its colliform prothorax to the Neotropical genus *Epimecis*, Brullé, though remarkable and perhaps unique in the great length of its pulvilli, which suggest association with damp situations.

#### 1. *Eriostethus pulcherrimus*, sp. n.

A subglabrous and strongly nitidulous black species with the abdomen white-banded and the head, pro- and mesothorax, scutellum, frenum, front and part of intermediate legs, bright red. Antennae setaceous and not slender, with only the radicle red. Abdomen black; the first segment except a subtriangular central basal mark, the second except irregular lateral marks at its obliquely impressed base and small lateral lines before its apex, broad apices and narrow sides of the following, and the venter except lateral spots, stramineous-white; terebra a third of the abdominal length. Wings narrow and subhyaline. Length, 9 mm. ♀ only.

The type in the British Museum was captured somewhere in Australasia by Edward Damel, and presented in 1858; it is not, I think, from either New Zealand or Australia proper, as in that case it would in all-probability have been re-discovered during the elapsed fifty years.

#### POECILOPIMPLA, Morley, nom. nov.

*Poecilocryptus*, Cam., Ann. Nat. Hist. VII, 1901, p. 527 (*nec* Kriech., Zeits. Hym.-Dipt. I, 1901, p. 252.)

The type of the present genus, now in the British Museum, shows it to be, if not truly Pimplid, at least very far removed from any known form of Cryptid, since (1) the areolet is not at all pentagonal, but distinctly irregular, twice as broad as high, (2) the basal segment is by no means petiolate, but gradually explanate throughout from base to apex, with (3) its spiracles exactly central and not at all beyond the

middle. The metathorax is very short and its areae disposed exactly as in the more fully areated species of *Theronia*, to which genus it is allied in its glabrous, though very obsoletely tuberculate abdomen, stout legs and the tarsal structure; though sufficiently differing in its much more slender facies, the apically subclavate antennae (resembling those of *Periope*, Haliday), transverse alar areolet, strong notauli, peculiarly short metathorax and total lack of hind wing nervellus. The areolet is, however, distinctly variable in its breadth, and in some specimens actually does become pentagonal; and in one species the nervellus is entire. Kriechbaumer's genus, from Para in Brazil, is entirely different and Cameron's name must consequently fall; I propose *Pocilopimpla* for the latter.

### 1. *Pocilopimpla nigromaculata*, Cam.

*Pocilocryptus nigromaculatus*, Cam., Ann. Nat. Hist. VII, 1901, p. 528, ♀.

This is a bright, testaceous species with occiput, flagellum, three mesonotal vittae, scutellar and metanotal bases, base of all the segments at least laterally, the terebra, a hind coxal and trochanteral and femoral spots, with apices of their tibiae and tarsi black; metathoracic spiracles subcircular and very small; terebra about three-quarters of the abdominal length; the metanotal areola is always entire and apically truncate, though varying in breadth, and its lateral costulae are also complete; the alar areolet is of variable breadth, from double its height (as in the type specimen) to but slightly broader than high; basal nervure continuous, discoidal cell apically strongly acute below, nervellus entirely wanting. Length, ♂ ♀, 8-10 mm. It was simply recorded from "Australia" originally; but is probably not rare in Victoria, where C. French has taken the half-dozen examples in the British Museum about Melbourne and elsewhere during August and September. Cameron states (Proc. Linn. Soc., New South Wales 1911, p. 335) that Froggatt has bred this species from reddish (*Eucalyptus*) berry-shaped galls in September near Inverall in New South Wales; his remarks upon its systematic position are extremely vague.

I cannot regard as distinct a much smaller, clear stramineous form with the black markings very much sparser, the sides of the abdomen alone spotted, and the legs immaculate. These modifications lend the insects a very different aspect, and the length is but 6-7 mm.; but the structure is in every way identical, and I will simply term

it var. *straminea*, the typical female of which was raised by Froggatt in 1892 from the swollen stem of acacia leaves at Sydney, together with a male labelled "Agrizom. galls, Rose Bay"; and a third was captured during August, 1900, by French at Melbourne.

## 2. *Poecilopimpla inflexa*, sp. n.

A flavous species with mandibular apices, flagellar disc, three mesonotal vittae, scutellar fovea, metanotal base on either side, centre of all the segments but the first, with two hind coxal spots, both extremities of their femora, and apices of both their tibiae and tarsi, black; stigma piceous, and the external cubital cell apically infumate; length, 10 mm. ♂ only.

This insect agrees with the present genus in its apically explanate antennae, very short metathorax, its complete areae, glabrous and hardly tuberculate abdomen, stout though elongate legs and almost pentagonal alar areolet; though it probably merits generic rank in its vertically much narrower head, basally not discrete and apically truncate clypeus, prominent mandibles, small and subpunctiform notauli, large and elongate metathoracic spiracles, the prominence of its petiolar spiracles, more deplanate abdomen, very large and but slightly curved tarsal claws, straight disco-cubital nervure, centrally strongly incurved second recurrent and geniculate nervellus, which emits a very strongly sinuate nervure to apex of the wing.

The type was presented to the British Museum in 1910 from "Eastern Australia" by Dr. T. P. Lucas.

## Theronia, Holmgren.

Kgl. Svensk. Vet. Ak. Öfvers 1859, p. 123; Handl. 1860, p. 16.

Professor Krieger first attempted a general account of this genus, from which he split off a new one, *Neotheronia* (Sitz. Naturf. Ges. Leipzig 1897-8, p. 48), which agreed with it, as well as with my *Orientaltheronia* (Fauna Brit. India Ichneum. I, 1913, p. 146), Cameron's *Lissotheronia* (Spolia Zeylanica 1905, p. 139) and his *Erythrotheronia* (l.c., p. 134) in its impunctate abdomen. This Theronioid group of genera may be known from all other Pimplides by its utterly glabrous and impunctate abdomen, of which the second to sixth segments bear no transverse impressed lines, the head is not

strongly constricted posteriorly, the terebra is by no means stout, and the central mesonotal lobe is—unlike that of *Xanthopimpla*, Sauss., and *Notopimpla*, Krieg. l.c. 1899, p. 48—apically immarginate. Both Krieger (Zeits. Hym.-Dipt. 1906, p. 234) and I (Fauna Brit. India Ichneum. I, p. 140) have drawn attention to the error of Ashmead (Proc. U.S. Nat. Mus. 1900) and Cameron (Spolia Zeyl. 1905, p. 134) in describing the claws of this genus as pectinate. So excellent is Krieger's general table of species in his "Ueber die Ichneumonidengattung *Theronia*, Holmg." of 1906, that it is here translated in curtailed form, though all the following species—tables of which under distributional headings have been added—are not included.

## TABLE OF SPECIES.

- (4) 1. Head almost entirely black; face tuberculate between scrobes; eyes hardly emarginate internally.
- (3) 2. Nearly entirely black; stigma piceous; scutellum convex; laterally margined to beyond centre. 4. *laevigata*, Tschek.
- (2) 3. Thorax and abdomen pale; stigma ferrugineous; scutellum subdeplanate and only basally margined.  
1. *melanocephala*, Brullé.
- (1) 4. Head mainly pale; face not tuberculate; eyes distinctly emarginate.
- (6) 5. Metathoracic costulae strong; head obliquely constricted behind eyes. 11. *clathrata*, Krieg.
- (5) 6. Metathoracic costulae wanting; head rounded behind eyes.
- (12) 7. Body and legs profusely dark-marked.  
(ORIENTOTHERONIA, Morl.)
- (9) 8. Notauli wanting; frons carinate between scrobes; carinae of first segment indistinct, tubercles of second weak and confluent. 16. *hippotigris*, Krieg.
- (8) 9. Notauli distinct; frons not carinate; carinae of first segment distinct to spiracles; tubercles of second strong and distinct.
- (11) 10. Mandibular teeth of equal length; areola apically incomplete; basal segment half as long again as apically broad. 15. *zebra*, Voll.
- (10) 11. Lower tooth double length of upper; areola apically entire, though weak; first segment fully twice longer than apically broad. 14. *zebroides*, Krieg.
- (7) 12. Body and legs not, or but slightly, dark-marked.
- (16) 13. Lower mandibular tooth at least twice as long as the upper.
- (15) 14. Epinemia strong and complete. (Celebes, etc.)  
18. *diligens*, Smith.

- (14) 15. *Epicnemia* obsolete above. (Ron Island). 19. *limbata*, Krieg.
- (13) 16. Mandibular teeth equal, or the lower but slightly the longer.
- (22) 17. Areola apically entire.
- (19) 18. *Epicnemia* broadly obsolete above. (Tasmania, S. Australia.)  
28. *maculosa*, Krieg.
- (18) 19. *Epicnemia* complete.
- (21) 20. Stigma piceous; basal segment excarinate, with central sulcus and oblique sulci strong. 17. *penetrans*, Smith.
- (20) 21. Stigma ferrugineous; basal segment strongly carinate, oblique sulci obsolete. 3. *atalantae*, Poda.
- (17) 22. Areola apically wanting.
- (26) 23. *Epicnemia* complete.
- (25) 24. Wings subhyaline; head broader than thorax. (Celebes.)  
20. *cephalotes*, Krieg.
- (24) 25. Wings infumate; head not broader than thorax. (New Guinea.)  
21. *jumata*, Krieg.
- (23) 26. *Epicnemia* obsolete above.
- (30) 27. African species; metapleural carinae basally obsolete; epomiaee wanting; notauli short but distinct.
- (29) 28. Head posteriorly broad, but not buccate immediately behind eyes; vertex slightly and subangularly emarginate behind; clypeus of ♀ subdeplanate, of ♂ centrally sub-sulcate; tubercles of second segment intersulcate.  
8. *trivittata*, Krieg.
- (28) 29. Head posteriorly narrow, but buccate immediately behind eyes; vertex deeply emarginate; clypeus basally protuberant and then abruptly depressed; tubercles of second segment subconfluent. (Madagascar.)  
10. *hildebrandti*, Krieg.
- (27) 30. Eastern species; metapleural carinae complete; epomiaee short, but distinct; notauli hardly indicated.
- (32) 31. Hind tibiae basally infusate, their tarsi pale; areola wanting; interscrobal carina strong; scutellum convex, margined to centre. (Java.) 22. *schmiedeknechti*, Krieg.
- (31) 32. Hind tibiae basally pale, their tarsi piceous; areola not entirely wanting; interscrobal carina obsolete; scutellum hardly convex, only basally margined.
- (34) 33. Temples and cheeks buccate, explanate immediately behind eyes, and little constricted posteriorly; mesonotum trivittate. (Australia.) 29. *steinbachneri*, Krieg.
- (33) 34. Temples and cheeks not buccate, not explanate behind eyes and more constricted posteriorly; mesonotum immaculate. (Queensland and New South Wales.)  
30. *dubia*, Krieg.

## NORTH AMERICAN SPECIES.

1. *Theronia melanocephala*, Brullé.

*Pimpla melanocephala*, Brullé, Hist. Hym. 1846, p. 99, ♀; Walsh, Trans. Acad. Louis 1873, p. 131, ♂ ♀.

Canada. At once known from the next species by its black head, etc.

2. *Theronia fulvescens*, Cress.

*Pimpla fulvescens*, Cress., Proc. Ent. Soc. Philad. iv. 1865, p. 268, ♂.

Its author knew but a single Coloradan male, and I cannot find subsequent reference to the species, which was left in *Pimpla* by Dalla Torre in 1901. D'Urban presented a Canadian pair to the British Museum in 1859; Rev. T. A. Marshall received a New York female from Professor C. V. Riley in 1888; and both sexes are also in the British Museum from Pike, Glen Falls, and Slingerland in New York, taken in June. It is a true *Theronia* with indistinct or weak metanotal transcarina, and the female differs only sexually. Viereck has described (Trans. Amer. Ent. Soc. xxix, 1903, p. 88) a variety, *mellipennis*. Krieger did not include the present species in this genus; and I am certainly of opinion that his British Columbian var. *americana* (Zeits. Hym.-Dipt. 1906, p. 240) of *T. atalantae* is synonymous with it.

## EUROPEAN SPECIES.

3. *Theronia atalantae*, Poda.

*Ichneumon atalantae*, Poda, Ins. Mus. Graec. 1761, p. 106; *I. flavicans*, Fab. Ent. Syst. 1793, p. 182.

Much commoner in southern than in northern Europe, first described from Greece, and extremely rare in Britain (cf. Entom. 1909, p. 65), whence are four examples ex coll. Stephens, including the Ramsgate female, and three, doubtfully indigenous, named by Gravenhorst. Further south it seems common enough, and the thirty specimens in the British Museum are some from the Vosges, Dr. Puton (Rev. T. A. Marshall) and the rest from Switzerland and southern Germany (Ruthe, etc., between 25th June and 17th September), two bred respectively from *Lithosia quadra* by von Bermuth and *Argynnis paphia* by Bucheker, hitherto unrecorded hosts.



infumate throughout and stigma testaceous. Its metanotal basal areae, areola, supro-external and spiracular areae are confluent, and its central sulcus broad; petiolar area and those on either side distinct; length 11 mm. It was described from southern Abyssinia and is certainly a good species, as I am enabled to testify from a very distinct and typical example, captured early in February, 1911, by S. A. Neave on the south east slope of Mount Kenya in British East Africa (6-7,000 ft).

### 7. *Theronia lurida*, Tosq.

Mém. Soc. Ent. Belg. 1896, p. 282, ♂ ♀; (?) *Stagmopimpla hyalina*, Sauss., Grand. Hist. Madagascar 1890, pl. xvi, fig. 1, ♂.

A luteous species with the mesothorax black-trivittate, and the fourth to seventh segments subinfusate; antennae ferruginous, terebra dull testaceous and apically nigrescent; wings slightly flavescent, with stigma fulvous; hind tarsi dull red; metanotal transcarina wanting, areola quadrate; length 12 mm. Tanfidi in July, 1887, and Delagoa Bay; Szépligeti (Sjöstedt's Kilim.-Meru Exped. 1910, p. 84) records nine examples from about Usambara and Kilimanjaro, adding that the ♂ hind tarsi are black. The British Museum possesses four females captured at Durban in 1902 by F. Muir; at Voi and Mombasa in British East Africa in the middle of February, 1912, by Neave, and in Madagascar during 1878 by Rev. W. D. Cowan. Numerous other examples of both sexes have recently been received from Entebbe, Uganda, in September, the west shores of the Victoria Nyanza, the plains to the north-east of Lake Edward; on the Ankole-Toro border to the east of Lake George at 4,500 feet in October; in the Daro Forest of Toro, 4,000-4,500 feet, and between the Seziwa River and Kampala at 3,500 to 3,700 feet, at the end of August.

### 8. *Theronia trivittata*, Krieg.

Sitz. Nat. Ges. Leipzig 1899, p. 113, ♂.

An orange coloured species with the head and tibiae luteous; mesonotum trivittate, and hind tarsi, black; antennae brunneous; wings hyaline, slightly infumate-margined, stigma pale; metanotal transcarina obsolete; length, 10 mm. Sierra Leone, Guinea, Lake Nyassa, Delagoa Bay and Madagascar. Krieger mentions neither of the above species in 1899, while in 1906 he states that the Berlin "type" of

*T. lurida* does not agree with the description, which was drawn from a "co-type" at Genoa, but with his own *T. trivittata* and this, agreeing with Tosquinet's type but not his description, Krieger retains. I have not seen his var. *bipunctata*.

### 9. *Theronia octopunctata*, Kriech.

*Theronia 8-punctata*, Kriech., Berl. Ent. Zeit. 1894, p. 304, ♀.

Differs from all the other African species in having a basal transverse scutellar line, small circular marks on either side of the third to sixth segments, with a transverse striga on the seventh and eighth, black; length  $14\frac{1}{2}$  mm., with terebra only 2 mm. in length. Taken by Dr. Brauns at Durban.

#### ASIATIC SPECIES.

- (6) 1. Areola entire; antennae and stigma pale.
- (5) 2. Wings hyaline; mesonotum ferruginous; metathorax not black-marked.
- (4) 3. Hind femora and metathorax not black (India).  
11. *clathrata*, Krieg.
- (3) 4. Hind femora and metathorax partly black (Japan).  
12. *japonica*, Ashm.
- (2) 5. Alar apices infumate; mesonotum piceous; metathorax marked.  
13. *nigrobalteata*, Cam.
- (1) 6. Areola apically incomplete; costulae wanting; antennae infusate.
- (12) 7. Flavous; mesonotum trivittate, and all abdominal segments fasciated with black.
- (11) 8. Nervelet wanting; first segment basally constricted.
- (10) 9. Hind tibiae and antennae red; radius subsinuate.  
14. *zebroides*, Krieg.
- (9) 10. Hind tibiae marked with, and antennae, black; radius nearly straight.  
15. *zebra*, Voll.
- (8) 11. Nervelet distinct; first segment parallel-sided throughout.  
16. *hippotigris*, Krieg.
- (7) 12. Luteous or ferruginous, unicolorous or hardly black-marked.
- (14) 13. Wings entirely hyaline; hind tibiae basally black.  
18. *diligens*, Smith.
- (13) 14. Wings at least apically infumate; hind tibiae not black.

- (18) 15. Wings subhyaline, the front ones apically indefinitely dark.
- (17) 16. Occiput, mesonotal vittae and abdomen partly, ferruginous.  
8. *cephalotes*, Krieg.
- (16) 17. Mandibular apices alone infuscate. 17A. *penetrans*, Smith.
- (15) 18. Wings infumate-fulvous, front ones apically broadly dark.  
10. *fumata*, Krieg.

### 11. *Theronia clathrata*, Krieg.

Sitz. Nat. Ges. Leipzig 1899, p. 111, ♀; *T. areolata*, Cam. Manch. Mem. 1899, p. 152, ♀.

Only known from the Khasi Hills of Assam. The type of Cameron's species is in the British Museum.

### 12. *Theronia japonica*, Ashm.

Proc. U.S. Nat. Mus. 1906, p. 181, ♀.

There is not a word of structural description in the whole of Ashmead's account of this species. It seems closely allied to the above, and was found by Dr. Matsumura at Sapporo in Japan.

### 13. *Theronia nigrobalteata*, Cam.

Manch. Mem. 1899, p. 153, ♀.

I have not seen this Assam species, which "comes near *T. areolata*, but is smaller; has the thorax and abdomen marked with black, and otherwise may be known by the central area on the base of the median segment being square and not hollowed." The type is in the Oxford Museum.

### 14. *Theronia zebroides*, Krieg.

*T. zebroides*, Krieg., Zeits. Hym.-Dipt. 1906, p. 236; *Orientotheronia rufescens*, Morl., Fauna Brit. India, Ichm. 1, 1913, p. 146, ♂ ♀.

There seems little room to doubt the above synonymy; I differentiated the genus *Orientotheronia* by the distinctly sulcate underside of the anterior femora, and am still of opinion that it will be a useful division of *Theronia*, when the known species of that genus become too numerous—as will soon be the case—to treat in mass, but in the present instance its adoption appears unnecessary. *T. rufescens* is a rare species, superficially at once known by its unicolorous red hind tibiae; it is wide-spread through Sikkim, Assam and

Burma to Hong-Kong, and one typical female was presented by Hon. W. Rothschild to the British Museum in 1911 from Suishako in Central Formosa.

### 15. *Theronia zebra*, Voll.

*Pimpla zebra*, Voll., Stett. Ent. Zeit. XL, 1879, p. 147, ♀; *Theronia callida*, Tosq., Mém. Soc. Ent. Belg. 1903, p. 91, ♀; *T. maskelijae*, Cam., Spolia Zeylanica 1905, p. 133, ♂ ♀; *Orientotheronia maculipes*, Morl., Fauna Brit. India, Ichn. I, 1913, p. 148, ♂ ♀ fig.

An abundant south Indian species through Bombay, Ceylon and Tenasserim to Singapore, where Geoffrey Meade-Waldo took a pair at the end of January, 1908, and whence Ridley has sent a nice series to the British Museum. It was originally recorded from Java; and Cameron refers to it (Manch. Mem. IV, 1891, p. 186), but he evidently did not know it, for he subsequently describes it as new from Ceylon, an error of which I myself am not innocent; while Tosquinet also considered it undescribed in 1903, when he mentioned it from an altitude of some 2,000 feet at Sukaburni in western Java. The type of Cameron's name in the British Museum has simple tarsal claws.

### 16. *Theronia hippotigris*, Krieg.

Zeits. Hym.-Dipt. 1906, p. 234; *Orientotheronia acheron*, Morl., Fauna Brit. India, Ichn. I, 1913, p. 149, ♂.

Professor Krieger's species is from Ceylon, where Colonel Bingham captured the male type of my doubtless synonymous species at Pundaloya.

### 17. *Theronia penetrans*, Smith.

*Pimpla penetrans*, Smith, Proc. Linn. Soc. Zool. III, 1858, p. 173, ♂ ♀; *T. sulcata*, Krieg., Zeits. Hym.-Dipt. 1906, p. 239.

This species was erroneously supposed (Sitzb. Nat. Ges. Leipzig 1899, p. 65) to be referable to *Xanthopimpla*, for Smith expressly terms it "smooth and shining." The four examples in the British Museum are those recorded (Linn. Soc. Journ. Zool. VIII, 1864, p. 64) from Salwatty and Aru; they all have the posterior tibiae immaculate and not "fuscous above." In structure this species exactly agrees with Krieger's *T. sulcata* and (excepting the apically entire areola) with his 1899 description of *T. cephalotes*, of which it may be a pale form. A. F. R. Wollaston took a female in July, 1910, on the Mimika River in Dutch New Guinea.

18. *Theronia diligens*, Smith.

*Pimpla diligens*, Smith, Journ. Linn. Soc. Zool. VIII, 1864, p. 64, ♀;  
*T. macrodus*, Krieg., Zeits. Hym.-Dipt. 1906, p. 237, ♀; *T. papuana*,  
 Cam., Nova Guinea IX, 1911, p. 209, ♂ ♀.

A female, apparently the unique type from Morty Island—or Morotai, as most maps now spell the word—in the British Museum is a large and stout testaceous insect of  $13\frac{1}{2}$  mm., with only the mandibular apices and extreme base of the hind (not “posterior”) tibiae, black; wings hyaline throughout, with their apices but very slightly darker. Cameron’s species is said to be rather smaller with a length of 11 mm., but his description agrees in nearly every way with Smith’s type, which has the mesonotal vittae extremely inconspicuous and was, until now, placed in *Pimpla*.

## AUSTRALASIAN SPECIES.

- (6) 1. Lateral metanotal carinae very strong; wings deeply and evenly infumate.
- (3) 2. Lower mandibular tooth much the longer; abdomen and hind legs black. 1. *melanosoma*, sp. n.
- (2) 3. Mandibular teeth of equal length; abdomen and legs not black.
- (5) 4. Ferruginous; abdominal tubercles obsolete; occiput centrally strongly emarginate; stigma flavous. 2. *flavistigma*, sp. n.
- (4) 5. Testaceous; abdominal tubercles strong; occiput not emarginate; stigma infusate. 3. *fumipennis*, sp. n.
- (1) 6. Lateral metanotal carinae normal; wings subhyaline.
- (8) 7. Metanotal areola apically complete; at least central segments black-marked; hind tarsi pale. 4. *viridicans*, sp. n.
- (7) 8. Metanotal areola apically not carinate; body clear testaceous; hind tarsi black. 5. *claripennis*, sp. n.

\* The only insect that had, until 1906, been ascribed to this genus in Australia is *Theronia rufipes*, brought forward (Queensland Agricultural Journal, February, 1900, p. 140, pl. clxxiv, fig. 2, ♀ ♂) by Mr. Henry Tryon, Entomologist. Doubtless Mr. Tryon has had but small experience in Parasitica, or he would know this is synonymous with the commonest of all Australian Ichneumonids, *Lissopimpla semipunctata*, Kirby (cf. Revis. Ichn. II, p. 34). His account of the economy is, nevertheless, extremely interesting. He says it destroyed a very large percentage of the grass-feeding larvae of *Spodoptera mauritia* in the Tingalpa district during April, 1895, and that the imagines were so abundant in pastures at Rockville, Mombra, during the caterpillar plague of 1896 as to attract the attention even of the graziers. It emerges from subterranean Lepidopterous pupae.

23. *Theronia melanosoma*, sp. n.

A very fine and dull red-testaceous species, with the mandibular apices, antennae, hind legs and the nitidulous abdomen black, with wings evenly and somewhat strongly infumate, though not nigrescent, throughout; the flagellar joints are much more apically setiferous than is usual in the present genus, the vertex broader behind the eyes, the metanotal lateral carinae are unusually prominent and apically foliaceous with metathoracic apex laterally sub-produced on either side, the frons is strongly impressed and stigma infusate; the ♀ has the terebra three-quarters of the abdominal length, the two basal segments apically flavidous on either side, and the first is basally testaceous; length ♀ 12, ♂ 14 mm. A single pair was captured by Turner in February and March, 1902, at Kuranda near Cairns in Queensland.

24. *Theronia flavistigma*, sp. n.

Similar to the last, but entirely nitidulous and ferruginous with the terebra, antennae and broad mandibular apices alone black; occiput centrally emarginate; areola not strongly costate, parallel-sided with slight lateral indication of an apical carina; wings infumate and distinctly a little paler apically, though not basally; their costa nigrescent to base of stigma and thence bright flavidous; terebra only half abdominal length; length 12 mm. ♀ only. The type was acquired in 1887 from C. M. Woodford, who captured it in the Solomon Islands.

25. *Theronia fumipennis*, sp. n.

Of the usual testaceous facies, but known from all other such species by its strongly and evenly infumate, though not nigrescent, wings; the metanotal carinae are somewhat weak, and areola entirely open apically; terebra almost half abdominal length; length 11-12 mm. ♀ only. The type was captured at Townsville in northern Queensland by F. P. Dodd; and three other females were presented by Turner in 1909 from Mackay.

26. *Theronia viridicans*, sp. n.

(? *T. steinbachmeri*, Krieg., Zeits. Hym.-Dipt. 1906, p. 320).

Very remarkable for the distinct pale green coloration of the abdomen and hind femora, trochanters and coxae;

otherwise this species is testaceous with mandibular apices, the basal scutellar fovea, sometimes lateral basal metanotal marks, hind claws, and more or less of the abdomen towards its apex, nigrescent; the terebra is half the abdominal length; the stigma piceous with its centre rufescent; and the metanotum feebly, though entirely, transcarinate with distinct but obtuse apophyses; length 11-14 mm. ♂ ♀. The typical female was captured by E. D. Atkinson in south-east Tasmania in 1877, a second taken by C. French in Victoria during September, 1901, and there is a pair, also from Victoria (C. French), in the British Museum.

### 27. *Theronia claripennis*, sp. n.

(? *T. dubia*, Krieg., Zeits. Hym.-Dipt. 1906, p. 320).

So similar to the palaeartic *T. atalantae* in every way as to be distinguishable only by its apically incomplete metanotal areola, black antennae and tarsi; length 9-11 mm. ♂ ♀. The type was captured near Sydney in 1856 by Cuning, a second male was secured during April, 1899, at Mackay in Queensland by Turner, and both F. du Boulay and C. French found females in Victoria.

### NEOTHERONIA, Krieger.

Sitzb. Naturf. Ges. Leipzig 1897-8, p. 48.

This genus is exactly similar to *Theronia* in almost every way, excepting that, in place of having the metanotum more or less evenly areolated with even carinae, its apex is bounded throughout its breadth by a high and stout ridge, cutting the metathorax into two very distinct parts. In his above-quoted erection of the genus, published in 1899, Professor Krieger did little more than differentiate it from its allied genera; but in his admirable paper upon the subject (Zeits. Hym.-Dipt. v, 1905, pp. 286-307 and 333-338) he enumerates no less than fifty-five species, all from central and southern America, with the exception of one from northern Carolina. Only four were ascribed by him to Mexico, whence came most of the material in the British Museum, and two from Cuba, a locality which is little known to us entomologically in England. That the first two species of *Theronia*, tabulated by me under Africa, belong to the present genus is not improbable (cf. Szépl., Kilim.-Meru Exped. 1910, p. 84). Mr. Ernest A. Elliott has been good enough to allow me to publish the following translation he has carefully drawn up

of the distinctions used by Krieger in his specific synopsis referred to above; a study of this particular group affords an excellent example of how numerous Ichneumonidae may be in a little-worked area, and of how appalling the number of species is likely to prove when a comparatively complete knowledge of them has eventually been attained.

## TABLE OF SPECIES.

1. Rust-red, mouth, temples below, usually also sternum, and the anterior coxae and trochanters yellow. Hind tarsi usually black. 2.  
Yolk-yellow, usually with black, brown, or rarely red markings; or black with yellow markings; abdomen sometimes partly rust-red. 28.
2. Stigma rust-red; wings yellow with bright gold sheen, dark-bordered. 3.  
Stigma black; wings hyaline and rarely brownish, usually brown-bordered with a dark spot at apex of radial cell. 4.
3. Metathorax with no pleural carinae; radial cell immaculate (Bolivia and Peru). 1. *aurata*, Krieg.  
Metathorax with pleural carinae; radial cell dark-spotted (Ecuador) 2. *micans*, Krieg.
4. Pleural carinae wanting; basal segment not apically explanate (Columbia). 3. *enderleini*, Krieg.  
Pleural carinae present; basal segment usually very explanate. 5.
5. Lower mandibular tooth double length of upper (Peru). 21. *mandibularis*, Krieg.  
Lower mandibular tooth as long as, or a little longer than upper. 6.
6. Body, especially legs, with long diffuse erect hairs (Peru). 24. *pilosa*, Krieg.  
Body without long erect pubescence. 7.
7. Lateral metathoracic carinae wanting. 8.  
Lateral metathoracic carinae present. 22.
8. Basal segment distinctly bicarinate nearly to apex, and sulcate between them. 9.  
Basal segment without dorsal carinae or they coalesce, not centrally sulcate. 16.
9. Transcarina of metathorax neither very high nor lamelliform. 10.  
Transcarina of metathorax very high, standing up lamelliform. 13.
10. Dorsal carinae of first segment very acute; corner metathoracic carinae (those bounding Thomson's 'areae angulares') complete and distinct (Columbia). 4. *carinata*, Krieg.  
Dorsal carinae of first segment not acute; corner carinae wanting or obtuse. 11.

11. Metanotum centrally impressed in front, corner carinae indistinct ; terebra distinctly exerted ; scutellum bordered to beyond middle (Peru and Bolivia). 5. *impressa*, Krieg.  
Metanotum not impressed, corner carinae wanting ; terebra not or scarcely exerted ; scutellum only basally bordered. 12.
12. Wings brownish, with dark brown borders (Bolivia). 6. *roraria*, Krieg.  
Wings almost entirely hyaline, with dark brown spot at apex of radial cell, and borders scarcely infusate (Columbia). 7. *veles*, Krieg.
13. Segment one basally narrow, comparatively strongly explanate. 14.  
Segment one not very narrow basally, and but little explanate. 15.
14. Metathoracic transcarina centrally strongly raised and truncate (Peru and Columbia). 10. *cristata*, Krieg.  
Metathoracic transcarina neither centrally elevated nor truncate (Peru). 11. *fossulata*, Krieg.
15. Border of wings broadly brown ; } Bolivia. 8. *subparallela*, Krieg.  
scutellum convex and not }  
bordered. } Mexico. 8a. *mexicana*, sp.n.  
Border of wings slightly infusate, not brown, with brown spot at apex of radial cell ; scutellum little convex, bordered to near its middle (Rio Grande do Sul and Sta. Catarina). 12. *kohli*, Krieg.
16. Basal segment slender, but little explanate towards the apex. 17.  
Basal segment not slender, distinctly explanate towards apex. 19.
17. Transcarina of metathorax very high, lamelliform ; head behind eyes short ; epinemia obsolete above (Ecuador). 9. *parallela*, Krieg.  
Transcarina of metathorax centrally low, angles dentately prominent ; head behind eyes elongate ; epinemia complete above. 18.
18. Frons centrally sulcate ; facial sulcus slightly developed ; scutellum bordered to beyond middle (Panama and Mexico). 13. *tolteca*, Cresson.  
Frons without central sulcus ; facial sulcus centrally deep ; scutellum not bordered as far as the middle (Peru). 14. *angulata*, Krieg.
19. Head behind eyes short, narrowed in curves ; mesonotum yellow, with three stripes (Ecuador and Peru). 40. *facialis*, Krieg., var. *ferruginea*, Krieg.  
Head behind eyes long ; mesonotum uniform rust-red. 20.
20. Head behind eyes narrowed in strong curve ; transcarina of metathorax higher in centre than at sides (Peru). 15. *buccata*, Krieg.  
Head behind eyes narrowed in straight line ; transcarina with angles higher than the middle. 21.
21. Face strongly prominent below scrobes, sharply triangularly excised ; scutellum only basally bordered (Ecuador). 16. *excisa*, Krieg.  
Face but little prominent, impression obtuse-angled ; scutellum bordered to the middle (Peru). 17. *occipitalis*, Krieg.

22. Longitudinal lateral carinae of metathoracic areola and basal area wanting (Peru and Brazil). 18. *terebratrix*, Krieg.  
Longitudinal metanotal carinae present. 23.
23. Borders of wings but slightly infuscate, not dark brown. 24.  
Borders of wings distinctly brown. 25.
24. Head slightly rounded behind eyes; scutellum very convex, only basally bordered (Panama). 19. *hastata*, Krieg.  
Head strongly narrowed behind eyes; scutellum less convex, bordered to the middle (Surinam). 20. *surinamensis*, Krieg.
25. Longitudinal metanotal carinae attain transcarina; basal segment without carinae (Peru). 26. *costata*, Krieg.  
Metanotal carinae apically abbreviated; dorsal carinae of first segment indicated. 26.
26. Head strongly rounded behind eyes; scutellum bordered as far as middle; terebra longer than hind tibiae and tarsi (Guinea).  
Head slightly rounded behind eyes; scutellum bordered to beyond centre; terebra but little longer than hind tibiae. 22. *sarisophora*, Krieg: 27.
27. Brown part of radial cell covers more than its apical half; epicnemia broadly and completely wanting above; terebra longer than hind tibiae (Bolivia). 23. *radialis*, Krieg.  
Brown part of radial cell covers less than its apical half; epicnemia sometimes interrupted, but always distinct on anterior margin of mesopleurae; terebra shorter than hind tibiae (Peru). 25. *vallata*, Krieg.
28. Three basal segments immaculate yellow, apical ones entirely black. 29.  
Abdomen not so coloured. 33.
29. Head and thorax almost entirely pale; margin of wings alone infuscate; facies unusually stout (Ecuador). 27. *obesa*, Krieg.  
Head and thorax black or extensively black-marked above, yellow beneath; apex of wings brown; body normally slender. 30.
30. Scutellum rust-red, basally bordered; first segment with carinae (Peru). 28. *tricolor*, Krieg.  
Scutellum black or yellow, bordered to its middle; first segment without dorsal carinae. 31.
31. Metapleural carinae wanting; face excised between scrobes (Peru). 29. *amphimelaena*, Krieg.  
Metapleural carinae present; face only emarginate between scrobes. 32.
32. Epicnemia obsolete above; head narrowed in a curve behind eyes; small interscrobal carina present; petiolar spiracles prominent (Peru). 30. *tuberculata*, Krieg.  
Epicnemia complete above; head almost straightly narrowed; interscrobal carina wanting; spiracles not prominent (Peru). 31. *mesoxantha*, Krieg.
33. Head and thorax yellow, usually black or brown marked. 34.  
Head and thorax almost entirely black (Peru). 44. *austera*, Krieg.

34. Anterior half of segments one and two black, posterior half yellow ; rest of abdomen uniform red (Cuba). 47. *bicincta*, Cress.  
Abdomen not so marked. 35.
35. Stigma black or black-brown, rarely only dark-bordered ; abdomen unicolorous, or with narrow dark bands or apical broad ones ; antennae black. 36.  
Stigma rust-red or fulvous ; abdomen with broad red or black bands on basal segments ; antennae often more or less red. 47.
36. Clypeus flat or gradually depressed ; flagellum almost always with more than forty joints. 39.  
Clypeus basally inflated, apically suddenly depressed ; flagellum thirty-four to thirty-nine, jointed. 37.
37. Whole body unusually robust ; head buccate (Brazil).  
41. *kriechbaumeri*, Krieg.  
Body not unusually stout ; head not buccate. 38.
38. Face only slightly emarginate between scrobes ; terebra slightly longer than hind tibiae and tarsi (Columbia).  
42. *columbiensis*, Krieg.  
Face pointedly excised between scrobes ; terebra little longer than hind tibiae and first tarsal joint (Mexico, Guatemala, Costa Rica, Panama, Columbia, Ecuador, Peru, Rio Grande del Sul). 43. *lineata*, Smith.
39. Scutellum flat, bordered at least to the middle. 40.  
Scutellum convex, only basally bordered. 41.
40. Scutellum bordered to beyond middle ; epinemia indistinct above ; first segment two-and-a-half times as long as apically broad ; wings subhyaline (Brazil). 32. *marginata*, Krieg.  
Scutellum bordered to middle ; epinemia acute throughout ; first segment thrice as long as apically broad ; wings yellow, brown-bordered (Peru). 33. *submarginata*, Krieg.
41. Head behind the eyes narrowed in a straight line on either side. 42.  
Head behind the eyes narrowed in a curve on either side. 43.
42. Epinemia entire ; wings hyaline, radial cell dark-spotted (Brazil).  
34. *nigrolineata*, Brullé.  
Epinemia obsolete above ; wings yellow-brown, dark bordered (Peru). 35. *fumosa*, Krieg.
43. Mandibles apically narrowed, apex hardly half as broad as base, teeth small ; head strongly rounded behind eyes ; metanotal transcarina very high, lamelliform ; abdomen always unicolorous light. 44.  
Mandibles at apex more than half as broad as at base, teeth large ; head but slightly rounded ; transcarina normal ; abdomen sometimes dark banded. 45.
44. First segment little more than twice as long as apically broad, seen from side high and curvate, with high carinae ; no interscrobal carina (Mexico). 36. *montezuma*, Cress.  
First segment two-and-a-half times as long as apically broad, basally narrow, flattish, with slight and indistinct carinae ; interscrobal carina present (Bolivia and Peru).  
37. *aurulenta*, Krieg.

45. Vertex without dark cross band ; no interscrobal carina ; facial sulci very distinct ; epomiae elongate (North Carolina).  
38. *septentrionalis*, Krieg.  
Vertex with dark band ; with interscrobal carina : sulci obsolete ; epomiae weak. 46.
46. Terminal margin of wings not brown, the front ones only slightly infusate apically ; face finely punctate, centrally subglabrous ; basal segment without trace of carinae (Southern Brazil).  
39. *australis*, Krieg.  
Terminal margin distinctly brown, with darker spot at apex ; face strongly punctate, centrally distinctly ; basal segment with confluent carinae (Peru, Ecuador and Bolivia).  
40. *facialis*, Krieg.
47. Upper mandibular tooth subobsolete, lower acuminate (Peru).  
55. *oxyodus*, Krieg.  
Mandibular teeth of equal or subequal length. 48.
48. Basal segment slender, more than two-and-a-half times as long as broad ; forewings brown-margined ; scutellum bordered at least to middle. 49.  
Basal segment at most two-and-a-half times as long as apically broad ; forewings not margined ; scutellum almost always bordered only basally. 50.
49. Scutellum bordered to apex ; transcarina normal, evenly curved ; lateral carinae entire ; first segment three times its apical breadth, carinae weak (Peru). 45. *tenuis*, Krieg.  
Scutellum bordered to middle ; transcarina high, angularly bent ; lateral carinae abbreviated ; first segment two-and-a-half times its breadth, carinae acute (Columbia). 46. *laticeps*, Krieg.
50. Clypeus abruptly depressed, apically distinctly emarginate. 51.  
Clypeus not or only very gradually depressed. 52.
51. Wings yellowish, not brown bordered or spotted ; antennae red, apex and sometimes base piecous ; scutellum bordered nearly to middle (Peru and Bolivia). 48. *conequata*, Krieg.  
Wings red-yellow, margin and apex brown ; antennae black, basally red ; scutellum only basally bordered (Cuba and Mexico). 51. *consimilis*, Cress.
52. Mesopleurae and metanotum pale ; radial cell spotted ; first segment one-and-a-half times its apical breadth. 53.  
Mesopleurae and metanotum dark-marked ; spot wanting ; first segment fully twice its apical breadth. 54.
53. No longitudinal carina between base of wings (? antennae) ; metathoracic transcarina rather high, and before it is a longitudinal fovea bordered by small flat tubercles representing central carinae ; first segment basally carinate (Cuba).  
52. *nubecula*, Cress.  
Longitudinal carina between base of wings (? antennae) ; metathoracic transcarina high, lamelliform, with acute central carinae ; first segment with indistinct carinae (Porto Rica).  
53. *nubecularia*, Dewitz.

54. Metathoracic lateral carinae basally abbreviated, its central carinae entire and acute; interscrobal carina wanting; transcarina evenly curved (Guiana, Bolivia, Ecuador, Columbia Brazil, Peru). 54. *alternans*, Brullé.

Metathoracic lateral carinae wanting; interscrobal carina small; transcarina high and rather angular. 55.

55. Vertex centrally deeply emarginate; metathoracic corner carinae wanting; basal segment less than twice as long as its apical breadth; antennae brown; legs brown-streaked (Rio Grande do Sul). 50. *compta*, Krieg.

Vertex slightly emarginate along its whole width; corner carinae more or less distinct; basal segment more than twice as long as apically broad; antennae ferruginous; legs yellow, brown-striped (Peru, Panama and Honduras).

49. *transversaria*, Krieg.

### 3. *Neotheronia jason*, Cam.

*Pimpla jason*, Cam., Manch. Mem. (4) 1, 1888, p. 176, ♂ ♀; *Neotheronia enderleini*, Krieg., Zeits. Hym.-Dipt. 1905, p. 289, ♂ ♀.

Cameron's ♂ and ♀ types are the only specimens in the British Museum. They were taken by Wheeler in "Interior of Columbia," whence also is Krieger's species, which is certainly synonymous, for it is a conspicuous one.

### 8a. *Neotheronia mexicana*, sp. n.

A fulvidous-flavous species with the body not strongly pilose, and the partly rufescent abdomen sometimes apically subinfusate. Antennae except basally, mandibular teeth, terebra, stigma, onychii and all the claws black; mesonotum fulvous with two flavous vittae; wings flavescent, with no darker apical border or spot. Metathoracic pleural carinae strong, the dorso-lateral wanting; basal segment parallel-sided, with strong central sulcus and weak carinae; mandibular teeth of subequal length; transcarina of metathorax acute and lamelliform; scutellum convex and not laterally bordered. Length 12 mm. ♂ ♀. Most closely allied in Krieger's table to *N. subparallela*, but quite distinct from both that and *N. kohli* in its evenly subinfumate wings. H. H. Smith took a dozen examples, of both sexes, in Mexico at Acaguizotla (type) (3,500 feet) during October, Rincon at 2,800 feet during October, Venta de Zopilote at 2,800 feet during June in Guerrero, at Atoyac in Vera Cruz in April and May, and at Teapa in Tabasco during February.

10. *Neotheronia cristata*, Krieg.

Zeits. Hym.-Dipt. 1905, p. 292, ♂ ♀.

A male and a couple of females, captured by Herbert Smith at Teapa in Tabasco during February, and at Atoyac in Vera Cruz during May, agree well with the description of this species, which is only recorded from Peru and Columbia; they are deep red and very stout.

12. *Neotheronia chiriquensis*, Cam.

*Theronia chiriquensis*, Cam., Biol. Centr.-Amer. 1886, p. 364, pl. xi, fig. 6; (?) *Neotheronia kohli*, Krieg., Zeits. Hym.-Dipt. v, 1905, p. 293, ♂ ♀.

Krieger does not appear to have consulted the *Biologia Centrali-Americana* at all (cf. Sitzb., Nat. Ges. Leipzig 1899, p. 121), or Cameron's figure of this species would have sufficed to place it in the present genus in spite of his poor description with no indicated sex, since the metanotal transcarina is distinct. It was described from two pairs, now in the British Museum, and these I should have no hesitation in attributing to *N. kohli* were it not that the latter is only known from Rio Grande do Sul and Santa Catherina in Brazil, whereas *N. chiriquensis* has been taken solely at Chontales in Nicaragua (Janson), at 800-1,500 feet at Bugaba, and at 4,000-6,000 feet on the Volcan de Chiriqui (Champion).

13. *Neotheronia tolteca*, Cress.

*Theronia tolteca*, Cress., Proc. Acad. Philad. 1873, p. 396, ♂ ♀; *N. tolteca*, Krieg., Zeits. Hym.-Dipt. 1905, p. 293; cf. Sitz., Nat. Ges. Leipzig 1899, p. 120. *Cryptus ferrugineus*, Smith, Descript. New. Spp. Hym. 1879, p. 231 (*nec* Smith, Proc. Linn. Soc. Zool. 1861, p. 63).

Apparently common; recorded by Cameron (Biol. Centr. Amer. 1886, p. 264) from Costa Rica, Nicaragua, Panama and Mexico. I can discover no distinction between specimens taken at Teapa in Tabasco, Mexico, during February and March by H. H. Smith and others from Ecuador (Rosenberg, 1899) and British Guiana (J. Rodway, 1908). Smith's type is in the British Museum, in which collection are other females from Jamaica in August, 1889 (W. Fawcett) and St. Domingo in 1855 (Mr. Tweedie).

19. *Neotheronia hastata*, Krieg.

This Panama species does not appear to extend into Mexico, since Herbert Smith sent none thence to the British Museum.

It is said to be ferruginous with the head but slightly rounded posteriorly, the scutellum strongly convex and not margined as far as its centre; the alar apices are hardly infumate, and the metathorax has the sides of the areola and the pleural carinae distinct.

### 25. *Neotheronia vallata*, Krieg.

Zeits. Hym.-Dipt. 1905, p. 296, ♀.

Only known from Peru in the female sex. Bates took four of both sexes, of which the ♂ only differs sexually, in Brazil about 1860, and these are in the British Museum with another male, captured at Iguaraçu in eastern Brazil in 1888 by Rev. T. C. Ramage.

### 27. *Neotheronia obesa*, Krieg.

Zeits. Hym.-Dipt. 1905, p. 297, ♀.

This female is described from Ecuador; and Bates took another characteristic specimen in Brazil, when he was on the Amazons.

### 36. *Neotheronia montezuma*, Cress.

*Theronia montezuma*, Cress., Proc. Acad. Philad. 1873, p. 395, ♂ ♀;  
*Neotheronia montezuma*, Krieg., Zeits. Hym.-Dipt. 1905, p. 305, ♀;  
 cf. Sitz., Nat. Ges. Leipzig 1899, p. 120.

The commonest Mexican species; it has stood in the British Museum since 1856, when M. Sallé sent it from the neighbourhood of the volcano of Orizaba; André gave it to Rev. T. A. Marshall labelled "Brésil," doubtless erroneously; but in Mexico it appears very prevalent, for Smith met with it wherever he collected, and there is a series of some thirty examples from Guerrero, Vera Cruz, Northern Yucatan, Tabasco, etc., in the British Museum.

### 43. *Neotheronia lineata*, Smith.

*Pimpla lineata*, Smith, Descript. New. Spp. Hym. 1879, p. 230, ♀  
*Theronia lineata*, Cam., Biol. Centr.-Amer. 1886, p. 264, pl. xi,  
 fig. 4, ♂ ♀.

Dalla Torre's erroneous reference is corrected by Krieger (Zeits. Hym.-Dipt. 1905, p. 301), in placing this species in the present genus. Cameron only knew it from Costa Rica—whence is Smith's British Museum type—Guatemala and Panama; but Herbert Smith has recently taken it at 6,000

feet at Amula in August, at 7,000 feet on the Sierra de las Aguas Escondidas in July, at 7,000 feet at Xucumanatlan in July, in the Tierra Colorado at 2,000 feet in October, and at 4,000 feet about the Hacienda de la Imagen in October, all in Guerrero, as well as at Teapa in Tabasco in February.

#### 47. *Neotheronia bicincta*, Cress.

*Pimpla bicincta*, Cress., Proc. Ent. Soc. Philad. iv, 1865, p. 38, ♀.

Krieger places this female in the present genus, and also records it from Cuba, to which island it seems to be peculiar, since J. T. Barnes presented another female thence to the British Museum in 1903. It is a stout and very beautiful, richly coloured species, with deeply flavescens wings and the anus broadly brick-red.

#### 51. *Neotheronia consimilis*, Cress.

*Pimpla consimilis*, Cress., Proc. Ent. Soc. Philad. iv, 1865, p. 37, ♀;  
*Neotheronia consimilis*, Krieg., Zeits. Hym.-Dipt. 1905, p. 335, ♀.

The ♀ alone has hitherto been known from Cuba and Mexico; but in the latter the ♂, which differs only sexually, appears of equally frequent occurrence, and the twenty specimens in the British Museum were taken by Smith at 6,000 feet about Amula in August and September, about Chilpancingo at 4,600 feet in June, about Xucumanatlan at 7,000 feet in July, about Venta de Zopilote at 2,800 feet in June, in Guerrero; and Champion also found it at 5,000 feet about Panajachel in Guatemala.

#### 54. *Neotheronia alternans*, Brullé.

*Pimpla alternans*, Brullé, Hist. Nat. Ins. Hym. iv, 1846, p. 105, ♂ ♀ (nec Grav.); *Neotheronia alternans*, Krieg., Zeits. Hym.-Dipt. 1905, p. 336, ♂ ♀.

This species was lost sight of for sixty years, but is now advantageously revived; it was originally recorded from both Surinam and Guaratuba in Brazil. It is probably common, for Krieger knew it from Guiana, Columbia, Ecuador, Bolivia, Peru and southern Brazil; though the British Museum contains only some half-dozen examples, taken by J. Rodway, in British Guiana in 1908, by Bates in Brazil about 1860, and a pair presented by Colonel Yerbury from near Monte Video, May 6th and 15th, 1896.

## XANTHOPIMPLA, Saussure.

Sauss., Grandidier's Hist. Phys. Madagascar 1892, pl. xiii.

This long and difficult genus will be dealt with at some future time. The markings of its species are extremely variable in almost every one, and already a great deal of synonymy is evident, which can be cleared up only by working with long series, preferably of bred specimens.

## HABROPIMPLA, Cameron.

Manch. Mem. 1900, p. 97.

In my Fauna of British India Ichneumons, part I, 1913, p. 103, I have allowed this genus to stand between *Echthromorpha* and *Lissopimpla*, mainly for lack of a better position, and because its author asserts that it "comes near" the former; and in the table of genera (lib. cit., p. 84) I have separated it from *Pimpla* on the much higher interception of the nervellus, which is an entirely fallacious character, for the interception is no higher than in typical *Pimpla*-species; the genus was consequently omitted from my *Echthromorphides* (Revis. Ichn. II, 1913, p. 33). From *Pimpla*, the unique male of the present genus differs hardly at all in its distinctly postfurcal lower basal nervure, its laterally emarginate second to fourth abdominal segments, rather stouter hind femora and basally—not apically, as stated by Cameron—curved radial nervure. It is in reality the peculiar testaceous markings of its single species which lend it a spuriously distinct appearance.

1. *Habropimpla bilineata*, Cam.

Manch. Mem. 1900, p. 97. ♂.

The tarsal claws are simple; but, in the absence of the ♀ and the mutilated condition of the only material available, no more can be said of its natural position. Among the many hundreds of Ichneumons I have examined from India there has not been a single example of the present species (with the exception of the type), and I am very strongly of the opinion that the locality is erroneous, for in the British Museum is a specimen differing only specifically in the less broad flavescent band of its hind tibiae, the broader meta-pleural flavous marks, laterally immaculate face and very slightly less curved base of the radius; this example is also

a male, of which the apically attenuate and black flagellum, extending to the fifth abdominal segment, is entire—it was captured by W. Foster about 1904 at Sapucay in Paraguay.

### PIMPLA, Fabricius.

Syst. Piez. 1804, p. 112; Thoms. Opusc. Ent. Fasc. XIII, p. 1408.

Mouth not rostriformly produced, apex of clypeus not emarginate but impressed in front and discrete at base; flagellum filiform, and in ♀ very slender; metanotum with neither areae nor apical transcarina, spiracles very rarely circular; abdomen dull and punctate, with very weak tubercles and the central segments not strongly transversely nor at all obliquely impressed; second segment transverse; terebra always shorter than abdomen; tarsal claws not pectinate, of ♀ simple and not basally lobate; hind claw at least twice length of penultimate joint; wings not fasciated, areolet entire and nervellus distinctly intercepted above its centre.

#### TABLE OF SPECIES.

- (30) 1. Abdomen black and not metallic, with at most incisures rufescent.
- (27) 2. Metathoracic spiracles oblong; hind tibiae not pale-banded; thorax black.
- (12) 3. Scutellum glabrous or mainly so; hind tibiae mainly pale.
- (9) 4. Hind femora and tibiae immaculate pale; basal segment simple.
- (8) 5. Metanotum trans-strigose and exareolate; coxae black.
- (7) 6. Postpetiole punctate; stigma infusate; hind tarsi always black.  
1. *instigator*, Fab.
- (6) 7. Postpetiole not punctate; stigma rufescent; hind tarsi entirely flavous.  
2. *ampla*, Morl.
- (5) 8. Metanotum tricarinate, with traces of areae; coxae red.  
3. *punicipes*, Cress.
- (4) 9. Hind femora and tibiae not entirely red; basal segment tumidulous.
- (11) 10. Petiolar area punctate; hind femora black.  
4. *apollyon*, Morl.
- (10) 11. Petiolar area glabrous; legs only black at base and apex.  
5. *croceipes*, Cress.

- (3) 12. Scutellum distinctly punctate; at least hind tibiae mainly black.
- (14) 13. Hind coxae red, their femora apically black.  
6. *pedalis*, Cress.
- (13) 14. Hind coxae black, their femora entirely red or entirely black.
- (24) 15. Dull; body not at all shining; hind tibiae black throughout.
- (17) 16. Abdomen fusiform, subpetiolate; front margin of wings alone infuscate.  
7. *ichneumoniformis*, Cress.
- (16) 17. Abdomen subcylindrical, sessile; wings not or evenly clouded.
- (23) 18. Wings hyaline; abdomen closely punctate; scutellum black.
- (22) 19. Frons not excavate; lower basal nervure oblique; hind tibiae straight.
- (21) 20. Scutellum, apophyal region and apical petiolar dots flavous.  
8. *mahalensis*, Grib.
- (20) 21. Body with no flavous markings.  
9. *aethiops*, Curt.
- (19) 22. Frons strongly excavate; lower basal nervure subvertical; hind tibiae basally curved.  
10. *luctuosa*, Smith.
- (18) 23. Wings infumate; abdomen strongly punctate; scutellum pale.  
11. *maura*, Cress.
- (15) 24. Body normally shining; hind tibiae sometimes basally paler.
- (26) 25. Smaller; hind tibiae partly pale; terebra shorter than half abdomen.  
12. *arctica*, Zett.
- (25) 26. Larger; hind tibiae black; terebra longer than half abdomen.  
13. *illicibrator*, Vill.
- (2) 27. Metathoracic spiracles oval; thorax and hind tibial band often pale.
- (29) 28. Thorax with whole mesonotum and scutellum red.  
14. *dorsalis*, Woll.
- (28) 29. Thorax black; hind tibiae always white-banded.  
15. *turionellae*, Linn.
- (1) 30. Abdomen red or metallic blue-green.
- (48) 31. Abdomen not at all red-marked; always metallic.
- (47) 32. Metanotum trans-strigose; at least front legs pale-marked.
- (38) 33. Frons trans-strigose; size smaller.
- (35) 34. Body and hind femora bright metallic-green.  
16. *viridescens*, sp. n.
- (34) 35. Body and hind femora not metallic-green.

- (37) 36. Petiole bituberculate ; hind femora entirely red.  
17. *indra*, Cam.
- (36) 37. Petiole not tuberculate ; hind legs black. 18. *cyanator*, Morl., n.n.
- (33) 38. Frons glabrous or obsoletely punctate ; size larger.
- (42) 39. Wings, nervures and stigma brilliant golden.
- (41) 40. Basal nervure continuous ; all tibiae entirely fulvous.  
19. *spectabilis*, Szépl
- (40) 41. Lower basal nervure antefurcal ; posterior tibiae blue-black.  
20. *glaucoptera*, sp. n.
- (39) 42. Wings hyaline or subinfumate, stigma dark.
- (44) 43. Nervelet of second recurrent strong ; all femora red.  
21. *tuberculata*, sp. n.
- (43) 44. Nervelet of recurrent nervure wanting ; at most front femora pale.
- (46) 45. Lower basal nervure antefurcal ; scutellum flavous.  
22. *calliphora*, sp. n.
- (45) 46. Lower basal continuous or subpostfurcal ; scutellum not pale.  
23. *caerulea*, Brullé.
- (32) 47. Metanotum glabrous ; all the legs entirely black.  
24. *sedula*, Cam.
- (31) 48. Abdomen broadly, usually entirely rufescent.
- (52) 49. Scutellum quite flat ; metathoracic spiracles circular ; legs all red.
- (51) 50. Petiole bituberculate ; metathorax trans-strigose ; scutellum pale.  
25. *semisanguinea*, Cress.
- (50) 51. Petiole simple ; metathorax punctate ; scutellum black.  
26. *semirufa*, Brullé.
- (49) 52. Scutellum distinctly convex ; metathoracic spiracles elongate ; legs not all red.
- (64) 53. Thorax not red, nor tibiae white-banded.
- (59) 54. Metapleurae with conspicuously pale apophal callosities.
- (58) 55. Petiolar area glabrous ; front coxae flavous-marked.
- (57) 56. Wings hyaline ; metanotum scabrous ; basal segment quadrate.  
27. *madecassa*, Saus.
- (56) 57. Wings flavescent ; metathorax trans-strigose ; basal segment elongate.  
28. *videonis*, sp. n.
- (55) 58. Petiolar area closely punctate ; all coxae infusate.  
29. *spiloaspis*, Cam.
- (54) 59. Metathorax black, with no pale markings.

- (61) 60. Abdomen testaceous; anterior legs and scape white.  
30. *glabra*, sp. n.
- (60) 61. Abdomen red; anterior legs red; scape entirely black.
- (63) 62. Metanotum not carinate; scutellum and wings flavous.  
31. *crocata*, Tosq.
- (62) 63. Metanotum laterally carinate; scutellum black, wings  
hyaline. 32. *thoracica*, sp. n.
- (53) 64. Thorax nearly entirely red, tibiae brightly white-banded.
- (66) 65. Sternum red; anterior coxae and anus black.  
33. *heliophila*, Cam.
- (65) 66. Sternum black; anterior coxae white; anus red.  
34. *melanospila*, Cam.

### 1. *Pimpla instigator*, Fab.

*Ichneumon instigator*, Fab., Ent. Syst. II, p. 164; *Pimpla coxator*,  
Ruthe, Stett. Ent. Zeit. xx, p. 371 (1859), var. *Pimpla instigator*,  
F., var. *poesia*, Cam., Manch. Mem. p. 176 (1899).

An entirely black and somewhat dull species, with all the femora and tibiae and the anterior tarsi clear red; the colour of the scutellum is more often black in northern Europe, flavous further south and in Asia. It is one of the most abundant of all palaeartic Ichneumonidae; I have seen it from Bavaria, Odenwald, Brittany, Dalmatia, Civitia Vecchia, Cyprus, Malta, Corsica; Madeira, several, and the Canary Islands (Wollaston); Tunis, Algeria and Cairo in January, 1910; "West Africa" (in coll. Smith, *Mus. Janson*); in Asia it appears to be nearly confined to Assam and to be nearly always represented by the var. *poesia*, Cam. (Manch. Mem. 1899, p. 176), though I have seen it from Salonowska in Siberia, Peshawur, Sikkim and Ceylon. In spite of the distinctions indicated by Ruthe (Stett. Ent. Zeit. xx, 1859, p. 371) between this species and his new *P. coxator* of which the type from Iceland is in the British Museum, I must consider the latter no more than a ♀ variety, differing in nothing but the pale coxae and smoother pleurae; nor am I by any means convinced of the distinction of his pair of *P. sodalis* (l.c.), also in the British Museum, from the same island.

### 2. *Pimpla ampla*, Morl.

Fauna Brit. India, Ichn. I, 1913, p. 154.

Apparently confined to Ceylon, where it is by no means rare. Besides the locality given (l.c.), it has been taken, probably at Trincomali, by Colonel Yerbury, from whom is a ♂, along with Bingham's type, in the British Museum.

3. *Pimpla punicipes*, Cress.

Proc. Acad. Philad. 1873, p. 398, ♀.

Remarkable for its unicolorous red legs, with even the hind tarsi hardly darker; in all other respects, and especially the oval metathoracic spiracles, it is hardly to be distinguished from *P. turionellae* with which Champion, Morrison and H. H. Smith have found a score, including both sexes, at various localities in Central America. The male differs only sexually.

4. *Pimpla apollyon*, Morl.

Fauna Brit. India, Ichn. I, 1913, p. 165.

5. *Pimpla croceipes*, Cress.

Proc. Acad. Philad. 1873, p. 398, ♂ ♀; *P. molesta*, F. Smith, Descr. New Spec. Hym. Brit. Mus. 1879, p. 229, ♀.

A very distinct species in the bright testaceous legs and shining black body. It is, as Cresson says, very common, though he only knew it from Orizaba, whence it came from M. Sallé to the British Museum so long ago as 1856. I have examined Smith's synonymous species, taken by H. Rogers at an altitude of 6-7,000 feet at Irazu in Costa Rica. Champion found the species in Guatemala and Panama (Biologia Centr.-Amer. 1886) and subsequently H. H. Smith took a series of it in Guerrero, at Omilteme, Amula, Xucumanatlan, Xantipa, and in the Sierra de las Aguas Escondidas (6-10,000 feet.).

6. *Pimpla pedalis*, Cress.

Proc. Acad. Philad. 1873, p. 268.

Distinct from *P. illecebrator* in little but its red hind coxae, and probably still more closely allied to *P. arctica*, but much duller, with all the coxae and trochanters red and the hind knees, as well as their tibiae and tarsi, black. In the British Museum it is represented only from the United States—both sexes at Glens Fall in New York in June and July, 1899 (N.Y.S. coll.); New Jersey, from Professor Riley (T. A. Marshall); the coast of Maine in 1902 (R. E. Danforth); and ? Canada (Dr. Richardson)—though Provancher (Faun. Ent. Canad. 1883, p. 456) says it is frequently taken on

flowers of *Solidago canadensis* about Cap Rouge, and that the puncture of the terebra is "assez peu douloureuse." Walsh refers (Trans. Acad. St. Louis, 1873, p. 133) to the close relationship of this species with *P. instigator*.

### 7. *Pimpla ichneumoniformis*, Cress.

Proc. Acad. Philad. 1873, p. 403, ♂; *P. xanthostigma*, Cam. Biol. Centr.-Amer. 1886, p. 269, pl. xi, fig. 9, ♀.

No doubt respecting this sexual synonymy can remain, especially on account of the remarkable costal alar infumescence and the basally constricted abdomen. The "honey-yellow" markings are much less conspicuous in the ♀, and the areolet emits the recurrent nervure a little before and not "at the tip"; the length is 16-18 mm. At least in the ♀ the petiole is basally auriculate on either side with strong spiracles, the gastrocoeli are deeply impressed, and both the second and third segments are laterally trans-impressed. It is a true *Pimpla*, though the almost petiolate abdomen, as Cresson remarks, and fusiform body, lend it a superficial resemblance to *Ichneumon*. Only known from the volcano of Orizaba in Mexico and the Volcan de Chiriqui in Panama, at 4-6,000 feet.

### 8. *Pimpla mahalensis*, Grib.

Ann. Mus. Civ. Genoa xiv, 1879, p. 345; Tosq., Mém. Soc. Ent. Belg. 1896, p. 290, ♀, var. *P. conchylata*, Tosq., lib. cit. p. 288, ♀.

Very similar to *P. madecassa* in structure and outline, but with the abdomen black. I do not find the metallic purpurascence referred to by Tosquinet; the post-petiole is laterally flavous, the anterior femora ochraceous, and the scutellum is much more convex. The species has hitherto been known from several females, all from Shoa in southern Abyssinia, but two others in the British Museum are from Marsabit in 1912 (R. J. Stordy), and Lagari at "Mile 469" in April, 1900 (C. S. Betton), in British East Africa.

### 9. *Pimpla aethiops*, Curt.

Brit. Ent. fol. et. pl. cexiv, 1828, ♀; Morley, Ichn. Brit. III, 1908, p. 95, ♂ ♀; (?) *P. aterrima*, Grav., Ichn. Europ. III, 1829, p. 215, ♀.

John Curtis indicates no locality, though he knew it—probably only—from England, where it appears to have become extinct, together with the Fen Lepidoptera, upon

which it is known to have preyed, before the great flood of 1848. A nice series, the only ones I have seen, is in the British Museum.

### 10. *Pimpla luctuosa*, Smith.

Trans. Ent. Soc. 1874, p. 394, ♀.

I have already referred both to Smith's type from Hiogo and the ♀ bred by Wileman at Kobe in June from a larva of *Attacus walkeri*, Feld. (Entom. 1910, p. 11). The ♂ was received from Hiogo along with the ♀ by Smith, but, though labelled "*investigator*, ♂" by him, it escaped description; from the ♀ it differs only in having the body more slender and the anterior femora and tibiae partly or entirely dull testaceous. The species has a restricted distribution from Japan (R. Fortune 1862, and T. A. G. Strickland, 1909) to Tygosan Island in the Chusan Archipelago (received from the Lords of the Admiralty 1892) and both Shanghai and northern China (Fortune 1854 and 1855). A female co-type is in Fred Smith's collection, in Mus. Janson.

### 11. *Pimpla maura*, Cress.

Trans. Amer. Ent. Soc. III, 1870, p. 145, ♀.

A single ♀ from "Georgia," ex coll. Doubleday, agrees exactly with the original Texan description, except in lacking the pale mark below its scape. As Cresson remarks, the totally black body and legs, with only the scutellum and front tibiae partly white, render the species, which is similar to, though more slender than, *P. luctuosa*, very distinct.

### 12. *Pimpla arctica*, Zett.

Ins. Lap. 1840, p. 375; Morl., Ichn. Brit. III, p. 97.

### 13. *Pimpla illecebrator*, Vill.

Linn. Entom. III, 1789, p. 194.

In the British Museum is a short series of this species, which does not occur in Britain; these are from "Dunes near Loemariaker, Brittany, 1886" (Rev. T. A. Marshall); Germany (Ruthe); Central Europe, labelled "*P. caligata*, Vol." (Buehker)—which species I believe to be synonymous, though not so treated by Dalla Torre—and a fine ♂ of twenty

millimetres from Corfu in May, 1889 (Schmiedeknecht). *P. bilineata*, Brullé et Lucas, from Algeria, which I do not know, has similar black hind tibiae with red femora, but differs in the former bearing "une tache rouge un peu en arrière de la base" and two metanotal areae; it is most likely *P. examiner*, Fab., var. *strigipleuris*, Thoms. (cf. Ichn. Brit. III, p. 98).

#### 14. *Pimpla dorsalis*, Woll.

*Lissonota dorsalis*, Wollaston, Ann. Nat. Hist. (3) 1858, p. 23, pl. iv, ♂.

I have already pointed out (Entom. 1911, p. 212) that this species is referable to the present genus and, since that time, I have found a good series of both sexes in the British Museum, all from Madeira, together with the type which is poorly figured by Westwood. This is a true *Pimpla* with *Itoplectis*-facies; the antennae are quite filiform, the metathoracic spiracles hardly circular and the ♀ claws are not basally lobate; the hind tibiae are described as black, but they are at most infuscate and more often red, sometimes dark with an indefinable rufescent band before their base; length 5-8 mm., ♂ ♀.

#### 15. *Pimpla turionellae*, Linn.

*Ichneumon turionellae*, Linn. Faun. Suec. 1761, p. 404; *Cryptus examiner*, Fab., Syst. Piez. 1804, p. 85; *Pimpla annulipes*, Brullé Walsh, Trans. Acad. Louis 1873, p. 133, ♂ ♀; *P. tenuicornis*, Cress., Proc. Ent. Soc. Philad. 1865, p. 267, ♀; *P. hawaiiensis*, Cam., Manch. Mem. x, 1886, p. 239, ♂.

[I am less sure of the synonymy here of *Pimpla bilineata*, Brullé, Hist. Ins. Hym. 1846, p. 98, ♀, than I was when writing my Ichn. Brit. in 1908, for Brullé gives the posterior tibiae and front coxae as totally black and Lucas' figure of the ♀ (Explor. Sc. Algérie, Zool. 1846, pl. xix, fig. 3) is too rough to assist in any way; the species now seems to me little more than a form of *P. illecebrator*, though I can ascribe no specimens to it.]

An abundant species throughout northern and central Europe, Dalmatia, &c., extending to Ispahan in south-west Persia, whence is a ♀ in the British Museum; co-specific examples with red coxae from Nova Scotia (Redman), New Mexico (Cockerell), New York (J. Edwards) and Texas (Belfrage) doubtless represent *P. annulipes* and differ in no

way from those of the Palaearctic Region. Numerous small specimens of both sexes, captured in Tabasco, Vera Cruz, Morelos, Guerrero, Orizaba and Milpas, are remarkable for nothing but their size and may be referred to as var. *tenuicornis*, Cresson; and Cameron's Hawaiian male, of which the type is in the British Museum, is quite typical, and doubtless of European importation. Besides the examples with partly red and partly black hind coxae mentioned by me in Ichn. Brit. (III, p. 101), I have seen this form both with and without pale scutellum from Germany in Ruthe's collection. The form with black hind coxae (*P. examiner*, Fab.) seems less widely distributed, though it is well represented from central Europe and Evian in Haute-Savoie, together with half-a-dozen of Thomson's var. *strigipleuris* from Zürich (Buckeler). The typical form extends also to India whence are examples from 6,000 feet in Assam and 4,500 feet from Pashok, together with a small and imperfect male, which I place here with some hesitation, taken in June 1906, as far east as Tientsin.

#### 16. *Pimpla viridescens*, sp. n.

A brilliant metallic green species, most closely allied to *P. caerulea*, but much more strongly and determinately punctate throughout, with the metathorax distinctly more finely trans-strigose and lacking all trace of central trans-carina. Frons strongly trans-strigose throughout; face strongly punctate, with a central glabrous longitudinal tubercle; antennae black and basally metallic green; mesonotum and its pleurae strongly nitidulous and very finely punctate, with deeply impressed notauli; metanotum distinctly elevated, though not carinate, longitudinally on either side; metanotal apex centrally glabrous, its spiracles short and cylindrical. Abdomen strongly punctate and metallic, with its anus smoother; first segment basally excavate and glabrous, with remainder punctate and its centre laterally elevated; central segments distinctly tuberculate; apices of four basal segments ventrally pale; terebra shorter than half abdomen. Legs somewhat slender, metallic green, with all the tarsi, tibiae, apex of intermediate and inner side of front femora bright testaceous; wings somewhat infumate flavescent, with the black stigma basally pale; areolet broader than high, subpetiolate and emitting the strongly curved recurrent nervure beyond its centre; nervellus a little curved, intercepted at its upper third. Length, 12-15 mm. ♀ only. The type in the British Museum was captured by H. H. Smith on the Sierra de las Aguas

Esconididas at 9,500 feet during July; two others were caught at Omilteme, also in Guerrero, at 8,000 feet in July and August. Mexico.

17. *Pimpla indra*, Cam.

Manch. Mem. 1899, p. 179, ♀.

Both sexes are described in my Fauna of Brit. India (1913, p. 161) from Assam; a ♂ taken there by Colonel Godwin-Austen is in the British Museum, with a ♀ from Shanghai.

18. *Pimpla cyanator*, nom. nov.

✓ *Pimpla cyanea*, Morl., Fauna Brit. India, Ichn. 1, 1913, p. 162, ♀ (*nec* Szépl Sjöstedt's Kiliman.-Meru Exped. II. 8. 1910, p. 81)

The unique female is in the British Museum.

19. *Pimpla spectabilis*, Szépl.

Sjöstedt's Kiliman.-Meru Exped. II. 8. 1910, p. 81, ♂ ♀.

The pale scutellum, flavous wings and entirely fulvous tibiae are remarkable. Professor Sjöstedt's expedition took seven examples of this species at both Meru and Kilimanjaro during February between 2,950 and 3,500 feet. There is a good series in the British Museum, found by S. A. Neave in British East Africa on both the western foot and eastern foot and slopes of the Aberdare Mountains at 7,000 to 8,500 feet in February and March, and on the western slopes of Mount Kenya on the Meru-Nyeri road at 6,000 to 8,500 feet almost at the same time. Szépliget brings forward nine new species in the above work, some of which do not appear to belong to the genus as here restricted by me.

20. *Pimpla glaucoptera*, sp. n.

Closely allied to the last species, but superficially recognised by its blue-black scutellum, tegulae and legs, of which only the front tibiae are fulvous, and the wings are much more uniformly flavescent. In other respects it is difficult to distinguish, for the basal segment is similarly bituberculate,

and the following are similarly transverse, with no trace of metanotal carinae; but the thorax is much more closely punctate with much more distinct notauli, the mesopleurae are not more sparsely punctate above, and the antennae are entirely black, with the basal flagellar joints apically more nodulose. Length,  $11\frac{1}{2}$ -13 mm. It is smaller than *P. cyanea*, Szpl., with the mesopleurae evenly punctate, nervulus not continuous through the median nervure, second segment distinctly transverse, front tibiae pale and wings not hyaline.

The typical pair was taken by S. A. Neave, along with the last species, at the east and west foot of the Aberdare Mountains in British East Africa, between 7,000 and 8,500 feet, at the end of February and beginning of March, 1911; he found another pair at an altitude of 6,400 feet on Mount Kokanjero in the Uganda Protectorate early in August of the same year; and a couple of males at Toro at 4,800 feet in the Mpangu Forest of Uganda, in the middle of the following November.

#### 21. *Pimpla tuberculata*, sp. n.

Metallic blue with the scutellum, radices, tegulae, callosity below wings, all the femora and the front tibiae deep red; antennae and remainder of legs dead black with no metallic reflection; metathorax evenly declivous and very finely trans-strigose throughout, with short-oval spiracles and no apophyses; basal segment centrally sulcate to beyond its centre and discally produced into two subacuminate tubercles; mesonotum and mesopleurae closely and confluent punctate; wings silicious, hardly clouded, with strong nervelet in second recurrent nervure, stigma black and basal nervure not continuous through the median; length 19 mm. ♀ only. One female was captured at an altitude of 7,000-8,500 feet on the east slope of the Aberdare Mountains in British East Africa on 24th February, 1911, by Mr. S. A. Neave.

#### 22. *Pimpla calliphora*, sp. n.

Closely allied in structure, especially that of the metanotum and basal segment, to *P. spectabilis*, though in pedal coloration it is to be distinguished from *P. glaucoptera* only in its fulvous front femora and trochanters. From both, the entirely hyaline wings with infuscate and centrally ferruginous stigma, the large flavous callosity below the

radices with concolorous tegulae and scutellum (but never postscutellum), and especially the sinuate second recurrent nervure, render it distinct; length  $10\frac{1}{2}$ - $12\frac{1}{2}$  mm. British East Africa (Aberdare Mountains, 7,000 to 8,500 feet, February, 1911; Mount Kenya, 6,000 to 7,000 feet, February, 1911—a nice series); Uganda (Mount Kokanjero to southwest of Elgon, 6,400 feet, in August, 1911, and to north of Mount Ruwenzori, 6,000 to 8,500 feet at beginning of the following November—all taken by S. A. Neave); and Abyssinia (one ♀ at Higo Samula on 30th October, 1911, by R. J. Sturdy).

### 23. *Pimpla caerulea*, Brullé.

Hist. Nat. Ins. Hym. 1846, p. 101, ♀; *P. caeryleata*, Cress., Proc. Acad. Philad. 1873, p. 397, ♂ ♀.

Very like the African *P. tuberculata*, but violaceous rather than blue, with the petiolar tubercles merely cariniform, abdominal tubercles somewhat distinct on the central segments, the legs and antennal base metallic blue, with the front tibiae and femora alone internally stramineous; the frons not at all strigose, metanotum strongly and evenly trans-strigose, unitranscarinate centrally and somewhat conspicuously elevated, though not carinate, longitudinally on either side; the mesonotum is dull and shagreened; the wings are somewhat clouded with the stigma black, the basal nervure subcontinuous through the median and no nervelet; length 10-18 mm. I have only seen the female. Cresson himself suggests the probable synonymy of his species with that of Brullé, and separates them mainly on the distance between Brazil and Mexico. Cameron (Biol. Centr.-Amer. 1886, p. 266) retains Cresson's name, and quotes Orizaba and Cordova, apparently without having seen the species himself. Indeed it seems rare in Mexico, and I have only examined one, taken in 1856 about the volcano of Orizaba by M. Sallé, and one recently captured at Atoyac near Vera Cruz in April by Smith. Its distribution is, however, much wider than has hitherto been suspected, since examples in the British Museum are from Senahu near Vera Paz in Guatemala (Champion), Ecuador (ex coll. Rosenberg) and the valley of Chimborazo there in 1861 (ex coll. Stevens) Sapucay in Paraguay (W. Foster, 1904), and Theresopolis on 20th September, 1887, in Brullé's locality, Brazil (Frühstorfer).

24. *Pimpla sedula*, Cam.

Biol. Centr.-Amer. 1886, p. 265, pl. xi, fig. 10, ♀.

The type from Panama, in the British Museum, alone is known. The figure (l.c.) is good, but represents the wings too pale, the body too dull and the legs too stout; the abdominal undulations are pronounced and the mesothorax is glabrous; the metapleurae, but not their notum, are trans-strigose.

25. *Pimpla semisanguinea*, Cress.

Proc. Acad. Philad. 1873, p. 400, ♀; *P. argentifrons*, Cam., Biol. Centr.-Amer. 1886, p. 269, pl. xi, ♀.

Structurally similar to *P. semirufa*, especially in the circular metathoracic spiracles, but entirely distinct in its densely pilose metathorax, much duller and more strongly punctate mesonotum, pale clypeus, scutellum and anterior coxae, as well as in the rufescent stigma. The undescribed male differs only in having the flagellum basally rufescent and the whole scape, with basal half of hind tibiae, indefinitely flavous. It is by no means an uncommon Mexican species with an unsuspected southern range to Santarem on the Amazon, whence is a male in the British Museum, taken by Bates before 1852. Cresson originally recorded females from Orizaba, as correctly quoted by Cameron who failed to recognise it, and brings other females forward as new from Panama and Mirandilla in Guatemala. Subsequently H. H. Smith took a nice series, including a dozen males, at Teapa in Tabasco in February and March, and at Atoyac in Vera Cruz during May.

26. *Pimpla semirufa*, Brullé.

Hist. Nat. Ins. Hym. 1846, p. 103, ♀.

In his "Himenopteros Argentinos" (Anales del Museo Nacional de Buenos Aires xx, 1910, pp. 203-316) no Ichneumonidae, and but two species of Braconidae are given by Burmeister. A female of the present genus, captured by Colonel Yerbury at La Plata City on 18th May, 1896, agrees. I think, too closely with Brullé's description (which has not been noticed since 1846) to merit distinction; therefrom it differs only in having the abdomen and legs unicolorous deep red, with the palpi, tegulae and radices stramineous.

The metathorax has circular spiracles and is evenly punctate, with only its centre subtrans-strigose; the basal segment is evenly convex and centrally without carinae; the mesonotum is extremely finely punctate and strongly nitidulous; and the front tibiae are distinctly intumescent, with their base constricted; length 9 mm.

### 27. *Pimpla madecassa*, Sauss.

*Coccygominus madecassus*, Sauss., Grandidier, Hist. Madagascar, 1890, pl. xiv, fig. 12, ♀; *Pimpla pleuralis*, Buysson, Ann. Soc. Ent. France 1897, p. 352, ♀; *P. properata*, Tosq., Mém. Soc. Ent. Belg. 1896, p. 293, ♀.

Tosquinet's description appears to agree with Saussure's figure sufficiently to warrant its hitherto unnoticed synonymy; both knew only the female, but the distinctions of the ♂ are noticed at Ann. S. African Mus. 1906, p. 115, from Cape Colony. It is doubtless a wide-spread species, though only a dozen specimens of both sexes are in the British Museum; these range from Natal (J. F. Quekett, Curator of the Durban Museum, where the capture was made on Christmas Day, 1903) and the Transvaal, where Fry took a female at Johannesburg on 5th May, 1901 (Distant coll.) and Pretoria (du Buysson, l.c.) to German East Africa, whence Neave sent it from the Usangu District during December, 1910, at an altitude of 4,000 feet; and a fine half-dozen of both sexes were collected about 1880 at Betsileo on Madagascar, where the species attains its maximum length of 25 mm.

### 28. *Pimpla videonis*, sp. n.

A large black and red species, with broad flavous markings. Head strongly transverse and very narrow behind the eyes, immaculate black with face coarsely and irregularly punctate; frons glabrous, nitidulous, sparsely punctate basally and centrally sulcate longitudinally, not strigose; antennae filiform and very slender, with the basal flagellar joints apically nodulose, ♂ with basal flagellar joints rufescent beneath. Thorax black; metathorax except petiolar area trans-strigose with strongly elongate spiracles; metathorax broadly longitudinally on either side, scutellum and apex of postscutellum bright flavous. Abdomen deep ferruginous, becoming darker basally, with apices of the four basal segments decreasingly and indefinitely flavous at their apices; all the segments shining and obsoletely sculptured,

with the first bicarinate to beyond its centre and hardly elevated; anus immaculate with terebra black and half length of abdomen. Anterior legs flavidous, with only onychii and claws infuscate; hind legs tricoloured with the black coxae sometimes flavidous above, their trochanters and basal half of tibiae flavidous, their femora deep red and apically nigrescent as also is the apical half of their tibiae, their tarsi fulvous with the two apical joints black and pilose; ♂ with all coxae, trochanters and more than apical half of hind tibiae black. Wings flavescent hyaline, with stigma bright red and not basally paler. Length 16-19 mm.

In its black, red and flavous coloration it approaches *P. tricolor*, Brullé, which I do not know; but here the metathorax is neither red-marked nor strongly punctate, nor centrally carinate, etc. Two females and the unique male were presented to the British Museum by Colonel Yerbury from Monte Video in Uruguay, where they were captured between the 1st and 9th May, 1896; another female from Argentina was presented by Dr. Burmeister in 1881; and the last was captured on 27th October, 1887, by Frühstorfer at Theresopolis in Brazil.

### 29. *Pimpla spiloaspis*, Cam.

Record of Albany Museum 1, 1904, p. 146.

Closely related to *P. mahalensis*, but with abdomen and hind femora red. The typical ♀ from Dunbrody, Cape Colony, is in the British Museum with others from Maseru in Basutoland, taken in January, 1902 (R. Crawshay), both sexes from Bulawayo, 1st August, 1909 (E. C. Chubb), and a female, which I cannot consider distinct, though the scutellum and radical callosities and metathorax are immaculate, from Gatelo Amaiyu in Abyssinia, on 4th November, 1911 (R. J. Stordy). The male, as is usual in this genus, differs from the female only in its slightly stouter and less filiform antennae.

### 30. *Pimpla glabra*, sp. n.

Black, with the whole abdomen and hind legs, except their coxae and onychii, testaceous; anterior legs entirely, prosternum above front coxae, palpi, apex of scape beneath, radix, tegulae, an elongate line before them and the frenal margin, pure white. Metathorax finely and evenly punctulate, with elongate white pilosity and broad oval spiracles;

mesonotum entirely, and its pleurae mainly, glabrous and strongly nitidulous; basal segment closely punctate, longer than broad and subdeplanate, with no discal carinae; wings ample and hyaline with stigma black, second recurrent nervure evenly curved, and the basal continuous through median; length 11 mm. ♀ only. A single example of this remarkable insect was taken by Mr. S. A. Neave at an altitude of some 6,500 feet on the south-east slope of Mount Kenya in British East Africa early in February, 1911.

### 31. *Pimpla crocata*, Tosq.

Mém. Soc. Ent. Belg. 1896, p. 301, ♀; *P. scutellaris*, Szépl., Sjöstedt's Kilim.-Meru Exped. II. 8. 1910, p. 83, ♀.

Originally described from a single ♀ in the Berlin Museum from the Cape of Good Hope. A dozen examples of both sexes in the British Museum are from Piet Retief (R. Crawshay, 1903) and Sterkfontein (H. P. Thomasset, 1899) in the Transvaal, through the Uganda Protectorate (at the western and south-eastern Ankole Districts, Mbale and eastern Mbale Districts at heights varying from 3,700 to 5,000 feet, S. A. Neave, 1911) and British East Africa (both sexes from both the east foot and slopes of the Aberdare Mountains at 7,000 to 8,500 feet, and the western slopes of Mount Kenya on the Meru-Nyeri Road at the same altitude, February, 1911, S. A. Neave) to Loddo Hawash in Abyssinia, whence R. J. Stordy sent it in 1912. No doubt can, I think, remain respecting the synonymy of Szépliget's single specimen from Kilimanjaro in April. The male differs from the female in having the anus hardly infusate.

### 32. *Pimpla thoracica*, sp. n.

Similar in its shining red abdomen to *P. semisanguinea* and *P. semirufa*, though distinct in its black scutellum, coxae and hind tibiae, and from all species of the genus known to me in its longitudinal metanotal carinae. Face and frons closely and somewhat coarsely punctate; clypeus obscurely testaceous; antennae immaculate black with only pedicellus paler. Thorax black, finely punctate, pubescent and not very shining, with notauli obsolete; metanotum and pleurae finely and closely trans-strigose with the former strongly carinate longitudinally on either side, the apex subglabrous and spiracles elongate. Abdomen entirely deep red, with the venter strongly plicate; basal segment hardly longer

than broad, basally excavate and strongly bituberculate in the centre; the following segments not strongly tuberculate, superficially and sparsely punctate, subimpressed before their apices; terebra half length of abdomen. Legs neither short nor stout, black, with the hind femora and all the tibiae except apices of hind ones, deep red; wings hyaline with stigma and tegulae nigrescent; areolet not longer than broad, sessile, with recurrent nervure strongly curved; nervellus intercepted far above centre. Length 9-10 mm. Two females in the British Museum were captured by H. H. Smith on the Sierra de las Aguas Escondidas at 9,500 feet in Guerrero, Mexico, during July.

### 33. *Pimpla heliophila*, Cam.

Zeits. Hym.-Dipt. 1905, p. 343, ♂; Trans. S. African Phil. Soc. 1906, p. 337, ♀.

Recorded from the Transvaal; the original female, reared in Cape Colony, from the palaeartic Tortricid, *Carpocapsa pomonana*, Linn., is in the British Museum, with a second found by Neave on the Upper Luangwa River in north-east Rhodesia, early in August, 1910. The red thorax and pure-white banded tibiae render it distinct; I have followed Cameron's distinction of this species from its allies upon obvious colour differences rather than structural, and perhaps more constant, characters.

### 34. *Pimpla melanospila*, Cam.

Ann. S. African Mus. 1906, p. 115, ♀.

Described from Cape Town; the ♂ is still unknown. A single small female of but six millimetres in the British Museum was captured in "Abyssinia," and differs from the description only in having the hind tibial band sub-basal, in place of sub-apical, and the basal half of the metatarsus, in place of all the tarsus, white. Its distribution will probably be found to be very broad.

## DELOMERISTA, Thomson.

Opusc. Ent. 1412; (?) Förster, Verh. pr. Rheinl. 1868, p. 164.

Head with the cheeks short and clypeus apically emarginate. Antennal flagellum slender and filiform. Thoracic notauli somewhat distinct; metathoracic areae, especially the central

area complete, with costulae always entire; spiracles circular. Abdomen densely punctate with its tubercles and the usual rugosities obsolete; terebra nearly straight, with its spicula stout. Tarsal claws of ♀ mutic. Wings with nervellus nearly antefurcal.

This genus differs from all others, now split from *Pimpla*, in its entire metanotal areae.

### 1. *Delomerista mandibularis*, Grav.

Ichn. Europ. III, p. 180.

It occurs sparingly in north and central Europe, but seems little understood. I have hitherto been unable to confirm it as British (cf. Ichn. Brit. III, p. 92), though the following note, found by me since 1908, will add something to that probability: "New British Ichneumon.—Having bred some Ichneumons from the pupae of *Odontia dentalis*, and not knowing them, I sent a pair to Mr. Desvignes, and received from him the following reply: 'The Ichneumons you have sent me, reared from *Dentalis*, appear to be *Pimpla mandibularis*, Grav. It is new to Britain. I certainly should be glad of more specimens, and particularly the male, as it has not been described yet.'—H. J. Harding, Noah's Ark, Peter Street, Deal, August 19th, 1856." (Ent. Weekly Intelligencer 23, VIII, 1856, p. 167). Holmgren first described the male in 1860 from Sweden.

### 2. *Delomerista laevifrons*, Thoms.

Opusc. Ent. VIII, 1877, p. 750.

### ITOPLECTIS, Thomson.

Opusc. Ent. 1408; (?) Förster, Verh. pr. Rheinl. 1868, p. 164.

Head with the cheeks very short; apex of clypeus not emarginate; eyes very deeply emarginate; antennal flagellum stout and distinctly attenuate towards the base. Thoracic notauli wanting; metanotal areola not complete, its spiracles oval or circular. Abdomen dull and punctate, with the epipleurae broad and terebra both straight and shorter than the abdomen. Tarsal claws of the female anterior legs basally lobate. Hind wings with nervellus intercepted distinctly above its centre.

I am by no means convinced that *Itopectis orientalis*, Morl. (*Pimpla vidua*, Cam., nec Walsh) and *I. sikkimensis*, Cam., placed in this genus by me in the Fauna of India, Ichneumons, I, 1913, p. 171, belong here; the former was there tentatively so treated for lack of a better position on account of its strong pubescence and the latter placed alongside because Cameron says it "comes near" it. I have seen neither.

## TABLE OF SPECIES.

- (14) 1. Mesonotum and abdomen not sanguineous; basal segment normal.
- (13) 2. Abdomen with no segment white-margined; postpetiole not carinate to apex.
- (10) 3. Flagellum apically subincrassate; terebra at least a third of the length of abdomen.
- (7) 4. Hind tibiae tricoloured.
- (6) 5. Mesonotum with dense and recumbent pilosity; abdomen laterally pale. 1. *maculator*, Fab.
- (5) 6. Mesonotum with sparse and suberect pilosity; abdomen rarely pale-marked. 2. *alternans*, Grav.
- (4) 7. Hind tibiae not tricoloured.
- (9) 8. Metathoracic spiracles oval; hind tibiae black and white. 3. *ovalis*, Thoms
- (8) 9. Metathoracic spiracles circular; hind tibiae subunicolorous red. 4. *epeirae*, Bign.
- (3) 10. Flagellum apically subclavate; terebra not longer than basal segment.
- (12) 11. Larger; abdomen entirely black (Europe). 5. *curticauda*, Kriech.
- (11) 12. Smaller; abdomen castaneous (Tenerife). 6. *castaneiventris*, Kriech.
- (2) 13. Abdomen with all segments white-margined; postpetiole bicarinate to apex. 7. *platana*, sp. n.
- (1) 14. Mesonotum and abdomen sanguineous; basal segment ephippiform. 8. *sponsa*, Hal.

1. *Itopectis maculator*, Fab.

*Ichneumon maculator*, Fab., Syst. Ent. p. 337; *I. scanicus*, Vill., Linn. Ent. III. p. 190.

Parasitic upon *Tortrices*, etc.; very common, but especially so upon *Coniferae* in early spring. Britain, France, Germany, Switzerland.

2. *Itoplectis alternans*, Grav.

*Pimpla alternans*, Grav., Ichn. Europ. III, p. 201; *P. tricincta*, Thoms., Opusc. Ent. VIII, p. 748.

Hardly rarer than the last; Switzerland (Zürich, etc.), Germany (Munich, etc.); three females of the var. *decora*, Först., were taken by Herr Carl Glaszner during July, 1901, in Cyprus, and by Colonel Yerbury in March, 1896, at Estoril, near Lisbon; its distribution extends to Kashmir and the Punjab, whence is a female taken by Stebbing at Simla in the British Museum (cf. also Ent. Mo. Mag. 1909, p. 64).

3. *Itoplectis ovalis*, Thoms.

*Pimpla ovalis*, Thoms., Opusc. Ent. VIII, 1877, p. 748, ♀.

Apparently rare in Sweden and Germany, and not yet found in Britain. Clemens Gehrs describes the ♂ in his "Über ein paar Ichneumonidenarten" (Deut. Ent. Zeit. 1908, p. 467) and says both sexes were bred on 16th August, 1907, from *Zygaena trifolii*.

4. *Itoplectis epeirae*, Bignell.

*Pimpla epeirae*, Bign., Ent. Mo. Mag. 1893, p. 37, ♀; Morl., Ichn. Brit. III, 1908, p. 107, ♂ ♀.

The type is in the British Collection in the British Museum, and the species has hitherto been recognised only from England (Devon and Hampshire), but Ruthe sent a male and two females to the British Museum in 1859 from Germany. On 12th February, 1909, the late Mr. Bignell wrote to me: "I would like to mention that it is the *young spiders* that are consumed, and not the eggs. I believe the statements "bred from spiders' eggs" are errors of judgment and have originated by seeing the egg-shells in the egg-bag, after the escape of the parasitic-fly. In fact, I doubt if the young parasite has sufficient power to penetrate the egg-shell. All nests or egg-bags I have brought home for observation confirmed this; I should not like to state how many nests of different species I have brought home for that purpose—all with the same result."

5. *Itoplectis curticauda*, Kriech.

*Pimpla curticauda*, Kr., Ent. Nachr. 1887, p. 120; *P. clavicornis*, Thoms., Opusc. Ent. 1889, p. 1409.

Very few specimens are known: Munich, Helsingborg, Thüringia, and at the following British localities—Shere, Selby, and Braemar (Ernest A. Elliott).

6. *Itopectis castaneiventris*, Kriech.

*Pimpla castaneiventris*, Kr., Berl. Ent. Zeit. 1894, p. 51, ♀.

I do not know this Tenerife species, but the description leaves little doubt that it should be ascribed to the present genus.

7. *Itopectis platana*, sp. n.

A black species, with metathorax red and all the segments white-margined. Head posteriorly narrow, with the frons and vertex subglabrous; face strongly punctate and elongately pilose, clypeus depressed and palpi stramineous. Antennae stout and not short, distinctly attenuate basally and apically obtuse; postannellus rufescent. Mesonotum subdeplanate, with sparse and elongate recumbent pilosity; notauli wanting; mesopleurae shining with shorter hairs and their base red-dotted below; metathorax red, evenly and superficially punctate, with elongate pale pilosity; areae entirely wanting, though the basal is represented by a glabrous space; spiracles not circular. Scutellum apically, postscutellum and the freni of both flavous. Abdomen black, strongly and evenly punctate with apices of all the segments, more broadly laterally. stramineous; remainder of basal segment red, its carinae strong and far apart, extending to and coalescing at the apex, with basal fovea large; tubercles of central segments distinct and the gastrocoeli of the second both stramineous and very deep; ♂ valvulae strongly exerted, ♀ terebra pilose and hardly half length of abdomen. Legs neither slender nor elongate, flavidous-white; hind coxae except apically, and all the femora except apically, red; apical half of posterior tibiae and apices of their tarsal joints, with both extremities of hind femora and base of their tibiae, black. Wings hyaline and not narrow; stigma castaneous, areolet sessile and emitting recurrent nervure from beyond its centre; nervellus intercepted far above its centre. Length 9-12 mm. ♂ ♀. It appears allied to *Pimpla tricolor*, Brullé, 1846 (*nec* Spinola, 1840). Four males and a female were captured at La Plata City in Argentina between 28th and 30th May, 1896, and presented to the British Museum by Colonel Yerbury.

8. *Itopectis sponsa*, Hal.

*Pimpla sponsa*, Hal., Trans. Linn. Soc. xvii, 1836, p. 318, ♀.

I have already noticed (Entom. 1911, p. 213) that Haliday's unique and remarkable female, which is extant in the British

Museum and bears his label, is referable to the present genus, since the antennae are distinctly attenuate basally and subclavate towards their apices, with the mesonotum recumbently pilose. The entirely black head, thorax, scutellum, legs and anus with deep red mesonotum, abdomen and hind femora except apically, render it very distinct; while the evenly nigrescent wings with very faint cyaneous reflection, their centrally intercepted and subopposite nervellus, sparsely punctate and centrally sulcate metanotum, strongly tuberculate abdomen with its remarkable ephippiform petiole, and the internally stramineous front femora and tibiae characterise it. The terebra is, as Haliday says, shorter than half the abdomen, with black and pilose valvulae. Length 9 mm. ♀ only. The type is from Valparaiso, and is obviously closely allied to *Pimpla braconoides*, Gay (Hist. fis. Chile, Zool. VI, 1851, p. 501, ♂ ♀), in having its wings infumate, mesonotum and abdomen deep red, but *P. braconoides* is less immaculate black and has the terebra much longer.

I have seen two males in the British Museum, captured at Atoyac in Vera Cruz during April by Herbert Smith, which may represent the other sex of Haliday's species, though the hind tibiae are stouter and centrally dull white, the mesonotum is black, the head cubical, the nervellus intercepted at its lower third and the basal segment is strongly bicarinate to its apex and not elevated; the length is only 6 mm., and, unfortunately, no female was taken along with them.

### EPIURUS, Thomson.

Thoms., Opusc. Ent. p. 1412; (?) Förster, Verh. pr. Rheinl. 1868, p. 164, part.

Head with the cheeks short, the clypeus apically depressed and somewhat deeply emarginate; the eyes subemarginate, frontal orbits not pale, vertex a little retused centrally behind the eyes, and the occipital carina centrally not very distinct. Antennae filiform throughout. Thorax with distinct notauli; metathorax with circular spiracles and its discal carinae always incomplete. Abdomen with narrow epipleurae and not strongly elongate terebra. Legs of ♀ with tarsal claws basally lobate. Wings with the nervellus rarely postfurcal, usually subopposite and intercepted at, more rarely below, its centre.

### TABLE OF SPECIES.

- (46) 1. Front femora of ♂ entire; abdomen of ♀ distinctly tuberculate (EPIURUS, auct.).

- (31) 2. Nervellus intercepted in or above centre; antennae longer than half body.
- (10) 3. Hind coxae distinctly punctate; nervellus intercepted above centre.
- (9) 4. Hind coxae red.
- (6) 5. Abdomen and hind tibiae also entirely red.  
1. *melanocephalus*, Grav.
- (5) 6. Abdomen entirely black; hind tibiae black and white.
- (8) 7. Hind coxae very coarsely granulate beneath.  
2. *graminellae*, Holmgr.
- (7) 8. Hind coxae finely punctate beneath. 3. *alborictus*, Cress.
- (4) 9. Hind coxae black and normally punctate beneath.  
4. *hibernicus*, Morl.
- (3) 10. Hind coxae subglabrous; nervellus intercepted at its centre.
- (26) 11. Claws simple; abdomen not double length of head and thorax.
- (13) 12. Face at least laterally pale; abdomen cylindrical.  
5. *rufipleura*, Bign.
- (12) 13. Face immaculate; abdomen centrally subexplanate.
- (25) 14. Black; terebra longer than half abdomen.
- (18) 15. Apical hind tarsal joint not longer than the third.
- (17) 16. Metanotum not basally carinate; terebra hardly longer than half the abdomen.  
6. *inquisitor*, Scop.
- (16) 17. Metanotum basally bicarinate; terebra as long as abdomen.  
7. *pubibundae*, Ratz.
- (15) 18. Apical hind tarsal joint distinctly longer than the third.
- (22) 19. Metathorax subglabrous throughout.
- (21) 20. Legs fulvidous with the hind ones partly pale.  
8. *similis*, Bridg.
- (20) 21. Legs black, with front femora and tibiae orange.  
9. *pilosus*, Cam.
- (19) 22. Metathorax always distinctly bicostate discally.
- (24) 23. Hind tibiae red; metathorax sparsely punctate, shining and shortly pubescent.  
10. *robustus*, Morl.
- (23) 24. Hind tibiae black and white; metathorax closely punctate, dull and elongately pubescent.  
11. *satanas*, Morl.
- (14) 25. Red; terebra hardly half length of abdomen.  
12. *taschenbergi*, Schm.
- (11) 26. Claws explanate; abdomen double length of head and thorax.
- (30) 27. Hind claws four times length of penultimate joint.

- (29) 28. Head transverse ; thorax red and subfusiform.  
13. *dilutus*, Ratz.
- (28) 29. Head subcubical ; thorax black and cylindrical.  
14. *culpator*, Morl., n.n.
- (27) 30. Hind claws hardly thrice length of penultimate joint.  
15. *arundinator*, Fab.
- (2) 31. Nervellus intercepted below centre ; antennae not longer than half body.
- (33) 32. Face flavous or flavous-marked. 16. *didymus*, Grav.
- (32) 33. Face immaculate.
- (43) 34. Basal segment distinctly punctate laterally.
- (40) 35. Nervellus intercepted slightly below centre ; thorax black.
- (37) 36. Face glabrous and strongly nitidulous ; hind tibiae red.  
17. *pterebas*, Say.
- (36) 37. Face sculptured ; hind tibiae pale banded.
- (39) 38. Larger ; abdomen fusiform and stout.  
18. *brevicornis*, Grav.
- (38) 39. Smaller ; abdomen cylindrical and slender.  
19. *punctiventris*, Th.
- (35) 40. Nervellus intercepted far below centre ; thorax, at least of ♀, red.
- (42) 41. Third segment longer than broad ; terebra as long as abdomen.  
20. *ulicida*, Morl.
- (41) 42. Third segment broader than long ; terebra shorter than abdomen.  
21. *pomorum*, Ratz.
- (34) 43. Basal segment irregularly shagreened laterally.
- (45) 44. Nervellus intercepted far below centre ; terebra as long as abdomen.  
22. *vesicarius*, Ratz.
- (44) 45. Nervellus intercepted slightly below centre ; terebra shorter than abdomen.  
23. *pictipes*, Grav.
- (1) 46. Front femora of ♂ emarginate beneath ; abdomen of ♀ weakly tuberculate. [SCAMBUS, Htg.]
- (58) 47. Ocelli not elevated ; wings normal.
- (49) 48. Hind femora nigrescent ; front tibiae of ♂ strongly arcuate.  
24. *sagax*, Htg.
- (48) 49. Hind femora fulvous ; front tibiae not, or in ♂ hardly, arcuate.
- (53) 50. Nervellus intercepted below the centre.
- (52) 51. Central segments apically elevated and shining ; ♂ scape black.  
25. *calobatus*, Grav.

- (51) 52. Central segments not apically elevated; ♂ scape white beneath. 26. *nucum*, Ratz.
- (50) 53. Nervellus intercepted at its centre.
- (55) 54. Basal segment of ♂ thrice longer than broad; terebra longer than body. 27. *inanis*, Schr.
- (54) 55. Basal segment of ♂ twice longer than broad; terebra shorter than abdomen.
- (57) 56. Cubital cell normal; body black; hind tibiae not all white. 28. *detritus*, Hlmgr.
- (56) 57. Cubital cell narrow; body red; hind tibiae all white. 29. *albitibia*, sp. n.
- (47) 58. Ocelli elevated and circumsulcate; wings broad. 30. *ventricosus*, Tschek.

### 1. *Epiurus melanocephalus*, Grav.

Ichn. Europ. III, p. 149.

The eyes of this species have very strong juxta-scrobal emargination, and the third paragraph of my description (Ichn. Brit. III, 1908, p. 69) refers to a distinct species which I here rename *E. culpator*, since I can find no published description to fit it; it is locally not uncommon in British marshes, while the only examples I have seen of the true *Pimpla melanocephala*, Grav., are a reputed British female without locality in Desvignes' collection, a German female correctly named by Ruthe before 1859, and an exactly similar female, though with slightly infuscate anus, taken on 15th June, 1906, by F. M. Thomson at Tientsin.

### 2. *Epiurus graminellae*, Holmgr.

*Ichneumon inquisitor*, Say, Contrib. Maclur. Lyc. Philad. 1828 (*nec* Scop., 1763); *Pimpla graminellae*, Holmgr., Sv. Ak. Handl. 1854, p. 88  
*P. holmgreni*, Schm., Opusc. Ichn. p. 1088.

A full series in the British Museum is from central Europe, and these differ in no way from others, taken in July, 1886, at Albany in New York State, and Alameda in California, which specimens are correctly referred to *P. inquisitor*, Say, by Professor Riley; Redman also took the species in Nova Scotia (cf. also Bignell, Ent. Mo. Mag. 1891, p. 131).

3. *Epiurus alborictus*, Cress.

Trans. Amer. Ent. Soc. 1870, p. 147, ♂.

Provancher has described (Nat. Canad. 1880, p. 39) the ♀ of this Pennsylvanian species from Canada, and Miss Phipson presented one of this sex from the United States in 1891.

6. *Epiurus inquisitor*, Scop.

Ent. Car. no. 754, pl. xli, fig. 745.

A very long series of this species, which is correctly described in Ichn. Brit. III, p. 62, is in the British Museum. It seems of very much more frequent occurrence in Germany (where Ruthe mistook it for *P. calobata* and *P. graminellae*), Switzerland (where Bucheker termed it *P. roborator*), and France (Boulogne, where Oldfield Thomas took it on 24th May, 1892). In the British Collection are a couple of females of the synonymous *P. stercorator*, Grav., named by Gravenhorst himself.

7. *Epiurus pudibundae*, Ratz.

Ichn. d. Forst. I, 1844, p. 114.

There are two pairs of this exclusively German species in the British Museum, from Ruthe's collection.

8. *Epiurus similis*, Bridg.

Trans. Ent. Soc. Lond. 1884, p. 433.

M. A. Roman has been good enough to refer to my account of his Upsala examples of this species bred from stems of *Anthriscus sylvestris* (Ichn. Brit. III, p. 65), thus (in lit., 21st April, 1909): "I see you presume the *Pimpla similis*, Bridg., to have made itself the cocoon from which it emerged. I have long been inclined to believe so myself, having till lately always got the *Pimpla* from that sort of cocoon. Last autumn, however, I found only one cocoon (as before in stem of *Anthriscus*), but from this there emerged a ♀ of *Trichiocampus cradatus* (Htg.) Thn., which species may therefore be suspected as the host of the Upsala specimens. The cocoons are mostly simple, and when two of different size are spun together only the larger cell has been inhabited."

9. *Epiurus pilosus*, Cam.

*Cnemopimpla pilosa*, Cam., Entom. 1903, p. 160, ♀.

The unique female upon which this species and its genus (l.c., p. 159) were erected is in the British Museum. The tarsal claws are basally lobed, the abdominal segments distinctly tuberculate, the lateral metathoracic areae wanting, the cheeks black, the terebra is shorter than the body, and the clypeal conformation exactly as in *Epiurus*. We have left only the "areolet large, wide; the transverse cubital nervures being widely separated above," and the "antennae stout, thickened towards the apex; the last joint of the antennae large, if anything longer than the preceding two joints united"; and these characters, with the entirely black posterior legs, will serve to distinguish this female, which was found by Edward Whymper at Machachi in Ecuador, at 9,000-10,000 feet up the Andes, from the rest of the present genus to which it quite certainly belongs.

10. *Epiurus robustus*, Morl.

Ichn. Brit. III, p. 65, ♀.

There is an example of this species in the British Museum, captured at Zürich by Bucheker and named by him *Pimpla gravenhorstii*, Tasch., which is considered by Schmiedeknecht (Opusc. Ichn.) to be synonymous with *P. detrita*, Holmgr.; others are from Lannion in Brittany, during September, 1892 (O. Thomas) and from south-west Persia (Escalera). It is entirely distinct from *E. detritus*, as I understand that species.

11. *Epiurus satanas*, Morl.

Fauna Brit. India, Ichn. I, 1913, p. 173, ♂ ♀.

The two known pairs of this species were found by W. F. Badgley, and are in the British Museum. Three other species are included in this genus (l.c.).

14. *Epiurus culpator*, nom. nov.

*Pimpla melanocephala*, Morl., Ichn. Brit. III, paragraph 3, p. 69, ♂ ♀, excl. paragraph 1, p. 68.

A new name becomes necessary for this British insect. Whether the true *Pimpla melanocephala* be indigenous is at present doubtful (cf. no. 1, ante).

15. *Epiurus arundinator*, Fab.

Syst. Piez., p. 116.

Often confused with *E. detritus*; central Europe and bred at Corté in Corsica from the gall-making larvae of the Conchylid Lepidopteron *Pharmacis corsicana*, Walsm., on 21st August, 1898.

16. *Epiurus didymus*, Grav.

Grav. Ichn. Europ. III, p. 178.

Apparently a rare species on the Continent; I have only seen four females from Ruthe's German collection, but the British series is full.

17. *Epiurus pterelas*, Say.*Ichneumon pterelas*, Say, Contrib. Maclur. Lyc. Philad. 1828, p. 71, ♀.

It is probable that J. Hamilton bred males of this species during his researches into its life-history (Entom. News 1894, p. 288) as an ectoparasite upon the weevil *Mononychus vulpeculus*, Fab., which he found ovipositing in seed-pods of *Iris versicolor*. That sex, however, seems to have hitherto escaped description, and it is here set forth only because the single example captured in 1902 by R. E. Danfurth on the coast of Maine exactly agrees with Walsh's female description (Trans. Acad. St. Louis 1873, p. 133), except in its rather shorter antennae with their first flagellar joint only basally pale, the basal segment not longer than broad and but little explanate apically; length 8 mm. The species is remarkable for its entirely glabrous face, pale tegulae and immaculate legs.

18. *Epiurus brevicornis*, Grav.Ichn. Europ. III, p. 211; *Pimpla novita*, Cress., Trans. Amer. Ent. Soc. 1870, p. 147, ♀.

Abundant in Europe; Germany (Ruthe, who mixed it with *E. inanis*, Shrck.), Switzerland (Buchecker, who synonymised it in MS. with *E. didymus*), Cyprus on 7th November, 1902 (C. Glaszner) and Roscoff in Brittany in September, 1892 (O. Thomas). Four fairly typical females from Hudson's Bay and Nova Scotia fall into Cresson's *P. novita*, which can, I think, be nothing but a synonym of Gravenhorst's species.

20. *Epiurus ulicicida*, Morl.

Entom. 1911, p. 161, ♂ ♀.

Both sexes of this pretty species were bred in the New Forest from flower-heads of gorse, containing larvae of the Cecidomyiid gnat *Aspondylia ulicis*, upon which it doubtless subsisted.

22. *Epiurus vesicarius*, Ratz.

*Pimpla vesicaria*, Ratz., Ichn. d. Forst. I, 1844, p. 115; *P. gallicola*, Morl., Ichn. Brit. III, p. 78, ♂ ♀.

Mr. C. A. L. Smits van Burgst has been so good as to call my attention to the above synonymy, which is doubtless correct. It was bred by Ratzeburg from several *Nematus* and *Cryptocampus* species; and Mr. Van Burgst has recently (Tijds. v. Ent. 1911, p. 10) bred both sexes in Holland during May and June from the galls of *Pontania vallisnerii*, Htg.

28. *Epiurus detritus*, Holmgr.

Holmgr. Sv. Ak. Handl. 1860, p. 23; *P. gravenhorstii*, Tasch., Zeits. Ges. Nat. 1863, p. 266, ♂ ♀; *P. indagatrix*, Cress., Trans. Amer. Ent. Soc. 1870, p. 146, ♂.

No rarer on the Continent than in England; Switzerland, Polish Ukraine, Germany. Captain Ibbetson has presented a female, that I fail to distinguish in any way from typical *E. detritus*, to the British Museum, from Western Canada; this agrees well with Provancher's ♀ description (Natural. Canad. 1880, p. 39) of *P. indagatrix*, Cresson, who only knew the male.

29. *Epiurus albitibia*, sp. n.

Extremely closely allied to *E. detritus* and too similar to that species to need a detailed description; therefrom it differs entirely in colour, but not at all in outline or essential structural details. The face is punctate, pilose and dull; the thorax and abdomen are neither pilose, and the former is both glabrous and nitidulous with the metapleurae alone shortly pubescent, the metanotum is entirely smooth and without sculpture; the basal segment is but obsoletely punctate and the segmental incisures are less deeply impressed, the terebra is more strongly pilose and not shorter than half the abdomen; the cubital cell is distinctly narrower with the

disco-cubital nervure nearly straight, and the nervellus is intercepted at a slightly lower point. The colour is bright ferruginous with the head except clypeus, two anal segments, terebra and more or less of the segmental apices narrowly, with sometimes mesonotum discally and prosternum, black; the palpi, underside of scape, whole hind tibiae entirely, and anterior legs indefinitely, white. The ♂ differs only in having the abdomen infuscate. Length 8 mm. ♂ ♀.

Herbert Smith took a dozen females at Venta de Zopilote, Xucumanatlan, Chilpancingo and Omilteme in Guerrero, Mexico, at 2,800-8,000 feet during June, July and August, as well as in Mexico City, along with a single male at 6,000 feet at Amula in Guerrero during September. Type in the British Museum.

### HEMIPIMPLA, Saussure.\*

Grandidier's Hist. Phys. Madagascar 1892, pl. xiii, fig. 4; Sauss., Distant's Naturalist in the Transvaal 1892, p. 227; *Erythropimpla*, Ashm., Proc. U.S. Nat. Mus. 1900, p. 57 (*nee* Szépl., Kilim.-Meru Exped. 1910, p. 79); *Trichiothecus*, Cam., Journ. Str. Br. R. Asiatic Soc. 1903, p. 136; *Cosmiopimpla*, Cam., Trans. S. African Philos. Soc. 1905, p. 198.

A genus of large and remarkably handsome insects, nearly always brilliant and usually particoloured, always with the wings flavescent and more or less broadly or entirely brown or black. In its more typical species it is certainly allied to *Epiurus* in its emarginate clypeus, lobate ♀ claws, strongly uneven abdomen, subcircular metathoracic spiracles and short antennae. I have described the genus in the Fauna Brit. India (Ichneumons I, 1913, p. 186) and a capital generic

\* This name has been sunk as a synonym of *Camptotypus*, Kriech., (Entom. Nachr. xv, 1889, p. 311), since the present paper was in type, by M. Roman (Archiv. für Zoologi Stockholm 1913, No. 15, p. 12). The latter has been so good as to tell me that he is convinced of the synonymy as far as is possible from a study of Kriechbaumer's description, but without having seen the type of either *C. sellatur* or *C. bicolor*, which are the only two species brought forward by its author. Prof. Heymons assures me these are not in the Berlin Royal Museum: and they were vaguely said to have come from "Australia (Coll. Radoszk.)." In the first place Kriechbaumer says "Generi *Lycorina* hoc genus maxime affine mihi videtur, sed praeter alias notas forma capitis magis cum illa *Colpomeria* conveniente et areola praesente differt;" but I consider *Hemipimpla* to bear only a remote relationship to either of these genera. In the second, neither of the original species at all agrees with any of those found by Turner (in the course of twenty years collecting) in Australia and described by me below. We must find the types of *Camptotypus* before we sink *Hemipimpla* to it.—C. M., Dec., 1913.

diagnosis of *Erythropimpla* is given by that excellent critic, W. A. Schulz, in *Spolia Hymenopterologica* 1906, p. 105, supplemented in *Zool. Annalen* 1911, p. 31, though this is based upon Saussure's later work and not upon the type of the genus *H. pulchripennis*, which (cf. lib. cit.) was unknown to him, and is probably in Saussure's collection. This has the head somewhat transverse, the terebra shorter than half abdomen and the nervellus is not intercepted above its centre; Schulz in 1911 says the type is lost. The latter appears a little uncertain respecting the synonymy here of *Trichiotheucus*, the description of which he had not seen; I have not only done so, but I have also examined the type specimens.

That all the species herein included by me are not truly homogeneous will be noted at some future time, and quite possibly those with longer terebra will fall into Ashmead's, and those with the shorter into Saussure's, genus; it will, I think, be found that the one nearly, or always, has circular and the other elongate, metathoracic spiracles; that the vertex of the latter is narrow and strongly transverse, which is not the case in the former except in *H. megaloura* and *H. pseudoptera*, which form a third group of species that may be characterised by its exceptionally buccate head, elongate metathoracic spiracles and terebra, and especially by the very high interception of the nervellus. The length of the (spurious) nervelet is remarkable in this genus and especially in its neotropical members, though representing little more than a corneous wing-fold. The resemblance, both of body and wings, to the present genus of the African Braconid *Braunsia*, Kriech. (*Berl. Ent. Zeit.* 1894, p. 63) is no less remarkable than that of the Braconid genus *Myosoma*, Cameron, from the Malay Archipelago; upon such a resemblance Frederick Smith remarked fifty years ago.

#### TABLE OF SPECIES.

- (38) 1. Abdomen with at least the anus always deep black.  
 (3) 2. Metathorax and basal half of abdomen bright flavous; wings hyaline. 1. *medioflava*, sp. n.  
 (2) 3. Metathorax and abdomen not flavous-marked; wings partly or wholly infumate.  
 (5) 4. Terebra thrice length of body; intermediate femora alone pale. 2. *megaloura*, sp. n.  
 (4) 5. Terebra not longer than body; intermediate femora not, or not alone, pale.  
 (25) 6. Abdomen entirely black, with at most the first segment badius.  
 (16) 7. Wings evenly infumate throughout.

- (9) 8. Stigma whitish ; abdomen distinctly fusiform. 3. *elotho*, sp. n.
- (8) 9. Stigma infusate ; abdomen subcylindrical.
- (13) 10. Head and thorax red ; terebra not shorter than the abdomen.
- (12) 11. Vertex very narrow ; terebra as long as abdomen (India). 4. *rugosa*, DeG.
- (11) 12. Vertex broad ; terebra as long as body (Africa). 5. *rubrithorax*, sp. n.
- (10) 13. Head and thorax not red ; terebra distinctly shorter than abdomen.
- (15) 14. Mesopleurae black ; terebra half abdominal length ; smaller. 6. *melanoptera*, sp. n.
- (14) 15. Mesopleurae flavous ; terebra three-fourths abdominal length ; larger. 7. *flavicaput*, sp. n.
- (7) 16. Wings partly flavescens or hyaline.
- (24) 17. Head and thorax discally black ; wings determinately infumate.
- (21) 18. Basal half of wings clear flavescens.
- (20) 19. Vertex narrow ; terebra shorter than half abdomen. 8. *calliptera*, Sauss.
- (19) 20. Vertex very broad ; terebra as long as whole body. 9. *pseudoptera*, sp. n.
- (18) 21. Wings nigrescent, only paler before their apices.
- (23) 22. Terebra nearly as long as body ; nervellus intercepted above centre. 10. *verticalis*, sp. n.
- (22) 23. Terebra not longer than abdomen ; nervellus intercepted below centre. 11. *verticella*, sp. n.
- (17) 24. Head and thorax entirely red ; wings indeterminately infumate. 12. *ariana*, Cam.
- (6) 25. Abdomen with at least two basal segments bright fulvous or red.
- (37) 26. Hind femora with no prominence on its underside.
- (28) 27. Wings entirely nigrescent from basal nervure, their base clear flavescens. 13. *philippina*, sp. n.
- (27) 28. Wings not unicolorous nigrescent thence, their base rarely flavidous.
- (34) 29. Mesothorax and head pale ; abdomen ochreous ; stigma pale.
- (33) 30. Basal half of wings not, or indeterminately flavescens (Eastern species).
- (32) 31. Two basal segments pale ; stigma whitish. 14. *braconoides*, Smith.
- (31) 32. Three basal segments pale ; stigma fulvous. 15. *atropos*, sp. n.
- (30) 33. Basal half of wings determinately flavescens (African). 16. *divisa*, Tosq.
- (29) 34. Mesothorax and head black ; abdomen deep red ; stigma dark.

- (36) 35. Wings not fasciate; metathorax red; terebra as long as abdomen. 17. *maxima*, sp. n.
- (35) 36. Wings fasciate; metathorax black; terebra shorter than abdomen. 18. *recta*, sp. n.
- (26) 37. Hind femora with distinct prominence on under side. 19. *pulcherrima*, Cress.
- (1) 38. Abdomen entirely fulvous or red; rarely black before, never at, anus.
- (60) 39. Basal third of front wings clear flavescens.
- (51) 40. Front wings with only apical margin more or less broadly infumate.
- (42) 41. Basal segment centrally elevated and bicarinate; terebra as long as body. *Wings apically infumate* 20. *olyntia*, Cam.
- (41) 42. Basal segment hardly convex, not bicarinate; terebra shorter than body.
- (44) 43. Apical infumate alar margin very narrow; terebra shorter than abdomen. 21. *caffra*, Sauss.
- (43) 44. Apical infumate alar margin very broad; terebra usually as long as abdomen.
- (46) 45. External alar infumescence extending only to stigma. 22. *infirma*, Smith.
- (45) 46. External alar infumescence extending to basal nervure.
- (50) 47. Antennae basally red; body unicolorous testaceous throughout.
- (49) 48. Stigma piceous; terebra as long as abdomen (Malay). 23. *flaviceps*, Smith.
- (48) 49. Stigma pale; terebra half abdominal length (Africa). 24. *divisella*, sp. n.
- (47) 50. Antennae deep black; body deep red, nigrescent before anus. 25. *lachesis*, sp. n.
- (40) 51. Front wings with one or two transfasciae, and the apical margin infumate.
- (59) 52. Three fasciae in front, and two in hind, wings infumate.
- (58) 53. Head and thorax fulvidous throughout.
- (55) 54. Terebra as long as abdomen; fasciae often broken into spots. 26. *vipioides*, Brullé.
- (54) 55. Terebra shorter than half abdomen; fasciae complete and entire.
- (57) 56. Hind legs apically black; nervellus intercepted below centre; nervelet very short. 27. *simillima*, sp. n.
- (56) 57. Hind legs fulvous; nervellus centrally intercepted; nervelet strongly elongate. 28. *pulchripennis*, Sauss.
- (53) 58. Head and thorax mainly black. 29. *pulchra*, sp. n.
- (52) 59. Two fasciae in front, only apical margin of hind, wings infumate. 30. *bifasciata*, Morl.
- (39) 60. Basal third of front wings entirely nigrescent.
- (64) 61. Thorax black; abdomen deep red.

- (63) 62. Head transverse ; antennae setiferous and black ; nervellus intercepted far below centre. 31. *umbrata*, sp. n.  
 (62) 63. Head cubical ; antennae simple and apically pale ; nervellus not intercepted below centre. 32. *umbraticula*, sp. n.  
 (61) 64. Thorax and abdomen unicolorous testaceous.  
 (66) 65. Wings evenly infumate throughout ; terebra as long as abdomen. 33. *obnoxia*, Smith.  
 (65) 66. Wings with a subapical hyaline area ; terebra about half length of the abdomen. 34. *superba*, Szépl.

### 1. *Hemipimpla medioflava*, sp. n.

The only species of the present genus with entirely hyaline wings and centre of its body bright flavous. Head and antennae immaculate black, with only the palpi pale. Thorax and frenum black, with scutellum, postscutellum and whole metathorax bright flavous, as also are the three basal segments of the otherwise black abdomen ; terebra black and one-third the abdominal length. Legs bright flavous with only the hind tarsi, apical half of their tibiae, and the intermediate onychii black ; claws large, stout and basally very strongly lobate. Wings entirely hyaline with stigma black, areolet a little petiolate and nervellus intercepted at its upper third. Length ♂ ♀, 11-12 mm. The typical female was captured by S. A. Neave with a couple of males on the east foot and slopes of the Aberdare Mountains of British East Africa, at between 7,000 and 8,500 feet, towards the end of February, 1911. Type in British Museum.

### 2. *Hemipimpla megaloura*, sp. n.

A very large and shining black species with indefinite rufescent markings and the wings, except their golden stigma, evenly infumate. Head strongly buccate, glabrous and black ; vertex very broad, laterally subparallel and but little narrower than the internally feebly emarginate eyes ; occiput not bordered ; frons smooth, transimpressed below ocelli and subaciculate between the scrobes ; face transverse, flat, obsoletely and very sparsely punctate ; clypeus much broader than long, basally discrete and apically impressed ; cheeks very short ; mandibles stout with teeth very obtuse, and the upper slightly the longer. Antennae immaculate black, filiform throughout (17 mm. in length), with cylindrical flagellar joints. Thorax glabrous, nitidulous and cylindrical, black with meso-pleurae and -sternum, and base of propleurae claret colour ; thoracic sculpture obsolete, but notauli

very deeply impressed though wanting at the flat mesonotal disc; metathorax declivous throughout, laterally a little explanate basally with distinctly elongate spiracles. Scutellum glabrous and impunctate. Abdomen convex and subparallel-sided, black, with the third and fourth segments and extreme apex of the second indefinitely dull red; basal segment distinctly longer than apically broad and bicarinate to near its apex; second segment slightly, and third strongly broader than long, the former apically transimpressed with strong basal gastrocoeli, the latter along with the fourth and fifth segments tuberculate on either side; anus smooth; terebra emitted from below fifth dorsal segment, stout, slightly reflexed and 78 mm. in length, with its apex strongly sagittiform. Legs elongate and slender, black with apices of only the intermediate femora bright orange; claws slender, elongate, basally lobed and not strongly curved. Wings large but not broad, evenly nigrescent throughout with only the broad and subtriangular stigma brilliant orange; basal nervure continuous through median; apical abscissa of radial nervure curved; areolet obliquely quadrate, sessile, much broader than high, emitting recurrent nervure very shortly beyond its centre; nervellus extremely strongly antefurcal and intercepted at its upper fourth, with its lower nervure oblique and upper vertical. Length 22 mm. ♀ only.

Possibly this species and *H. pseudoptera* are not true Hemipimpla, but the distinctions are not sufficiently conspicuous to allow at present of the erection of a different genus. The type is in coll. Fred. Smith (mus. Janson) and is labelled "Brasilia. Capta D. Swainson."

#### AUSTRALASIAN, MALAYAN, AND ASIATIC SPECIES.

### 3. *Hemipimpla clotho*, sp. n.

A testaceous and subglabrous species with the antennae, hind legs and the tuberculate, punctate abdomen black; wings entirely infumate throughout with stigma and a very indefinite area below it in the cubital cell nearly clear white; head and mesonotal vittae often flavidous; areolet not large, externally continuous with second recurrent nervure; length ♂ ♀, 9-15 mm. On more meagre material, I should not dare to consider these Australian specimens distinct from those of the Malay Archipelago, in spite of the more convex and sparsely punctate central area of the first segment; but throughout the score of both sexes which I have seen in the British Museum, where is the type, the abdomen and hind

legs are entirely dead black and the wings are not basally paler, moreover the cubital cell is much less definitely pellucid above, the abdomen is not laterally white-marked, and its tubercles are a little more distinct. This species appears to be one of the commonest of Pimplids about Mackay and Cairns in Queensland, and I suspect a female labelled "New Guinea" of also being Australian. Compare *Camptotypus sellatus* and *C. bicolor*, Knèch. (Ent. Nachr. 1889, p. 311), which are certainly not synonymous and, in my opinion, not congeneric.

#### 15. *Hemipimpla atropos*, sp. n.

Extremely closely allied to *H. braconoides*, Smith, but instantly known by the entirely glabrous and very highly nitidulous (or in ♂ rarely roughly punctate) disc and sides of the elevated central area of the basal segment, by the larger and brilliant stramineous stigma, surmounting a very definite and entirely hyaline area in the cubital cell of the otherwise, except basally, evenly infumate wings; the head is larger, the thorax stouter and much more convex, and the abdomen is less convex with its basal segment much flatter; length ♂ ♀, 12-15 mm. Described from four males and a female from Mackay in Queensland.

#### 25. *Hemipimpla lachesis*, sp. n.

Possibly no more than a form of the last species, but sufficiently distinct in its jet-black vertex, laterally prominent though not spinate metathorax, centrally punctate and in ♂ excavate centre of basal segment, the distinctly though indefinitely red anus, in the clear fulvescent-hyaline basal half of all the wings, with those of the ♀ sanguineous-red above the hyaline cubital area; length, ♂ 10 mm., ♀ 14 mm. A single pair in the British Museum; the male was taken in February, 1900, at Mackay in Queensland, and the female in Victoria. There is also an unlocalised female in Frederick Smith's collection (mus. Janson).

#### 14. *Hemipimpla braconoides*, Smith.

*Pimpla braconoides*, Smith, Journ. Linn. Soc. Zool. III, 1858, p. 172, ♂ ♀ (*nec* Spin. *non* Cress.); *Bracon stigmaticus*, W. F. Kirby, Ann. Nat. Hist. 1834, p. 404, ♀; *Erythropimpla obiensis*, Schulz, Spolia Hym. 1906, p. 107, ♀; *Camptotypus obiensis*, Roman, Archiv. für Zool. Stockholm. 1913, No. 15, p. 13, ♀.

Both sexes—not ♀ only, as given by Dalla Torre—are described from "Key Island" by Frederick Smith. In the

British Museum is the original ♂ from Aru, two co-typical ♀ ♀ from New Guinea and Aru, with another captured by Edward Damel in the Celebes in 1858. "The fourth and following segments of the abdomen" are described as black in ♀, and the ♂ "with only the basal segment yellow"; the co-typical females have respectively the two basal segments except the apical elevated margin of the second throughout, and the first with only basal lateral angles of the second segment, testaceous; while in the Celebes example the second segment is apically extremely obsoletely infuscate. Smith adds: "This species might at first sight be mistaken for a species of the genus *Bracon*," and so appropriate is the remark that the late W. F. Kirby actually described the female, taken by the Challenger Expedition in Ki Dulan on 25th September, 1874, under that genus; his type, also in the British Museum, differs very slightly in having the third segment, except its apical angles, also testaceous, the wings basally more fulvescent and the stigma conspicuously stramineous in place of conspicuously whitish, probably owing to discoloration. Both this and the above closely allied Australian species have the apices of the anal, and apical angles of the central, segments narrowly whitish.

## 22. *Hemipimpla infirma*, Smith.

*Pimpla infirma*, Smith, Journ. Linn. Soc. Zool. iv, 1860, Suppl., p. 63, ♀;  
*Erythropimpla testacea*, Cam., Tijds. v. Ent. 1907, p. 98, ♀.

A co-type from Amboyna, placed by Smith in the British Museum proves this species to be identical with Cameron's *Erythropimpla testacea*, ♀, both sexes of which are treated by me under the present genus in Fauna of British India, Ichneumons 1913, p. 188; it is known to extend through Burma and Assam to Sikkim; Smith records it from Makassar; and in the British Museum is a ♀ presented by the Admiralty and captured during the voyage of H.M.S. "Penguin" between 13th and 17th November, 1891, at Amboyna. It is a true member of the present genus, and has no association with *Xanthopimpla*, as suggested by Dr. Krieger (Sitzb. Nat. Ges. Leipzig 1899, p. 65). The entirely testaceous body and legs, with broadly infumate alar apices render it a conspicuous species. The Berlin Museum possesses a score from Sikkim and one from Sumatra (Bingham Coll.).

33. *Hemipimpla obnoxia*, Smith.

*Pimpla obnoxia*, Smith, Journ. Linn. Soc. Zool. VIII, 1864, p. 64, ♀.

This species has not been mentioned since first superficially described by Smith from Morty Island. A co-type from his collection was acquired by the British Museum in May, 1879, and differs from *H. infirma* solely in having the wings strongly infumate throughout with only their base, and a shade below the stigma in the cubital cell, flavescens. It is the only example I have seen, and very probably constitutes no more than a form of the last species.

23. *Hemipimpla flaviceps*, Smith.

*Pimpla flaviceps*, Smith, Journ. Linn. Soc. Zool. IV, 1860, Suppl., p. 139, ♀ (*nec* Brullé).

Although this species and *H. infirma* are described in the same year and Supplement, the present occurs in a different paper and, if found synonymous, must fall to the latter name, from which it differs in nothing but its more coarsely, though still sparsely, punctate metathorax, the glabrous and not rugose lateral areae of the basal segment and in having the wings infumate from the basal nervure of the upper and from base of the radius in the lower wings (and not, as in *H. infirma*, only from the apex of its testaceous stigma) to apices of the wings. It is an intermediate form, connecting *H. infirma* and *H. obnoxia*; originally recorded from Batchian, but a co-type ex coll. Smith in the British Museum is from Morty.

20. *Hemipimpla olynthia*, Cam.

*Pimpla olynthia*, Cam., Manch. Mem. 1899, p. 156, ♀; cf. Tijds. v. Ent. 1907, p. 99.

In my Fauna of British India, Ichneumons I, 1913, p. 189, I ventured to synonymise this species with *Hemipimpla caffra*, Sauss., but the former's description, which directly applies to the oriental and not the African species, is there correctly reproduced. This agrees well enough with Saussure's account of his species, but a comparison of the types of both in the British Museum shows Cameron's species to be a much larger and stouter insect with the vertex broader, the eyes internally much less emarginate, the notauli obsolete, metanotum laterally less strongly punctate, the basal segment

centrally bicarinate and elevated to a remarkable degree ; the abdomen is centrally broader with the segments discally much smoother and less uniformly punctate ; the terebra is exactly, or very nearly, as long as the body ; the legs are stouter, with hind tarsi red ; the lower wing has the apical infumescence hardly extending to the evenly rounded hind margin ; but the neuration is identical, excepting that the areolet is narrower, less petiolate and emits the recurrent nervure nearer its apex. The half-dozen examples in the British Museum are from Sikkim and Burma ; it is also known from Assam. A score of Bingham's Sikkim specimens are in the Berlin Museum.

#### 4. *Hemipimpla rugosa*, DeG.

*Spheg rugosus*, DeG., Mem. Hist. Nat. Ins. III, 1773, p. 597, pl. xxx, figg. 18, 19 ; *Bracon plumator*, Fab., Syst. Piez. p. 102 ; *Pimpla bipartita*, Brullé, Hist. Hym. 1846, p. 88 ; *P. viridipennis*, Smith, Journ. Linn. Soc. Zool. 1860, Suppl. p. 64, ♂ ; *Trichiothecus ruficeps*, Cam., Jour. Str. Br. R. Asiatic Soc. 1903, p. 137 ♀, *Erythropimpla fruhstorferi*, Schulz, Spolia Hym. 1906, p. 106 ; cf. Zool. Annalen 1911, p. 28, ♀.

I have fully discussed (Fauna Brit. Ind. Ichn. I, 1913, p. 190) the propriety of adopting DeGeer's ancient name for this species. *Pimpla viridipennis*, the type of which in the Oxford Museum and the original variety in the British Museum I have now seen, are its male. It is the only oriental species with uniformly deep black wings, and is well represented in the British Museum. It is still uncertain whether this species extends so far north as Burma ; Schulz's females from Toli-Toli in the northern Celebes and Kudat in north Borneo are probably this species, he also records it from Manila in the Philippines. A specimen (♀) in the Berlin Museum is from Tengar, Perak.

#### 12. *Hemipimpla ariana*, Cam.

*Pimpla ariana*, Cam., Manch. Mem. 1899, p. 157, ♀ ; cf. Tijds. v. Ent. 1907, p. 99.

Very like *H. rugosa* but stouter, with the abdomen broader and wings, except at their apices, flavescent. It is only known from the Himalayas at Sikkim and various mountains in Assam ; several examples from the former, and one from the latter, locality are in the British Museum. I have recently examined twenty-five examples in the Berlin Museum, taken by Bingham in Sikkim (Rungarum in April, 1900, etc.) and Sumatra.

13. *Hemipimpla philippina*, sp. n.

Most closely allied to *H. ariana*, though with the abdomen less uneven, more finely punctate, with the segmental apices less laterally prominent; all the legs are pale fulvous, with only the hind tarsi and tibial apices infuscate. The scape, head, thorax and two basal abdominal segments are testaceous, with the apical margin of the last and whole remainder of the abdomen black; terebra 14 mm. in length; the metathorax is glabrous with only its disc punctate, all carinae wanting. It is at once known by the unique coloration of the wings, both pairs of which are bright flavous (those of *H. lachesis* are alone similar) nearly as far as the basal nervure of the upper, or a little beyond the nervellus in the lower, pair and thence strongly and determinately nigrescent throughout, with stigma also black and no pale area below it; length 17 mm. ♀ only. The type was captured on 29th May, 1906, at Luzon (Benquet Province of Irian) in the Philippine Islands, and is in the British Museum.

## AMERICAN SPECIES.

17. *Hemipimpla maxima*, sp. n.

(See Plate.)

A magnificent black species with the metathorax and basal two-thirds of the abdomen deep crimson, and the wings infumate with a paler cloud below the areolet. Head immaculate with vertex not very narrow behind the internally slightly emarginate eyes, but abruptly declivous behind the elevated ocelli; frons smooth and a little impressed on either side. Antennae immaculate and but slightly longer than abdomen, with flagellar joints cylindrical and apex sub-attenuate. Thorax glabrous and very strongly nitidulous, with notauli superficial; black with whole metathorax and apical mesopleural sutures deep rich red; metanotum hardly impressed centrally, sparsely pale-pilose, with subcircular and not very small spiracles. Scutellum glabrous and deplanate, its centre and the apex of postscutellum rufescent. Abdomen stout and rich red with the fifth and following segments, except very narrowly at their apices on either side, deep black; first segment smooth, basally excavate, not longer than apically broad, with no carinae; the second to

sixth with a strong tubercle and apical elevation on either side; remainder smooth; terebra black, as long as abdomen and unusually stout, with its base beneath fifth dorsal segment; spicula black and very strong. Legs neither elongate nor slender, black with front tibiae externally and apex of femora internally testaceous. Wings infumate throughout, though with apical third of the cubital cell much paler below areolet,\* which is sessile and twice as broad as high, emitting the evenly curved recurrent nervure but slightly before its apex; nervelet extremely elongate and parallel with the black costa nearly to the upper basal nervure; stigma black; second recurrent of lower wing very strongly reflexed. Length 17-19 mm. ♀ only. The type and a co-type were captured by H. W. Bates at Para on the Amazon and were received by the British Museum in 1848 or 1849. Perhaps it is not rare there, for three other females from the "Amazon" and "Para" are in Frederick Smith's collection (mus. Janson), with one from "Chili"; all these have subunicolorous infumate wings.

### 18. *Hemipimpla recta*, sp. n.

Extremely like the last species, though smaller, with the metathorax black and the wings bifasciate. It further differs therefrom in its flavidous palpi, discally subglobose head with very strongly emarginate occiput, entirely black thorax and scutellum, the acutely impressed disc of the second and third segments, distinctly shorter terebra of normal thickness and rufescent spicula, the laterally entirely testaceous front legs and basally subhyaline wings as far as the basal nervure; their centre from apex of stigma including areolet to anal nervure is also hyaline; lack of nervelet, the slight second recurrent of lower wings and lower interception of the nervellus; but especially is it distinct in having the basal abdominal segment abruptly elevated and strongly carinate on either side. Length 12 mm. ♀ only. The single Venezuelan female was acquired by the British Museum from Dyson early in 1847.

\* In the co-type is a most curious neurational aberration, which I have seen nowhere else. The dexter areolet is succeeded at the basal top of the outer cubital cell by a very small secondary and subcircular areolet, formed by duplication of its outer nervure; in this specimen only, the second recurrent emits an external nervelet.

19. *Hemipimpla pulcherrima*, Cress.

*Pimpla* ? *pulcherrima*, Cress., Proc. Acad. Philad. 1873, p. 404, ♀ ;  
*P. laevigata*, Smith, Descr. New. Spp. Hym. 1879, p. 229, ♀ ;  
*Odontopimpla pulcherrima*, Cam., Biol. Cent.-Amer. 1886, p. 272, ♀.

Cameron elevated this species to generic rank on account of a hind femoral prominence and some slight modifications in which latter it differed from *Pimpla*, but entirely agrees with *Hemipimpla*, where it may nowadays be fairly included. The pale legs and hind femoral excrescence render it conspicuous among the occidental species. Its distribution is South American, and it does not appear to extend to the Province of Sonora, nor did Herbert Smith find it about Guerrero, etc., among many thousands of other Parasitica. Five examples in British Museum, all—except in one doubtful case—females; Cache in Costa Rica (Smith's type); Valladolid in Yucatan (Gaumer); Honduras in 1845 (Dyson); British Guiana in 1908 (J. Rodway), and Brazil about 1838 (Mornay); Cresson's type was from Cordova, Mexico.

## AFRICAN SPECIES.

21. *Hemipimpla caffra*, Sauss.

Distant's Naturalist in the Transvaal 1892, p. 227, ♀.

Saussure's short description from a single ♀ from Pretoria agrees well with *H. olynthia*, though an examination of three topotypes in Distant's collection, of which one is a ♂, show the marked distinctions set forth above under the latter species. Here the hind wing is conspicuously emarginate with its border infumate throughout its apical two-thirds; and the terebra is hardly longer than half abdomen. It is the only African species with entirely testaceous body and the flavescent wings infumate only at their extreme apices.

8. *Hemipimpla calliptera*, Sauss.

Distant's Naturalist in the Transvaal, p. 228, ♀; *Pimpla limbata*,  
 Tosq., Mém. Soc. Ent. Belg. 1896, p. 295, ♂ ♀.

Black with the head and thorax partly ochraceous; terebra half length of abdomen; wings basally flavescent and apically black or black-marked; length 12-15 mm. There can, I think, be no doubt that Saussure's species, half-a-dozen topotypes of which from Distant's collection from the neighbourhood

of Pretoria are now in the British Museum, is no more than a dark variety of *P. limbata*, Tosq., of which the typical Cape Colony form with three subapical alar spots is recorded from Jannerill by Cameron (Trans. S. African Phil. Soc. 1905, p. 195) and represented in the British Museum from Natal, with two of the subapically banded form mentioned by him (var. *semilimbata*, nov.) from the same locality; the type form with the whole alar apex nigrescent from the stigmal apex is probably not rare since Captain Munn presented it from Durban in Natal in 1891 and Neave sent three more from Masongaleni at an altitude of 3,000 feet in British East Africa, where he found them at the end of March, 1911. I have not seen the male.

#### 6. *Hemipimpla melanoptera*, sp. n.

Extremely like *H. calliptera* in structure and terebral length, but with the antennae filiform and much more slender, the wings entirely and uniformly nigrescent, the abdomen more parallel-sided and with a cyaneous reflection, the metathorax both shining and strongly punctate; the head, except vertex and occiput, and both prothorax and front legs are ochraceous; length 12-14 mm. ♂ ♀ Both sexes (of which the male differs only in its ochraceous intermediate legs and flavous anterior coxae and trochanters) were discovered by S. A. Neave in 1911-12 in the Uganda Protectorate, on the north-west at 3,800-3,900 feet, and on the west at 3,700 feet about Buddu, shores of the Victoria Nyanza; at Northern Buddu at 3,800 feet in September; as well as between Mitiana and Entebbe at 3,800 feet in early January.

#### 7. *Hemipimpla flavicaput*, sp. n.

A large black species with uniformly nigrescent wings and only the head, front legs, prothorax, mesopleurae and mesosternum brilliant flavous; it is similar to the last species, with the abdomen equally subcyaneous and parallel-sided; but the terebral length will render it abundantly distinct, both from that and the smaller, though similarly coloured, *Pimpla cognata*, Tosq. (Mém. Soc. Ent. Belg. 1896, p. 299), since in both it is much shorter than the abdomen, while here it extends to exactly the same length; the head is strongly transverse and vertically narrow, the cheeks subobsolete, the

scape pale beneath, the hind tibiae are basally arcuate and the abdominal tubercles weak; length 18-19 mm. ♀ only. The female type, acquired from Frederick Smith's collection by the British Museum in 1879, is labelled "West Africa," and if that be correct its range is wide, for the only other example I have seen was captured by Neave in the middle of September, 1911, at 3,700 feet about Buddu on the west shore of the Victoria Nyanza in Uganda.

### 5. *Hemipimpla rubrithorax*, sp. n.

An elongate black species, with concolorous wings; head except vertex, the entire thorax, scutellum, anterior legs and hind coxae rosy. Of the size and outline of *H. flavicaput*, but quite distinct in its coloration, the more slender antennae, posteriorly much broader head, subbuccate cheeks, dead black scape, impunctate metathorax, more closely and much less coarsely punctate abdomen and sculptured basal segment, and in the very strongly elongate terebra. Length 17 mm., ♀ only. The type was captured by Neave in forest at 4,000 feet on 28th July, 1911, between Jinja and Busia, near East Busoga, in the Uganda Protectorate, and is in the British Museum.

### 9. *Hemipimpla pseudoptera*, sp. n.

A large and stout species, immaculate black and nitidulous, with the hind tarsi red and terebra exactly as long as the body; wings deep flavescent to centre of stigma of front ones and to slightly beyond second recurrent nervure in hind ones, and thence truncately black with an irregular central spot in the anterior. I hesitate to place this species in the present genus on account of its very stout head with buccate cheeks and temples, strongly excavate scrobes, large metathoracic spiracles and the structure of the hind tarsi, which are distinctly weak with the onyches (unlike the intermediate which are stout, curved and basally lobed) short and nearly straight, hardly extending beyond the stout pulvilli. It is very like the *semilimbata* form of *H. calliptera*, though stouter, more shining, with longer terebra. Length fully 15 mm. ♀ only. The type in the British Museum is from 4,800 feet in the Mpanga Forest, Toro, November, 1911 (S. A. Neave).

10. *Hemipimpla verticalis*, sp. n.

Black, with the wings, except before apices of the anterior, concolorous. Head except vertically, prothorax and front legs, bright ochraceous. Unlike any of the foregoing African species in having the wings nigrescent throughout with only a large subapical spot in the anterior, extending from centre of areolet nearly to the margin and from the anal nervure to the costal nervure, silicious-hyaline. Both cheeks and temples are very strongly buccate; vertex and frons, but neither occiput nor scrobes, are black, as also are the apices of the equally bidentate mandibles; metanotum impunctate and strongly glittering, scutellum and metathorax also glittering, but with a few scattered punctures; areolet distinctly sessile, nervellus intercepted slightly above its centre; all the tarsal claws curved and basally lobate; terebra 13 mm. in length, body 15 mm. ♀ only. A single female was taken by Neave, between Mitiana and Entebbe in Uganda, at 3,800 feet, in the middle of January, 1911, and is in the British Museum.

11. *Hemipimpla verticella*, sp. n.

Extremely like the last species in the coloration both of body and wings, but with the terebra not longer than the abdomen and both meso-pleurac, -sternum and the intermediate legs differently coloured; the tarsal claws are small and strongly reflexed, the abdomen is more coarsely and evenly punctate with its segmental apices less glabrous and lateral tubercles obsolete; the areolet is distinctly a little petiolate and the nervellus intercepted far below its centre; length 12-13 mm. ♀ only. This species is only known from the Buamba Forest in the Semliki Valley of Uganda, where Neave found it at an altitude of about 2,500 feet at the beginning of November, 1911.

26. *Hemipimpla vipioides*, Brullé.

and var. *imperfecta* nov. and *immaculata* nov.

*Pimpla vipioides*, Brullé, Hist. Nat. Ins. Hym. 1846, p. 96, ♀; *Cosmiopimpla ferruginea*, Cam., Trans. S. African Phil. Soc. 1905, p. 193, ♀; Ann. S. African Mus. 1906, p. 116, ♂ ♀; *Erythropimpla aethiopica*, Schulz, Spolia Hym. 1906, p. 109; cf. Zool. Annalen, 1911, p. 31.

This species has the head, thorax and abdomen immaculate fulvous; it was originally recorded from Senegal and South

Africa. The typical form has three distinct fasciae in the front and two in the hind wings, the mesonotal notauli deeply impressed and the hind legs only black "à partir du milieu des jambes"; with the terebra 8, and body 15 mm. in length. This exactly fits half-a-dozen females in the British Museum from Obuasi in Ashanti (Dr. W. M. Graham 1908), Eriam in southern Nigeria on 21st May, 1910 (J. J. Simpson), on bank of the Nile near Kakindu at 3,400 feet, and in forest between Jinja and Busia at 4,000 feet, both in August, 1911 (S. A. Neave), and Salisbury in Mashonaland in January, 1900 (Marshall). Schulz's single female was from Usambara in German East Africa; Cameron's typical female of 12 mm., with terebra of 8 mm., and the alar fasciae entire is from Brak Kloof in Cape Colony, and later he records it from Rondeburg in September.

Holmgren has described the male of this species (Eugenics Resa Ins. 1868, p. 404) from the Cape of Good Hope, as similarly coloured to the female, but with the head and anterior legs flavescent-testaceous. Cameron adds that the wings also are paler—and thus is a northern Nigerian male taken at Lateri on 2nd December, 1910 (J. J. Simpson). Three other females (var. *imperfecta*, nov.) I cannot regard as distinct, since they differ solely in having the hind legs, except coxae and tibial base, black, together with both the discal fasciae of the front wings more or less broadly interrupted. Szépliget's *Erythropimpla trifasciata* (Sjöstedt's Kilimanjaro-Meru Exped. 1910, p. 79) seems, as Schulz remarks in 1911, a similar form with the hind wings "(die äusserste Basis der Schienen ausgenommen) und ein Fleckchen an der Unterseite der Mittelhuften schwarz." The var. *imperfecta* is from the Yala River on the south edge of the Kakumga Forest at 5,000 feet in February, 1911; on the northern slope of Mount Kenya on the Embu-Meru road at 5,000 feet in February, 1911, in British East Africa; and at 6,000 to 8,500 feet to the north of Mount Ruwenzori at the beginning of November, 1911, in Uganda (Neave).

Another pair (var. *immaculata*, nov.) differ from the type form in their entirely fulvous hind legs, which bear no black markings whatever, in the rather shorter ♀ terebra which is only 7, to the total body length of 13 mm., and in the sparse nigrescent markings of the ♂ wings, where the basal fascia is reduced to a prestigmal dot, the second to slight clouds below the stigma and before areolet and in the centre of the cubital cell, while the apical margin is but narrowly infumate in both pairs of wings.

27. *Hemipimpla simillima*, sp. n.

I am able to distinguish this species from the last solely on its smaller size of only 11 mm., and shorter terebra of but 3 mm.; it seems to me impossible that the ovipositor should vary to this extent, with no intermediate grades in the dozen females I have examined. One female and six males were captured together during November, 1910, at Zungeru in northern Nigeria by J. W. Scott-Macfie.

28. *Hemipimpla pulchripennis*, Sauss.

Grandidier's Hist. Phys. Madagascar 1892, pl. xiii, figg. 4, 4a, 4b, ♀  
Madagascar.

29. *Hemipimpla pulchra*, sp. n.

A fulvous species with wing-markings like those of *H. vipioides*, of which it appears a variety till the much more strongly elevated segmental apices, more acute abdominal tubercles and shorter terebra which is shorter than the abdomen, be noted. In coloration it is very distinct, with the head except vertically, prothorax, mesosternum, and anterior legs except base of the intermediate, flavidous; the vertex, remainder of thorax with scutellum and whole remainder of the legs, are black; length 10 mm., terebra, 4 mm. ♀ only. Northern slopes of Mount Kenya, on the Embu-Meru road at 4,500-5,000 feet in the middle of February, 1910 (S. A. Neave, type). I should suspect this of being Szépligeti's *E. trifasciata*, but he does not tell us the thorax is black-marked.

16. *Hemipimpla divisa*, Tosq.

*Pimpla divisa*, Tosq., Mém. Soc. Ent. Belg. 1896, p. 304, ♀.

It has hitherto only been known from the Cape of Good Hope, from Tosquinet's type in the Berlin Museum. Moreover it is by no means a common species, and the male is still unknown; the four examples in the British Museum are from Pretoria (Distant), Estcourt in Natal during November, 1902 (Marshall) and Howick in Natal in 1904 (Cregoe).

24. *Hemipimpla divisella*, sp. n.

Extremely like *H. divisa*, and perhaps no more than a colour variety of it, differing mainly in its unicolorous pubescent abdomen and much smaller hyaline area below the stigma, and in its northern distribution. One male and two females were taken by Scott-Macfie at Zungeru in northern Nigeria in November, 1910; and by Neave at 3,700 feet on the Mbale-Kumi road, south of L. Salisbury in Uganda, in the middle of August, 1911.

30. *Hemipimpla bifasciata*, sp. n.

A fulvous species, with the hind tarsi and tibiae black, very closely allied to *H. vipioides* in every way but with the alar apices dark and, in front wings, only a single discal transfascia from the apical two-thirds of the stigma to the sinus and, at the latter, confluent with the outer marginal band. It is certainly not a variety of that species, for the head is much broader behind the eyes with vertex stout and face transverse, the notauli are wanting and the metathorax subimpunctate, the areolet is not at all petiolate and the nervellus is intercepted distinctly above its centre, the basal segment is much shorter, more convex and distinctly sulcate centrally, the following are more closely punctate and convex with stronger tubercles though, as in that species, the second and following segments are often black-dotted apically on either side; length 14 mm., terebra 8 mm. It is the only African species with bifasciated wings, and occurs principally in the south: at Durban in 1855 (Guenzius, type), Barberton in Transvaal (Distant), and Delagoa Bay (Mrs. Monteiro, 1886); though a small male (8 mm.) was secured by Neave in October, 1911, to the south of Lake George in Uganda, 3,200-3,400 feet, and I possess a female of 20 mm. from West Africa.

31. *Hemipimpla umbrata*, sp. n.

Black, with the abdomen dark red, head and front legs and prothorax ochraceous, and the wings strongly clouded. Head vertically narrow and strongly transverse, entirely flavidous-ochraceous with mandibular apices and the internally distinctly emarginate eyes alone black. Antennae filiform,

setiferous and longer than half body, black, with scape pale beneath. Thorax glabrous, nitidulous, impunctate and black, with prothorax ochraceous, notauli deeply impressed and the metanotum distinctly punctate only at the base on either side, centrally sulcate at its apex; spiracles small and circular. Abdomen rich deep red, strongly punctate and subparallel-sided; first segment with base and sides of second especially roughly punctate, the former very slightly longer than apically broad with distinct basal though no discal carinae; sixth and following segments not tuberculate; terebra black and nearly half length of abdomen. Legs dead-black, with the intermediate badious and the front ones pale ochraceous. Wings nigrescent with the front ones, from base of the fulvous stigma to centre of brachial cell and thence nearly to apical margin, flavidous-hyaline, slightly clouded at the stigma and centre of cubital cell; hind wings nigrescent with a single pale transfascia at the second recurrent nervure. Length 15 mm. Apparently allied to *H. pulchra*, which has the wings basally pale. Three females with varying density of alar infumescence were taken by C. C. Gowdey and S. A. Neave in Uganda in the Daro Forest of Toro at 4,000-4,500 feet in October, 1911; on the shore of Lake Isolt at 3,800 feet early in January, 1912; and at Entebbe at the end of the following May.

### 32. *Hemipimpla umbraticula*, sp. n.

Exactly like the last species in superficial facies and coloration; but with the head cubical, the vertex very broad and temples hardly narrower than the internally entire eyes; antennae filiform, deep black and not setiferous, with their base immaculate and apex red. Thorax with notauli wanting and metanotum very sparsely punctate, not centrally sulcate, with elongate spiracles. Abdomen finely punctate and subfusiform; basal segment much longer than apically broad with its disc glabrous and laterally bicarinate; terebra fully as long as whole body. Posterior legs dead-black; wings nigrescent, the front ones with an indefinite transfascia, from beyond the black stigma to anal nervure, subhyaline; hind wings pale only at base of radial cell; nervellus not intercepted below centre. Length 15 mm., ♀ only. The type was captured in the Bigona Forest at Unyoro in Uganda at 3,700 feet by Neave, at the beginning of December, 1911, and is in the British Museum.



- (10) 9. Abdomen castaneous, white-banded; mesothorax red.  
5. *lineiger*, sp. n.
- (9) 10. Abdomen entirely black; mesothorax not red.  
6. *argiope*s, Marsh.

### 1. *Tromatobia oculatoria*, Fab.

*Ichneumon oculatorius*, Fab., Ent. Syst. Suppl. 1798, p. 211.

Northern and central Europe; taken by Ruthe as late in the year as 21st October, 1852, in Germany, and Elliott took it at the end of the same month in 1899 at Lynton. Mr. J. E. Collin has pointed out (Entom. 1909, p. 97) that the larva figured at Ichn. Brit. III, p. 114, is not, as I supposed, that of the present species, but of some Dipteron, thought by him to appertain to the Cyrtidae and by Dr. Sharp to the Stratiomyidae.

### 2. *Tromatobia ornata*, Grav.

*Pimpla ornata*, Grav., Ichn. Europ. III, p. 158.

By no means a common species either in Britain or upon the Continent; the British Museum possesses a German female from Ruthe's collection and a male captured by Schmiedeknecht on Corfu in May, 1889.

### 3. *Tromatobia ovivora*, Bohem.

*Pimpla ovivora*, Boh., Sv. Ak. Handl. 1821, p. 336.

A good series in the British Museum is from Zürich, Corfu, and Germany.

### 4. *Tromatobia bridgmani*, Bignell.

*Pimpla bridgmani*, Bign., Ent. Mo. Mag. 1894, p. 255, ♀; Morl., Ichn. Brit. III, p. 118, ♂ ♀.

Closely allied to *Polysphincta*, but with the areolet entire. It has not yet been recorded from the Continent and is known only from Devonshire and Surrey.

### 5. *Tromatobia lineiger*, sp. n.

A slender red species with black and white markings, and the legs mainly stramineous. Head posteriorly constricted

and black with all the orbits broadly to vertex, clypeus, cheeks, mouth and in ♂ nearly the whole face, stramineous; mandibles nigrescent with a pale basal dot; face sparsely and in the centre strongly punctate, apically discrete from the glabrous and uneven clypeus. Antennae filiform, a little longer than half body and dull ferrugineous, with scape darker. Thorax shining and bright red, with only the prosternum nigrescent; elongate callosities before and short ones beneath radices, postscutellum, margins of scutellum broadly and the obtuse apophyses, stramineous; metathorax sparsely and superficially punctate, elongately pilose and evenly concave, with no areae; spiracles circular and not large. Abdomen coarsely punctate and castaneous with the five basal, and sides of the sixth, segments narrowly bright stramineous-margined before their black apices; first segment not longer than broad, basally glabrous and bicarinate to near its centre; terebra black, pilose and nearly half length of abdomen. Legs pale stramineous with all the femora discally black-lined; hind coxae internally broadly, and externally narrowly, black-marked; apical third of hind tibiae, a band before their base, and apices of the hind tarsal joints, black; claws curved, basally lobate and not pectinate. Wings hyaline and not narrow; stigma dark castaneous, basal nervure continuous through the median; areolet small, not higher than broad and sessile; external angle of discoidal cell acute; nervellus intercepted a little above its centre. Length 8-9 mm. ♂ ♀. The typical female and a couple of males taken at Colon, Monte Video, in Uruguay on 11th and 15th May, 1896, were presented to the British Museum in 1903 by Colonel Yerbury.

#### 6. *Tromatobia argiopes*, Marsh.

*Pimpla argiopes*, Marshall, Ann. Soc. Ent. France LXI., 1892, p. 65, ♀.

The apparently unique female is in the British Museum, and is, as the Rev. T. A. Marshall says in his excellent description, "indiqué de Caracas" in Venezuela. It was bred from the cocoon of the spider *Argiope argentata*, Fab., which extends in America from Pennsylvania to Brazil, and is very common on Martinique. From the specific characters, no less than from its economy, it is closely allied to *T. oculatoria* and, indeed, the type is labelled "Ennemi de Araignés—très voisine de la *Pimpla oculatoria*, Gr., parasite des oeufs d'*Epeira*."

## POLYSPHINCTA, Gravenhorst.

Grav., Ichn. Europ. III, p. 112.

This genus was originally distinguished from *Pimpla*, and especially *Tromatobia* which it resembles in all superficial facies, by the lack of areolet. Holmgren found, however, that, although it is similar in the abdominal conformation, the terebra was as a rule shorter, and the clypeus, besides being more convex, was not or very rarely deflexed, and never impressed, though very often margined before its apex. It differs from *Schizopyga* in its more slender legs and longer terebra; and from *Clistopyga* the ♀ is distinct in the cleft hypopygium. Little or no reliance is to be placed upon the extent of the rufescent thoracic, nor nigrescent pedal, coloration in this genus. The remarkable point respecting it is that its species are external parasites of more or less mature spiders, upon which they prey exposedly, with the mouth buried in the juices of their victims. This is well illustrated by a note in the Entomologists' Weekly Intelligencer 1858, p. 30: "A Spider with a Parasite.—One day last May I found a spider with an apodal larva attached to its side, and feeding on it; some time after the spider died, and the larva spun up. On looking in the box I found it had come out; it is a small, obtuse Hymenopterous insect; body shining black. What is the name, and is it common?—F. B. W. White, Athole Place, Perth; October 1st." Rev. T. A. Marshall is reported (Meeting Ent. Soc. 5th July, 1882) to have noticed these larvae assimilate the colour of their hosts. The British Museum contains most of the common European species of this genus, such as *P. variipes*, Grav., *carbonator*, Grav., *muticolor*, Grav., *tuberosa*, Grav., *percontatoria*, Mull., *gracilis*, Holmgr. and *bohemani*, Holmgr., including the type of my var. *tropica* of the last-named species, described from Silhouette and Mahé in the Seychelles Islands (Trans. Linn. Soc. 1912, p. 172, ♂ ♀).

*Polysphincta simonis*, Marsh.

The only species of interest in the British Museum is the type of *Pimpla simonis*, which is certainly referable to the present genus, along with another pair, doubtless co-specific, captured by H. H. Smith at Atoyac in Vera Cruz during May and at 6,000 feet at Amula in Guerrero during September. The typical female was described (Ann. Soc. Ent. France, 1892, p. 67) as having the "aréole en pentagone irrégulier

assez grand, dont la nervure extérieure effacée” ; but in the type from Caracas in Venezuela it is more than effaced, for it is externally utterly wanting.

### CLISTOPYGA, Gravenhorst.

Ichn. Europ. III, p. 132.

This genus differs from *Rhyssa*, *Ephialtes*, *Pimpla* in its broadest sense, etc., in having the two apical ventral segments entire, its lack of areolet and in the shorter terebra ; it is related to *Glypta* and *Lycorina* in the impressed abdomen, but differs from the latter in its apically rounded scutellum and from the former in its rugose abdomen, simple tarsal claws, narrow mandibles and short terebra. It is poorly represented in the British Museum, less than a score of species is known and I shall but note the following :—

#### 1. *Clistopyga incitator*, Fab.

*Ichneumon incitator*, Fab., Ent. Syst. 1793, p. 172 ;  
var. *haemorrhoidalis*, Grav.

A common and well-known species both in Britain and upon the Continent.

#### 2. *Clistopyga rufescens*, Fonsc.

Ann. Soc. Ent. France 1854, p. 518, ♂.

“ Elle est bien voisine de la *C. haemorrhoidalis*, et si ce n'était sa taille beaucoup plus petite, je serais porté à la regarder comme le mâle de cette espèce.” Consequently we may regard it as little more than a form of *C. incitator*. *C. erythroca*, Fonsc., I guess to be related to *Oedematopsis* [*Hybophanes*] *ops*, Morl., Ichn. Brit. III, p. 273, from which *Phytodietus elegans*, Ruthe (Stett. Ent. Zeit. XVI, 1855, p. 83, ♀), differs in little but its darker mesonotum.

#### 3. *Clistopyga linearis*, Woll.

*Ephialtes linearis*, Woll., Ann. Nat. Hist. 1858, I, p. 22, ♀.

This is a good species, certainly referable to the present genus though to neither of Fonscolombe's descriptions, as I suggested might be the case (Entom. 1911, p. 212, where the

♂ of *Ephialtes lineatus* is erroneously associated with it). The type and two co-types from Madeira are in the British Museum.

#### 4. *Clistopyga plana*, sp. n.

A shining ferruginous species with black head, red thorax and profuse white markings. Head with internal orbits to vertex, a transverse line below scrobes, clypeus, mouth, cheeks and a callosity behind them, flavous. Antennae filiform and basally pale beneath. Thorax sanguineous with prothorax above, and disc of mesothorax, black; an elongate line before and a dot below radices, prothorax below, and metapleurae longitudinally above lateral carinae, flavous; mesonotum very deeply trilobed and sparsely pilose; metathorax glabrous and strongly nitidulous, with large and circular spiracles at its basal third. Scutellum and post-scutellum flavous, with frenal region dark. Abdomen ferruginous, nitidulous, finely punctate and linear, very slightly explanate to sixth segment, with apices of the five basal centrally narrowly flavous; basal segment half as long again as apically broad, laterally punctate, with no carinae; spicula half abdominal length (valvulae absent). Legs short, stout and flavous, with front femora strongly emarginate and hind coxae large; intermediate femora discally dark-lined, the hind ones infusate before both base and apex; posterior tibiae except centrally infusate, as also are the apices of their tarsal joints; onychii stout, claws mutic. Wings narrow and hyaline, with stigma piceous and areolet wanting; nervellus distinctly antefurcal, intercepted below its centre. Length 7 mm. ♀ only. None of the North American descriptions, rough though they be, tally with the British Museum type, which was captured at La Plata City on 29th May, 1896, and presented by Colonel Yerbury.

#### GLYPTA, Gravenhorst.

Ichn. Europ. III, p. 3.

*Glypta* seems extremely rare in Africa, in the central tropical parts of which it is probably replaced by *Sjostedtiella*; I have only heard of one African species, and Brullé's ferruginous *G. nigripectus* (Hist. Nat. Ins. Hym. iv, 1846, p. 108) from "le midi de l'Afrique" is almost certainly referable to Szépliget's species of that genus on account of "la présence de l'aréole aux ailes de devant." Most of the usual European species are well represented in the British Museum, such as

*G. (Conoblasta) monocerus*, Grav., *fronticornis*, Grav., *ceratites*, Grav., *parvicornuta*, Bridg., *elongata*, Holmgr.; *G. haesitator*, Grav., *vulnerator*, Grav., *sculpturata*, Grav., *trochanterata*, Bridg., *resinanae*, Htg., *rufata*, Bridg., *scalaris*, Grav., *bifoveolata*, Grav., of which one remarkably small German female is labelled by Ruthe " *minima* ; 29th July, 1845, in *Urticae* " ; and *G. annulata*, Bridg., found sometimes on oak about Munich, and one female from " Alten Finmark ; F. Walker, Esq. " Of Cresson's species (Trans. Amer. Ent. Soc. 1870, pp. 151-159), *G. erratica* is represented by a single old Nova Scotian female ; *G. macra*, which has the metathorax apically truncate, by a female received by Rev. T. A. Marshall through Riley from Alameda co., California, in 1888 ; *G. rufiscutellaris* by a pair bred by Riley from his nearctic Tortricid *Proteoteras aesculana* on 4th June, 1886 ; all these are *Glyptae*, sensu stricto. *G. albopicta*, Cress. (Proc. Acad. Philad. 1873, p. 405, ♂) was taken by Salvin and Godman on Orizaba in December, 1887, too late for inclusion in Biol. Centr.-Amer. 1886, p. 271, where Sumichrast's original capture of it alone is instanced ; the species has not since been mentioned, and there is no description of the female which differs only in its occasionally black mesonotum and seven millimetres terebra ; this species has no frontal horn, and the basal areae of its glabrous metanotum are sufficiently definite ; two females in the British Museum were secured at Atoyac in Vera Cruz by H. H. Smith during May. Schmiedeknecht has given us a review of the palaeartic species of this genus (Opusc. Ichn. 1184) ; and the exotic descriptions are usually too superficial to work into this difficult group, which is badly in need of a general revision, which paucity of material renders here impossible.

### 1. *Glypta flavolineata*, Grav.

Ichn. Europ. III, p. 27.

Well represented in the British Museum from Germany (Munich, etc.).

### 2. *Glypta evanescens*, Ratz.

Ichn. d. Forst. II, p. 103.

Many of both sexes from Zürich in July and August (Buecher) ; a ♀ from Corfu in May, 1889 (Schm.). Probably common in southern Europe, though I do not find it recorded thence ; it is certainly very rare in Britain, whence four or five examples alone are known.

3. *Glypta suturalis*, sp. n.

A stout, shining, white-pubescent, somewhat coarsely punctate black species with the tegulae, an elongate supra-propleural line before them, and the greater part or apical half of scutellum, alone stramineous. Head narrow and strongly constricted behind the eyes with the frons and vertex coarsely punctate, and the former centrally carinate though not cornute. Antennae filiform, immaculate black and eight-ninths the length of the body. Thorax shining, with apex of mesonotum laterally impressed, though with no distinct notauli; metathorax evenly declivous with strong apical transcarina and sides of both basal area and areola entire, as are the costulae; spiracles small and circular. Abdomen immaculate, stout and subfusiform with basal segment nearly smooth, stout and a little longer than its broad apex; the three following segments distinctly a little broader than long with no trans-sulcus but strong oblique impressions, neither extending to lateral margins nor quite coalescent basally; remaining segments not impressed, and terebra slightly shorter than abdomen. Legs deep red with all the coxae and trochanters, the hind tarsi and apices of both their femora and their tibiae, black; all the femora sometimes mainly black; fifth hind tarsal joint distinctly longer than fourth. their claws sparsely and stoutly pectinate, not strongly curved. Wings hyaline with stigma piceous, areolet wanting; second recurrent nervure broadly bifenestrate with the intercepting corneous mark externally produced; nervellus intercepted at its lower fourth. Length 9 mm. ♀ only.

Two examples were presented to the British Museum by Lord Walsingham, who took them in Corsica, in 1896. I should hesitate to describe a palaeartic species of this genus as new, were it not that none of the workers upon this group appear to have had a wide knowledge of the Mediterranean forms. I only know of the four following species, from the South-European area, and none of them are tabulated by Schmiedeknecht.

4. *Glypta erythrogaster*, Lucas.

Explor. Algér. Zool. 1846, p. 324, ♂ ♀.

This has the head punctate, black and anteriorly ferruginous; the antennae dark red, with the scape entirely infuscate or black; prothorax black with the meso- and

meta- [pro- (*sic*)] thorax dark red and punctate; abdomen punctate and rosy, with the apical segment black; legs rufescent, with hind tarsi black; wings infuscate-subvescent with piceous nervures; length 11 mm. Taken on the flowers of *Thapsia garganica* about Constantine in Algeria.

### 5. *Glypta nigromarginata*, Pérez.

Ann. Soc. Ent. France 1895, p. 200, ♂.

It is quite unlike *G. suturalis* in its red abdomen, encircled with black, the black scutellum and only a small pale line before the tegulae. It was found at Las Palmas in Grand Canary.

### 6. *Glypta rufiventris*, Kriech.

Anales Sociedad Española Nat. Hist. xxiii, 1894, p. 249, ♀.

Taken by Moragues at Manacor and Mayo in Majorca; it is black with the abdomen except apically and legs mainly red; it is most closely allied to *G. haesitator*, but of different size and coloration.

### 7. *Glypta sardoa*, Costa.

Rendic. Accad. sc. fis. Napoli xxv, 1886, p. 53, ♂ ♀; *G. lycorinoides*, Costa, Atti Accad. sc. fis. Napoli xxv, 1886, p. 33, ♂ ♀.

I give preference to the name brought forward in the Rendiconto, since I have not seen that in the Atti description. That the synonymy is unquestionable is shown by the description of *G. lycorinoides* given by the same author in Bull. Soc. Ent. Ital. xxii, 1890, p. 119, which is word for word identical with that of *G. sardoa* (l.c.), except that the latter is *Glypta crebre grosse punctata*, and the former is *Glypta rude crebre punctata*; both are from Sardinia. The species is said to be coarsely and roughly punctate and shortly pilose, with the basally coalescent and oblique abdominal impressions very deep on the five basal segments and apically confluent, with an ante-apical transimpression; and the metanotal areae are complete. It is black with the clypeus, part of mandibles, external orbits, and in ♀ two facial marks, as well as the scutellum and a postscutellar line, and segmental apices, flavidous; the legs are mainly fulvidous, with base of hind tibiae and the tegulae white; terebra two-thirds abdominal length; length 6-7 mm.

8. *Glypta longula*, Cress.

Proc. Acad. Philad. 1873, p. 405, ♀.

I have seen but a single male of this species, which was taken by M. Sallé around the volcano of Orizaba in Mexico in 1856; it so exactly agrees with Cresson's description of the female from the same locality, however, that no doubt respecting its relation thereto can exist. Unfortunately he overlooked the salient structural features of the species: that the frons bears two stout horns (placing the species, along with the British *Glypta bicornis*, Boie *et* Desv., in Förster's subgenus *Diplastomorpha*); that the basal segment and metathorax are glabrous, with wonderfully strongly and completely carinate areae; and that the central mesonotal lobe is apically produced, with small lateral tubercles and exceedingly deep notauli extending to the centre.

9. *Glypta simplicipes*, Cress.

Trans. Amer. Ent. Soc. 1870, p. 156, ♂ ♀.

This is said to be one of the commonest of the United States species of the genus, and is recorded (l.c.) from Massachusetts, New York and Illinois; Walsh (Trans. Acad. St. Louis 1873, p. 123) had fourteen females, but did not know the male. In the British Museum is a pair, captured on the 12th June, 1877, and sent by Professor Riley to Rev. T. A. Marshall from the United States National Museum. The metathorax is evenly and strongly punctate with the apical transcarina entire, the basal area confluent with the areola which is laterally weak or obsolete immediately beyond the distinct costulae; the spiracles are small and circular, and the frons mutic.

10. *Glypta pedata*, Desv.

Cat. Ichn. Brit. Mus. 1856, p. 74; *G. pictipes*, Taschen., Zeits. Ges. Nat. 1863, p. 276, ♀; *G. tuberculifrons*, Walsh, Trans. Acad. Louis 1873, p. 124, ♂ ♀.

I have seen a pair of this American species which I cannot differentiate from Desvignes' British types in the British Museum, from Hudson's Bay and Unalaska Island in the Aleutians of the Behring Sea where it was captured by H. O. Boger in 1892. Walsh's species is known to range from Illinois (Cresson, Trans. Amer. Ent. Soc. 1870, p. 152) to Canada (Provancher, Faun. Ent. Canad. 1883, p. 470).

11. *Glypta nigrina*, Desv.

Cat. Ichn. Brit. Mus. 1856, p. 74, ♀; *G. flavipes*, Desv., l.c., p. 75 ♂; *G. nursei*, Cam., Journ. Bombay Nat. Hist. Soc. xiv, 1902, p. 425, ♂.

It is remarkable that this species should only be known from Britain and India; all the British Museum examples from the latter country are males, which were found by Colonel Bingham at Rungarum in Sikkim during April, and by Colonel Nurse at Simla during September at an altitude of 7,000 feet. There also are the type and a co-type of Cameron's name; and the type of both Desvignes sexes are in the British Collection there.

12. *Glypta tricarinata*, Cam.

Zeits. Hym.-Dip. 1908, p. 41, ♀.

I have not seen this Sikkim species.

13. *Glypta annulicornis*, sp. n.

Remarkable in its coloration, but with no distinctive sculpture. A white species, with slightly ochreous tinge and broad black markings; the filiform flagellum except basally beneath and a broad band at its apical third, mandibular apices, a small facial mark and the capital vertex from scrobes to occiput, prothorax above, whole mesonotum, frenum except its margins, metanotal disc to the small and circular spiracles, and the subglabrous abdominal segments except their apical fifth and basal angles, deep black. Hind legs with an internal and external coxal mark, outer side of both trochanters and femora, the latter internally towards their apices, and the tibiae and tarsi towards both their extremities, slightly brunneous. Frons simple; metanotum rugose, with a subapical transcarina and indications of a basal area; terebra as long as abdomen; wings hyaline and not broad with areolet wanting, stigma piceous and the nervellus intercepted but little below its centre. The ♂ differs only in its broader flagellar band, with immaculate face and legs. Length 8 mm. ♂ ♀. The type was sent to the British Museum in 1888 by Herr. Frühstorfer, who captured it on 23rd September, 1887, at Theresopolis near Desterro in Brazil; Smith found the male at Teapa in Tabasco, Mexico, during March.





behind the internally subemarginate eyes, black with the mouth, cheeks and centre of face to scrobes ochreous; clypeus prominent, convex apically rounded and basally not discrete from the obsoletely punctate and centrally subconvex face; frons mutic, nitidulous, very finely punctate with large scrobes. Antennae nearly as long as body, filiform and black throughout. Thorax nitidulous, finely and evenly punctate, black with weak notauli and elongate linear stramineous callosities before radices; metathorax strongly nitidulous with distinct and sparse puncturation, griseous pilosity and no carinae at all; its spiracles small and nearly circular. Scutellum except basally in the centre, postscutellum, and the frenum of both flavous. Abdomen immaculate black, shining and apically white-pilose; basal segment half as long again as apically broad, the two following with strong and the fourth with weak oblique impressions; terebra nearly as long as abdomen. Legs ochreous, with hind femora and coxae subfulvidous; hind tarsi and their stoutly pectinate claws alone infusate. Wings ample and slightly infumate with nervures exactly as in *T. striata*, and areolet elongately petiolate. Length circa 12 mm. ♀ only. Described from a single example, captured by H. H. Smith at 8,000 feet about Omilteme in Guerrero, Mexico, during July; type in the British Museum.

### 3. *Teleutea macilenta*, Tosq.

*Teleutea macilenta*, Mem. Soc. Ent. Belg. x. 1903, p. 89, ♀.

The type was captured by H. Frühstorfer at some 8,500 feet in the Gede Mountains of western Java during 1892. The metallic green-blue abdomen, with all its segments narrowly flavous-banded, is distinctive. I have not seen the species.

### SJÖSTEDTIELLA, Szépligetii.

Sjöstedt's Kilimanjaro-Meru Exped. II. 8. 1910, p. 76.

Head triangular, posteriorly strongly constricted; clypeus not discrete; cheeks very long, as long as basal flagellar joint; frons not cornute; vertex very narrow; eyes not emarginate. Thorax with notauli strong; metanotum with a single subapical transcarina; spiracles small and circular. Abdomen longer than head and thorax, parallel-sided; basal segment longer than broad and but slightly constricted basally, with two slender carinae; segments two to four with

deeply impressed oblique impressions, closely punctate and not longer than broad. Legs slender, with the front claws pectinate. Wings with areolet entire, petiolate and rhomboidal; parallel nervure emitted very low; lower basal somewhat postfurcal; nervellus intercepted far below its centre. Closely allied to *Teleutaea*, Först.; Brullé knew this genus so long ago as 1846, but he considered it not sufficiently distinct from *Glypta* to merit description.

### 1. *Sjöstedtiella pulchella*, Szépl.

Sjöstedt's Kiliman.-Meru Exped. II. 8. 1910, p. 76, ♀; (?) *Glypta nigripectus*, Brullé, Nat. Hist. Ins. Hym. 1846, p. 108, ♂ ♀.

The typical and hitherto only known species of this genus is fulvous with the red abdomen about as long as the terebra, and the male is unknown; ten examples were captured during April and May about Kilimanjaro.

### 2. *Sjöstedtiella plicata*, sp. n.

A black species with nothing but the mouth and ventral plica ochraceous, and the deeply infumate and ample wings with strong cyaneous reflection. Head peculiarly narrow and very strongly transverse; mouth somewhat produced, with the clypeus apically rounded and not basally discreted; face deplanate, centrally elevated and subcarinate before the cheeks. Antennae filiform and longer than half body. Thorax very dull, alutaceous and closely punctate, with deeply impressed and elongate notauli; metathorax also subtrans-striate, with a weak subapical carina. Abdomen dull and pilose; basal segment twice as long as apically broad, striate, with basal carinae and subbasal spiracles; second and third segments strongly and obliquely impressed; ventral valvulae large. Legs black and somewhat slender (hind femora, &c., lacking). Wings with lower basal nervure strongly postfurcal; upper half of the second recurrent pellucid; areolet distinct, obliquely rhomboidal and elongately petiolate; nervellus intercepted at its lower third. Length circa 10 mm. ♂ only.

The type was captured by G. F. Scott Elliott on Mount Ruwenzori at 6,000-8,000 feet, during 1895, and is in the British Museum.

## SUB-FAMILY TRYPHONINAE.

### TRIBE BASSIDES.

This tribe is composed of a small and homogeneous group of insects, known from the whole remainder of the Ichneumonidae in having the upper mandibular tooth bifid, so that the mandibles, apically bidentate (except in certain *Metopius*-species, cf. Revis. Ichn. I, p. 73) or more rarely unidentate, here become tridentate; apart from this remarkable modification and their economy, it is often extremely difficult to distinguish these insects from certain *Mesoleius*, especially the *Saotus* group of that genus, among the Tryphoninae or from the smaller kinds of *Epiurus* among the Pimplinae, though in the female sex the latter have an elongately exerted terebra.

The whole of the present Tribe prey upon Dipterous larvae of the family *Syrphidae*, which so beneficially destroy *Aphididae*, among which I have watched the females ovipositing and pushing the young Aphidids upon one side in order to affix their eggs to the herbage. But their economy is little known, and I have no idea how Bassid-larvae attach themselves to their hosts, from whose indurated puparia the imagines invariably emerge. This indirect attachment to food-stuffs is, doubtless, responsible for the wide dissemination of some of the Bassid-species, one of which is the most cosmopolitan of all Ichneumonidae; and we are beginning to find that several other kinds, hitherto supposed to have a strictly palaeartic range, extend at least to Bengal and Bombay.

Our academic knowledge of these insects is considerably fuller than that of most groups of Ichneumonidae, on account of their convenient grouping, and I shall here do little more than present the known species in tabular form, paying especial attention to those with which I was unacquainted when compiling my synopsis of the palaeartic kinds eight years ago ("On the Ichneumonidous Group *Tryphonides schizodonti*, Holmgr., with Description of New Species": Trans. Ent. Soc. Lond. 1905, pp. 419-438). Holmgren paid considerable attention to the group in 1855, Thomson reduced it to systematic order in his excellent "Öfversigt af arterna inom släktet *Bassus*" (Opusc. Ent. XIV, 1890, pp. 1459-1525) and Herrn K. Pfankuch has more recently solidified the

synonymy by critically examining "Die Typen der Gravenhorstschen Gattung *Bassus*" (Deut. Ent. Zeit. 1910, pp. 271-280) and his "Über einige Typen der Holmgrenschen Gattung *Bassus*" (l.c., pp. 280-284). I have given an account of such species as occur in Britain in *Ichneumonologia Britannica* iv, 1911, pp. 79-127.

For the possibility of including in the following account those species described in Hungarian by Szépligeti in his "Adatok a magyarországi *Bassus*-félék ismeretéhez" (Contributions to the Knowledge of the Hungarian species of *Bassus*—published in *Rovartani Lapok* v, 1898, pp. 75-78), I am entirely indebted to Mr. Ernest A. Elliott, F.Z.S., F.E.S., who has kindly taken the greatest pains upon its translation. In this paper Szépligeti seems to adopt all Förster's typeless subgenera and, in the light of later writings, his remarks may now, for the most part, be ignored.

#### TABLE OF GENERA.

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|------|--|-----------------------------|
| (2)  | 1. Basal abdominal segments deeply transversely impressed. | <i>BASSUS</i> , Fallén.     |
| (1)  | 2. Basal segments not or very slightly impressed.          |                             |
| (10) | 3. Metathoracic spiracles small and black.                 |                             |
| (7)  | 4. Face dull and distinctly punctate.                      |                             |
| (6)  | 5. Notauli wanting; scape not deeply excised.              | <i>HOMOCIDUS</i> , Morl.    |
| (5)  | 6. Notauli distinct; scape excised to its centre.          | <i>ZOOTREPHUS</i> , Thoms.  |
| (4)  | 7. Face glabrous and very strongly nitidulous.             |                             |
| (9)  | 8. Areolet wanting; abdomen partly rufescent.              | <i>PROMETHUS</i> , Thoms.   |
| (8)  | 9. Areolet entire; abdomen entirely black.                 | <i>PHTHORIMUS</i> , Först.  |
| (3)  | 10. Metathoracic spiracles very large and pale.            | <i>TRICHOMASTIX</i> , Voll. |

#### *BASSUS*, Fallén.

Fall., Specimen. Hym. 1813; Thoms., Opusc. Ent. xiv, 1890, p. 1465.

This genus is instantly known from the rest of the *Bassides* by the transimpressed abdominal segments and determinate demarcation of the hind tibial white coloration, which is always present. Pfankuch has remarked (Deuts. Ent. Zeit. 1910) that *Bassus*-species lack all structural distinctions *inter se*, and that their hosts, *Diptera*, of the family *Syrphidae*, are similar in this respect. Kriechbaumer's species is probably no more than a form of the cosmopolitan *B. laetatorius*, but his opinion is of considerable weight.

## TABLE OF SPECIES.

- (14) 1. Abdominal segments not flavous-banded.  
 (9) 2. Anterior coxæ entirely pale; abdomen centrally red.  
 (8) 3. All the coxæ pale.  
 (7) 4. Hind tibiæ tricoloured; second segment broadly red.  
 (6) 5. Scutellum entirely pale; most of second segment red.  
     1. *laetatorius*, Fab.  
 (5) 6. Scutellum mainly black; apex of second segment red.  
     2. *balearicus*, Kriech.  
 (4) 7. Hind tibiæ bicoloured; abdomen not or hardly red.  
     3. *tricinctus*, Grav.  
 (3) 8. Hind coxæ basally black; abdomen red-banded.  
     4. *multicolor*, Grav.  
 (2) 9. Anterior coxæ not entirely pale; abdomen rarely red-marked.  
 (11) 10. Hind coxæ red; basal segment apically pure white.  
     5. *albosignatus*, Grav.  
 (10) 11. All the coxæ black; basal segment not white-marked.  
 (13) 12. Apices of hind tibiæ black; ♀ epistoma white-marked.  
     6. *varicoxa*, Thoms.  
 (12) 13. Apices of hind tibiæ ferrugineous; ♀ epistoma immaculate.  
     7. *annulatus*, Grav.  
 (1) 14. Abdominal segments apically flavous-banded.  
 (16) 15. Areola obsolete; hind tibiæ basally flavous.  
     8. *orientalis*, Cam.  
 (15) 16. Areola entire; hind tibiæ basally black.  
     9. *clotho*, Morl.

1. *Bassus laetatorius*, Fab.

*Ichneumon laetatorius*, Fab., Spec. Insect. 1, p. 424; *Bassus laetatorius*, Panz. Krit. Revis. II, p. 74; Thoms., Opusc. Ent. XIV, p. 1470; *B. albovarius*, Woll., Ann. Nat. Hist. 1, 1858, p. 23, ♂; *B. tripicticus*, Walsh, Trans. Acad. Louis 1873, p. 85; *B. venustus*, Sauss., Grandidier Hist. Madag. pl. xv, fig. 23, ♂; *Scolobates varipes*, Smith, Trans. Ent. Soc. 1878, p. 3, ♀.

The type of this species is in the Banksian Collection in the British Museum (cf. Entom. 1909, p. 134). This is the only Bassid-species, except the next one which is doubtfully distinct, that has the hind tibiæ tricoloured. Its range is entirely cosmopolitan, and its distribution probably artificial through the *Syrphidae* which prey upon *Aphididae* that are attached to all exported green-stuff; Dalla Torre, in 1901, gives it a range through north America, and nearly all Europe only; Ashmead the previous year knew it from Asia, Africa, Australia, New Zealand, Chatham Islands, Hawaii, Japan, the West Indies, and both North and South

America. In the British Museum it is represented from Albania (Sir S. S. Saunders), Germany (Ruthe); Harrar in Abyssinia (Kristensen), Maedi near Cairo (Dr. Gough); Funchal in Madeira on 5th April, 1896 (Colonel Yerbury), St. Helena (Wollaston); Chili (E. C. Reed and W. B. Calvert), Buenos Ayres (Schrottky), Mexico City (H. H. Smith); Tientsin in July, 1902, and the mountains of Shan-hai-Kwan on 1st September, 1906 (F. M. Thomson), Idzu in Japan in June, 1910 (S. Akiyama); Hawaiian Islands (F. W. Terry, 1911); Victoria (F. du Boulay) in February and September and on hollyhoek at Windsor, etc., near Melbourne in November, 1898 (French), Mackay in Queensland in March, September and October (Turner); Oamaru and elsewhere in New Zealand (Captain F. W. Hutton), whence also is the British Museum type of the synonymous *Scolobates varipes*, Smith.\* In India it has been found in Baluchistan, Kashmir, Punjab, and Rajputana; and in Britain from the Isle of Wight to Yorkshire, though my statement (Ichn. Brit. iv, 1911, p. 83) that both sexes are almost equally common is incorrect and the male seems quite unknown, since none of the examples which I took to be that sex proved to be so when examined by M. Roman who, Pfankuch tells us (Deut. Ent. Zeit. 1910), finds all European examples to be females, which he suggests must propagate parthenogenetically, though he knows males from North America. Schrottky remarks (An. Mus. Buenos Aires 1902, p. 93) "Ein ♂ dieser in Europa und Nord-America verbreiteten art, wurde von Herrn. S. Venturi im Jan. 1897 bei Buenos Aires gefangen. Spinola hatte sie auch von verschiedenen."

## 2. *Bassus balearicus*, Kriech.

*Bassus balearicus*, Kriech., Anales de la Sociedad Española de Historia Natural xxiii, 1895, p. 216, ♀.

This species is described as black, with the mouth, clypeus, internal orbits, a small line on either side of mesonotum, callosity before radices, a scutellar mark, a hind tibial band, and both radices and tegulae, white; antennae rufescent beneath; apex of second abdominal segment and the legs red, with hind tibiae tricoloured, their tarsi black, and the

\* In the British Museum I have examined the types of both *Scolobates intrudens*, Smith (Trans. Ent. Soc. 1878, p. 3; Hutton, Cat. New Zeal. Hym. 1881, p. 127, ♀), which is referable to the Campoplegides, and *Bassus remotus*, Marshall (Ent. Rec. viii, 1896, p. 296, ♀), which is entirely synonymous with *Clepticus practor*, Hal. Haliday's species I am unable to distinguish from *Proclitus grandis*, Först. et Thoms.

alar stigma infuscate with its base pale; length  $4\frac{1}{2}$  mm. ♀ only. It is said to be closely allied to *B. lactatorius* in its transversely impressed segments, "an ejus var. a Thomsoni? sed individua transitoria ad hanc speciem mihi nunquam obvenerunt." It was found at Pollenza, in Majorca.

### 3. *Bassus tricinctus*, Grav.

Ichn. Europ. III, p. 351; *B. nemoralis*, Holmgr., Sv. Ak. Handl. 1835, p. 354.

Abundant in Britain and Germany, whence Ruthe had placed it, with only two specimens correctly named, under *B. albosignatus*; I have seen it from Sikkim, Bengal and Rajputana in India.

### 4. *Bassus multicolor*, Grav.

Ichn. Europ. III, p. 352; *B. deletus*, Thoms., Opusc. Ent. XIV, p. 1471.

I fancy Herr Pfunkuch must have been mistaken in considering Thomson's species to be distinct; the descriptions so exactly agree. It appears a very uncommon species both in Britain and upon the Continent, though extending to India, where it is not rare towards the south, in Bengal and Bombay, though doubtless imported from Europe.

### 6. *Bassus variicoxa*, Thoms.

Opusc. Ent. XIV, p. 1640.

An abundant palaeartic species, somewhat suspiciously closely allied to *B. tricinctus*. As Indian it rests upon a single example, taken by Captain Boys, and needs confirmation. *B. annulatus* differs from it only in the less deeply impressed abdominal incisures, entirely (♀) or internally (♂) ferruginous apices of the hind tibiae, the smaller humeral and scutellar pale marks and immaculate ♀ epistoma.

### 8. *Bassus orientalis*, Cam.

Cameron, Spolia Zeylanica 1905, p. 131, ♂; Morl., Fauna Brit. India, Ichn. I, 1913, p. 280, ♂ ♀.

Allied to *B. albosignatus* in its stout facies and apically pale basal segment, though here the following two are also apically stramineous. It was described from Ceylon, and I have seen it from Assam, Bengal, and another female in the British Museum was taken by Escalera in south-west Persia.



- (20) 19. Coxae red ; epistoma immaculate ; second segment striolate.  
9. *longipes*, Holmgr.
- (19) 20. Coxae black ; epistoma pale ; second segment not striate.  
10. *punctiventris*, Thoms.
- (2) 21. Metanotal areae entirely wanting (? *Syrphoctonus*, Först.)
- (23) 22. Scutellum subtumidous and immaculate.  
11. *borealis*, Holmgr.
- (22) 23. Scutellum of normal convexity, nearly always pale.
- (25) 24. Petiolar area entire and strongly nitidulous.  
12. *bifoveolatus*, Kriech.
- (24) 25. Petiolar area of metathorax obsolete and dull.
- (33) 26. Vertex of head more or less emarginate ; scutellum apically or entirely pale.
- (32) 27. Scutellum only partly pale ; hind tibiae nigrescent, always basally white.
- (31) 28. Face parallel-sided ; postpetiole not quadrate.
- (30) 29. Metathorax not at all red-marked. 13. *biguttatus*, Grav.
- (29) 30. Metathorax very broadly red on either side.  
14. *abdominator*, Bridg.
- (28) 31. Face dilated towards its apex ; postpetiole quadrate.  
15. *flavolineatus*, Grav.
- (27) 32. Scutellum entirely pale ; hind tibiae red, apically black.  
16. *tarsatorius*, Panz.
- (26) 33. Vertex of head not emarginate ; scutellum only laterally pale.  
17. *fissorius*, Grav.
- (1) 34. Areolet entire and distinct ; or ♀ anus very strongly compressed.
- (36) 35. Areola, coxal and petiolar areae entire. 18. *ulbrichti*, Haberm.
- (35) 36. All the metathoracic areae obsolete or wanting.
- (78) 37. Hind tibiae usually partly white ; no abdominal segment entirely red.
- (49) 38. Petiolar carinae distinct and usually elongate ; tibiae not mainly white.
- (44) 39. Hind tibiae basally pure white.
- (41) 40. Carinae of the basal segment parallel throughout.  
19. *ornatus*, Grav.
- (40) 41. Carinae of the basal segment not parallel.
- (43) 42. Petiolar carinae apically divergent. 20. *deplanatus*, Grav.
- (42) 43. Petiolar carinae apically convergent, subcoalescent.  
21. *albopictus*, Lange.
- (39) 44. Hind tibiae not at all white-marked.
- (48) 45. Clypeus not apically excised ; scutellum black ; areolet weak.
- (47) 46. Anterior coxae and hind tarsi black. 22. *brevicornis*, Thoms.
- (46) 47. Anterior coxae and hind tarsi pale. 23. *niger*, Morl.
- (45) 48. Clypeus apically excised ; scutellum pale ; areolet strong.  
24. *sundevalli*, Holmgr.

- (38) 49. Petiolar carinae short or wanting; hind tibiae usually mainly white (? *Homotropus*, Först.).
- (53) 50. All the femora and the hind tibiae black-lined.
- (52) 51. Metathorax finely punctate; scutellum black.  
25. *nigrolineatus*, Strb.
- (51) 52. Metathorax strongly scabrous; scutellum flavous-marked.  
26. *tauriscorum*, Strb.
- (50) 53. Legs not black-lined.
- (75) 54. Scutellum not entirely pale, nor ♀ anus strongly compressed.
- (72) 55. Scutellum of normal size and convexity.
- (57) 56. Clypeus apically reflexed and entire. 27. *reflexus*, Morl.
- (56) 57. Clypeus apically neither reflexed nor entire.
- (59) 58. Apex of clypeus strongly excised and laterally elevated.  
28. *incisus*, Thoms.
- (58) 59. Apex of clypeus emarginate, neither laterally nor apically reflexed.
- (67) 60. Clypeus laterally foveate.
- (64) 61. Hind tibiae basally infusate; mesosternum of ♂ black.
- (63) 62. Scutellum apically white; flagellum of ♀ red.  
29. *ruficornis*, Holmgr.
- (62) 63. Scutellum at most laterally white; flagellum black.  
30. *pumilus*, Holmgr.
- (61) 64. Hind tibiae hardly darker basally; mesosternum of ♂ pale-marked.
- (66) 65. A coarsely punctate species, with black mesosternum.  
31. *dimidiatus*, Schr.
- (65) 66. A finely punctate female, with flavous sternauli.  
32. *similis*, Lange.
- (60) 67. Clypeus not laterally foveate.
- (69) 68. Second segment twice as long as broad; tibiae normal.  
33. *longiventris*, Thoms.
- (68) 69. Second segment transverse; hind tibiae distinctly stout.
- (71) 70. Thorax not at all red-marked. 34. *crassicus*, Thoms.
- (70) 71. Thorax with the pleurae and sternum red.  
35. *haemorrhoidalis*, Szpl.
- (55) 72. Scutellum large and somewhat strongly convex.
- (74) 73. Metathorax rugulose; second segment longitudinally strigose.  
36. *strigator*, Fab.
- (73) 74. Metathorax finely punctate; second segment not strigose.  
37. *megaspis*, Thoms.
- (54) 75. Scutellum entirely pale; anus of ♀ strongly compressed.
- (77) 76. Metanotum rugose-punctate; alar areolet entire.  
38. *xanthaspis*, Thoms.
- (76) 77. Metanotum shining, subglabrous; areolet wanting.  
39. *emarginatus*, Morl.
- (37) 78. Tibiae not at all white; centre of abdomen nearly always broadly red.

- (86) 79. Scutellum not entirely black, or basal segments scabrous.  
 (83) 80. Scutellum at most apically pale; second segment punctate.  
 (82) 81. Pleurae not alutaceous; nervellus centrally intercepted.  
     40. *elegans*, Grav.  
 (81) 82. Pleurae alutaceous; nervellus intercepted below centre.  
     41. *affinis*, Szépl.  
 (80) 83. Scutellum mainly pale; second segment subglabrous.  
 (85) 84. Areolet entire; second segment elongate. 42. *pallidipes*, Grav.  
 (84) 85. Areolet wanting; second segment broader than long.  
     43. *pulcher*, Hölmgr.  
 (79) 86. Scutellum entirely black; basal segments not scabrous.  
     (? *Aniarophron*, Först.).  
 (88) 87. All the coxae pale; areolet of wing entire. 44. *signatus*, Grav.  
 (87) 88. Hind coxae basally black; areolet of wing wanting.  
     45. *hygrobius*, Thoms.

### 1. *Homocidus cinctus*, Grav.

*Bassus cinctus*, Grav., Ichn. Europ. III, p. 327, ♂; *B. lateralis*, Grav., l.c., p. 342, ♀; *B. hyperboreus*, Marsh., Ent. Mo. Mag. XIII, 1877, p. 241, ♂.

A very common species, well represented from Germany and Britain in the British Museum, where also is the type of Marshall's species from Spitzbergen. I have seen one or two Indian specimens from Darjiling.

### 2. *Homocidus bizonarius*, Grav.

*Bassus bizonarius*, Grav., Ichn. Europ. III, p. 350; (?) *B. frontalis*, Brisch., Nat. Ges. Danz. 1878, p. 113, ♂.

Apparently much commoner in Germany than Britain, for there is a very long series thence in Ruthe's collection in the British Museum; others are from Nantes and Lido Isle at Venice (T. A. Marshall). We must suppose that Szépliget knew this species, but he ascribes it (Rovart. Lapok v, 1898, p. 77) to the genus *Zootrephus*, and describes two varieties: "Var. 1, ♂ humeral marks punctiform or wanting; inner orbits with only a punctiform mark. Var. 2, ♂ like var. 1, but with posterior margin of third segment and the fourth hind tarsal-joint red."

### 5. *Homocidus pectoratorius*, Grav.

Grav., Ichn. Europ. III, p. 333, ♂ ♀.

Distinctly local in Britain; there is a long German series (Ruthe coll.) in the British Museum.

6. *Homocidus sexcinctus*, Brauns.

Professor Brauns describes this new species in his "Descriptiones Speciarum Novarum Ichneumonidarum e Fauna Hungarica" (Term. Füzet. XIX, 1896, p. 273) thus: Head black with the mouth, palpi, clypeus, cheeks, face and internal orbits to vertex broadly, flavous; face somewhat nitidulous, clypeus depressed on either side and centrally slightly emarginate. Antennae infusate, flavous beneath and apically somewhat attenuate. Thorax with pronotum mainly flavous, a central lateral plaga black; mesonotum discally black and shining, with notauli obsolete and a bihamate flavous mark on either side; mesopleurae shining with their lower half pale and a mesosternal line laterally black; metathorax somewhat rugose, with obsolete areae and four flavous marks; metapleural suture and a mark before hind coxae flavous. Scutellum and postscutellum flavous, and the former convex. Abdomen dull, black and towards the anus subcabriculously punctate; segments broadly flavous-margined; carinae of basal segment inconspicuous. Legs flavous with hind femora fulvous, and the central third of their apically infusate tibiae whitish; tarsi infusate, with base of the joints pale. Wing; with tegulae and radices flavous, stigma fulvescent; areolet wanting, nervellus subopposite and intercepted below its centre. Length 7 mm. ♂ only.

It is said to be of the form and outline of *H. p. oratorius*, but very different. The male alone is described from the neighbourhood of Budapest.

12. *Homocidus bifoveolatus*, Kriech.

*Homoparus bifoveolatus*, Kriech., Anales de la Sociedad Española de Historia Natural XXIII, 1893, p. 246, ♂ ♀.

This Mediterranean species is described as black and shining. Head transverse and constricted behind the eyes, with the mouth, clypeus and in ♀ a central facial mark, flavous; facial orbits very narrowly rufescent; basal clypeal fovea of ♀ large and deeply impressed; ♂ with the face and frontal orbits entirely flavous. Antennae rufescent beneath. Thorax with a subhamate line before, and a small line beneath, the radices flavous; notauli obsolete, with central mesonotal lobe broadly impressed; metanotum scabrously punctate, with the strongly nitidulous petiolar area alone distinct. Scutellum of uncertain colour. Abdomen of ♀ apically compressed, of ♂ lanceolate-cylindrical; the second to fourth segments red, in ♀ with the base of the latter broadly black-

marked and in ♂ all more or less infusate. Legs red, with coxae and trochanters flavous; hind coxae basally black, and their tarsi in ♂ infusate. Wings with radix and tegulae flavous; stigma fulvous, areolet wanting and nervellus centrally intercepted. Length 5 mm. ♂ ♀. This species was found at Manacor (Son Moro).

### 13. *Homocidus biguttatus*, Grav.

Grav., Ichn. Europ. III, p. 332; *B. confusus*, Woldst., Bidr. Kaenn. Finl. 1873, p. 84, ♀; var. *B. rufipes*, Grav., l.c., p. 337, ♀.

In the British Museum is a female labelled "*Bassus confusus*, ♀, Woldst." from Schmiedeknecht, who took it in Corfu during May, 1889; and three other German females, labelled "*B. rufipes*, Gr. ?" by Ruthe. I believe it to be uncommon in Britain.

### 16. *Homocidus tarsatorius*, Panz.

Panz., Faun. Germ. ix. p. 102; *B. exultans*, Gr., Ichn. Europ. III, p. 328, ♂; *B. insignis*, Gr., l.c., p. 349; *B. indicus*, Cam., Journ. Bombay Nat. Hist. Soc. 1909, p. 728, ♂.

Abundant both here and upon the Continent, and described as new by Cameron, whose type from Simla in the Punjab I have seen in Colonel Nurse's collection. *B. flavus*, Desv. (Trans. Ent. Soc. 1862, p. 219), is a rare form of the present species with a small and spurious areolet.

### 18. *Homocidus ulbrichti*, Habermehl.

Dr. Habermehl gives (Deutsch. Ent. Zeit. 1910, pp. 690-1) a long description of this species: Head transverse and broader than thorax, distinctly constricted posteriorly with the clypeus, extreme apex of face, those of the cheeks and the mandibles except apically, flavous; face transverse, dull, finely rugose and centrally subintumescent; clypeus sparsely punctate, basally distinctly discrete and apically transversely impressed and truncate with erect whitish pubescence. Antennae slender and about length of body, with flagellum piceous above and, excepting at base, ferruginous beneath, with two small flavous marks beneath scape. Thorax black, with pronotal margin, hamate humeral marks, marks below radix

flavous and the mesosternum more or less rufescent- and flavescent-marked; notauli wanting, mesonotum nitidulous; mesopleurae very finely and sparsely punctate, with speculum shining; epicnemialia distinct; metathorax convex with areola indistinct, small and subtriangular; petiolar and coxal areae strong; spiracles small and circular. Scutellum flavous. Abdomen black with extreme apices of the third to seventh segments, and the venter, flavous; basal segment longer than broad and gradually explanate apically, with distinct glymmae, its basal fovea extending apically to beyond centre in a distinct and narrow sulcus; second strongly constricted apically, slightly longer than broad; the remainder cultriformly compressed; all the segments discally strongly nitidulous; terebra short, with broad valvulae not exerted. Legs red with the trochanters, anterior coxae and hind tibiae pale; the last externally piceous, nigrescent before both extremities, with their actual apices rufescent; and hind tarsi black. Wings with the radix and tegulae flavous; stigma piceous; areolet wanting, radial nervure emitted slightly before centre of stigma, nervulus subpostfural, parallel nervure emitted from centre of brachial cell, nervellus subantefural and intercepted beyond its centre. Length circa 6 mm. ♀ only.

A variety of the same sex differs mainly in having the face entirely black, and a length of only some 5 mm. This species was described from four females, taken by Herr. Alb. Ulbricht about Krefeld.

NOTE.—This female is said by Habermehl (Deut. Ent. Zeit. 1911 p. 342) to be synonymous with *Mesoleius (Saotis) bilineatus*, Grav.

### 19. *Homocidus ornatus*, Grav.

Ichn. Europ. III, p. 341.

A specimen in the British Museum was captured by G. C. Dudgeon in the Kangra Valley of the Punjab, India, at 4,500 feet during October, 1899. The ♂ of *Bassus frontalis*, Cress. (Trans. Amer. Ent. Soc. 1868, p. 111) figured at Biol. Centr. Amer. (1886, p. 231, pl. xi, fig. 8) is the only species of the genus there recorded from Central America. Cresson knew eight females from Conn., Pa. and Ills.; I have seen none of the other seven species brought forward (i.e.) as new in his "List of the Ichneumonidae of North America, with descriptions of new species."

21. *Homocidus albopictus*, Lange.

*Homotropus albopictus*, Lange, Deutsch. Ent. Zeit. 1911, p. 545, ♂.

Head dull, with the face, clypeus, mandibles and cheeks white. Antennae pale brown beneath, with underside of the scape white. Thorax black; the mesonotum laterally hamate-marked with mesopleurae below radices, on their lower surface, and sternauli, white; pleurae rufescent below; notauli wanting; mesopleurae black above, with the speculum nitidulous. Scutellum black with its apex, as in *H. ornatus*, narrowly white. Abdomen black, broadly sessile, with the two short and oblique basal carinae of the first segment enclosing a triangular impression; second segment with a short basal longitudinal carina. Legs mainly white; hind coxae pale red; femora and tibiae subrufescent, with about two-thirds of the hind tibiae above and their tarsi black. Wings with the areolet more or less elongately petiolate. Length  $5\frac{1}{2}$  mm. ♂ only.

Both the type form and a var., named by Lange *scutellaris*, which has the scutellum white with only a central dark spot and the anterior tarsi also nigrescent, were described from the Erzgebirge Mountains in Germany, between Saxony and Bohemia.

25. *Homocidus nigrolineatus*, Strobl.

*Homoporus nigrolineatus*, Strobl, Mitt. Nat. Ver. Steierm. xxxix, 1903, p. 97, ♂ ♀.

In his "Ichneumoniden Steiermarks" (i.e., pp. 92-99), Professor Strobl gives an account of the Styrian species of Bassides, and describes only this and the next as new. The first is described as follows: Shining and nearly smooth, black. Head of ♂ with whole face and genal apices, of ♀ with mouth, clypeus and a quadrate facial mark, flavous. Antennae with scape flavous beneath. Thorax of ♂ broadly flavous-marked, of ♀ with a concolorous mesonotal line; metathorax with no areae. Abdomen of ♀ very strongly compressed; basal segment of ♂ short and not carinate. Legs of ♂ flavous; hind coxae black and the anterior black-marked; all the femora and the hind tibiae black-lined; hind tarsi black; ♀ legs red with anterior trochanters partly flavous, all the coxae and hind tarsi black, and all femora partly infusate. Wings with areolet entire. Length 5 mm. ♂ ♀.

It is said to be allied to *H. nigratarsus*, Grav. and *H. crassicornis*, Thoms. "Auf Alpenwiesen des Pyrgas, Scheiblstein, Kalbling 4 ♂ und 7 ♀; August."

26. *Homocidus tauriscorum*, Strobl.

*Homoporus tauriscorum*, Strobl, Mitt. Nat. Ver. Steierm. xxxix, 1903, p. 99, ♂.

Head, thorax and pedal colour and structure very similar to the last species; differing in the flavous-didymate scutellum, strongly scabrous metathorax and flavous-banded second and third abdominal segments, and lacking alar areolet. "An Alpenbachen des Hochschwung bei Rottenmann von Eisenhut gestricht 20/8. 1 ♂."

31. *Homocidus dimidiatus*, Schr.

*Ichneumon dimidiatus*, Schr., Fauna Boica II, p. 293; *B. dimidiatus*, Holmgr., Sv. Ak. Handl. 1855, p. 363, ♂; *B. pictus*, Holmgr., lib. c., p. 361, ♀; Gr., Ichn. Europ. III, p. 336; *H. dimidiatus*, Morl., Trans. Ent. Soc. 1905, p. 428, ♂ ♀.

The typical species of a very difficult group; common in Germany and Britain, though not yet bred. Its distribution is much mixed with those of its congeners, but I have seen a single female captured by Brunetti about Darjiling in Sikkim.

32. *Homocidus similis*, Lange.

*Homotropus similis*, Lange, Deut. Ent. Zeit. 1911, p. 545, ♀.

C. F. Lange in his "Neue paläarktische Ichneumoniden" (i.e., pp. 540-547) proposes this name for the species, which Herr. K. Pfankuch had said (lib. c., 1910, p. 274) Thomson mistook for *Bassus pictus*, Grav. His description is: Dull, very finely punctate and black. Head short and broader than thorax with mandibles, palpi and clypeus with a confluent elongate facial mark, flavous. Antennae extending to apex of thorax, pubescent, individual joints with apical whorls of rather longer hair. Thorax with notauli wanting; lateral mesonotal spots, sternauli, small marks before and below radices, flavous; metathorax densely and finely rugose, with no carinae. Scutellum laterally and posteriorly flavous. Abdomen immaculate, broadly sessile, with prominent spiracles; second segment nearly twice as broad as long, abdominal centre broadest, with apical segments laterally compressed. Legs red-yellow with coxae and trochanters partly black. Wings with stigma dark brown; areolet wanting, nervulus postfurcal, and nervellus strongly geniculate; length 7-7½ mm. ♀ only. Two specimens from the Erzgebirge Mountain of Germany.

35. *Homocidus haemorrhoidalis*, Szépl.

*Homotropus haemorrhoidalis*, Szépligeti, Rovart. Lapok v, 1898, p. 78, ♀.

Mr. Ernest A. Elliott's translation from the Hungarian is: Shining, punctate; clypeus slightly impressed; face, vertex and pleurae punctate; antennae 22-jointed; metathorax dorsally rugose, areae indistinct, the upper middle area scarcely visible; abdomen about as long as head and thorax; second segment apically very broad first quadrate and rugose; second little broader than long, rugose, basally centrally aciculate, posteriorly diffusely punctate; third basally rugose, thence, like the following, finely punctate and shining; outer section of radius slightly curvate; areolet irregularly triangular and very shortly petiolate; nervellus intercepted very low down. Black; mouth, clypeus, an upwardly forked longish mark in middle of face, the humeral hooked marks, base of wings and a mark below, tegulae, scutellum laterally and basally, postscutellum, sternal sutures, posterior pleurae (pleural sutures), tibiae and knees white; pleurae, sternum, metathorax laterally, scutellum and legs red; hind tarsi and hind calcaria (?), and the front legs more or less black. Length 6 mm.; Budapest.

40. *Homocidus elegans*, Grav.

*Bassus elegans*, Grav., Ichm. Europ. III, p. 313, ♂; *B. nigratarsus*, Grav., l.c., p. 338, ♀.

Apparently much commoner in Britain than on the Continent, for Ruthe's large collection contains but four examples. Rev. T. A. Marshall found it at Nantua in Ain and at Nantes. Its colour is extremely variable and some authors still consider *B. nigratarsus* to be distinct; this has, certainly erroneously, been recorded as bred from Lepidopterous hosts.

41. *Homocidus affinis*, Szépl.

*Homotropus affinis*, Szépligeti, Rovart. Lapok v, 1898, p. 78, ♀.

Mr. Ernest A. Elliott's translation from the Hungarian is: Shining, punctate; clypeus narrow and even; face and frons finely and densely punctate; antennae 21-jointed; pleurae punctate and shining; metathorax rugose; areae wanting; abdomen longer than head and thorax; third segment very broad, only apically compressed; first apically scarcely broader (i.e. than at base), rugose, basally impressed, spiracles

projecting; second transverse, rugose, centrally basally aciculate. Outer section of radius straight, areolet triangular and sessile; nervellus intercepted low down. Black; mouth, clypeus, a central spot on face, a streak above and below radix, pleurae posterior suture (?), and apex of scutellum yellow. Legs red, coxae and trochanters and hind tibiae black; first segment apically, second and third entirely and fourth basally red. Length 5.5 mm. Differs from *H. elegans*, Grav., in the nervellus being intercepted low down and the alutaceous pleurae.

### ZOOTREPHUS, Thomson.

Thoms., Opusc. Ent. XIV. 1486: (?) *Zootrephes*, Först., Verh. pr. Rheind. 1868, p. 162.

#### 1. *Zootrephus rufiventris*, Grav.

*Bassus rufiventris*, Grav., Ichn. Europ. III, p. 312; *B. holmgreni*, Bridg. Trans. Ent. Soc. 1882, p. 161.

I know but a single species of this genus, which is by no means uncommon both in Britain and Germany, where it frequents the most swampy situations from early June to the end of September. What Szépligeti understood to belong to this genus is somewhat uncertain, since he places *Homocidus bizonarius* in it; Mr. Ernest A. Elliott's translation of his two Hungarian descriptions is:—

*Zootrephes compressus*, Szépl., Rovart. Lapok v. 1898, p. 76, ♀.

Smooth, shining. Face finely punctate, shining; frons scarcely impressed; head behind slightly concave; antennae 27-jointed; thorax smooth, costae wanting; metathorax scarcely rugose, shining, area posteromedia narrow and only slightly (*leczeskek*—no such word to be found) bounded above. Abdomen smooth and shining; the three basal segments laterally compressed, cultriform; first half as long again as broad, base only half as broad as apex, with an incomplete furrow on each side, carinae weak and reaching only to the middle; second and third equal, little longer than broad; terebra very short. Wings hyaline, areolet wanting, nervellus slightly oblique, not intercepted; nervures brown, stigma black. Black; mouth parts, humeral marks, tegulae and a spot on each side before them, abdomen, coxae apically and the anterior trochanters white. Legs (tarsi) red; anterior coxae basally, apices (calcaria) sometimes,

and upper joint of hind trochanters black; hind legs blackish, inner side and the apices (calcaria) flesh-coloured; tarsi black. Antennae red-brown, pale ringed. Length 5 mm. Budapest, Svabhegy, 12th June, 1897. Abdomen more compressed and body more shining than in the type; the incompletely areated thorax confirms its position as a *Zootrepbes*, ♀.

*Zootrepbes tricolor*, Szépl., Rovart. Lapok v, 1898, p. 77, ♀.

Shining, punctate. Head same breadth as thorax; clypeus even, narrow, anterior margin and small central tooth (*bir*—meaning unknown to me), face even and punctate. Thoracic furrows anteriorly developed; metathorax elongate and sparsely punctate; area superomedia scarcely developed; area posteromedia small and semicircular. Segment one longer than broad, base rather narrow, with two carinae; second and third transverse; first to third coarsely punctate, only the posterior margins smooth; abdomen not apically compressed. Stigma brown, areolet wanting, nervellus intercepted below the middle. Terebra short. Black; mouth parts, face centrally, inner orbits, a spot on each side of vertex, margin of prothorax, the tegulae and a small streak below them, knees, hind tibiae inside, abdomen, posterior margin of all segments and the trochanters white; sternum, meso- and meta-pleurae, mesonotum, scutellum, legs (tarsi) and antennae red; two basal antennal joints black, each with a red spot beneath; prothorax and hind tarsi black; hind legs basally and broadly apically black. Length 5.5 mm. Recalls *B. pectoratorius* in the elongate mesothorax, but distinguished by the well developed upper and small lower metathoracic areae, the red antennae and the half black hind legs.

### PROMETHUS, Thomson.

Opusc. Ent. xiv, 1475; (?) *Promethes et Liopsis*, Först., Verh. pr. Rheinl. 1868, p. 162.

#### TABLE OF SPECIES.

- (14) 1. All coxae pale; petiolar area not coarsely sculptured.  
 (9) 2. Scutellum black.  
 (8) 3. Notauli present; coxae flavous.  
 (5) 4. Abdomen broadly red in the centre. 1. *sulcator*, Grav.  
 (4) 5. Abdomen not centrally red-marked.

- (7) 6. Central segments narrowly flavous-banded. 2. *albipes*, Szépl.
- (6) 7. Central segments nearly entirely black. 3. *melanaspis*, Thoms.
- (3) 8. Notauli wanting; coxae white. 4. *albicoxa*, Thoms.
- (2) 9. Scutellum pale.
- (13) 10. Abdomen broadly red centrally.
- (12) 11. Mesonotum shining; second segment basally striolate. 5. *scutellaris*, Bridg.
- (11) 12. Mesonotum dull; second segment mainly striolate. 6. *dodsi*, Morl.
- (10) 13. Abdomen nearly entirely black. 7. *nigriventris*, Thoms.
- (1) 14. Hind coxae mainly black; petiolar area finely sculptured.
- (16) 15. Basal segment twice as long as broad; coxae white. 8. *cognatus*, Holmgr.
- (15) 16. Basal segment not elongate; coxae flavescens.
- (18) 17. Third segment with basal flavous spots. 9. *laticarpus*, Thoms.
- (17) 18. Third segment with no flavescens markings.
- (20) 19. Mesonotum dull and confluent punctate. 10. *pulchellus*, Holmgr.
- (19) 20. Mesonotum shining and sparsely punctate.
- (22) 21. Slender; second segment entirely scabrous; vertex normal. 11. *dorsalis*, Holmgr.
- (21) 22. Stout; second segment apically glabrous; vertex broad. 12. *festivus*, Fab.

### 1. *Promethus sulcator*, Grav.

Grav., Ichn. Europ. III, p. 320.

A very abundant species throughout the palaeartic region, and found in 1908 by Brunetti in the Sikkim district of India; Ruthe took it commonly in Germany, but confused with it both *Homocidus signatus* and *H. hygrobius*.

Of the two remaining genera—*Phthorimus* Thoms. (Opusc. Ent. 1890, p. 1474) and *Trichomastix*, Voll. (Tijds. v. Ent. 1878, p. 160 = ? *Bioblapsis*, Först., Verh. pr. Rheinl. 1868, p. 162)—only single species are known, namely, *Phthorimus compressus*, Desvignes (Cat. Brit. Mus., Ichn. 1856, p. 91) and *Trichomastix flavipes*, Holmgren (Sv. Ak. Handl. 1856, p. 356).

## ADDENDA.

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### *Trichomma decorum*, Cam.

Morl., Revis. Ichn. II, 1913, p. 83.

I am now enabled to confirm Krieger's surmise (Zeits. Hym.-Dip. 1904, p. 162) that *Anomalon decorum*, Cam. (Manch. Mem. 1897, p. 24, ♀) should be relegated to the Genus *Trichomma*. While recently examining the Indian species in the Berlin Museum, I discovered a second ♀—I know not what became of the first—of this pretty Ceylonese insect; this was captured by Colonel Bingham at 1,800 feet, at Kyau Klepin, in Upper Burma, during November, 1900. The eyes are elongately pilose; the scutellum convex, with its apical half abruptly declivous and laterally carinate. The present example is 14 mm. in length, with the terebra  $4\frac{1}{2}$  mm.; the undescribed antennae are entirely fulvous, with their scape paler beneath and their apical half attenuate and pilose; the metathorax is apically produced; the abdomen brick-red, with disc mainly, terebra and sides of anus indefinitely, black; basal half of first segment stramineous, the apical third inflated and by no means has "its top with an elongated depression"; the anterior legs are stramineous throughout with the hind coxae, trochanterellus and a band before base of their tibiae colorous; hind trochanters, remainder of tibiae, their tarsi except basally, and base of their red femora, black; wings extending beyond centre of abdomen. In my table of this genus (Revis. II, p. 63) it differs from *T. productor* in its convex, bicarinate and pale scutellum, elongate terebra, pale coxae, etc.

### *Thalessa mölleri*, Bingham.

cf. Morl., Revis. Ichn II, 1913, p. 18.

*Coleocentrus mölleri*, Bingham (Journ. Bombay Nat. Hist. Soc. 1898, p. 116, pl. A, fig. 4; Morl., Faun. Ind. Ichns. 1913, p. 48, ♀) is a *Thalessa*, though none of the species

enumerated (loc. cit.) by me, as I am enabled to state by the examination of the Sikkim specimen taken by Bingham at 1,000 feet in the Runjit Valley during July, 1897, and now in the Berlin Museum. The clypeus is apically truncate and the mandibular teeth short, obtuse and of equal length; the mesonotum is trans-striate; the centre of metathorax longitudinally sulcate, with no areae; the central abdominal segments are distinctly emarginate; and the hypopygium very remote from the terebral base. It is a very large species of fully 35 mm., black with profuse flavous markings, the whole metanotum concolorous, terebra much longer than body, and the wings deeply flavescent.

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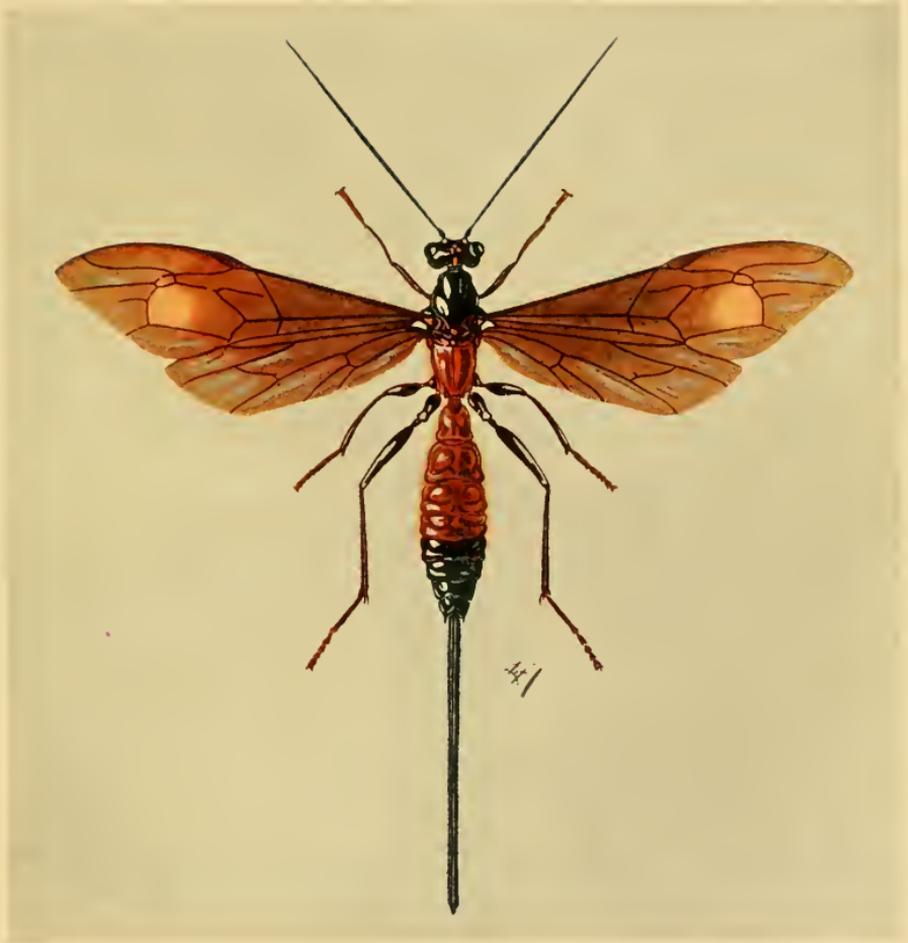
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