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XVI. *Descriptions of new species of Tenthredinidæ, Ichneumonidæ, Chrysididæ, Formicidæ, &c. of Japan.* By FREDERICK SMITH.

[Read 6th April, 1874.]

THE majority of the insects described in the present paper were collected by Mr. George Lewis during his residence in Japan, the rest are in the collection of the British Museum; among these are species collected by Mr. Henry Whiteley at Hakodadi, and others by Mr. R. Fortune in North Japan, probably from Hakodadi also. The general aspect of the collection is that of an European one, a single exotic form only being found among them in the genus *Thyreodon*. Several of the species of the genus *Ichneumon* very closely resemble well-known English ones: *Ichneumon cognatorius* is the counterpart of the British species *T. Proteus*; *Trogus arrogans* very closely approaches *T. pepsoides* of North China.

The *Tenthredinidæ* are very interesting; many of them also closely resemble European ones: *Hylotoma nigratarsis* is extremely like *H. violacea* of Klug; *Hylotoma imperator* greatly resembles *H. enodis*; indeed, of the six species of this genus described, five are close representatives of British ones, whilst I have been unable to separate the sixth from the *Hylotoma pagana* of Panzer. *Tenthredo erratica* appears to be identical with specimens from Siberia, both probably being mere climatal varieties of *T. flavicornis* of Fabricius. The common *Tenthredo scalaris* is found in Japan, only differing in being rather larger. Of three species of the genus *Lyda* one is almost identical with *L. inanita* of Villiers, a common British insect.

All the *Ichneumonidæ* are from Hiogo in South Japan; the *Tenthredinidæ* are partly from Hiogo and partly from Hakodadi, in North Japan.

Wings limpid, much shorter than the body; veins piceous; humerus rather more than half the length of the wing; ulna about one-fourth the length of the humerus; radius much shorter than the ulna; cubitus a little shorter than the radius; stigma small.

Hab.—Hiogo.

It agrees in some characters with the species included under the generic name *Isosoma*, which, as I have before mentioned, I purpose reuniting to *Eurytoma*.

Fam. PROCTOTRUPIDÆ.

Genus EPYRIS, Westw.

1. *Epyris apicalis*.

Female.—Length 4 lines. Nigra; antennæ piceæ, basi nigrae; metathorax scite striatus; abdomen apice rufum, segmentis ventralibus piceo-marginatis; tarsi ferruginei; alæ fuscescentes.

Body black, shining, nearly linear; head and thorax thinly and finely punctured, slightly convex. Head transverse, much broader than the thorax. Antennæ piceous, curved; scape black; prothorax small, transverse, narrower in front. Scutum large. Scutellum small. Metathorax very large, flat, finely sculptured above with longitudinal striæ, nearly perpendicular hindward. Petiole very short. Abdomen lanceolate, convex, smooth, red at the tip, a little longer than the thorax; hind border of the ventral segments piceous. Legs short, stout; tarsi ferruginous. Wings brownish, a little longer than the thorax; veins black.

Tribe HETEROGYNA, Latr.

Fam. FORMICIDÆ.

GENUS CAMPONOTUS, Mayr.

1. *Camponotus ligniperdus*, Mayr, Europ. Formicid. 35.

Formica ligniperda, Latr. Hist. Nat. Fourm. 88;
St. Farg. Hym. i. 209; Ny-
land. Adm. Mon. Form. 898;
Form. France et Algér. 55;
Foerst. Hym. Stud. Form.

Hab.—France; Germany; Austria; Finland; Siberia; Japan.

2. *Camponotus japonicus*, Mayr, Diag. neue Formicid. 1, 8.

3. *Camponotus vitiosus*.

Worker.—Length $2\frac{3}{4}$ lines. Shining-black; the antennæ and legs rufo-piceous, the tarsi and joints of the legs palest; the mandibles obscure rufo-piceous. Head oblong, subquadrate. Thorax narrowed posteriorly, the metathorax obliquely truncate; the scale of the peduncle narrow, its superior margin rounded and fringed with a few stiff hairs.

Hab.—Hiogo.

This species resembles dark examples of *Camponotus lateralis* of Europe, but is distinct; its thorax is evenly obliquely inclined to the margin of the metathorax, not elevated and abruptly truncate, as in *C. lateralis*; the description is that of a worker minor.

Genus *LASIUS*, Fabr.

1. *Lasius fuliginosus*, Mayr, Europ. Formicid. 49.

Formica fuliginosa, Latr. Hist. Nat. Fourm. 140; St. Farg. Hym. i. 200; Nyl. Mon. Form. Bor. 915; Foerst. Hym. Stud. Form. 28; Smith, Brit. Form. 105; Mayr, Form. Austr. 79.

Hab.—Europe; Japan.

2. *Lasius niger*, Fabr. Syst. Piez. 415; Mayr, Europ. Formicid. 49.

Formica nigra, Linn. Faun. Suec. No. 1723; Fabr. Ent. Syst. ii. 352; Latr. Hist. Nat. Fourm. 156; St. Farg. Hym. i. 206; Nyland. Mon. Form. Bor. 920; Schenck, Beschr. Nass. Ameis. 49; Smith, Brit. Form. 109.

Formica fusca, Foerst. Hym. Stud. Form. 33.

Genus *POLYRHACHIS*, Smith.

1. *Polyrhachis lamellidens*, Mayr, MS.?

Worker.—Length $3\frac{1}{2}$ lines. Head and abdomen black, smooth and shining; thorax opaque, ferruginous. Head:

the clypeus with a sharp central longitudinal carina; the mandibles aciculate and punctured. Thorax: armed anteriorly with two stout divergent spines; the mesothorax has on each side a short stout spine, which curves outwardly and inclines backwards; the metathorax with two short, stout, blunt spines. Abdomen: the peduncle terminates above in two divergent, acute, curved spines, which are inclined over the base of the abdomen, which is highly polished and shining.

Hab. Hiogo.

This species is most closely allied to *P. bellicosus*; in the British Museum are specimens of the species from Hong Kong.

Genus TAPINOMA, Foerst.

1. *Tapinoma flavipes*.

Female.—Length 2 lines. Fuscous, opaque, sericeous. Antennæ bright yellow, 12-jointed; ocelli placed backward on the vertex, the posterior pair situated at its posterior margin. Thorax short and ovate; wings subhyaline, with a fulvous tinge; with one large marginal cell and one submarginal, the discoidal cells obsolete; legs of a bright golden-yellow. Abdomen oblong-ovate; petiole small and inclined forwards.

Worker.—Length 1 line. Yellow and shining; the head and posterior half of the abdomen somewhat fuscous; the scale of the abdomen inclined forwards.

Hab.—Hiogo.

Fam. PONERIDÆ.

Genus PONERA, Latr.

1. *Ponera solitaria*.

Worker.—Length 2 lines. Black, slightly shining, and having a thin grey pile; the apex of the scape, the flagellum, and the legs ferruginous; the mandibles ferruginous, and denticulate on the inner margin; the metathorax compressed, subcarinate longitudinally above, and obliquely truncate behind; the node of the peduncle in-crassate, its superior margin rounded; the apical segments of the abdomen pale rufo-testaceous.

Hab.—Hiogo.

Fam. MYRMICIDÆ.

Genus APHÆNOGASTER, Mayr.

1. *Aphænogaster aciculata*.

Female.—Length 5 lines. Shining jet-black. Head: the mandibles aciculate and somewhat obscurely ferruginous; the extreme apex of the scape and also of the flagellum rufo-piceous; the head aciculate. Thorax: above longitudinally aciculate and having a few scattered punctures; scutellum rounded behind and having a central longitudinal impressed line, the metathorax deeply excavated in the middle, the excavation transversely aciculate; the four apical joints of the tarsi rufo-testaceous. Abdomen: the two nodes of the peduncle rugulose; the segments smooth and shining, and with scattered pale setæ.

Worker.—Length $2\frac{1}{2}$ lines. Jet-black, the head and thorax aciculate, the abdomen smooth and shining, and with scattered pale setæ. The extreme apex of the antennæ, the tips of the femora and of the tibiæ, and the apical joints of the tarsi, rufo-testaceous; the nodes of the abdomen rugose.

Hab.—Hiogo.

Genus ISCHNOMYRMEX, Mayr.

1. *Ischnomyrmex famelicus*.

Worker.—Length 3 lines. Black, nigro-piceous or rufo-piceous, very variable in colour; large workers usually black, with more or less ferruginous-coloured legs; small workers rufo-piceous, with intermediate shades in different examples. Head oblong, eyes lateral, small and prominent, situated about the middle of the length of the head; antennæ nearly as long as the body; mandibles trigonate, prominent and dentate. Thorax: the prothorax produced into a short neck; the metathorax bidentate; above with a longitudinal channel; legs elongate, the intermediate and posterior tibiæ with very short fine spines at their apex. Abdomen: the petiole of the first node long; the node, viewed laterally, of a blunt wedge-shape; the second node subglobose; abdomen smooth, shining and ovate, usually palest at the apex.

Hab.—Hiogo.

Genus LEPTOTHORAX, Mayr.

1. *Leptothorax congruus*.

Worker.—Length $1\frac{1}{4}$ line. Black-brown; head oblong, eyes about the middle, lateral; the base of the scape of the antennæ and the flagellum rufo-testaceous; the three-jointed club dark fuscous; the head longitudinally finely striated. Thorax finely rugulose; the base of the femora and of the tibiæ, and also the tarsi, pale rufo-testaceous; the thorax is narrowed posteriorly, where it is armed with two short spines. Abdomen smooth and shining, truncate at the base.

Hab.—Hiogo.

This insect is like *L. acervorum*, but smaller.

Genus MONOMORIUM, Mayr.

1. *Monomorium intrudens*.

Worker.—Length 1 line. Head yellowish-chestnut, very smooth and shining; eyes minute, placed at the sides of head anteriorly; the club of the antennæ three-jointed and rather darker than the head. The thorax, legs and nodes of the peduncle pale yellow. The extreme base of the abdomen pale, the rest of it nearly black.

Hab.—Hiogo.

This minute ant is probably, like two or three of the species of the genus, found in houses; the common house ant found in many London houses belongs to the same genus. The species are remarkable for not having any suture between the pro- and meso-thorax, and the meta-thorax is not spined.

Genus PHEIDOLE, Westw.

1. *Pheidole fervida*.

Female.—Length $3\frac{1}{4}$ lines. Pale chestnut-colour, the mandibles of a brownish-black, punctured, very stout and with two teeth at their apex; head about the same width as the thorax; longitudinally striated and slightly emarginate behind. Thorax ovate, rather longer than broad, shining and flattened above; the scutellum smooth and shining; legs paler than the body. Abdomen ovate, smooth and shining, the apical margins of the segments pale.

Worker.—Length $1\frac{1}{2}$ lines. Head of a deeper colour than the female, and four times the width of the prothorax; deeply incised behind; longitudinally striated, the striæ becoming obsolete at the margin of the vertex. The thorax widened anteriorly and angulated at the sides; much narrowed posteriorly; the metathorax with two short, erect, acute spines; the legs and abdomen testaceous.

Hab.—Hiogo.

2. *Pheidole nodus*.

Worker.—Length $2\frac{1}{2}$ lines. Obscurely ferruginous; the head anteriorly, the thorax, and the base of the abdomen, brightest. Head longitudinally striated; deeply emarginate behind, where it is deeply and coarsely punctured. The thorax rugose above; the metathorax with two short, acute spines. Abdomen: the first node of the peduncle narrow, its superior margin rounded; the second large, transverse, four times the width of the first, angular at the sides, above having a few transverse striæ. The head twice the width of the abdomen.

Hab.—Hiogo.

Of the same size as, and resembling the *P. bicarinatus* of Mayr, from Calcutta, but distinguished by the enlarged second node of the abdomen.

Genus CREMATOGASTER, Lund.

1. *Crematogaster laboriosa*.

Worker.—Length $1\frac{1}{2}$ lin. Nigro-piceous, occasionally rufo-piceous, being more or less obscure, smooth and shining; the head narrowed behind the eyes, slightly so in front of them, the tibiæ and tarsi paler than the femora; the metathorax with two short acute spines; the base of the abdomen usually paler than the apex, which is acute.

Hab.—Hiogo.

Fam. MUTILLIDÆ.

Genus MUTILLA, Linn.

1. *Mutilla pungens*.

Female.—Length 4 lines. Head: anterior margin of the thorax narrowly, and the abdomen, black; thorax otherwise red. A pubescent spot in the middle of the basal segment, and a narrow fascia on the apical margin

of the second segment, and the extreme apex, pale golden-yellow; the rest of the pubescence on the abdomen above black; beneath, the margins of the segments are thinly fringed with pale hairs. The thorax oblong, densely covered with strong confluent punctures, slightly narrowed in middle; the tarsi rufo-testaceous; the calcaria at the apex of the tibiæ pale testaceous.

Hab.—Hiogo.

Var. differs in being smaller, in being more finely punctured, and in having the legs red, with tips of the joints blackish. May possibly be a distinct species.

2. *Mutilla insidiator*.

Female.—Length 3 lines. Black, the thorax red; a transverse glittering silvery-white pubescent spot on each side of the second segment, before the middle, and the apical segment covered with similar pubescence. The head strongly and closely punctured. Thorax oblong, the sides nearly parallel, slightly narrowed about the middle, and covered with large deep confluent punctures, the thinly-scattered pubescence on its disk black; legs black, and with thin pale glittering pubescence; the calcaria at the apex of the tibiæ white; the tarsi obscurely rufo-testaceous. Abdomen with rather distant punctures, and covered with short black pubescence; beneath, the pubescence is pale and glittering.

Hab.—Hiogo.

3. *Mutilla petulans*.

Male.—Length 5 lines. Head and thorax black, basal half of the abdomen red. Head and thorax strongly and closely punctured; the metathorax with large coarse punctures; the tegulæ and a small space on the scutellum smooth and shining; the thinly-scattered pubescence on the thorax and head silvery-white, except a little on the vertex of the latter, which is black; wings slightly fuscous, darkest towards their apex. Abdomen: the first and second segment ferruginous, the others black; the first segment strongly punctured, the second more finely and more distantly so; the other segments finely punctured; the apical margins of the third and fourth segments with narrow silvery-white fasciæ; the pubescence on the other segments black.

Hab.—Hiogo.

LIST OF SPECIES.

Fam. TENTHREDINIDÆ.

- Hylotoma* nigritarsis.
 imperator.
 humeralis.
 ephippiata.
 simillima.
 similis.
 pagana, Panz.
 trinotata.
 captiva.
Selandria nigriceps.
Strongylogaster iridipennis.
Pachyprotasis erraticus.
Macrophya nigropicta.
 vexator.
 apicalis.
 pacifica.
 ferox.
 ignava.
 irritans.
 carbonaria.
 timida.
 luctifera.
 flavipes.
Tenthredo erratica.
 providens.
 scalaris.
 hilaris.
 volatilis.
Dolerus ephippiatus.
 fuscipennis.
 subfasciatus.
 nigro-cæruleus.
Lyda volatilis.
 venustus.
 latifrons.
Cephus viator.
 agilis.
Sirex japonicus.

Fam. ICHNEUMONIDÆ.

- Ichneumon* generosus.
 cognatorius.
 doliturus.
 cursorius.
 flavitarsis.
 virulentus.
 improvidus.
 incanescens.
 vexator.
 irritator.
 rufitarsis.
 dentatus.
 intrudens.
Cryptus ambulator.

Fam. ICHNEUMONIDÆ—contd.

- Cryptus* carbonarius.
 basalis.
 penetrator.
 punctator.
 maculipes.
Trogus arrogans.
Pimpla destructor.
 luctuosa.
Thyreodon purpurascens.
Anomalon flavifrons.
 insidiator.
Paniscus unicolor.
Ophion pungens.
 flavopictus.
 unicolor.
Xylonomus investigator.

Fam. BRACONIDÆ.

- Agathis* atricornis.

Fam. CHRYSIDIDÆ.

- Stilbum* amethystina.
Chrysis Daphne.

Fam. CHALCIDIDÆ.

- Chalcis* obscurata.
Epitrannus albipennis.
Halticella apicalis.
Eurytoma antica.

Fam. PROCTOTRUPIDÆ.

- Epyris* apicalis.

Fam. FORMICIDÆ.

- Camponotus* ligniperdus, Mayr.
 japonicus, Mayr.
 vitiosus.

- Lasius* fuliginosus, Mayr.
 niger, Fabr.

- Polyrachis* lamellidens, Mayr.
Tapinoma flavipes.

Fam. PONERIDÆ.

- Ponera* solitaria.

Fam. MYRMICIDÆ.

- Aphænogaster* aciculata.
Ischnomyrmex famelicus.
Leptothorax congruus.
Monomorium intrudens.
Pheidole fervida.
 nodus.

- Crematogaster* laboriosa.

Fam. MUTILLIDÆ.

- Mutilla* pungens.
 insidiator.
 petulans.