TAXONOMIC STUDIES ON THE SUBFAMILY METOPIINAE OF JAPAN*

(HYMENOPTERA : ICHNEUMONIDAE)

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Introduction

The subfamily Metopiinae is a comparatively large group of the Ichneumonidae, being represented by 22 genera containing nearly 500 described species in the world. Insofar as their habits are known the species of the Metopiinae are endoparasites of larvae of Lepidoptera belonging to Tineidae, Hyponomeutidae, Glyphipterygidae, Gelechidae, Oecophoridae, Olethreutidae, Phalonidae, Pyralidae, Pyraustidae, Phycitidae, Zygaenidae, Nolidae, Noctuidae, Notodontidae, Drepanidae, Lasiocampidae and Geometridae.

In Japan 68 species of this subfamily have been given by W. H. Ashmead (1906), S. Matsumura (1911, 1912 & 1931), T. Uchida (1930-1934, 1940, 1942, 1955 & 1956), S. Momoi (1960 & 1966), S. Momoi, A. Nakanishi and K. Kusigemati (1968), K. Kusigemati (1967 & 1968) and S. Momoi and K. Kusigemati (1970). Since 1964 I have made taxonomic studies on the family Ichneumonidae occurring in Japan. On this occasion the result of my work on the subfamily Metopiinae will be published. In this paper will be given 113 species, of which 37 species are new to science and 8 species new to Japan. The holotypes of the new species descrided in this paper, unless otherwise especially stated, are deposited in the collection of the Entomological Institute, Hokkaido University.

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Classification

This subfamily has been referred for a long time by authors to subfamily Tryphoninae, being divided into three tribes Metopiini, Tylocomnini (or Trachydermatini) and Exochini. Townes (1945) is the first reviser who treats it as a distinct subfamily, Metopiinae, separating from the Tryphoninae. This subfamily appears to be most closely related to the subfamily Orthocentrinae, especially in the structure of face and antennae, but it differs from the latter in having the interantennal process or lamella and the ovoid scape. The Metopiinae may be distinguished from any other subfamily by the combination of the following characters :—

Second trochanters of front and middle legs usually fused with their femora; clypeus not separated from face by a groove; face strongly convex, except that in the genus *Metopius* the face has a large, flat or concave, escutcheon-shaped area.

This subfamily is a relatively large group of the Ichneumonidae, being represented by 22 genera in the world. In the course of the present study, 14 genera have been known to occur in Japan. Further, 11 genera have been known to occur in Europe, 16 in the Nearctic region and 9 in the Oriental region. It seems that Japan has a comparatively rich fauna of the Metopiinae. Among the genera occurring in Japan, *Chorinaeus*, *Trieces*, *Metopius*, *Triclistus*, *Colpotrochia*, *Hypsicera* and *Exochus* are very common genera, being widely distributed in the world. *Colpotrochia*, however, is restricted to the eastern Palaearctic, Oriental and Nearctic regions, and *Hypsicera* to the Holarctic region. *Aceraspis* is confined to the eastern Palaearctic and Oriental regions. *Pseudometopius* and *Synosis* have been found both in Japan and in North America. The rest, namely, *Carria*, *Stethoncus*, *Periope* and *Drepanoctonus*, which are represented by several species, appear to have a wide distributional range.

The Japanese genera may be distinguishable by the following key, of which the completion owes much to the key to the genera of the subfamily Metopiinae published by H. and M. Townes (1959).

Key to the genera of Metopiinae occurring in Japan

1. Face occupied largely by a flat or concave escutcheon-shaped area bounded by a carina. Middle tibia with one spur; apical margin of tibiae produced on the outer side into a small tooth. ..... 5. *Metopius* Panzer
- Face entirely convex. Middle tibia with two spurs except in male of *Aceraspis*; apical margin of tibiae rounded on outer side, without tooth. 2
2. Third to 5th tergites with epipleura apparentely absent (represented by narrow, inconspicuous vestiges). Front and middle tarsal claws conspicuously pectinate. 3
- Third to 5th tergites with epipleura, well developed. Front and middle tarsal

claws, usually apparentely simple. 6
3. Areolet present. Interantennal process of face forming a high semicircular flange between antennal sockets. Second abdominal tergite with a pair of median longitudinal carinae; 7th tergite of male restricted. Hind tarsal claws conspicuously pectinate. Forewing 7-11 mm. 4
- Areolet absent. Interantennal process of face forming a triangular projection in front of antennal sockets, but not a high flange between them. Second abdominal tergite with a median longitudinal carina and often also with sublateral longitudinal carinae; 7th tergite of male exposed. Hind tarsal claws simple (except for *Chorinaeus pectinatus*). Forewing 4.1-8.5 mm. 5
4. Abdomen parallel-sided, the 5th and 6th segments not wider than the preceding segments, and the apex of the 6th segment not specialized. Middle tibia of male with two spurs. ..... *Pseudometopius* Davis
- Abdomen clavate, the 5th and 6th segments much wider than the preceding segments, the apex of the 6th segment subspherically rounded. Middle tibia of male with one spur. ..... 2. *Aceraspis* Uchida
5. Upper edge of pronotum paralleled by a broad, shallow, submarginal groove. Sublateral longitudinal carina of abdomen extending at most to basal third of 2nd tergite, entirely absent from 3rd tergite. Mesopleural suture present. .... 3. *Chorinaeus* Holmgren
- Upper edge of pronotum without a distinct submarginal groove. Sublateral longitudinal carina of abdomen extending the entire length of 2nd tergite. Mesopleural suture absent. ..... 4. *Trieces* Townes
6. Hind tibia with one spur. Antennae enlarged beyond the middle, weakly clavate. ..... 8. *Periope* Haliday
- Hind tibia with two spurs. Antennae not enlarged beyond the middle, not clavate. 7
7. Antennal sockets separated by a high lamella, the lamella with a deep median groove dorsally (except for *Triclistus minutus*). 8
- Antennal sockets not separated by a high lamella, or when a lamella is present it does not have a median groove. 9
8. First abdominal segment broad basally, the spiracle situated near the basal 1/4, and the sternite extending about 1/5 its length. Propodeum with distinct dorsal and posterodorsal faces. Head somewhat cubical; edge of interantennal lamella arcuate in profile. ..... 6. *Triclistus* Foerster
- First abdominal segment narrow basally, the spiracle situated near the basal 3/8-1/2, and the sternite extending to 1/3-1/2 its length. Propodeum without distinct and posterodorsal faces (except for *C. nigra*), these blending in an even curve. Head lenticular; edge of interantennal lamella angulate in profile. .... 7. *Colpotrochia* Holmgren
9. Areolet present. Occipital carina entirely absent. Propodeal spiracle round. .... 10. *Carria* Schmiedeknecht
- Areolet absent. Occipital carina present. Propodeal spiracle elongate. 10
10. Second abdominal tergite with a median pair of longitudinal carinae, at least at its base. Second recurrent vein meeting cubitus almost at the intercubitus, then 2nd abscissa of cubitus being less than 1/4 the length of intercubitus. Meta-

pleuron densely hairy all over. Temple short. ..... 9. *Drepanoctonus* Pfankuch
- Second abdominal tergite without median longitudinal carinae. Second recurrent vein meeting cubitus considerably before the intercubitus, the 2nd abscissa of cubitus being more than 1/3 as long as intercubitus. Temple rather long. 11

11. Interantennal process of face separated from face by a prominent transverse carina. Lower half of propleuron subspherically swollen. ..... 12. *Stethoncus* Townes
- Interantennal process of face not separated from face by a carina. 12

12. Back of head vertical behind posterior ocelli. Face in profile sloping forwards to its upper margin. Middle tibia with spurs approximately equal length. .... 11. *Hypsicera* Latreille
- Back of head sloping from posterior ocelli to the level of the occipital carina, thence approximately vertical to the foramen magnum. 13

13. Front spur of middle tibia longer than the hind spur. Median longitudinal carinae of propodeum approximate or fused medially, resulting in the basal area and areola well separated. Interantennal process of face weakly notched at apex. ... . 13. *Synosis* Townes
- Front spur of middle tibia shorter than the hind spur or approximately equal in length. Median longitudinal carinae of propodeum, when present, not approximate or fused medially. Interantennal process of face nearly always pointed medially. ..... 14. *Exochus* Gravenhorst

1. Genus **Pseudometopius** Davis

Pseudometopius Davis, Trans. Amer. Ent. Soc. 24 : 202, 1897. [Type-species : *Metopius hagenii* Cresson].

Tylocomnoides Uchida, Trans. Sapporo Nat. Hist. Soc. 16 : 178, 1940. [Type-species : *Tylocomnoides egawai* Uchida].

Odontotylocomnus Uchida, Trans. Sapporo Nat. Hist. Soc. 16 : 179, 1940. [Type-species : *Odontotylocomnus pilosus* Uchida].

This genus seems to be confined to North America and Japan, being represented by three species, *P. hagenii* (Cresson) from North America, *P. egawai* (Uchida) and *P. pilosus* (Uchida) from Japan. The Japanese species may be distinguished by the following key : —

Key to the species

1. Propodeum with costula strong ; areola confluent with basal area ; propodeal spiracle situated nearer to pleural carina than to lateral carina. Median longitudinal carinae of 2nd and 3rd tergites strong, extending to apex ; 4th tergite rather sparsely hairy, with a median longitudinal carina on about basal 2/3. Sublateral upper margin of face not specialized. Inner apical part of front tibia less strongly produced, with fine setae. ..... 1. *egawai* (Uchida)
- Propodeum with costula obsolete ; areola separated from basal area by a carina ; propodeal spiracle situated nearer to lateral carina than to pleural carina. Second tergite with weak median longitudinal carinae on basal 2/3 ; 3rd tergite with a

weak median longitudinal carina on basal 2/3 ; 4th tergite more densely hairy, without a median longitudinal carina. Sublateral upper margin of face produced upwards over base of antenna as an acute triangular flange. Inner apical part of front tibia strongly produced, with very strong setae. ..... 2. *pilosus* (Uchida)

1. **Pseudometopius egawai** (Uchida)

Tylocomnoides egawai Uchida, Trans. Sapporo Nat. Hist. Soc. 16 : 178, 1940.

Pseudometopius egawai : Uchida, Ins. Mats. 20 : 49, 1956 ; Townes, Proc. Ent. Soc. Washington 59 : 119, 1957.

Specimens examined. Hokkaido—Shikotsu-ko, 1 ♀, 30-vi-66, K. Kusigemati leg. Honshu—Morioka, 1♀, 16-vi-56, T. Oku leg. ; Toyama, 1♀, 4-vi-55, S. Takagi leg.; Momogawa, Hyogo, 1 ♀, 23-v-61, S. Momoi leg. ; Ashozan, Hiroshima, 1 ♀ (holotype of *egawai*), 26-v-35, K. Egawa leg.

Distribution : Japan.

2. **Pseudometopius pilosus** (Uchida)

Odontotylocomnus pilosus Uchida, Trans. Sapporo Nat. Hist. Soc. 16 : 180, 1940.

Odontotylocomnus pilosus : Uchida, Ins. Mats. 20 : 49, 1956.

Pseudometopius pilosus : Townes, Proc. Ent. Soc. Washington 59 : 114, 1957.

Specimen examined : 1♀ (holotype of *pilosus*), Yokohama, Kanagawa, Honshu, 17-vii-29, A. Itoga leg.

Distribution : Japan.

2. Genus **Aceratapsis** Uchida

Cerataspis Uchida, Trans. Sapporo Nat. Hist. Soc. 13 : 275, 1934 (name preocc. by Gray, 1828). [Type-species : *Cerataspis clavata* Uchida].

Aceratapsis Uchida, Ins. Mats. 9 : 23, 1934 (replacement name for *Cerataspis*).

This genus is distributed in the Oriental and eastern Palaearctic regions, being represented by six described species. The following two species have been known to occur in Japan, being distinguishable by the following key : —

Key to the species

1. Areola and basal area combined as wide as second lateral area measured along anterior margin, entirely smooth and polished, nearly hexagonal, the posterior margin being straight ; costula originating before middle, then 2nd lateral area touching areola by two angles and a marginal line between them. Distance between lateral ocelli and eyes shorter than diameter of an ocellus. Scutellum with median transverse band and subtegular ridge yellow. Middle and hind tibiae broadly yellow-banded. First to 3rd abdominal tergites usually with a pair of yellow spots at apico-lateral corner. ..... 1. *clavata* (Uchida)

– Areola and basal area combined distinctly narrower than 2nd lateral area measur-

ed along anterior margin, almost trapezoid, radially striate usually, the striation being sometimes partly obsolete, and the posterior margin distinctly arched; costula originating from posterior angle, then 2nd lateral area touching areola by a single angle. Distance between lateral ocelli and eyes longer than diameter of an ocellus. Scutellum, subtegular ridge, middle and hind tibiae, and 1st to 3rd abdominal tergites entirely black. ..... 2. *sinensis* Michener

1. **Aceratаspis clavata** (Uchida)

Cerataspis clavata Uchida, Trans. Sapporo Nat. Hist. Soc. 13 : 276, ♂, 1934.

Aceratаspis clavata : Uchida, Ins. Mats. 9 : 23, 1934 ; Michener, Psyche 47 : 122, 1940 ; Momoi, Ins. Mats. 23 : 53, 1960.

Specimens examined. Hokkaido—Kamuikotan, 1 ♀, 8-viii-64, Yûbari-dake, 1 ♀, 9-viii-66, Muine-yama, 1 ♂, 26-viii-68, K. Kusigemati leg. ; Sapporo, 1 ♀, 22-viii-58, S. Momoi leg. ; Nopporo, 1♂, 29-vii-67, M. Suwa leg. Honshu—Onnazawa, Nagano, 1 ♂, 21-viii-62, Y. Miyatake leg. ; Haku-san, Ishikawa, 1 ♀, 6-viii-53, A. Nagatomi leg. ; Sasayama, Hyogo, 1 ♀, 5-vii-52, K. Iwata leg. ; Kaibara, Hyogo, 1♀, 7-ix-59, Y. Yamamoto leg. ; Sokoto, Hachijô-jima, 1♂, 4-vi-64, Y. Hirashima and M. Shiga leg. Kyushu—Wakasugi-yama, Fukuoka, 1 ♂, 22-ix-63, A. Nakanishi leg. ; Inunaki-yama, Fukuoka, 1♂, 30-ix-65, T. Saigusa leg. ; Hiko-san, Fukuoka, 1 ♂, 27-v-56, S. Momoi leg. ; Ryugamizu, Kagoshima, 1 ♀, 21-vi-68, A. Mori leg. ; Ambo, Yaku-shima, Kagoshima, 1 ♂ & 1 ♀, 31-v- & 7-vi-69, K. Kusigemati leg.

Distribution : Japan.

2. **Aceratаspis sinensis** Michener

Cerataspis clavata Uchida, Trans. Sapporo Nat. Hist. Soc. 13 : 276, ♀, 1934. (Part).

Aceratаspis sinensis Michener, Psycche 47 : 123, 1940 ; Momoi, Ins. Mats. 23 : 53, 1960.

Specimens examined. Hokkaido—Ashoro, 1 ♀, 27-vii-62, Y. Miyatake leg. ; Soranuma-dake, 1 ♀, 30-viii-67, K. Kusigemati leg. ; Taisetsu-zan, 1♂, 22-26-vii-57, T. Uchida et al. leg. Honshu—Mt. Nyugasa, Yamanashi, 1♂ & 2♀♀, 9- & 10-vii-61, A. Nakanishi leg. ; Mt. Nyugasa, Yamanashi, 1♀, 23-viii-61, F. Nakasuji leg. ; Masutomi, Yamanashi, 1 ♂, 8-vii-67, H. Takizawa leg. ; Hyono-sen, Hyogo, 1♀, 8-vii-51, Fukuzumi, Hyogo, 1♂, 21-vii-52, Hataganaru, Hyogo, 1♀, 19-23-vii-59, A. Nagatomi leg. ; Kibune, Kyoto, 1♀, 4-x-36, T. Kimura leg. ; Kurama, Kyoto, 1♂, 25-ix-55, K. Iwata leg. ; Sasayama, Hyogo, 1♀, 20-viii-65, S. Momoi leg. ; Tentoku, Hiroshima, 1♀, 20-x-35, E. Egawa leg. Shikoku—Kôchi, 1♀ (allotype of *clavata*), viii-52, H. Wada leg.

Distribution : Japan and China.

3. Genus **Chorinaeus** Holmgren

Chorinaeus Holmgren, Svenska Vetensk. Akad. Handl. 1 : 320, 1856. [Type-species : *Exochus funebris* Gravenhorst].

Polyrhabdus Walsh, Trans. Acad. Sci. St. Louis 3 : 98, 1873. [Type-species: *Polyrhabdus cariniger* Walsh].

In my previous paper (1967) are given eight species of the genus, as inhabitants of

Japan. In the course of the present study have been found three other species, which are new to science.

Key to the species

1. Metapleuron with fine setiferous punctures mostely. Propodeal spiracle situated nearer to lateral carina than to pleural carina. Hind femur more slender, 3.5 times as long as wide in lateral view, and entirely ferruginous. ..... 1. *longicalcar* Thomson
- Metapleuron with very fine setiferous punctures on upper 1/4–1/2. Propodeal spiracle situated nearer to pleural carina than to lateral carina, if nearer to lateral carina, spiracle circular. Hind femur stouter, 2.4–3.2 times as long as wide in lateral view, and more or less blackish. 2
2. Second abdominal tergite with sublateral longitudinal carinae (in female of *aizanensis* almost obsolete). 3
- Second abdominal tergite without sublateral longitudinal carinae. 8
3. Face as wide as high. Scutellum with lateral carina obsolete. Middle coxa and femur, and hind tibia yellow. ..... 7. *aizanensis* Kusigemati
- Face wider than high. Scutellum with lateral carina distinct. Middle coxa and femur, and hind tibia dark brown to black. 4
4. Face and clypeus strongly punctured. Middle leg with basitarsus as long as or longer than the following segments together except claws. Face black, yellow on lateral side ; clypeus blackish. 5
- Face and clypeus finely punctured. Middle leg with basitarsus shorter than the following segments together except claws. Face and clypeus yellowish. 7
5. Fused areola and basal area of propodeum ovate. Hind tarsal claws pectinate. Second abdominal tergite with sublateral longitudinal carinae very strong. ..... 2. *pectinatus* Kusigemati
- Fused areola and basal area parallel-sided. Hind tarsal claws simple. Second abdominal tergite with sublateral longitudinal carinae weak. 6
6. Scutellum long, more weakly convex, densely haired. Metapleurom more narrowly haired along upper margin. Hind femur 3.0–3.2 times as long as wide in lateral view. ..... 3. *orbitalis*, sp. nov.
- Scutellum short, more strongly convex, sparsely haired. Metapleuron more broadly haired along upper margin. Hind femur 2.8 times as long as wide in lateral view. ..... 4. *robustus*, sp. nov.
7. Face 1.2 times as wide as high. Pronotum without longitudinal striae at lower corner. Second abdominal tergite strongly and closely rugoso-punctured. Face, clypeus, malar space and lower corner of frons yellow. ..... 5. *eniwanus* Kusigemati
- Face 1.4 times as wide as high. Pronotum with fine longitudinal striae at lower hind corner. Second abdominal tergite weakly wrinkled. Face yellow, black medially and dorsally ; frons entirely black. ..... 6. *funebris* (Gravenhorst)
8. Malar space longer than basal width of mandible ; mandible 1.6 times as long as basal width. Fused areola and basal area of propodeum parallel-sided. Hind tarsal claws pectinate. Front and middle legs and hind tibia yellow. .....

..... 8. *flavipes* Bridgman

- Malar space shorter than basal width of mandible ; mandible 2.0-2.5 times as long as basal width. Fused areola and basal area of propodeum parallel-sided or slightly widened towards apex. Hind tarsal claws simple. Legs dark brown to black. ... 9

9. Scutellum with lateral carina strong. Middle leg with tibial spurs approximately equal in length. First flagellar segment 2.0 times as long as wide. Face, clypeus and malar space entirely yellow. ..... 9. *parvus* Kusigemati

- Scutellum with lateral carina very weak or absent. Middle leg with front tibial spur shorter than the hind spur. Face, clypeus and malar space black ; inner orbit yellow. 10

10. Face strongly convex, strongly and closely punctured and flatened ventrocentrally ; clypeus flat. Propodeal spiracle situated nearer to pleural carina than to lateral carina. ..... 10. *clypeatus* Kusigemati

- Face and clypeus normal, finely and rather sparsely punctured. Propodeal spiracle situated at middle between lateral and pleural carinae. .... 11. *borealis*, sp. nov.

1. **Chorinaeus longicalcar** Thomson (Fig. 34)

Chorinaeus longicalcar Thomson, Dtsch. Ent. Ztschr. 31 : 201, 1887.

Chorinaeus longicalcar : Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25 : 266, 1930; Townes & Townes, U. S. Nat. Mus. Bull. 216 : 16, 1959 ; Kusigemati, Ins. Mats. 30 : 19, 1967.

♀. Malar space about 4/5 as long as basal width of mandible ; mandile about 2.1 times as long as basal width. Antennae with 37 or 38 segments ; 1st flagellar segment 2.2-2.4 times as long as wide. Hind femur 3.3-3.5 times as long as wide in lateral view. Apex of clypeus marginate with dark brown ; malar space usually yellow, the marking connected with yellow inner orbit.

♂. Face about 1.3 times as wide as high ; malar space about 1.2 times as long as basal width of mandible. Nervulus postfurcal by 1/3 of its own length ; nervellus bent near its lower 1/5. Middle leg with basitarsus 4/5 as long as the following segment togethes except claws. Third abdominal tergite with median longitudinal carina on basal 4/7, stronger than in female. Apex of penis without setae (Fig. 34.). Face, clypeus, lower side of frons, mandible except for dark brown apical teeth, and palpi whitish yellow. Scape and pedicel black, whitish yellow on ventral side ; flagellum dark brown, darker dorsally. Front and middle legs yellow ; basiventral side of coxae blackish ; femora light fulvous. Hind leg with coxa black except at apex ; coxa at apex, trochanter, bases of femur and tibia, and tarsus witish yellow ; femur light brown except at base ; tibia fulvous except at base.

Length : Body 7.7 mm., forewing 5.6 mm.

Specimens examined : 1 ♂ & 1 ♀, Soranuma-dake, Hokkaido (17-vi-67 & 15-vi-68, K. Kusigemati) ; 1♀, Jôzankei, Hokkaido (8-vii-68, T. Kocha).

Host : *Choristoneura fumiferana* Clemenes (after Kusigemati, 1967).

Distribution : Japan, Korea, Europe and North America.

2. **Chorinaeus pectinatus** Kusigemati

Chorinaeus pectinatus Kusigemati, Ins. Mats. 30 : 18, 1967.

Specimens examined : 1 ♀ (holotype of *pectinatus*), Nakawa, Nagano, Honshu (8-x-58, K. Kamijo) ; 1♀, Sasayama, Hyogo, Honshu (5-x-54, K. Iwata) ; 1 ♀, Nambarakyo, Hiroshima, Honshu (13-x-35, K. Egawa) ; 1 ♀, Hiko-san, Kyushu (9-viii-40, K. Yasumatsu).

Distribution : Japan.

3. **Chorinaeus orbitalis**, sp. nov. (Fig. 2)

♀. Face a little wider than high, moderately and evenly convex, rather strongly and closely punctured ; clypeus moderately and evenly convex, strongly and closely punctured as in face, the apical margin being weakly concave medially ; malar space about 5/6 as long as basal width of mandible ; mandible rather strongly tapering towards apex, about 2.3 times as long as basal width, the upper tooth being very longer than the lower ; antennae more slender than in *clypeatus*, with 31-33 segments ; 1st flagellar segment 2.1-2.4 times as long as wide and 1.4-1.6 times as long as the 2nd. Scutellum rather long, weakly convex, densely hairy, with a weak lateral carina. Metapleuron polished, sparsely haired on upper 1/4. Propodeum with median longitudinal carinae almost parallel-sided ; propodeal spiracle elliptic, situated nearer to pleural carina than to lateral carina. Forewing with nervulus postfurcal by 1/2 its own length ; nervellus weakly bent near its lower 1/3. Hind femur 3.0-3.2 times as long as wide in lateral view ; front spur of middle tibia about 4/5 as long as the hind one ; basitarsus of middle tarsus 1.0-1.2 times as long as the following segments together except claws. Abdomen rather fusiform ; 1st tergite shallowly and rather sparsely punctured, rugulose apically ; 2nd tergite about 3/4 as long as wide at apex and a little shorter than the 3rd, longitudinally rugoso-punctured strongly, with sublateral longitudinal carinae on about basal 1/3 ; 3rd tergite strongly and closely punctured, with a median longitudinal carina on basal 3/5-5/7.

Black. Inner orbit yellow, the yellow marking attaining to emargination of eye (Fig. 2) ; interantennal process yellow (Fig. 2) ; clypeus weakly tinged with dirty yellowish brown ; palpi whitish yellow, basal segment of maxillary palpus infuscate ; mandible dirty yellowish brown, black at both ends ; scape and pedicel black, blackish brown at apex ; flagellum dark brown, darker dorsally and basally. Tegula dirty yellowish brown, with a basal yellow spot. Coxae, trochanters, hind femur black ; front and middle femora dark brown, yellow at extreme apex, the former a little paler than the latter ; front tibia yellow at base and on ventral side, dark brown on dorsal side except at base ; middle tibia dark brown except at yellow base ; tarsi yellowish brown to dark brown. Abdominal tergites black ; each tergite weakly tinged with dark brown apically and laterally.

Length : Body 5.8-6.6 mm., forewing 4.4-4.8 mm.

♂. Antennae with 37 or 38 segments. Front spur of middle tibia about 5/7 as long as the hind one ; basitarsus of middle tarsus 5/7 as long as the following segments together except claws. Abdomen a little more slender than in female ; 2nd tergite more strongly rugoso-punctured than in female, 5/7-8/9 as long as wide at apex and

about as long as the 3rd in length ; 3rd tergite rugoso-punctured on basal 1/3, strongly punctured on apical 2/3, with a median longitudinal carina on basal 2/3–5/6 ; apex of penis without setae. Face, lower lateral corner of frons, interantennal process, clypeus, malar space and mouth parts yellow ; scape and pedicel black, yellow on ventral side ; flagellum blackish brown, paler ventrally. Front and middle legs yellow, femora dark brown on dorsal side ; hind coxa black ; trochanters whitish yellow ; hind femur blackish, yellow at extreme apex ; hind tibia blackish, yellow at base. Abdominal tergites black.

Length : Body 6.6–6.8 mm., forewing 4.5–4.9 mm.

Holotype (♀) & paratypes (4 ♀♀) : Eboshi-dake, Kagoshima, Kyushu (15-v-70, K. Kusigemati). Paratypes : 1 ♀, Eboshi-dake, Kagoshima, Kyushu (4-v-69, K. Kusigemati) ; 1 ♂, Terayama near Kagoshima, Kyushu (27-iv-70, K. Kusigemati) ; 2 ♂♂ & 1 ♀, Terayama near Kagoshima, Kyushu (1-v-70, K. Kusigemati).

Distribution : Japan.

This species is very similar to *C. robustus*, sp. nov., from which it is distinguished by the slender hind femur, by the broadly haired metapleuron, etc. as mentioned in the key.

4. **Chorinaeus robustus**, sp. nov. (Fig. 1)

♀. Face 1.1 times as wide as high, weakly convex, strongly and closely punctured ; clypeus more strongly convex than in face, strongly and sparsely punctured, the apical margin being faintly concave ; malar space about 4/5 as long as basal width of mandible ; mandible moderately tapering towards apex, 1.9 times as long as basal width, the upper tooth longer than the lower ; antennae filiform as in *clypeatus*, with 29 or 30 segments ; 1st flagellar segment about 2.1 times as long as wide and 1.8 times as long as the 2nd. Scutellum a little more strongly convex than in *clypeatus*, sparsely hairy, the lateral carina being strong. Metapleuron polished, sparsely haired on upper 4/7. Propodeum with median longitudinal carinae parallel-sided ; propodeal spiracle elliptic, situated nearer to pleural carina than to lateral carina. Forewing with nervulus postfurcal by 2/3 of its own length ; nervellus weakly bent near its lower 1/5–1/4. Hind femur about 2.8 times as long as wide in lateral view ; front spur of middle tibia about 4/5 as long as the hind one ; basitarsus of middle tarsus 1.1 times as long as the following segments together except claws. Abdomen rather clavate ; 1st tergite weakly and loosely rugulose ; 2nd tergite about 5/8 as long as wide at apex and about 1.2 times as long as the 3rd, longitudinally rugoso-punctured strongly, with weak sublateral longitudinal carinae on basal 2/5 ; 3rd tergite strongly and closely punctured, with a median longitudinal carina on about basal 1/2.

Black. Inner orbit yellow, the yellow marking attaining to emargination of eye and expanded medially on face (Fig. 1) ; interantennal process yellow (Fig. 1) ; palpi yellowish brown ; mandible blackish basally, reddish brown apically except for apical black teeth ; antennae blackish, a little paler ventrally. Tegula blackish brown, a little paler posteriorly. Legs dark brown to black ; front and middle coxae at apex, 2nd trochanters, femora at extreme both ends and tibiae on about basal 1/5 whitish yellow.

Length : Body 5.2–5.8 mm., forewing 4.7–4.9 mm.

♂. Unknown.

Holotype (♀) : Sapporo, Hokkaido (13-ix-68, K. Kusigemati). Paratype : 1 ♀, Sapporo, Hokkaido (23-vii-68, K. Kusigemati).

Distribution : Japan.

This species is very closely related to *C. pectinatus* Kusigemati and *C. clypeatus* Kusigemati. It differs from *pectinatus* in having the simple hind tarsal claws and the parallel-sided median longitudinal carinae of the propodeum ; from *clypeatus* in having the normal face and clypeus and the short and clavate abdomen.

5. **Chorinaeus eniwanus** Kusigemati

Chorinaeus eniwanus Kusigemati, Ins. Mats. 30 : 21, 1967.

Specimens examined. 39 ♂♂ & 9 ♀♀ (one the holotype of *eniwanus*) : Hokkaido—Rausu-dake, Toikanbetsu, Ashoro, Taisetsu-zan, Aizankei, Satsunai-dake, Uryu, Soranuma-dake, Yubari-dake, Jôzankei, Sapporo, Apoi-dake, Eniwa-dake. Honshu—Kamikôchi and Senjoga-dake.

Distribution : Japan.

6. **Chorinaeus funebris** (Gravenhorst)

Exochus funebris Gravenhorst, Ichneumonologia europaea 1 : 695, 1829.

Chorinaeus funebris : Townes & Townes, U. S. Nat. Mus. Bull. 216 : 26, 1959 ; Kusigemati, Ins. Mats. 30 : 20, 1967.

Specimens examined : 1 ♂, Akan, Hokkaido (12-viii-59, Y. Maeta) ; 1 ♀, Shikotsu-ko, Hokkaido (16-vi-61, H. Takada) ; 1 ♂, Shikaribetsu-ko, Hokkaido (13-vii-61, H. Takada) ; 1 ♀, Sounkyo, Hokkaido (9-viii-65, K. Kusigemati) ; 1 ♀, Aizankei, Hokkaido (19-vii-66, K. Kusigemati) ; 5 ♀♀, Muine-yama, Hokkaido (20- & 26-viii-68, K. Kusigemati).

Host : *Depressaria heracleana* Linné, *Euxanthis angustana* Hübner (after Kusigemati, 1967, in Europe) ; *Ancylis comptana* Fröhlich, *Strepsicrates smithiana* Walshingham, *Argyrotaenia lutosana* Clemens, *Acrobasis betulella* Hulst, *Anacampsis rhoifructella* Clemens (after Kusigemati, 1967, in North America).

Distribution : Japan, Europe and North America.

7. **Chorinaeus aizanensis** Kusigemati

Chorinaeus aizanensis Kusigemati, Ins. Mats. 30 : 25, 1967.

Specimens examined : 1 ♀ (holotype of *aizanensis*), Aizankei, Hokkaido (2-viii-55, K. Morimoto) ; 1 ♂, Taisetsu-zan, Hokkaido (22-26-vii-57, T. Uchida et al.) ; 1 ♂, Senjôga-take, Yamanashi, Honshu (30-vii-61, A. Nakanishi).

Distribution : Japan.

8. **Chorinaeus flavipes** Bridgman (Fig. 32)

Chorinaeus flavipes Bridgman, Trans. Ent. Soc. London 1881 : 165, 1881.

Chorinaeus flavipes: Kusigemati, Ins. Mats. 30: 24, 1967.

Specimens examined: 1 ♂, Sapporo, Hokkaido (17-vii-64, K. Kusigemati); 1 ♂, Jôzankei, Hokkaido (2-viii-65, K. Kusigemati); 1 ♀, Soranuma-dake, Hokkaido (29-viii-65, K. Kusigemati).

Host: *Salebria formosa* Haworth (after Kusigemati, 1967, in Europe).

Distribution: Japan and Europe.

9. **Chorinaeus parvus** Kusigemati

Chorinaeus parvus Kusigemati, Ins. Mats. 30: 23, 1967.

Specimens examined: 1 ♀ (holotype of *parvus*), Soranuma-dake, Hokkaido (26-vi-65, K. Kusigemati); 1 ♀, Sapporo, Hokkaido (19-v-65, H. Takada); 4 ♂♂, Sapporo, Hokkaido (21-vi-67, K. Kusigemati); 2 ♀♀, Nukabira, Hokkaido (24- & 25-vii-63, A. Nakanishi).

Distribution: Japan.

10. **Chorinaeus clypeatus** Kusigemati (Fig. 35)

Chorinaeus clypeatus Kusigemati, Ins. Mats. 30: 22, 1967.

♂. Agrees with the female description, apart from usual sexual differences, in the following characters: —

Face and clypeus normal, finely and closely punctured. Lateral sides of frons flat, rather strongly sloping towards middle. Antennae with 32-34 segments; 1st flagellar segment 1.9-2.4 times as long as wide. Scutellum weakly convex, the lateral carina being weak, extending to apex. Hind femur 2.8 3.1 times as long as wide in lateral view; front spur of middle tibia slightly shorter than the hind spur; basitarsus of middle tarsus about 3/5 as long as the following segments together except claws. Second abdominal tergite about as long as wide at apex and equal to 3rd tergite in length, with obsolete sublateral longitudinal carinae. Apex of penis without setae (Fig. 35). Face, clypeus, lower side of frons, ventral sides of scape and pedicel yellow, the yellow marking of frons attaining to emargination of eye. Malar space black, sometimes yellow in varid degrees; mandible yellow except at blackish both ends. Front and middle legs whitish yellow; coxae at base and dorsal side of femora dark brown. Hind leg black; coxa at apex, trochanters and tarsus whitish yellow; tibia dark brown with a yellow basal band.

Length: Body 5.0-7.1 mm., forewing 4.0-5.1 mm.

Specimens examined: 1 ♀ (holotype of *clypeatus*), Jôzankei, Hokkaido (23-vi-67, K. Kusigemati); 1 ♀, Sapporo, Hokkaido (30-v-57, S. Momoi); 1 ♀, Sapporo, Hokkaido (21-vi-67, K. Kusigemati); 3 ♀♀, Shimamatsu, Hokkaido (12-vi-67 & 10-vi-68, K. Kusigemati); 5 ♂♂, Soranuma-dake, Hokkaido (26-vi-65 & 17-vi-68, K. Kusigemati); 20 ♂♂ & 1 ♀, Jôzankei, Hokkaido (23-vi-67, 3- & 11-vi-68, K. Kusigemati); 1 ♂, Hokkaido (11-vii-67, T. Naito); 1 ♂, Towada, Aomori, Honshu (19-v-68, H. Takizawa).

Distribution: Japan.

11. **Chorinaeus borealis**, sp. nov. (Figs. 3 & 33)

♀. Face 1.2-1.4 times as wide as high, moderately and evenly convex, finely and closely punctured ; clypeus moderately and evenly convex, finely punctured, the apical margin being weakly concave medially ; malar space about 2/3 as long as basal width of mandible ; mandible rather stout, almost parallel-sided or slightly tapering towards apex, weakly swollen subapically, about 2.5 times as long as basal width, the upper tooth being very longer than the lower ; antennae with 26-28 segments, more slender than in *clypeatus* ; 1st flagellar segment 1.7-2.0 times as long as wide and 1.0-1.3 times as long as the 2nd. Pronotum without oblique striae at lower hind corner. Scutellum rather flat, sparsely hairy, the lateral carina being very weak. Metapleuron polished, very sparsely hairy along upper margin. Propodeum with median longitudinal carinae parallel-sided ; propodeal spiracle small, circular, situated nearer to lateral carina than to pleural carina or at middle between the carinae. Nervulus postfurcal by 1/3 of its own length ; nervellus bent near its lower 1/5. Hind femur 2.4-2.7 times as long as wide in lateral view ; spur of middle tibia approximately equal in length ; basitarsus of middle tarsus 2/3 as long as the following segments together except claws. Abdomen somewhat clavate ; 1st tergite weakly and longitudinally rugose ; 2nd tergite about 6/7 as long as wide at apex and approximately as long as the 3rd, longitudinally rugoso-punctured strongly, without sublateral longitudinal carinae ; 3rd tergite strongly punctured, the median longitudinal carinae being very weak.

Black. Inner orbit yellow, the yellow marking attaining to emargination of eye (Fig. 3) ; interantennal process yellow, sometimes blackish (Fig. 3) ; palpi pale to fulvous ; mandible dark ferruginous with blackish on basal half. Scape black with yellow on ventral side ; pedicel blackish, brown apically ; flagellum reddish brown, dark brown dorsally. Tegula dirty yellowish brown. Legs black ; femora at apex, middle and hind tibiae on basal 1/5 yellowish brown ; front tibia yellowish with a dark dorsal stripe ; middle and hind tibiae except at base infuscate ; tarsi light brown to dark brown.

Length : Body 3.8-5.3 mm., forewing 3.1-4.1 mm.

♂. Face about 1.3-1.5 times as wide as high ; malar space as long as basal width of mandible ; mandible about 1.6 times as long as basal width. Lateral sides of frons weakly convex ; antennae with 31-36 segments ; 1st flagellar segment about 2.2 times as long as wide. Scutellum with lateral carina rather strong. Propodeum with costula complete, or sometimes present as a short stub on lateral longitudinal carina. Front spur of middle tibia 4/5 as long as the hind spur. Second abdominal tergite more strongly rugoso-punctured longitudinally, with weak sublateral longitudinal carinae on basal 3/7. Apex of penis with 4 stout setae on each apex (Fig. 33). Similar to male of *clypeatus* in colouration except below :— Malar space yellowish ; yellow marking of frons not attaining to emargination of eye ; front and middle femora entirely yellowish brown.

Length : Body 4.9-6.3 mm., forewing 3.9-4.9 mm.

Holotype (♀) and paratypes (2♂♂ & 1♀) : Jôzankei, Hokkaido (11-v-68, K. Kusigemati) ; Paratypes : 2 ♀♀, Jôzankei, Hokkaido (3-v-68, K. Kusigemati) ; 1 ♂ & 1 ♀, Sapporo, Hokkaido (27-v-68 & 2-vi-68, K. Kusigemati) ; 1 ♂, Soranuma-dake, Hokkaido (6-vi-68, K. Kusigemati) ; 1 ♂, Sapporo, Hokkaido (6-vi-68, H. Takizawa).

Distribution : Japan.

On account of the colour pattern of the face, this species is similar to *C. longicalcar* and *C. clypeatus*, but easily distinguished from *longicalcar* by the stouter and black hind femur, and from *clypeatus* by the normal face and clypeus in the female and by the penis with setae in the male.

4. Genus **Trieces** Townes

Trieces Townes, Bol. Ent. Venezolana 5 : 60, 1946 ; H. & M. Townes, U. S. Nat. Mus. Bull. 216 : 34, 1959. [Type-species : *Exochus texanus* Cresson].

In my previous paper (1967) four species of *Trieces* are confirmed to occur in Japan. In addition, one new species is described in this paper.

Key to the species

1. Metapleuron with a vertical slot-like pit at hind end. 2
- Metapleuron without such a pit. 4
2. Head with occipital carina present ; ocellar area normal ; mandible normal, hardly tapering towards apex. Metapleuron hairy. Face yellow. .... 1. *homonae* Kusigemati
- Head with occipital carina absent ; ocellar area strongly projected as a triangular prominence; mandible strongly tapering towards apex, more or less twisted. Metapleuron bare or very sparsely hairy. Face blackish ; inner orbit more or less tinged with dirty yellowish brown. 3
3. Head with face about as wide as high, densely hairy, strongly convex ; clypeus strongly convex, densely hairy ; antennae with 19–21 segments in female, 26 segments in male. ..... 2. *hokkaidensis* Kusigemati
- Head with face wider than high, sparsely hairy, slightly convex ; clypeus almost flat, sparsely hairy ; antennae with 24 or 25 segments in female, 33–36 segments in male. ..... 3. *mandiblaris*, sp. nov.
4. Apical margin of clypeus truncate. Metapleuron bare. Propodeal spiracle situated behind middle. ..... 4. *nigrifaciatus* Kusigemati
- Apical margin of clypeus concave. Metapleuron hairy on upper portion. Propodeal spiracle situated at middle. ..... 5. *flavifaciatus* Kusigemati

1. **Trieces homonae** Kusigemati

Trieces homonae Kusigemati, Ins. Mats. 29 : 45, 1967.

Specimens examined : 1 ♀ (holotype of *homonae*), Chiran, Kagoshima, Kyushu (25-iv-66, Kusigemati) ; 1 ♂, Kagoshima, Kyushu (22-x-62, K. Kusigemati) ; 1 ♂, Sata-misaki, Kagoshima, Kyushu (2-v-62, A. Nakanishi) ; 1 ♂, Sata-misaki, Kagoshima, (26-iv-63, H. Takada) ; 1 ♀, Chiran, Kagoshima (25-iv-66, K. Kusigemati) ; 1 ♀, Eboshi-dake, Kagoshima (4-v-69, K. Kusigemati).

Host : *Homona magnanima* Diakonoff (after Kusigemati, 1967).

Distribution : Japan.

2. **Trieces hokkaidensis** Kusigemati

Trieces hokkaidensis Kusigemati, Ins. Mats. 29 : 47, 1967.

The male of this species was previously unknown. On the basis of the present specimens a brief description of the male may be given below :--

♂. Antennae longer and more slender than in female, with 26 segments ; 1st flagellar segment about 1.7 times as long as wide ; apex of interantennal process pointed. Basal area and areola of propodeum with a few hairs partly. Metapleuron with rather sparse hairs along upper margin. Hind femur 2.3-2.6 times as long as wide in lateral view ; front spur of middle tibia about 1/3 as long as the hind spur. Yellow markings of face sometimes more distinct than in female, and attaining to interantennal process. Legs paler than in female.

Length : Body 4.1-4.6 mm., forewing 3.0-3.5 mm.

Specimens examined : 1 ♂ (holotype of *hokkaidensis*), Jôzankei, Hokkaido (20-vi-65, K. Kusigemati) ; 3 ♀♀, Sapporo, Hokkaido (25-vi- & 3-vii-65, K. Kusigemati) ; 7 ♀♀ & 2 ♂♂, Shimamatsu, Hokkaido (12-vi-67, 14-vi-67 & 10-vi-68, K. Kusigemati) ; 1 ♀, Sapporo, Hokkaido (8-vi-67, T. Saigusa) ; 2 ♀♀, Tôya, Hokkaido (14-vi-67, M. Miyazaki) ; 1 ♂, Jôzankei, Hokkaido (20-vi-67, K. Kusigemati).

Distribution : Japan.

3. **Trieces mandiblaris**, sp. nov. (Figs. 4, 5 & 30)

♀. Face about 1.8 times as wide as high, weakly convex, rather finely and sparsely punctured ; clypeus rather flat, very sparsely, especially medially, punctured, the apical margin being very weakly convex ; malar space 2/5-1/2 as long as basal width of mandible ; mandible (Fig. 30) strongly tapering towards apex, strongly twisted so that it appears unidentate when view from below and strongly punctured on basal half, the apical portion margined with a shallowly setiferous groove along upper edge ; distance between lateral ocelli and eyes 1.2 times as long as diameter of an ocellus ; interantennal process moderately produced, the apical portion being truncate (Fig. 4) ; ocellar area strongly projected as a triangular prominence ; occipital carina absent ; temple rather strongly swollen, visible in frontal view ; antennae with 24 or 25 segments ; 1st flagellar segment about 1.6 times as long as apical width. Mesonotum weakly and densely punctured, the punctures becoming sparser and stronger posteriorly. Scutellum long, weakly convex, finely and very sparsely punctured, the lateral carina being strong, extending to apex. Mesopleuron densely hairy on upper third, elsewhere very sparsely hairy, with shortly fine longitudinal wrinkles on lower posterior corner. Metapleuron with a vertical slot-like pit at hind end, finely and longitudinally wrinkled on lower posterior 2/5, and without hairs except at upper anterior corner. Propodeal spiracle very large, circular, and situated behind middle. Forewing with nervulus postfurcal by about 2/5 of its own length. Hind femur about 1.9 times as long as wide in lateral view ; front and middle tarsal claws strongly pectinate. Abdomen with 2nd tergite 5/7-6/7 as long as wide at apex and 5/6-7/8 as long as the 3rd ; 3rd tergite with a median longitudinal carina on basal 4/9-5/8.

Black. Face on lateral margin, apical margin of clypeus, interantennal process indistinctly tinged with dirty yellowish brown ; antennae dark brown, paler ventrally ;

mandible black on basal half, ferruginous on apical half. Tegula blackish, paler posteriorly. Legs black, trochanters at apex, front tibia, middle and hind tibiae at both ends tinged with dirty yellowish brown, the greater part of the front tibia being darker; tarsi pale yellowish brown. Wings hyaline ; stigma blackish brown.

Length : Body 6.0–6.6 mm., forewing 4.4–4.7 mm.

♂. Face about 1.3 times as wide as high, sometimes separated from clypeus by a shallow and broad groove ; clypeus a little more strongly convex than in female ; malar space about 1/2 as long as basal width of mandible ; mandible normal, tapering towards apex ; distance between lateral ocelli and eyes about as long as diameter of an ocellus ; apex of interantennal proces pointed ; antennae with 33–36 segments. Mesopleuron rather densely hairy. Metapleuron more strongly and longitudinally wrinkled, sometimes with a few hairs on posterior part. Hind femur 2.2–2.5 times as long as wide in lateral view. Abdomen with 2nd tergite 5/7–6/7 as long as wide at apex and a little shorter than 3rd.

Black. Face black, with a pair of large and distinct yellow markings (Fig. 5) ; mandible yellow except at both ends. Legs paler than in female ; front femur, sometimes front trochanters yellowish or dirty yellowish brown.

Length : Body 7.0–8.2 mm., forewing 4.7–5.6 mm.

Holotype (♀) : Shimamatsu, Hokkaido (12-vi-67, K. Kusigemati). Paratypes : 1 ♂, Apoi-dake, Hokkaido (7-vii-57, S. Momoi) ; 1 ♀, Shimamatsu, Hokkaido (13-vi-65, K. Kusigemati) ; 1 ♂, Taisetsu-zan, Hokkaido (10-vii 65, K. Kusigemati) ; 1 ♂, Tôya, Hokkaido (14-vi-67, M. Miyazaki) ; 1 ♂, Yûbari-dake, Hokkaido (16-vii-67, A. Nakanishi) ; 1 ♀, Sapporo, Hokkaido (2-vi-68, K. Kusigemati).

Distribution : Japan.

This species is very closely related to *T. hokkaidensis* Kusigemati, but differs from the latter by the wide face, strongly twisted mandible in the female, and by the number of the antennal segments.

4. **Trieces nigrifaciatus** Kusigemati

Trieces nigrifaciatus Kusigemati, Ins. Mats. 29 : 48, 1967.

On this occasion the followiug description of the male, which was previously unknown, may be given :—

♂. Face less strongly convex than in female, 6/7 as wide as high ; malar space 2/3 as long as basal width of mandible ; clypeus more strongly convex than in female ; mandible without a subbasal constriction, almost parallel-sided ; distance between lateral ocelli and eyes 3/4 as long as diameter of an ocellus. Antennae 34-segmented ; 1st flagellar segment 1.7 times as long as wide. Metapleuron with rather dense hairs on upper posterior half. Forewing with nervulus postfurcal by 3/8 of its own length. Hind femur 2.7 times as long as wide in lateral view ; front spur of middle tibia 1/3 as long as the hind spur. Abdomen with 2nd tergite 1.2 times as long as wide at apex ; 3rd tergite with a median longitudinal carina on basal 4/5. Mandible yellow at both ends. Face more extensively yellow. Front and middle legs yellow to yellowish brown, the base of coxae being blackish. Hind leg with coxa and femur black except

at apex ; coxa at extreme apex, trochanter, femur at apex, tibia and tarsus yellow to yellowish brown.

Length : Body 5.2 mm., forewing 3.6 mm.

Specimens examined : 1 ♀ (holotype of *nigrifaciatus*), Sapporo, Hokkaido (9-vi-65, K. Kusigemati) ; 1 ♂, Asahikawa, Hokkaido (1-vii-65, bred from *Zeiraphera truncata* by K. Kamijo) ; 3 ♀♀, Tôma, Hokkaido (17-vi-66, K. Kamijo) ; 1 ♀, Aizankei, Hokkaido (19-vii-66, K. Kusigemati) ; 1 ♂ & 3 ♀♀, Jôzankei, Hokkaido (23- & 26-v-67, K. Kusigemati) ; 1 ♂ & 1 ♀, Sapporo, Hokkaido (27-v-68, K. Kusigemati).

Host : *Zeiraphera truncata* Oku.

Distribution : Japan.

5. **Trieces flavifaciatus** Kusigemati

Trieces flavifaciatus Kusigemati, Ins. Mats. 29 : 47, 1967.

Specimens examined : 1 ♀ (holotype of *flavifaciatus*), Shimamatsu, Hokkaido (15-vi-65, K. Kusigemati) ; 1 ♀, Rebun-tô, Hokkaido (1-viii-58, S. Takagi) ; 1 ♀, Sapporo, Hokkaido (17-vi-64, H. Takada) ; 1 ♀, Shimamatsu, Hokkaido (15-vi-65, K. Kusigemati) ; 1 ♀, Yûbari-dake, Hokkaido (15-vii-67, A. Nakanishi).

Distribution : Japan.

5. Genus **Metopius** Panzer

Metopius Panzer, Kritische Revision der Insectenfaune Deutschlande ... 2 : 78, 1806. [Type-species : *Shpex vespoides* Scopoli].

Peltastes Illiger, in Rossi, Fauna Etrusca 2nd ed., 2 : 55, 1807. [Type-species : (*Ichneumon necatorius* Fabricius) = *Metopius vespoides* (Scopoli)].

Peltopius Clément, Konowia 8 : 347, 1930. [Type-species : *Metopius vespoides* (Scopoli)].

The genus *Metopius* is a relatively large group of the subfamily Metopiinae, probably of worldwide distribution. So far as I am aware, ten species of this genus have been known to occur in Japan. This genus is divided into six subgenera, of which three occur in Japan, and being distinguished by the following key :—

Key to the subgenus

1. Face with interantennal process compressed, with a median carina ; lower tooth of mandible absent. ..... *Metopius* Panzer
- Face with interantennal process wide, not compressed, without median carina ; lower tooth of mandible present. 2
2. Frons with a median lamella continuous with upper end of interantennal process of face ; interantennal process without median groove. ..... *Tylopius* Townes
- Frons with a separate median horn or a compressed tooth connected with upper end of antennal process of face by a ridge ; interantennal process with a median groove. ..... *Ceratopius* Clément

Subgenus **Metopius** Panzer

The following species is only a single representative of this subgenus in Japan.

1. **Metopius (Metopius) browni** Ashmead

Metopius browni Ashmead, Proc. U. S. Nat. Mus. 29 : 117, 1905.

Metopius kakogawensis Matsumura, Thousand insects of Japan, suppl 4 : 100, 1912.

Metopius (Ceratopius) formosanus Clément, Konowia 8 : 410, 1930.

Metopius (Metopius) browni : Townes and Townes, U. S. Nat. Mus. Bull. 216 : 63, 1959.

Metopius (Metopius) rufus browni : Momoi and Kusigemati, Pacific Insects 12 : 402, 1970.

This species is essentially characterized by the following points : —

♀. Face and clypeus combined 1.1 times as high as wide, the facial shield being weakly pointed below or broadly rounded below ; malar space about 1/2 as long as basal width of mandible. Mesonotum without notauli. Propodeum with costula more or less present, distinct on basal half ; median longitudinal carinae strong on basal half, weak or obsolete on apical half ; posterior margin of areola obsolete ; basal area sometimes with a sharp median longitudinal carina. Forewing with nervulus postfurcal by 1/4-2/5 of its own length ; areolet rhomboidal, emitting 2nd recurrent vein beyond middle ; metacarpella with 11-13 hamuli. Hind femur 2.4-2.9 times as long as wide in lateral view.

Head and thorax yellowish brown to dark brown ; facial shield, interantennal process, frons on lateral side, palpi, pronotum on upper margin, large spot of prepectus, subtegular ridge, scutellum on apical half, postscutellum and propodeum with a pair of markings, yellow. Legs brown ; front and middle femora at apex, front and middle tibiae and tarsi yellowish to yellowish brown ; hind femur with a yellow spot on apicolateral part. Abdomen with each tergite bicoloured, dark brown to black basally and yellow apically. Wings hyaline ; forewing with a large infumate spot near apex.

Length : Body 11.5-14.0 mm., forewing 8.0-9.3 mm.

♂. Facial shield a little longer than in female ; antennae with 54-59 segments. Hind femur a little stouter, about 2.6 times as long as wide in lateral view. Darker in colour than in female ; clypeus, labrum and mandible yellow ; hind femur except at both ends black.

Length : Body 12.7-14.5 mm., forewing 8.0-10.0 mm.

Specimens examined. Japan (28 ♂♂ & 12 ♀♀ including the holotype of *kakogawensis*) : Honshu—Nojiri, Toyama, Kyoto, Sasayama, Washiu near Koshima and Takasago ; Shikoku—Kôchi ; Kyushu—Nojiri near Kumamoto, Makurazaki, Sata-misaki. Ryukyu Is. (18 ♂♂ & 7 ♀♀) : Yaeyama-shotô, Ishigaki-jima, Iriomote-jima, Okinawa, Yoron-jima, Tokuno-shima and Amami-ôshima. Formosa (2 ♂♂ & 1 ♀) : Shinka, Takao and Alishan. Korea (2 ♂♂ & 2 ♀♀) : Suigen. China (1 ♀) : Siangsu.

Host : *Prodenia litura* Fabricius (after Ishii, 1932).

Distribution : Japan, China, Formosa, India, Mongolia, Korea and Philippines.

Subgenus **Tylopius** Townes

Tylopius Townes, U. S. Nat. Mus. Bull. 216 : 97, 1959. [Type-species : *Metopius pinatorius* Brullé].

The following five species of this subgenus have been known to occur in Japan, being distinguished by the following key :—

Key to the species of the subgenus Tylopius

1. Facial shield about 8/9 as high as wide, the lower margin being rounded. Pronotum rugose on lower half. Hind femur slender, about 3.3 times as long as wide in lateral view. ..... 1. *fossulatus* Uchida
- Facial shield about 1.1 times as high as wide, the lower margin pointed, truncate, or rounded. Pronotum striate obliquely. Hind femur stouter, 2.5-2.9 times as long as wide in lateral view. 2
2. Mesonotum with notauli strong, extending to end of mesonotum ; scutellum very strongly striate longitudinally. Hindwing with metacarpella with 18 hamuli. Abdomen with 2nd and 3rd tergites strongly reticulate-rugose ; 1st to 5th tergites entirely black. Facial shield entirely yellow, the lower margin being rather truncate. Forewing about 18 mm. ..... 2. *iyoensis* Uchida
- Mesonotum with notauli obsolete ; scutellum rather finely and closely punctured. Hindwing with metacarpella with 12-14 hamuli. Abdomen with 2nd and 3rd tergites strongly punctured ; 1st to 5th tergites with yellow markings. Facial shield black, partly yellow (in male of *coreanus* entirely yellow). 3
3. Propodeum without costula. Forewing with areolet pentagonal, sessile. Scutellum entirely black. Hind femur yellow on basal half, black on apical half. ..... 3. *sapporensis* Uchida
- Propodeum with costula slightly present. Forewing with areolet rhomboidal, sessile or with a short stalk above. Scutellum with a yellow apical band, at least the top of the lateral carina yellow. Hind femur black, yellow at both ends. 4
4. Forewing with nervulus interstitial or slightly postfurcal. Abdomen with 3rd to 5th tergites 2/3-5/7 as long as wide at apex, respectively. Facial shield entirely yellow in male, and black with a yellow spot in female. Pronotum, mesopleuron and propodeum with yellow spots in male, entirely black in female. Labrum yellow in male, black in female. Abdomen with 5th tergite with an apical yellow band. ..... *coreanus* Uchida
- Forewing with nervulus postfurcal. Abdomen with 3rd to 5th tergites approximately as long as wide, respectively. Facial shield black, yellow on lateral and dorsal margins in both sexes ; labrum black in both sexes. ... 5. *arakawai* Uchida

1. **Metopius (Tylopius) fossulatus** Uchida

Metopius (Metopius) fossulatus Uchida, Proc. Imp. Acad. Tokyo 9 : 72, 1933.

In general structures and colour this species is similar to *M. arakawai* Uchida, but it

differs from the latter in having the shape and colour of the facial shield, the slender hind femur and the black 2nd abdominal tergite.

The female was not previously known. It resembles the female, apart from usual sexual differences, except that the hind femur is stouter; scutellum is more strongly rugose; inner orbit and 2nd abdominal tergite are black; 3rd abdominal tergite is black with an apical yellow band.

Length: Body 17.0–18.0 mm., forewing 12.0–13.0 mm.

Specimens examined: 1 ♂ (holotype of *fossulatus*), Sapporo, Hokkaido (2-vi-32, K. Igarashi); 1 ♀, Apoi-dake, Hokkaido (28-vi-67, M. Miyazaki).

Distribution: Japan.

2. **Metopius (Tylopius) iyoensis** Uchida

Metopius (Ceratopius) iyoensis Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25: 252, 1930.

This is the largest species of the subgenus. It differs clearly from any other species in having the mesonotum with strong and complete notauli, the hindwing with metacarpella with 18 hamuli and the black 1st to 5th abdominal tergites.

Length: Body 23.0 mm., forewing 18.0 mm.

Specimen examined: 1 ♂ (holotype of *iyoensis*), Iyo, Ehime, Shikoku, no date, S. Arakawa leg.

Distribution: Japan.

3. **Metopius (Tylopius) sapporensis** Uchida

Metopius (Ceratopius) sapporensis Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25: 254, 1930.

Metopius (Tylopius) sapporensis: Townes & Townes, U. S. Nat. Mus. Bull. 216: 97, 1959.

In general appearance this species is very similar to the following species, *M. coreanus*, from which it is readily distinguished by the long malar space, by the propodeum with costula and by the pentagonal areolet of the forewing.

Length: Body 17.0 mm., forewing 13.0 mm.

Specimen examined: 1 ♀ (holotype of *sapporensis*), Sapporo, Hokkaido (9-vi-14, S. Matsumura).

Distribution: Japan.

4. **Metopius (Tylopius) coreanus** Uchida

Metopius (Ceratopius) coreanus Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25: 248, 1930.

Metopius (Metopius) coreanus: Uchida, Ins. Mats. 16: 125, 1942.

Metopius (Tylopius) coreanus: Townes & Townes, U. S. Nat. Mus. Bull. 216: 97, 1959.

In general structures and colour this species is closest to the following species, *M. arakawai*, but is readily distinguished from the latter by the characters mentioned in the present key.

Length : Body 12.0-14.0 mm., forewing 8.5-10.0 mm.

Specimens examined. Korea (13 ♂♂ & 6 ♀♀) : Suigen and Kiu-Yuan, including the lectotype, ♀, Suigen, 27-v-28, S. Fujii leg.

Distribution : Japan, Korea and China.

As this species has not yet been known exactly to the author, it is included into the present key based on Korean specimens.

5. **Metopius (Tylopius) arakawai** Uchida

Metopius (Ceratopius) arakawai Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25 : 253, 1930.

Metopius (Ceratopius) takabayashii Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25 : 253, 1930.

Metopius (Ceratopius) temmanensis Uchida, Jour. Fac. Agr. Hokkaido Univ. 50 : 132, 1955.

Metopius (Tylopius) sapporensis : Townes & Townes, U. S. Nat. Mus. Bull. 216 : 97, 1959. (Part).

In general facies this species is very similar to the preceding species, *M. coreanus* Uchida, but it differs from the latter in having the postfurcal nervulus of the forewing and the colouration of the face and labrum.

Length : Body 14.5-19.0 mm., forewing 10.2-13.0 mm.

Specimens examined. Japan : 1 ♀, Kurokawa, Niigata, Honshu (1-viii-58, K. Baba) ; 1 ♂ (holotype of *takabayashii*), Takao, Tokyo, Honshu (5-x-13, H. Takabayashi) ; 1 ♀, Kariyose, Tokyo, Honshu (16-v-68, H. Takizawa) ; 1 ♀, Shimizudani, Kôbe, Honshu (8-viii-57, F. Nakasuji) ; 1 ♀, Nishiobu, Kôbe, Honshu (5-viii-59, F. Nakasuji) ; 1 ♀, Sasayama, Hyogo, Honshu (15-v-53, K. Iwata) ; 1 ♀, Sekinomiya, Hyogo, Honshu (17-viii-53, S. Taniguchi) ; 1 ♀ (holotype of *arakawai*), Iyo, Ehime, Shikoku (no date, S. Arakawa) ; 1 ♀, Tosayama, Kôchi, Shikoku (5-vii-34, Y. Sugihara). Korea : 1 ♀ (holotype of *temmanensis*), Temmasan (11-vi-42, K. Tsuneki).

Distribution : Japan and Korea.

Subgenus **Ceratopius** Clément

Ceratopius Clément, Konowia 8 : 408, 1930. [Type-species : *Metopius dissectorius* Panzer].

The subgenus *Ceratopius* is represented by four species in Japan. These species may be distinguished by the following key :—

Key to the species of the subgenus Ceratopius

1. Forewing with 2nd recurrent vein originating from middle of areolet. Propodeum with areola having a sharp longitudinal carina. Mesopleuron with a yellow spot

near anterior margin ; femora more or less marked with yellow. .... 2. *hakiensis* Uchida

- Forewing with 2nd recurrent vein originating far beyond middle of areolet. Propodeum with areola lacking a median longitudinal carina. Mesopleuron entirely black ; femora almost dark brown or reddish brown. 2

2. Forewing with areolet pentagonal, sessile above. Malar space and labrum whitish yellow. Abdominal tergites having a brilliant metalic blue. .... 1. *maruyamensis* Uchida

- Forewing with areolet rhomboidal, sessile above or petiolate. Malar space, labrum and mandible black. Abdominal tergites more or less tinged with black. 3

3. Face with facial shield weakly pointed below. Scutellum black, the lateral carina more or less produced and yellow apically. Propodeum with costula originating from middle. Hind femur dark brown to black. Forewing weakly clouded. ... . 3. *dissectorius* (Panzer)

- Face with facial shield broadly rounded below. Scutellum entirely black, the lateral carina being not produced. Propodeum with costula originating before middle. Hind femur reddish brown. Forewing strongly clouded. .... 4. *kiushiuensis* Uchida

1. **Metopius (Ceratopius) maruyamensis** Uchida

Metopius (Ceratopius) maruyamensis Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25: 249, 1930.

This species is characterized by the brilliant metalic blue abdomen, by the pentagonal areolet of the forewing, and by the whithish labrum.

Length : Body 18.0-20.5 mm., forewing 12.1-14.1 mm.

Specimens examined : 1 ♂ (holotype of *maruyamensis*), Sapporo, Hokkaido (11-viii-26, T. Uchida) ; 1 ♀, Taisetsu-zan, Hokkaido (10-vii-62, H. Takada) ; 1 ♂, Kurobe, Toyama, Honshu (21-vii-31, K. Takeuchi) ; 1 ♀, Sasayama, Hyogo, Honshu (2-vii-53, S. Taniguchi) ; 1 ♀, Obako-dake, Nara, Honshu (21-vii-57, K. Iwata) ; 1 ♀, Mt. Kogane, Hyogo, Honshu (1-vi-52, A. Nagatomi) ; 1 ♀, Osuzu-yama, Miyazaki, Kyushu (22-v-66, K. Kusigemati).

Distribution : Japan.

2. **Metopius (Ceratopius?) hakiensis** Matsumura

Metopius hakiensis Matsumura, Thousand insects of Japan, suppl. 4 : 90, 1912.

Metopius (Ceratopius) hakiensis : Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25 : 254, 1930.

Metopius (Ceratopius?) hakiensis : Townes, Momoi and Townes, Mem. Amr. Ent. Inst. 5 : 353, 1965.

This species is readily distinguished from any other consubgeneric species by the 2nd recurrent vein of the forewing which is originating from middle of areolet, by the areola with a median longitudinal carina and by the yellow marked mesopleuron and femora.

Length : Forewing 14.0 mm.

Specimen examined : 1 ♂ (holotype of *hakiensis*, head lacking), Haki, Kumamoto, Kyushu (19-vii-04, S. Matsumura).

Distribution : Japan.

3. **Metopius (Ceratopius) dissectorius** (Panzer)

Ichneunmon dissectorius Panzer, Fauna insectrum germanicae 98 : 14, 1805-1806.

Rhyssolabus purpurescens Matsumura, Jour. Col. Agr. Tohoku Imp. Univ. 4 : 92. 1911.

Metopius (Ceratopius) dissectorius var. *trifasciatus* Uchida, Jour. Fac. Agr. Hokaido Imp. Univ. 25 : 251, 1930.

Metopius (Ceratopius) dissectorius var. *imperfectus* Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25 : 251, 1930.

Metopius (Ceratopius) dissectorius : Momoi and Kusigemati, Pacific Insects 12 : 402, 1970.

This species is one of the commonest species in Japan. In general structure and colour this species is very similar to the following species, *M. kiushiuensis* Uchida, from which it is easily distinguished in having the shape of the facial shield and propodeum and the colour of the hind femur.

In this species are variable in colouration the 1st to 4th or 5th abdominal tergites which are usually black with an apical yellow band. The apical yellow band of the tergites is often interrupted at the middle. The 1st and 5th tergites are sometimes entirely black.

Length : Body 13.0-17.0., forewing 10.0-15.0 mm.

Specimens examined. Saghalien : 1 ♀ (holotype of *purprescens*), Tonnaitcha (no date, K. Oguma) ; 2 ♀♀ (no date, S. Matsumura) ; 1 ♂, Konuma (13-vii-24, S. Takano & K. Tamanuki). Japan (27 ♂♂ & 12 ♀♀) : Hokkaido—Sapporo and Jôzankei ; Honshu—Niigata, Nikko, Haku-san, Saitama, Kôbe, Osaka, Sekinomiya, Sasayama and Kyoto ; Shikoku—Kôchi ; Kyushu—Sobo-san, Kurume, Osuzu-yama, Kirishima-yama, including lectotype of *trifasciatus*, ♂, Sapporo, Hokkaido, 30-vii-25, T. Uchida leg ; Ryukyu Is.—Amami-ôshima. Korea (2 ♂♂ & 2 ♀♀) : Suk-Wang-Sa (=Shakoji), Yutenji, Mt. Kodai (Takadai-san) and Makaen, including lectotype of *imperfectus*, ♂, Shakoji, no date, S. Takano and T. Uchida leg.

Host. This species has been recorded as a solitaly parasite of Noctuidae, Geometridae and Lasiocampidae in Europe and Japan.

Distribttion : Japan, Ryukyu Is., Formosa, Korea, China, Saghalien and Europe.

4. **Metopius (Ceratopius) kiushiuensis** Uchida

Metopius (Ceratopius) dissectorus f. *kiushiuensis* Uchida, Ins. Mats. 6 : 166, 1932.

Metopius dissectorius var. *kiushiuensis* Iwata, Acta Hymenopterologica 1 : 162, 1960.

Metopius (Caratopius) dissectorius var. *kiushiuensis* : Townes, Momoi and Townes, Mem. Amer. Ent. Inst. 5 : 352, 1965.

This species is most closely related to the preceding species, *M. dissectorius* (Panzer), from which it may be distinguishable by the shape of the facial shield of the face, by the strongly clouded forewing, by the entirely reddish brown hind femur, etc. as below :—

♀. Face with facial shield about 1.2 times as high as wide, and broadly rounded below ; malar space 3/8 as long as basal width of mandible ; antennae with 58–62 segments. Mesonotum with notauli weakly impressed, extending to the end of mesonotum ; scutellum with lateral carina not produced and truncate apically. Hindwing with metacarpella with 14 hamuli ; nervellus bent above middle. Hind femur about 2.3 times as long as wide in lateral view. Second to 5th abdominal tergites about as long as wide at apex.

Black. Facial shield black, broadly margined with yellow ; interantennal process and inner orbit yellow, the yellow marking of inner orbit extending to emargination of eye ; palpi infuscate ; 2nd segment of maxillary palpus sometimes whitish yellow partly. Scutellum entirely black ; tegula and subtegular ridge blackish, sometimes the latter being tinged with yellow. Legs black ; all trochanters, front and middle femora, often hind coxa dark ferruginous ; hind femur reddish brown ; front and middle femora at extreme apex and front tibia at base and on basilateral half, yellowish. Abdomen black ; 1st to 4th tergites each with a yellow band, the band of 1st tergite being interrupted by median carinae ; 5th tergite sometimes yellow at extreme apex. Wings more strongly clouded than in *dissectorius*.

Length : Body 17.0–19.0 mm., forewing 13.0–15.0 mm.

♂. Antennae with 62–66 segments. Hind femur 2.8–3.1 times as long as wide in lateral view. Palpi more or less paler than in female ; 2nd segment of maxillary palpus almost pale yellow. Wings a little less strongly clouded than in female. Hind tibia dark brown to reddish brown.

Length : Body 16.0–17.0 mm., forewing 12.0–1.30 mm.

Specimens examined : 1 ♀ (holotype of *kiushiuensis*), Tano, Fukuoka, Kyushu (19-vii-29, T. Esaki & Fujino) ; 1 ♀, Mi-take, Tsushima, Kyushu (15–18-vii-68, S. Miyamoto & A. Nakanishi) ; 1 ♂, Mitsumori, Kôchi, Shikoku (1-vii-34, H. Okamoto) ; 1 ♀, Sasayama, Hyogo, Honshu (17-ix-52, K. Ikeda) ; 1 ♀, Sasayama, Hyogo, Honshu (17-vii-52, T. Okutani) ; 1 ♀, Takakuma-yama, Kagoshima, Kyushu (30-viii-70, A. Tanaka).

Distribution : Japan.

6. Genus **Triclistus** Foerster

Triclistus Foerster, Verh. Naturh, Ver. Rheinlande 25 : 161. 1868. [Type-species : *Exochus podagricus* Gravenhorst].

The genus *Triclistus* is a relatively large group of the subfamily Metopiinae, being probably of worldwide distribution. Only two species, *T. pallipes* Holmgren and *T. globulipes* (Desvignes) = *T. fuscoapicalis* Uchida, have been known to occur in Japan. In 1970 Momoi and Kusigemati gave seven species of the genus occurring in Ryukyu Is. In the present paper are added to the fauna of Japan eight other species, of which six are new to science.

Key to the species

1. Fourth abdominal tergite without hairs or with only a few sparse hairs. Hind tibia with hind spur including hairs stouter, shorter than 3.8 times its width, ... 2
- Fourth abdominal tergite with numerous, regularly spaced hairs. Hind tibia with hind spur including hairs more slender, longer than 3.8 times its width, if shorter than 3.8 times then abdomen reddish brown, or hind coxa and femur black. 8
2. Forewing with areolet absent. Head with interantennal lamella not grooved dorsally. ..... 7. *minutus*, sp. nov.
- Forewing with areolet present. Head with interantennal lamella deeply grooved dorsally. 3
3. Propodeum with 2nd pleural area finely and longitudinally striate (except for *glabrosus*). Metapleuron with 10-30 setiferous punctures. 4
- Propodeum with 2nd pleural area finely granulate. Metapleuron impunctured, bare or with 1-5 hairs. 5
4. Propodeum with costula more or less defined. Face and clypeus combined about as wide as high. Hind femur more stouter, 2.0 times as long as wide in lateral view. Second and 3rd abdominal tergites strongly and densely punctured laterally. ..... 6. *mimerastriae*, sp. nov.
- Propodeum with costula absent. Face and clypeus combined 7/8 as wide as high. Hind femur more slender, 2.4 times as long as wide in lateral view. Second and 3rd abdominal tergites finely and sparsely punctured laterally. ..... 5. *semistriatus*, sp. nov.
5. Face and clypeus combined about as wide as high. Coxae and hind femur blackish. ..... 1. *podagricus* (Gravenhorst)
- Face and clypeus combined a little narrower than high. Legs fulvous or light reddish brown. 6
6. Head with temple rather regularly and sparsely haired, the hairs becoming sparser medially. Scutellum and mesopleuron more deeply and densely punctured. Second and 3rd abdominal tergites more densely haired laterally. ..... 2. *planus* Momoi and Kusigemati
- Head with temple very sparsely haired, hairless medially. Scutellum and metapleuron more shallowly and sparsely punctured. Second and 3rd abdominal tergites more sparsely haired. 7
7. Hind tibia with hind spur including hairs 2.5-3.0 times as long as wide. Propodeum with 2nd pleural area finely granulate. ..... 4. *pallipes* Holmgren
- Hind tibia with hind spur including hairs about 2.1 times as long as wide. Propodeum with 2nd pleural area rather longitudinally striate than granulate. ..... 3. *glabrosus* Momoi and Kusigemati
8. Propodeum (Figs. 9, 13 & 14) with costula present at least as a short stub on lateral longitudinal carina. Metapleuron (Figs. 28 & 29) with 9-40 hairs (except for *aitkini*). 9
- Propodeum (Figs. 10, 12 & 15-17) with costula completely absent. Metapleuron with 1-14 fine setiferous punctures, sometimes impunctured. 12
9. Propodeum (Fig 28) with 2nd pleural area very wide, about 1.7 times as long as

basal width. Legs entirely reddish brown. ..... 8. *crassus* Townes and Townes
- Propodeum (Fig. 29) with 2nd pleural area narrow, 2.1–3.0 times as long as basal width. Legs entirely fulvous or blackish ; coxae always blackish. 10

10. Metapleuron bare or with a few hairs. Propodeum with areola very wide. Femora light fulvous ; hind tibia (Fig. 39) pale yellow, infuscate apically. .... 9. *aitkini* (Cameron)
- Metapleuron with numerous setiferous punctures. Propodeum with areola very narrow. Femora black or reddish brown. 11

11. Forewing (Fig. 63) with radius originating from just middle of stigma, the apical part being more strongly curved. Hind femur reddish brown, darker apically. ..... 10. *uchidai*, sp. nov.
- Forewing (Fig. 64) with radius originating beyond middle of stigma, the apical part being less strongly curved. Hind femur blackish ; hind tibia black on apical 2/3, pale yellow on basal 1/3. ..... 11. *nigrifemoralis*, sp. nov.

12. Abdomen reddish brown ; 1st tergite with a black band. 13
- Abdomen entirely black. 14

13. Metapleuron without hairs or with only 1–3 hairs. Malar space 3/7 as long as basal width of mandible. Hind femur about 2.4 times as long as wide in lateral view ; hind spur of hind tibia including hairs more stouter, 2.3–3.4 times as long as wide. First abdominal tergite entirely reddish brown, sometimes blackish basally, with distinct median longitudinal carinae on basal 1/2. .... 17. *dimidiatus* Morley
- Metapleuron with 20–60 hairs. Malar space 3/5–4/5 as long as basal width of mandible. Hind femur 2.5–3.0 times as long as wide in lateral view ; hind spur of hind tibia including hairs more slender, 3.8–4.2 times as long as wide in lateral view. First abdominal tergite tricoloured, pale yellow basally, blackish medially, reddish brown apically, with obsolete median longitudinal carinae. .... 16. *rubellus*, sp. nov.

14. Hind coxa and femur (Fig. 38) black ; hind tibia bicoloured, pale yellow basally, blackish apically. 15
- Hind coxa fulvous ; hind femur fulvous or dark brown ; hind tibia entirely pale yellow or pale yellow with dark brown apically. 16

15. Frons sparsely punctured. Middle coxa, front and middle femora blackish ; hind tibia (Fig. 38) pale yellow on basal 2/5, blackish on apical 3/5. .... 12. *nigripes* Momoi and Kusigemati
- Frons finely and closely punctured. Middle coxa, front and middle femora light fulvous ; hind tibia pale yellow on basal 2/3, blackish on apical 1/3. .... 13. *kamijoi* Momoi and Kusigemati

16. Propodeum (Fig. 12) with median longitudinal carinae straight, slightly convergent basally. Forewing with radius originating from just middle of stigma. Hind femur entirely yellowish brown ; hind tibia entirely pale yellow. .... 14. *japonicus*, sp. nov.
- Propodeum with median longitudinal carinae weakly curved near base. Forewing with radius originating from beyond middle of stigma. Hind femur dark brown ; hind tibia pale yellow, with dark brown at apex. ..... 15. *globulipes* (Desvignes)

1. **Triclistus podagricus** (Gravenhorst)

Exochus podagricus Gravenhorst, Ichneumonologia europaea 2 : 336, 1829.

Triclistus podagricus : Morley, Ichneumonologia Britannica 4 : 34, 1911 ; Townes & Townes, U. S. Nat. Mus. Bull. 216 : 123, 1959.

This species is new to Japan. Having compared the specimens (71 ♀♀) examined with an authentic European specimen (1 ♀) of *podagricus* I have come to the conclusion that the present material should be identified with *podagricus*. In the specimens examined the coxae and hind femur are blackish ; hind tibia with hind spur including hairs 2.3-2.8 times as long as wide.

Length : Body 4.1-5.4 mm., forewing 3.5-4.5 mm.

Specimens examined : 1 ♀, Ashoro, Hokkaido, 23-vii-67, T. Saigusa leg. ; 1 ♀, Hokkaido, 26-vi-67, T. Saigusa leg. ; 1 ♀, Asahigawa, Hokkaido, xii-66, bred from *Zeiraphera truncata* Oku by K. Kamijo ; 1 ♀, Sapporo, Hokkaido, 21-vi-67, K. Kusigemati leg. ; 61 ♀♀, Jôzankei, Hokkaido, 23-v-67, 26-v-67, 3-v-68 & 11-v-68, K. Kusigemati leg. ; 4 ♀♀, Soranuma-dake, Hokkaido, 26-vi-65 & 15-vi-68, K. Kusigemati leg. ; 2 ♀♀, Eniwa-dake, Hokkaido, 1-vii-66, K. Kusigemati leg.

Host. This species has been recorded as a solitaly parasite of Geometridae, Gelechidae and Glyphipterygidae in Europe. On the basis of bred material from Hokkaido *Zeiraphera truncata* Oku is added to the host list of this parasite for the first time.

Distribution : Japan, Russia, Canada and Europe.

2. **Triclistus planus** Momoi and Kusigemati

Triclistus planus Momoi and Kusigemati, Pacific Insects 12 : 403, 1970.

Specimens examined : 1 ♀ (holotype of *planus*), Izumi - Gogayama, Okinawa, 22-iii-64, C. M. Yoshimoto & J. Harrell leg. ; 1 ♀, Tokuno-shima, Amami-shotô, 23-iii-64, H. Takada leg.

Distribution : Ryukyu Is.

3. **Triclistus glabrosus** Momoi and Kusigemati

Triclistus glabrosus Momoi and Kusigemati, Pacific Insects 12 : 404, 1970.

Specimens examined : 1 ♀ (holotype of *glabrosus*), Amami-ôshima, Amami-shotô, 21-iii-64, H. Takada leg. ; 1 ♀, Ambô, Yaku-shima, Kagoshima, 31-v-67, K. Kusigemati leg. ; 1 ♀, Osuzu-yama, Miyazaki, Kyushu, 22-v-66, K. Kusigemati leg. ; 1 ♀, Osuzu-yama, Miyazaki, Kyushu, 22-v-66, A. Tanaka leg.

Distribution : Japan and Ryukyu Is.

4. **Triclistus pallipes** Holmgren

Triclistus pallipes Holmgren, Öfvers. Svenska Vetensk. Akad. Förh. 40 : 59, 1873.

Triclistus pallipes : Morley, Ichneumonologia Britannica 4 : 36, 1911 ; Townes and Townes, U. S. Nat. Mus. Bull. 216 : 124, 1959.

Triclistus taiwanensis Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 33 : 210, 1932.

This species is one of the commonest species in Japan. In general appearance this species is similar to the preceding species, *T. podagricus* (Gravenhorst), but it differs from the latter in having the narrower face and the colouration of the legs.

Length : Body 4.0-6.1 mm., forewing 3.2-4.9 mm.

Specimens examined. Saghalien (1 ♀) : Konuma. Kuriles (1 ♀) : Etorofu-tô. Japan (125 ♀♀) : Hokkaido—Toyotomi, Toikanbetsu, Rishiri-zan, Akan, Nukabira, Ashoro, Tokachi, Bibai, Mukawa, Sapporo, Jozankei, Soranuma-dake. Shimamatsu and Tomakomai. Honshu—Hiraniwa-dake near Kuji, Senjoga-dake and Sayama near Tokyo. Kyushu—Hikosan.

Host. This species has been recorded as a solitaly parasite of Tortricidae, Geometridae and Olethreutidae in Europe and North America.

Distribution : Japan, Saghalien, Kuriles, Formosa, Russia, Europe and North America.

5. **Triclistus semistriatus**, sp. nov.

Triclistus pallipes Momoi and Kusigemati, Pacific Insects 12 : 403, 1970 (non Holmgren, 1873).

♀. Face and clypeus combined 7/8 as wide as high ; face weakly mat, finely punctured ; clypeus sparsely and rather strongly puntured ; malar space about 1/2 as long as basal width of mandible ; frons and vertex more densely punctured than in *pallipes*; temple short, weakly swollen, sparsely hairy, the hairs being absent on median area and denser towards eye and occipital carina ; distance between lateral ocelli and eyes 1.2 times as long as diameter of an ocellus ; antennae with 23 segments ; 1st flagellar segment 2.7 times as long as wide and 1.6 times as long as the 2nd. Mesopleuron more strongly and densely punctured than in *pallipes* ; metapleuron with 15 hairs ; scutellum weakly convex, rahter densely hairy as in *mimerastriae*. Propodeum with median longitudinal carinae strong ; areola with a few hairs ; costula entirely absent ; 1st and 2nd lateral areas wholly haired ; 2nd pleural area weakly and longitudinally striate, the posterior part being weakly granulate, about 2.0 times as long as basal width. Forewing with nervulus postfurcal by about 5/7 of its own length ; stigma large, about 2.2 times as long as wide ; radius originating from just middle of stigma. Hind femur 2.4 times as long as wide in lateral view ; hind spur of hind tibia including hairs about 2.8 times as long as wide. First abdominal tergite 1.3 times as long as wide at apex, the median longitudinal carinae being strong on basal 4/9 ; 2nd tergite 5/6 as long as wide at apex, with a few setiferous punctures on lateral portion ; 3rd tergite with fine, sparse, setiferous punctures on basolateral portion, elsewhere impunctured. Subgenital plate rather densely haired, the hairs being slanted backwards.

Black. Antennae, mouth parts except for mandiblar teeth and tegula yellowish brown. Subtegular ridge light reddish brown. Legs yellowish brown, the coxae and femora being a little darker.

Length : Body 5.0 mm., forewing 3.8 mm.

♂. Unknown.

Holotype (♀) : Yona, Okinawa, 24-25-iii-64, M. C. Yoshimoto & J. Harrell leg.

Distribution : Ryukyu Is.

This species is very closely related to *T. pallipes* Holmgren, but readily differs from the latter by the short and swollen temple, by the slender hind femur and by the striate 2nd pleural area of the propodeum.

6. **Triclistus mimerastriae**, sp. nov. (Fig. 11)

♀. Face and clypeus combined about as wide as high ; face strongly mat, finely punctured ; clypeus sparsely and strongly punctured ; malar space about 1/2 as long as basal width of mandible ; frons and vertex densely punctured ; temple weakly swollen, densely hairy, the hairs becoming sparser medially ; antennae with 25-30 segments ; 1st flagellar segment 2.2-2.8 times as long as wide and about 1.5 times as long as the 2nd. Metapleuron with 10-30 large setiferous punctures. Forewing with nervulus postfurcal by 3/5-4/5 of its own length ; 2nd recurrent vein interstitial. Propodeum (Fig. 11) with costula rather weak, sometimes present as a short stub on lateral longitudinal carina ; 2nd lateral area covered with sparse hairs, mostly, the outer side being 1.7-2.1 times as long as the inner one ; 2nd pleural area 2.2-2.6 times as long as basal width, densely and finely striate, the posterior part being weakly granulate. Hind femur about 2.0 times as long as wide in lateral view ; 2nd segment of hind tarsus 2.0-2.4 times as long as wide. First abdominal tergite 1.2 times as long as wide at apex, the median longitudinal carinae being strong on basal 3/5-5/7 ; 3rd tergite with large setiferous punctures on basi-lateral part, elsewhere impunctured ; 4th tergite with sparse and very fine punctures ; subgenital plate densely hairy, the hairs being almost vertical.

Black. Mandible reddish brown ; palpi and tegula pale yellow ; antennae dark brown, yellowish brown basoventrally. Subtegular ridge tinged with yellowish brown. Legs light yellowish brown, sometimes reddish brown. Subgenital plate yellowish brown.

Length : Body 5.5-7.4 mm., forewing 4.5-5.6 mm.

♂. Unknown.

Holotype (♀) : Shimamatsu, Hokkaido (13-vi-65, K. Kusigemati). Paratypes : 1 ♀, Sapporo, Hokkaido (1954, bred from *Mimerastria mandschuriana* by T. Kumata) ; 3 ♀♀, Shimamatsu, Hokkaido (13-vi-65, 8-vii-65 & 10-vii-68, K. Kusigemati) ; 1 ♀, Sapporo, Hokkaido (13-viii-68, K. Kusigemati) ; 1 ♀, Shimarinai, Hokkaido (13-viii-62, H. Takada) ; 1 ♀, Taisetsu-zan, Hokkaido (24-vii-68, M. Suwa) ; 1 ♀, Utashinai, Hokkaido (2-viii-61, K. Kamijo) ; 1 ♀, Terayama near Kagoshima, Kyushu (1-v-70, K. Kusigemati).

Host : *Mimerastria mandschuriana* Oberthür.

Distribution : Japan.

This species is similar to *T. pallipes*. It can be readily separated from the latter by the propodeum with costula and the striated 2nd pleural area, by the punctured metapleuron, and by the subgenital plate with vertical hairs.

7. **Triclistus minutus**, sp. nov. (Fig. 20)

♀. Face and clypeus combined 5/7 as wide as high ; face weakly mat, shallowly punctured ; clypeus strongly and sparsely punctured ; malar space 5/9 as long as basal width of mandible ; frons and vertex very finely and sparsely punctured ; interantennal lamella not grooved dorsally ; temple long, weakly swollen, rather regularly and sparsely

haired ; distance between lateral ocelli and eyes 2.0 times as long as diameter of an ocellus ; antennae 18-segmented ; 1st flagellar segment about 3.1 times as long as wide and about 1.6 times as long as the 2nd. Mesopleuron finely and sparsely punctured; metapleuron bare ; scutellum rather long, hardly convex, rather densely haired. Propodeum (Fig. 20) with median longitudinal carinae weak but complete ; costula absent ; 1st and 2nd lateral areas covered with hairs mostly ; 2nd pleural area finely granulate, 2.6-2.8 times as long as basal width. Forewing with areolet absent ; nervulus postfurcal by about 4/5 of its own length ; stigma large, about 2.5 times as long as wide ; radius originating from middle of stigma. Hind femur 2.0 times as long as wide in lateral view ; hind spur of hind tibia including hairs about 3.0 times as long as wide. First abdominal tergite 1.5-1.7 times as long as wide at apex, with median longitudinal carinae on about basal 1/2 ; 2nd tergite a little shorter than apical width, with a few hairs on lateral part ; 3rd tergite sparsely haired laterally, glabrous medially. Subgenital plate sparsely haired, the hairs being slanted backwards.

Head blackish ; body weakly tinged with dirty yellowish brown. Face tinged with dirty yellowish brown ; antennae yellowish brown, darker apically ; mouth parts pale yellow. Tegula and subtegular ridge yellowish brown. Legs light yellowish brown.

Length : Body 2.6-3.1 mm., forewing 2.4-2.8 mm.

♂. Malar space about 2/3 as long as basal width of mandible ; antennae 19-segmented ; 1st flagellar segment 3.3 times as long as wide ; interantennal lamella slightly grooved dorsally. Metapleuron with 5 hairs. Forewing with stigma about 3.0 times as long as wide. Second abdominal tergite more densely haired laterally than in female, about as long as wide at apex. Head and thorax a little more darker than in female.

Length : Body 3.1 mm., forewing 2.4 mm.

Holotype (♀) : Yuwan-dake, Amami-ôshim, Amami-shotô (7-v-66, K. Kusigemati). Paratypes : 2 ♀♀, Yuwan-dake, Amami-ôshima, Amami-shotô (7- & 8-v-66, K. Kusigemati) ; 1 ♂, Yaku-shima, Kagoshima, Kyushu (2-v-65, H. Takada).

Distribution : Japan and Ryukyu Is.

This species may be distinguishable from any other congeneric species by the forewing without areolet and by the interantennal lamella without groove in female.

8. **Triclistus crassus** Townes and Townes (Fig. 28)

Triclistus crassus Townes and Townes, U. S. Nat. Mus. Bull. 216 : 110. 1959.

This species is new to Japan. Having compared the specimens (47 ♂♂ & 42 ♀♀) examined with paratypes (2 ♂♂) of *crassus* I have been convinced that they should be identified with *crassus*. The present specimens agree well enough with the original description of *crassus*, but differ in having the following aspects :—

Metapleuron (Fig. 28) with 15-40 hairs in female and 20-50 hairs in male ; propodeum with outer side of 2nd lateral area 1.8-2.1 times as long as the inner one ; 1st abdominal tergite 1.1-1.4 times as long as apical width in both sexes.

Specimens examined. Saghalien (3 ♂♂ & 3 ♀♀) : Konuma, Suzuya-dake and Kashiho. Kuriles (42 ♂♂ & 14 ♀♀) : Etorofu—Shana, Horobetsu, Seseki and Shamanbe. Japan (2 ♂♂ & 25 ♀♀) : Hokkaido—Taisetsu-zan, Akan and Sapporo.

Distribution : Japan, Saghalien, Kuriles and North America.

9. **Triclistus aitkini** (Cameron) (Figs. 9 & 39)

Exochus Aitkini Cameron, Mem. & Proc. Manchester Lit. Phil. Soc. 41 : 31, 1897.

Exochus curvicarinatus Cameron, Jour. Bombay Nat. Hist. Soc. 14 : 431, 1902.

Triclistus aitkeni : Morley, Fauna of British India ... Hymenoptera 3 (1) : 302, 1913.

Triclistus aitkini : Chiu, Bull. Taiwan Agr. Res. Inst. 20 : 14, 1962 ; Momoi and Kusigemati, Pacific Insects 12 : 403, 1970.

Specimens examined : 2 ♀♀, Sapporo, Hokkaido, 25-viii- & 7-x-65, K. Kusigemati leg. ; 1 ♀, Kagoshima, Kyushu, 26-iv-63, K. Kusigemati leg. ; 1 ♀, Taniyama, Kagoshima, Kyushu, 21-iv-66, K. Kusigemati leg. ; 1 ♀, Kirishima-yama, Kagoshima, Kyushu, 7-9-v-67, H. Takizawa leg. ; 1 ♀, Amami-ôshima, Amami-shotô, 13-iii-64, H. Takada leg. ; 2 ♀♀, Nase, Amami-ôshima, Amami-shotô, 5-v-66, K. Kusigemati leg.

Distribution : Japan, Ryukyu Is., Formosa and India.

10. **Triclistus uchidai**, sp. nov. (Figs. 13, 29 & 63)

This new species is similar to the preceding species, *T. aitkini* (Cameron), from which it may be separated by the following characters :—

♀. Antennae with 33 segments ; 1st flagellar segment 2.5-2.7 times as long as wide and 1.4-1.7 times as long as the 2nd. Mesonotum with notauli absent. Propodeum (Fig. 13) with costula completely but weakly defined ; 2nd lateral area rather densely hairy wholly, the outer side being 1.7 times as long as the inner one ; 2nd pleural area weakly granulate, 2.6-3.0 times as long as basal width. Metapleuron (Fig. 29) with 20-28 fine setiferous punctures. Forewing (Fig. 63) with nervulus postfurcal by 4/9-5/9 of its own length. Hind tibia with hind spur including hairs 4.0-4.5 times as long as wide ; 2nd segment of hind tarsus about 2.3 times as long as wide. Third abdominnal tergite hairy, and bare on apico-median part ; 4th tergite densely hairy, the hairs becoming sparser apico-medially. Subgenital plate rather densely hairy, the hairs slanted backwards.

Black. Palpi and tegula pale yellow. Antennae dark brown to blackish, the ventral side of scape and pedicel, 1st and 2nd or 3rd flagellar segments being pale yellow. Subtegular ridge black anteriorly, yellowish brown posteriorly. Coxae black, the apex being yellowish brown to bark brown ; femora reddish brown, pale yellow at apex ; front and middle tibiae on apical half, base and dorsal side of hind tibia, front and middle tarsi yellowish brown ; hind tibia at apex and hind tarsus infuscate, the greater part of 1st tarsal segment being fulvous. Subgenital plate blackish.

Length : Body 7.7 mm., forewing 5.6 mm.

♂. Unknown.

Holotype (♀) : Shikaribetsu, Hokkaido (24-viii-34, T. Uchida). Paratypes : 2 ♀♀, Rausu-dake, Hokkaido (4-viii-67, A. Nakanishi) ; 1 ♀, Soranuma-dake, Hokkaido (1-viii-68, K. Kusigemati).

Distribusion : Japan.

This species is very closely related to *T. crassus* Townes and Townes, but readily distinguished from the latter by the more sparsely punctured frons and vertex, by the narrow 2nd pleural area of the propodeum and by the colour of the legs.

11. **Triclistus nigrifemoralis**, sp. nov. (Figs. 14 & 64)

♀. Head with face very weakly mat, finely punctured ; frons and vertex very finely and densely punctured ; temple weakly swollen, densely hairy ; antennae with 27 segments ; 1st flagellar segment 2.8–3.0 times as long as wide and about 1.9 times as long as the 2nd. Propodeum (Fig. 14) with costula complete or imcomplete ; median longitudinal carinae situated very closely each other ; areola somewhat strongly and loosely rugose ; 2nd lateral area sparsely hairy in whole ; 2nd pleural area narrow, 2.1–2.4 times as long as basal width, and finely granulate. Matapleuron without hairs. Forewing (Fig. 64) with radius originating from beyond middle of stigma ; nervulus postfurcal by 1/3 of its own length. Hind tibia with hind spur including hairs about 2.2–2.4 times as long as wide. First abdominal tergite with median longitudinal carinae on basal 5/8 ; 3rd tergite bare medially, sparsely hairy laterally. Hairs on subgenital plate weakly slanted backwards.

Black. Palpi and tegula yellowish brown. Antennae blackish, pale yellow basiventrally. Legs dark brown to black ; trochanters, apical third of front femur, extreme apex of middle and hind femora, front and middle tibiae and tarsi yellowish brown to dirty yellowish brown, the base of tibiae being paler ; hind tibia yellowish brown on basal 1/3, blackish on apical 2/3.

Length : Body 5.5 mm., forewing 4.5 mm.

♂. Unknown.

Holotype (♀) : Sapporo, Hokkaido (2-vi-68, Kusigemati). Paratype : 1 ♀, Sora-numa-dake, Hokkaido (26-vi-65, K. Kusigemati).

Distribution : Japan.

This species is very similar to *T. uchidai*, sp. nov., from which it is distinguished by the rugose areola of the propodeum, by the colour of the legs, etc. as mentioned in the key.

12. **Triclistus nigripes** Momoi and Kusigemati (Fgs. 16 & 38)

Triclistus nigripes Momoi and Kusigemati, Pacific Insects 12 : 405, 1970.

The male of this species has not yet been described. The present male specimens, however, resemble closely the female, apart from usual sexual differences, except for the following points :—

♂. Malar space 1/2 as long as basal width of mandible ; antennae a little paler than in female, with 26–28 segments ; 1st flagellar segment 2.8–3.0 times as long as wide and about 1.4 times as long as the 2nd. Propodeum with median longitudinal carinae stronger than in female.

Length : Body 8.4–9.9 mm., forewing 5.5–6.7 mm.

Specimens examined : 2 ♂♂ & 2 ♀♀, Sapporo, Hokkaido, 23-v-, 21-vii- & 26-vii-56,

S. Momoi leg.; 1 ♂ & 2 ♀♀, Sapporo, 27-viii-65, 2-ix-65 & 13-viii-68, K. Kusigemati leg.; 1 ♀, Sapporo, 9-ix-68, T. Kocha leg.; 1 ♀, Jôzankei, Hokkaido, 18-viii-65, K. Kusigemati leg.; 1 ♀, Hayachine-san, Iwate, Honshu, 29-viii-66, K. Kusigemati leg.; 1 ♀, Karuizawa, Nagano, Honshu, 9-vii-66, M. Honda leg.; 1 ♀, Takao-san, Tokyo, Honshu, 2-vi-69, K. Kanmiya leg.; 1 ♀, Nachi, Wakayama, Honshu, 21-ix-65, H. Takada leg.; 1 ♀, Sasayama, Hyogo, Honshu, 27-v-54, S. Momoi leg.; 1 ♂, Kurino-dake, Kagoshima, Kyushu, 23-v-69, K. Kusigemati leg.; 1 ♀, Kagoshima, 6-vi-62, T. Saigusa leg.; 1 ♀, Kagoshima, 29-iv-66, K. Kusigemati leg.; 3 ♀♀, Shimota, Kagoshima, 15-vi-69, K. Kusigemati leg.; 2 ♂♂ & 5 ♀♀, Terayama near Kagoshima, 27-iv-, 1-v- & 8-v-70, K. Kusigemati leg.; 2 ♀♀, Kagoshima, 7-x-62, bred from *Anomis flava* Fabricius by K. Kusigemati; 1 ♂, Eboshi-dake, Kagoshima, 4-v-69, K. Kusigemati leg.; 1 ♀, Bôno-misaki near Makurazaki, Kagoshima, 27-iv-66, K. Kusigemati leg.; 1 ♂, Sata-misaki, Kagoshima, 1-v-62, A. Nakanishi leg.; 1 ♀, Sata-misaki, Kagoshima, 12-viii-63, H. Tanaka leg.; 1 ♀, Sata-misaki, Kagoshima, 18-v-66, K. Kusigemati leg.; 1 ♀ (holotype of *nigripes*), Amami-ôshima, Amami-shotô, 10-iii-64, H. Takada leg.

Host. *Anomis flava* Fabricius.

Distribution: Japan and Ryukyu Is.

13. **Triclistus kamijoi** Momoi and Kusigemati (Fig. 15)

Triclistus kamijoi Momoi and Kusigemati, Pacific Insects 12: 404, 1970.

The male was not previously known. It resembles the famale, apart from usual sexual differences, except that the antennae are darker, with 24-26 segments, and that hind femur is 2.2-2.5 times as long as wide in lateral view.

Specimens examined. Hokkaido (3 ♂♂ & 5 ♀♀)—Obihiro, Taisetsu-zan, Yukomanbetsu, Sapporo and Apoi-dake; Honshu (1 ♂ & 2 ♀♀)—Karuizawa, Shimane and Shimonoseki; Kyushu (48 ♂♂ & 46 ♀♀)—Hiko-san, Fukuchi-san near Nôgata, Inunaki-yama, Kurume, Kumamoto, Wanitsuka-yama, Kirishia-yama, Taniyama, Eboshi-dake near Taniyama, Kagoshima, Terayama near Kagoshima, Ibusuki and Sata-misaki; Ryukyu Is. (1♂ & 3 ♀♀, including the holotype of *kamijoi*)—Amami-ôshima.

Distribution: Japan and Ryukyu Is.

14. **Triclistus japonicus**, sp. nov. (Fig. 12)

In general structures and colour this species is very closely related to the following species, *T. globulipes* (Desvignes), but it differs from the latter by the straight median longitudinal carinae of the propodeum, by the uniformely fulvous legs, etc. as follows:—

♀. Head with clypeus very weakly mat, strongly and sparsely punctured; antennae with 29 or 30 segments. Mesonotum with notauli absent or present as a very shallowly impression. Propodeum (Fig. 12) with median longitudinal carinae almost straight, and a little widened towards apex. Metapleuron with 1-3 hairs, sometimes hairless. Forewing with nervulus postfurcal by 1/5-1/3 of its own length. Hind tibia with hind spur including hairs 3.9-4.3 times as long as wide; 2nd segment of hind tarsus 2.7-3.1 times as long as wide. Third and 4th abdominal tergites rather densely

covered with hairs.

Black. Antennae dark brown to infuscate, the ventral side being pale yellow. Subtegular ridge pale yellow. Legs light yellowish brown ; coxae at apex, trochanters, front femur at apex and tibiae a little paler. Subgenital plate tinged with yellowish brown.

Length : Body 5.9-7.0 mm., forewing 5.0-5.8 mm.

♂. Head with malar space 5/8 as long as basal width of mandible ; antennae with 24-31 segments. Metapleuron with 3-13 hairs. Hind tarsus with 2nd segment 2.3-2.8 times as long as wide.

Length : Body 4.1-5.9 mm., forewing 3.4-4.4 mm.

Holotype (♀) : Hiko-san, Fukuoka, Kyushu (12-vi-66, K. Kusigemati). Paratypes (14 ♂♂ & 16 ♀♀) : Hokkaido (Sapporo, Shimamatsu, Apoi-dake, Sounkyo, Aizankei, Taisetsu-zan, Ashoro, Toikanbetsu and Toyotomi) ; Honshu (Haguro-san, Senjoga-dake, Kita-Alpus and Hachijo-jima) ; Kyushu (Hiko-san and Kagoshima).

Distribution : Japan.

15. **Triclistus globulipes** (Desvignes)

Exochus globulipes Desvignes, Catal. Brit. Ichneumon 1856 : 45, 1856.

Exochus holmgreni Boheman, Öfvers. Vet. Akad. Rörh. 1863 : 79, 1863.

Triclistus globulipes : Morley, Ichneumonologia Britannica 4 : 37, 1911.

Triclistus fuscoapicalis Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25 : 267, 1930. **Syn. nov.**

In general appearance this species is closest to the preceding species, *T. japonicus*, sp. nov., but is readily distinguished from the latter by the characters mentioned in the key.

Length : Body 5.5-8.2 mm., forewing 4.1-5.5 mm.

Specimens examined : 1 ♀, Bibai, Hokkaido, 28-viii-64, bred from *Cymolomia hartigiana*, 1 ♂. Bibai, 11-vii-65, bred from *Archips piceanus*, 1 ♂, Asahigawa, Hokkaido, 29-viii-66, bred from *A. issikii* by K. Kamijo ; 1 ♂, Sapporo, Hokkaido, 24-ix-52, T. Tomioka leg. ; 1 ♀, Taisetsu-zan, 30-vii-67, 1 ♀, Sapporo, 23-vii-66, 1 ♂, Soranuma-dake, Hokkaido, 23-ix-66, K. Kusigemati leg. ; 1 ♀, Towada, Aomori, Honshu, 26-vii-66, K. Kusigemati leg. ; 1 ♂, Kirishima-yama, Kagoshima, Kyushu, 25-v-66, K. Kusigemati leg. ; 1 ♂, Hiko-san, Fukuoka, Kyushu, 25-vi-66, 1 ♂, Wakasugi-yama, Fukuoka, Kyushu, 22-ix-63, A. Nakanishi leg.

Host. This species has been recorded as a solitaly internal parasite of Tortricidae and Olethreutidae in Europe. On the basis of bred material *Archips piceanus* Linné, *A. issikii* Yasuda and *Cymolomia hartigiana* Ratzerburg are given as hosts of the parasite in Japan.

Distribution : Japan and Europe.

In the course of the present study I have come to the conclusion that *T. fuscoapicalis* Uchida, 1930, should be suppressed as a synonym of *globulipes*.

16. **Triclistus rubellus**, sp. nov. (Fig. 10)

♀. Head with face polished, often very weakly mat on upper part, strongly punctured ;

clypeus weakly convex, polished, strongly and very sparsely punctured, the apical part being weakly impressed and the apical margin truncate ; malar space 4/5–3/5 as long as basal width of mandible ; temple slightly convex, shorter than in *dimidiatus* ; occiput more strongly sloping; antennae with 27–30 segments ; 1st flagellar segment 2.2–3.2 times as long as wide and 1.3–1.7 times as long as the 2nd. Mesonotum with notauli absent. Propodeum (Fig. 10) with median longitudinal carinae obsolete except for basal and apical pairs of short stubs ; 1st and 2nd lateral areas moderately densely hairy on outer half and bare on inner half. Metapleuron with 20–60 hairs. Hind femur 2.5–3.0 times as long as wide in lateral view ; hind spur of hind tibia including hairs about 4.3 times as long as wide ; 2nd segment of hind tarsus 1.9–2.3 times as long as wide. First abdominal tergite about 1.5 times as long as wide at apex, the median longitudinal carinae being obsolete; 2nd tergite about 5/7 as long as wide at apex ; 3rd and 4th tergites sparsely hairy, the hairs becoming sparser medially and apically.

Black. Palpi and tegula whitish yellow. Subtegular ridge tinged with yellowish brown posteriorly. Antennae whitish yellow, darkened towards apex. Front and middle legs pale yellow ; front and middle femora and tibiae on dorsal side sometimes dark brown to black. Hind leg pale yellow, femur at both ends, tibia on apical 2/3 and tarsi reddish brown or infuscate. Abdominal tergites reddish brown ; 1st tergite tricoloured, pale yellow at extreme base, blackish on greater part of middle and reddish brown at apex. Subgenital plate reddish brown. In five specimens (5 ♀♀) from Kagoshima and Miyazaki 1st abdominal tergite blackish, yellowish brown at apex.

Length : Body 5.3–6.2 mm., forewing 4.3–5.5 mm.

♂. Malar space about 2/3 as long as basal width of mandible; antennae with 28–31 segments ; 1st flagellar segment 2.8–3.1 times as long as wide and about 1.6 times as long as the 2nd. Hind femur, tibia and tarsus usually darker than in female ; hind spur of hind tibia including hairs 3.4–3.8 times as long as wide. Second abdominal tergite 2/3–7/9 as long as wide at apex; 3rd and 4th tergites more densely haired than in female.

Length : Body 6.5–8.0 mm., forewing 5.5–5.8 mm.

Holotype (♀) : Nachi, Wakayama, Honshu (21-ix-65, H. Takada). Paratypes : 1 ♀, Sapporo, Hokkaido (9-vii-55, S. Momoi) ; 1 ♀, Shimamatsu, Hokkaido (14-viii-68, K. Kusigemati) ; 1 ♀, Ashoro, Hokkaido (24-vii-67, A. Nakanishi) ; 1 ♀, Inunaki-yama, Fukuoka, Kyushu (25-v-61, T. Saigusa) ; 1 ♀, Osuzu-yama, Miyazaki, Kyushu (22-v-66, K. Kusigemati) ; 1 ♀. Kurino-dake, Kagoshima, Kyushu (23-v-69, K. Kusigemati) ; 1 ♀, Shimota, Kagoshima (25-v-69, K. Kusigemati) ; 1 ♂, Eboshi-dake near Taniyama, Kagoshima (15-v-70, K. Kusigemati) ; 2 ♂♂ & 2 ♀♀, Takakuma-yama, Kagoshima (27-, 28- & 30-viii-70, K. Kusigemati).

Distribution : Japan.

This species is very closely related to *T. dimidiatus* Morley, but readily distinguished from the latter by the metapleuron with 20–60 hairs, by the longer malar space and by the slender hind femur.

17. **Triclistus dimidiatus** Morley (Fig. 17)

Triclistus dimidiatus Morley, Fauna of British India ... Hymenoptera 3 : 301, 1913.

Triclistus dimidiatus : Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 33 : 209, 1932 ;

Chiu, Bull. Taiwan Agr. Res. Inst. 20 : 14, 1962 ; Momoi and Kusigemati, Pacific Insects 12 : 403, 1970.

On the basis of the present specimens a brief redescription may be given below : –

♀. Head with face weakly mat, rather sparsely punctured ; clypeus weakly covex, polished, strongly and very sparsely punctured ; malar space 2/5 as long as basal width of mandible ; temple flat, longer than in *rubellus* ; occiput weakly sloping ; antennae with 24–27 segments. Mesonotum with notauli shallowly impressd at base. Propodeum (Fig. 17) with median longitudinal carinae strong. Metapleuron with 1–3 hairs, sometimes hairless. Hind femur about 2.4 times as long as wide in lateral view ; hind spur of hind tibia including hairs about 3.3 times as long as wide ; 2nd segment of hind tarsus 2.4–2.8 times as long as wide. First abdominal tergite with median longitudinal carinae strong on basal 1/2.

Black. Mandible fulvous, dark brown to black apically and basally. Scape and pedicel pale yellow ; flagellum dark brown, darker dorsally, pale yellow on basiventral side. Legs yellow to fulvous ; femora, hind tibia at apex and hind tarsus darker. Abdominal tergites reddish brown, a little darker than in *rubellus* ; 1st tergite with a blackish basal band.

♂. Metapleuron with 1 or 2 hairs. Hind spur of hind tibia including hairs 3.3–3.6 times as long as wide.

Length : Body 8.0–8.2 mm., forewing 5.1–6.3 mm.

Specimens examined. Japan (2 ♂♂ & 12 ♀♀) : Ryukyu Is.—Amami-ôshima and Okinawa. Formosa (2 ♂♂ & 2 ♀♀) : Mt. Hoozan, Taihorin and Kosempo. Philippine Is. (1 ♀) : Negros Is. Thailand (1 ♂) : Chanthabaru.

Distribution : Ryukyu Is., Formosa, Burma, Philippines and Thailand.

7. Genus **Colpotrochia** Holmgren

Colpotrochia Holmgren, Svensk. Vet. Akad. Handl. 42 : 80, 1855. [Type-species : *Ichneumon elegantulus* Schrank].

Alcocerus Foerster, Verh. Naturh. Ver. Rheinlande 25 : 161, 1868. [Type-species : *Tryphon ? trifasciatus* Cresson].

Exochoides Cresson, Trans. Amer. Ent. Soc. 2 : 37, 1868. [Type-species : *Exochoides mexicana* Cresson].

Aithris Cameron, Mem. Proc. Manchester Lit. Phil. Soc. 44 : 106, 1900. [Type-species : *Aithris coenutus* Cameron].

Inoresa Cameron, Jour. Bombay Nat. Hist. Soc. 19 : 724, 1909. [Type-species : *Inoresa pilosa* Cameron].

The genus *Colpotrochia* is a relatively large group of the subfamily Metopiinae, being probably of worldwide distribution. According to S. Momoi (1966), eleven species have been known to occur in Japan. In the present paper three new species are added to the fauna of Japan. This genus is divided into four subgenera, of which two occur in Japan, and can be separated by the following key : —

Key to the subgenus

1. Hindwing with nervellus reclivous or vertical ; areolet most often absent. .... *Colpotrochia* Holmgren
- Hindwing with nervellus inclivous ; areolet present. ..... *Scallama* Cameron

Subgenus **Colpotrochia** Holmgren

The subgenus *Colpotrochia* is represented by eight species in Japan, of which one is new to science as described below. These species may be distinguishable by the following key.

Key to the species of the subgenus Colpotrochia

1. Propodeum with pleural longitudinal carinae straight, not sinuate below spiracle and not touching spiracle, but very close one another. 2
- Propodeum with pleural longitudinal carinae touching spiracle, strongly sinuate just below spiracle. 4
2. Second and 3rd abdominal tergites entirely blackish, sometimes the latter being yellowish on apical part. Hind tibia with black part occupying less than half length of the tibia. ..... 4. *munda* Momoi
- Second abdominal tergite black with apical half yellow ; 3rd tergite entirely yellow, or only blackish basally. Hind tibia with black part occupying much more than half length of the tibia (except for some specimens of *fusca*). 3
3. Scutellum yellow with basal half black. First abdominal tergite stouter, 1.7–2.1 times as long as wide at apex ; 3rd tergite yellow with basal part blackish. ... . 3. *bifusciata* Momoi
- Scutellum almost entirely black, sometimes the apex tinged with dark brown. First abdominal tergite more slender, 2.0–2.6 times as long as wide at apex ; 3rd tergite entirely yellow or yellow with blackish basal part. ..... 1. *fusca* Matsumura
4. Pronotum with upper margin rather flat, without submarginal impression. Hind femur more or less longer than 3 times as long as width in lateral view. 5
- Pronotum with upper margin with submarginal impression. Hind femur clearly shorter than 3 times as long as width in lateral view. 6
5. Second abdominal tergite entirely blackish ; 3rd tergite black with basal half yellow. Propodeum with lateral longitudinal carinae imcomplete apically and not extending straigt to apex of the propodeum. Hind tibia on yellow part occupying less than half length of the tibia. ..... 7. *unifasciata* Momoi
- Second abdominal tergite (Fig. 25) black, with a pair of broad oblique yellow bands; 3rd tergite (Fig, 25) yellow with median apical part blackish. Propodeum with lateral longitudinal carinae complete and extending straight to apex of the propodeum. Hind tibia on yellow part occupying much more than half length of the tibia in female. ..... 8. *sadensis*, sp. nov.
6. Scutellum black, with apical margin narrowly yellow. Pronotum, propodeum and 1st abdominal tergite entirely black. Interantennal process angularly arched, thicking towards the top in dorsal view of head, its horizontal rim thick..... ..... 2. *jozankeana* Uchida

- Scutellum almost entirely yellow. Pronotum, propodeum and lst abdominal tergite conspicuously marked with yellow or reddish brown. Interantennal process strongly narrowing towards the top in dorsal view of head, its horizontal rim thin. 7

7. Mesonotum entirely black. Pronotum not marked with yellow along the upper margin. Propodeum with lateral longitudinal carina without median angulation towards dorsal face of propodeum. ..... 6. *pilosa* (Cameron)
- Mesonotum with four longitudinal yellow stripes. Pronotum yellow along the upper margin. Propodeum with lateral longitudinal carina with a small but distinct angulation towards dorsal face of propodeum. ..... 5. *nipponensis* Uchida

1. **Colpotrochia (Colpotrochia) fusca** Matsumura

Colpotrochia elegantula Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25 : 261, 1930.

Colpotrochia elegantula f. *fusca* Matsumura, 6000 illustrated insects of Japan-Empire, 1931 : 40, 1931.

Colpotrochia (Colpotrochia) fusca : Townes, Momoi & Townes, Mem. Amer. Ent. Inst. 5 : 355, 1965 ; Momoi, Mushi 40 : 19, 1966.

Specimens examined. Kuriles (8 ♂♂ & 1 ♀) : Kunashiri Is. Japan (98 ♂♂ & 3 ♀♀, including lectotype of *fusca*) : Hokkaido—Rausu-dake, Taisetsu-zan, Shiokari near Asahigawa, Shikaribetsu, Nukabira, Sapporo, Jôzankei, Soranuma-dake, Shikotsu-ko, Tomakomai, and Gamushi near Esashi ; Honshu—Toyama, Sadoga-shima, Kamikôchi, Karuizawa, Shimashima near Matsumoto, Nagano, Fuji-san, Tokyo, Yamanashi, Nikko, Kyôto and Sasayama ; Shikoku—Ishizuchi-san ; Kyushu—Hiko-san, Ichifusa-yama, Osuzu-yama, Miyazaki, Kirishima-yama, Takakuma-yama and Yaku-shima.

Distribution : Japan, Kuriles and Korea.

2. **Colpotrochia (Colpotrochia) jozankeana** Uchida

Colpotrochia elegantula var. *jozankeana* Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25 : 261, 1930.

Colpotrochia (Colpotrochia) jozankeana: Townes, Momoi & Townes, Mem. Amer. Ent. Inst. 5 : 355, 1965 ; Momoi, Mushi 40 : 24, 1966.

Specimens examined : Hokkaido (14 ♂♂ & 4 ♀♀, including lectotype of *jozankeana*)—Sapporo and Jôzankei ; Honshu (3 ♂♂)—Kurokawa near Niigata and Sasayama ; Kyushu (2 ♂♂ & 1 ♀)—Hiko-san.

Distribution : Japan and China.

3. **Colpotrochia (Colpotrochia) bifasciata** Momoi

Colpotrochia (Colpotrochia) bifasciata Momoi, Mushi 40 : 21, 1966.

The female of this species was previously unknown. On the basis of the present specimens a brief description of the female may be given below :—

♀. Metapleural carina sometimes touching to propodeal spiracle and weakly sinuate below the spiracle. Fourth abdominal tergite with a lateral longitudinal suture extending

to basal 1/3, its spiracle distant from the suture by about 3 times of diameter of the spiracle. Postscutellum black, sometimes yellowish apico-laterally. Yellow portions of front coxa and trochanter, front and middle femora and hind tibia less extensively marked than in male. Middle tibia black on apical about 1/2, yellow apico-ventrally.

Length : Body 10.8-11.2 mm., forewing 8.3-8.8 mm.

Specimens examined : 1 ♂ (holotype of *bifasciata*), Ôgino-sen, Hyogo, Honshu (26-v-54, S. Momoi) ; 3 ♂♂, Ôgino-sen, Hyogo, Honshu (26-v-54, S. Momoi) ; 1 ♂, Tazima, Hyogo, Honshu (24-v-55, E. Fujita) ; 1 ♂, Nyugasa, Nagano, Honshu (16-vi-62, T. Torii) ; 1 ♂, Hiko-san, Fukuoka, Kyushu (26-v-56, S. Momoi) ; 1 ♀, Takachiho-kyo, Miyazaki, Kyushu (2-v-67, T. Kocha) ; 2 ♂♂ & 1 ♀, Terayama near Kagoshima, Kyushu (27-iv-, 1-v- & 8-v-70, K. Kusigemati).

Distribution : Japan.

4. **Colpotrochia (Colpotrochia) munda** Momoi

Colpotrochia (Colpotrochia) munda Momoi, Mushi 40 : 25, 1966.

Specimens examined : 1 ♀ (holotype of *munda*), Ômata, Miyazaki, Kyushu (14-vii-54, K. Iwata) ; 1 ♂, Sasayama, Hyogo, Honshu (no date, K. Iwata) ; 1 ♀, Jôzankei, Hokkaido (27-ix-67, K. Kusigemati) ; 1 ♂, Sapporo, Hokkaido (8-ix-67, K. Kusigemati) ; 1 ♀, Wakasugi-yama, Fukuoka, Kyushu (20-viii-65, A. Nakanishi) ; 1 ♀, Shiiba, Ôkawauchi, Miyazaki, Kyushu (4-viii-70, A. Nagatomi) ; 1 ♀, Kagoshima, Kyushu (25-v-63, K. Kusigemati) ; 1 ♀, Kagoshima, Kyushu (14-x-64, K. Hashimoto) ; 1 ♀, Shibi-zan, Kagoshima, Kyushu (1-x-69, A. Nagatomi) ; 1 ♂ & 1 ♀, Shimota, Kagoshima, Kyushu (9-ix-69, K. Kusigemati) ; 1 ♀, Terayama near Kagoshima, Kyushu (25-viii-70, K. Kusigemati) ; 1 ♀, Takakuma-yama, Kagoshima, Kyushu (27-viii-70, K. Kusigemati).

Distribution : Japan.

5. **Colpotrochia (Colpotrochia) nipponensis** Uchida

Colpotrochia nipponensis Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25 : 262, 1930.

Colpotrochia (Colpotrochia) nipponensis : Townes & Townes, U. S. Nat. Mus. Bull. 216 : 132, 1959 ; Momoi, Mushi 40 : 19, 1966.

Specimens examined : 1 ♀ (lectotype of *nipponensis*), Wakayama, Honshu (1929, F. Wada) ; 1 ♂ & 2 ♀♀, Kurokawa, Niigata, Honshu (9- & 10-vi-1910, M. Nakamura) ; 1 ♀, Sasayama, Hyogo, Honshu (2-vii-53, K. Iwata) ; 1 ♀, Suma, Hyogo, Honshu (7-vi-29, S. Matsumura) ; 1 ♀, Kodakasa-yama, Kôchi, Shikoku (5-v-30, Y. Sugihara).

Distribution : Japan.

6. **Colpotrochia (Colpotrochia) pilosa** (Cameron)

Inoresa pilosa Cameron, Jour. Bombay Nat. Hist. Soc. 19 : 724, 1909.

Colpotrochia pilosa : Morley, Fauna of British India ... Hymenoptera 3 : 307, 1913.

Colpotrochia (Colpotrochia) pilosa : Townes & Townes, U. S. Nat. Mus. Bull. 216 : 132, 1959 ; Momoi, Mushi 40 : 22, 1966.

Specimens examined. Formosa (3 ♂♂ & 1 ♀) : Baibara and Kankau. China (3 ♂♂) : Ku-ling and Kiangusu. Japan (1 ♂) : Yakushima, Kyushu.

Distribution : Japan, Formosa, Ryukyu Is., China, India and Philippines.

7. **Colpotrochia (Colpotrochia) unifasciata** Momoi

Colpotrochia (Colpotrochia) unifasciata Momoi, Mushi 40 : 24, 1966.

Specimen examined : 1 ♀ (holotype of *unifasciata*), Sapporo, Hokkaido (2-ix-58, S. Ueda).

Distribution : Japan.

8. **Colpotrochia (Colpotrochia) sadensis**, sp. nov. (Figs. 25 & 37)

♀. Head with face a little wider than high, weakly mat, with a small upper median tubercle ; interantennal process gently arched in profile, strongly lobed on each side of the median groove, slightly narrowing towards the top in dorsal view of head, the horizontal rim being thick ; antennae with 60-65 segments. Upper margin of pronotum rather flat, without a submarginal groove. Propodeum with lateral longitudinal carinae strong, extending to apex of propodeum ; pleural longitudinal carinae touching the propodeal spiracle and strongly sinuate just below the spiracle. Hind femur 3.0-3.3 times as long as wide in lateral view. First abdominal tergite about 2.2 times as long as wide at apex, with obtuse and indistinct median longitudinal carinae, the carinae being not attaining beyond the spiracle ; 4th tergite with a lateral longitudinal creasion on basal 2/3, the spiracle being distant from the creasion by 3.5-4.0 times its diameter.

Black. Palpi yellowish brown. Antennae dark brown ; scape pale yellow ventrally, blackish dorsally. Abdominal tergites (Fig. 25) black ; 2nd tergite with a pair of yellow broad oblique bands that convergent anteriorly, the band being widened towards apex, sometimes undefined ; 3rd tergite (Fig. 25) yellow, with a black marking apically. First to 3rd epipleura pale yellow, and the 4th dark brown. Legs (Fig. 37) black ; ventral side of front trochanters, front femur on ventral side and at apex yellow to dirty yellowish brown ; front tibia, middle tibia on basal 2/3 yellow ; hind tibia (Fig. 37) broadly yellow-banded, blackish at base and on apical 1/3 ; front and middle tarsi yellow ventrally, dark brown dorsally.

♂. Differs from the female, apart from ususal sexual differences, only by the colouration as below :—

Antennae and front tibia darker ; middle and hind tibiae more extensively black.

Length : Body 12.0-13.0 mm., forewing 10.0-11.0 mm.

Holotype (♀) : Sado, Niigata, Honshu (5-ix-66, M. Suwa). Paratypes : 1 ♂, Iide-san, Yamagata, Honshu (2-viii-66, A. Nakanishi) ; 1 ♀, Kibune, Kyôto, Honshu (20-v-57, K. Iwata) ; 1 ♀, Takao-san, Kyôto, Honshu (3-x-58, K. Iwata) ; 1 ♀ (head lacking), Sasayama, Hyogo, Honshu (2-vii-52, K. Iwata).

Distribution : Japan.

This species is very closely related to *unifasciata*, but it may be distinguishable from the latter by the complete longitudinal carina of the propodeum and by the colour pattern of the 2nd and 3rd abdominal tergites.

Subgenus **Scallama** Cameron

Scallama Cameron, Mem. Proc. Manchester Lit. Phil. Soc. 43 : 216, 1899. [Type-species : *Scallama trilineata* Cameron].

Colpotrochioides Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25 : 263, 1930. [Type-species : *Colpotrochioides orientalis* Uchida].

The subgenus *Scallama* is represented by six species in Japan, of which two are new to science. These species may be distinguished by the following key.

Key to the species of the subgenus Scallama

1. Propodeum without lateral longitudinal carinae. 2
- Propodeum (Fig. 19) with lateral longitudinal carinae. 3
2. Head and thorax yellow with undefined brownish markings ; legs yellowish brown to reddish brown. Second abdominal tergite with epipleuron very wide, 2/5 as wide as the tergite at apex. ..... 1. *flava* (Uchida)
- Head black with face and clypeus yellowish brown ; thorax black ; legs bicoloured, black and yellow. Second abdominal tergite with epipleuron very narrow, 1/5 as wide as the tergite at apex. ..... 2. *kurisuei* (Uchida)
3. Propodeum with median longitudinal carinae entirely absent. Pronotum on upper margin, scutellum on apical and lateral margin and postscutellum yellow. Propodeum black with yellow markings. 4
- Propodeum with median longitudinal carinae more or less present. Pronotum, scutellum, postscutellum and propodeum entirely black. 5
4. Face a little wider than high. Propodeum yellow on apical third ; pleural longitudinal carinae not sinuate just below spiracle. Abdomen (Fig. 26) with each tergite bicoloured, base black and apex yellowish brown to reddish brown. Body 11.0–13.0 mm. ..... 5. *osuzensis*, sp. nov.
- Face a little narrower than high. Propodeum with a pair of small spots just before petiolar area ; pleural carinae sinuate just below spiracle in female. First abdominal tergite at apex, 2nd to 4th ones at base yellow, elsewhere black. Body 7.5 mm. ..... 4. *latifasciata* Momoi
5. Mandibular teeth approximately equal in length. Propodeum with apical transverse carina imcomplete ; propodeal spiracle large, elliptic, not touching pleural carina. Last segment of hind tarsus without subbasal, ventral tooth. Second and 3rd abdominal tergites yellow. Hairs on subgenital plate short and vertical. Large species, 15.0–17.0 mm. ..... 3. *orientalis* (Uchida)
- Mandible with upper tooth larger and longer than the lower. Propodeum (Fig. 19) with transverse carina complete and strong ; propodeal spiracle small, circular and touching to pleural carina. Hairs on subgenital plate long and slanted backwards. Abdominal tergites entirely black. Small species, 7.5–8.7 mm. .... 6. *nigra*, sp. nov.

1. **Colpotrochia** (**Scallama**) **flava** (Uchida)

Colpotrochioides flava Uchida, Ins. Mats. 5 : 145, 1931.

Colpotrochia (*Scallama*) *flava* : Townes & Townes, U. S. Nat. Mus. Bull. 216 : 128,

1959 ; Momoi, Mushi 40 : 17, 1966.

Specimens examined : 1 ♂ (holotype of *flava*) & 1 ♀, Minoo, Ôsaka, Honshu (1-vii-29 & 14-viii-30, C. Teranishi) ; 1 ♀, Tsushima, Nagasaki, Kyushu (19-vii-68, S. Miyamoto & A. Nakanishi).

Distribution : Japan.

2. **Colpotrochia (Scallama) kurisuei** (Uchida)

Colpotrochioides kurisuei Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25 : 264, 1930.

Colpotrochia (Scallama) kurisuei : Townes & Townes, U. S. Nat. Mus. Bull. 216 : 128, 1959 ; Momoi, Mushi 40 : 16, 1966.

Specimens examined. Japan : 1 ♀, Ôgino-sen, Hyogo, Honshu (17-vii-62, A. Nakanishi) ; 1 ♀, Hongawa, Kôchi, Shikoku (viii-32, H. Wada) ; 1 ♀, Hiragi, Kagawa, Shikoku (1-vi-50, K. Iwata). Korea : 1 ♂ (holotype of *kurisuei*), On-Chong-Ri (Onseri) (24-vii-24, T. Kurisue).

Distribution : Japan and Korea.

3. **Colpotrochia (Scallama) orientalis** (Uchida)

Colpotrochioides orientalis Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25 : 264, 1930.

Colpotrochia orientalis : Townes & Townes, U. S. Dept. Agr., Agr. Monog. 2 : 355, 1951.

Colpotrochia (Scallama) orientalis : Townes, Proc. Ent. Soc. Washington 59 : 104, 1957 ; Momoi, Mushi 40 : 16, 1966.

Specimens examined. Japan: 1 ♀, Nagano, Honshu (20-ix-37, K. Kamijo) ; 1 ♂, Haku-san, Ishikawa, Honshu (2-viii-62, A. Nakanishi). Korea : 1 ♀ (lectotype of *orientalis*) & 1 ♀, Su-Won (Suigen) (29-v-28, K. Sato).

Distribution : Japan and Korea.

4. **Colpotrochia (Scallama) latifasciata** Momoi

Colpotrochia (Scallama) latifasciata Momoi, Mushi 40 : 17, 1966.

Specimens examined : 1 ♂ (holotype of *latifasciata*), Azuma, Fukushima, Honshu (8-x-56, T. Nambu) ; 1 ♂, Esashi, Hokkaido (10-25-viii-56, S. Momoi).

Distribution : Japan.

5. **Colpotrochia (Scallama) osuzensis**, sp. nov. (Figs. 26 & 40)

♂. Head with face 1.1-1.3 times as wide as high, the upper part being strongly mat, gradually weakened towards below, and the lower part polished ; mandibular teeth approximately equal in length ; interantennal process roundedly arched in lateral view, weakly lobed on each side of the median groove, its top very thin ; malar space 1/3-2/5 as long as basal width of mandible ; antennae with 57-59 segments. Propodeum without median longitudinal sulcus ; apical transverse carina almost absent but visible between pleural and lateral carinae ; petiolar area divided into two sharply defined, circular impression ; lateral longitudinal carina strong and fadding out at base ; pleur-

al carina gently curved below but not sinuate ; propodeal spiracle large, elliptic, not touching to pleural carina. Forewing with nervulus postfurcal by 1/3-1/2 of its own length ; nervellus bent near its lower 1/5-2/5. First abdominal tergite 1.4-1.7 times as long as wide at apex, with median longitudinal carinae obtuse and indistinct ; 2nd tergite 2/3-5/6 as long as wide at apex ; epipleura of 2nd and 3rd tergites very narrow, the former narrower than the latter ; 4th tergite with a lateral longitudinal suture, extending from base to middle, the distance between spiracle and suture 3.0 times as long as its diameter.

Black. Mouth part except for black apical teeth, upper margin of pronotum, apical and lateral margins of scutellum, postscutellum, tegula, subtegular ridge, mesopleuron and metapleuron at apex yellow to yellowish brown. Antennae with scape yellowish ; pedicel and flagellum light brown, dark brown dorsally and apically. Propodeum black with apical part yellow to yellowish brown, the impression being blackish. Legs yellow to yellowish brown ; base of front and middle coxae dark brown to black ; hind coxa black with a long yellow marking on basilateral area ; front femur sometimes dark brown on dorsal side ; middle femur dark brown on basal half ; hind femur (Fig. 40) black with yellow to yellowish brown at base and on dorsal side, sometimes entirely black ; hind tibia (Fig. 40) infuscate at base and on apical 2/5 ; hind tarsus yellowish brown to infuscate, paler towards apex. Abdomen (Fg. 26) with each tergite bicoloured, black at base and yellow or reddish brown at apex, that is, 1st tergite on apical 1/4, the 2nd on apical 1/3, the 3rd on apical 3/5, the 4th on apical 1/5, the 5th and 6th at extreme apex yellow or yellowish brown ; 7th tergite reddish brown.

Length : Body 11.0-13.0 mm., forewing 10.0-11.0 mm.

Holotype (♂) : Osuzu-yama, Miyazaki, Kyushu, 22-v-66, K. Kusigemati leg. Paratypes : 19 ♂♂ (K. Kusigemati), 20 ♂♂ (A. Tanaka) and 1 ♂ (A. Nagatomi), same date and locality as the holotype ; 50 ♂♂, Yakushima Is., Kyushu (1- & 2-vi-69, K. Kusigemati) ; 1 ♂, Apoi-dake, Hokkaido (4-vii-63, T. Kumata) ; 2 ♂♂, Soranuma-dake, Hokkaido (27-vii-66 & 25-vii-67, K. Kusigemati).

Distribution : Japan.

This species is similar to *rufigaster* Momoi from China in general structures and colour, but is distinguished at once from that species in having a black band on the tergites 1 to 4, repsectively, and by the propodeum without a median longitudinal sulcus.

6. **Colpotrochia (Scallama) nigra**, sp. nov. (Figs. 19 & 36)

♀. Head with face 1.1 times as wide as high, polished, rather sparsely and strongly punctured ; clypeus polished, more sparsely punctured than face ; malar space about 5/7 as long as basal width of mandible ; upper tooth of mandible larger than the lower ; interantennal process rather roundedly arched in lateral view, moderately lobed on each side of the median groove and strongly narrowing towards the top on dorsal view of head, the holizontal rim being thin ; antennae 34-segmented. Propodeum (Fig. 19) without median longitudinal impression ; median longitudinal carinae present, very weak on median part ; lateral longitudinal carina strong and complete ; apical transverse carina strong and complete ; propodeal spiracle circular and touching pleural

carina. Hindwing with nervellus bent near its lower 1/5. Hind femur about 3.1 times as long as wide in lateral view ; last segment of hind tibia with a small ventral tuft of hairs on inner side as in *Triclistus*. First abdominal tergite 1.3–1.6 times as long as wide at apex, with obtuse median longitutinal carinae at least at base ; 2nd one about 6/9 as long as wide at apex ; 4th one with a longitudinal suture on basal 2/5–3/4, the distance between the spiracle and the suture 2.0 times as long as its diameter ; epipleura of 2nd and 3rd tergites very narrow ; hairs on subgenital plate long, weakly slanted backwards.

Black. Palpi infuscate ; labrum dirty yellowish brown ; mandible black, the apical part except for black teeth tinged with dark ferruginous. Antennae dirty yellowish brown, darkened dorsally and apically, the scape being dark brown on dorsal side. Legs (Fig. 36) black ; femora at extreme apex, front tibia except for dorsal side, middle and hind tibiae at base whitish yellow ; dorsal side of front tibia, middle tibia except at base and front and middle tarsi infuscate.

♂. Head with face 1.2–1.4 times as wide as high ; malar space about 3/5 as long as basal width of mandible ; antennae with 32–34 segments. Hind femur 2.6–2.9 times as long as wide in lateral view ; last segment of hind tarsus without subapical ventral tooth.

Length : Body 7.5–8.7 mm., forewing 5.5–7.0 mm.

Holotype (♀) : Omogokei, Ehime, Shikoku, 26-v-67, A. Nakanishi leg. Paratypes : 1 ♀, Iwaobetsu, Hokkaido (21-vii-63, A. Nakanishi) ; 1 ♂, Hiraniwa near Kuji, Iwate, Honshu (27-viii-66, K. Kusigemati) ; 2 ♂♂, Hiko-san, Fukuoka, Kyushu (13-vi-66, K. Kusigemati). The holotype is deposited in the collection of the Entomological Laboratory, Kyushu University.

Distribution : Japan.

This species may be distinguishable from any other consubgeneric species by the black and small size, by the propodeum with median longitudinal carinae and by the last segment of the hind tarsus with a subapical ventral tooth in female.

8. Genus **Periope** Haliday

Periope Haliday, Ann. Nat. Hist. 2 : 144, 1839. [Type-species : *Periope auscultator* Haliday].

Monoplectron Holmgren, Svenska Vetensk. Akad. Handl. 42 : 64 & 81, 1856. [Type-species : (*Monoplectron zygaenator* Holmgren) = *Periope auscultator* Haliday].

Oligoplectron Foerster, Verh. Naturh. Ver. Rheinlande 25 : 161, 1868. [Type-species : *Periope auscultator* Haliday].

Monoplectrochus Heinrich, Mitt. Münchner Ent. Ges. 35–39 : 109, 1949. [Type-species : *Monoplectrochus hoerhammeri* Heinrich].

This genus is distributed in the Holarctic region, being represented by four species : *P. auscultator* Haliday from Europe, *P. hoerhammeri* (Heinrich) from Europe and Japan, *P. aethiops* (Cresson) from North America and *P. shibuyai* Kusigemati from Japan.

Key to the species

1. Head with face not prolonged below ; occipital carina incomplete, not joined with hypostomal carina ; glossa short, not surpassing beyond mandible. Propodeum with areola and basal area combined about 2.0 times as long as basal width of basal area, polished, with a few hairs, the apical transverse carina being strong. First abdominal tergite stouter, about 1.4 times as long as apical width, with very strong median and sublateral longitudinal carinae, the spiracle being not produced as a tubercle. Scutellum entirely black. ..... 1. *hoerhammeri* (Heinrich)
- Head with face prolonged below ; occipital carina complete, joined with hypostomal carina ; glossa long, surpassing beyond mandible. Propodeum with areola and basal area combined about 1.4 times as long as basal width of basal area, weakly punctured and densely haired, the apical transverse carina being very weak. First abdominal tergite more slender, about 2.3 times as long as apical width, with obsolete median and sublateral longitudinal carinae, the spiracle being produced as a tubercle. Scutellum with a yellow large spot. ..... 2. *shibuyai* Kusigemati

1. **Periope hoerhammeri** (Heinrich)

Monoplectrochus hoerhammeri Heinrich, Mitt. Münchner Ent. Ges. 35-39 : 110. 1949.

Periope hoerhammeri : Townes, Proc. Ent. Soc. Washington 59 : 111, 1957 ; Kusigemati, Ins. Mats. 31 : 8, 1968.

Specimens examined : 1 ♀ & 5 ♂♂, Sapporo, Hokkaido (19-v-64 & 20-24-v-67, K. Kusigemati) ; 1 ♀ & 5 ♂♂, Shimamatsu, Hokkaido (12-vi-67 & 10-vi-68, K. Kusigemati) ; 1 ♂, Jôzankei, Hokkaido (11-v-68, K. Kusigemati) ; 4 ♀♀ & 7 ♂♂, Terayama near Kagoshima, Kyushu (27-iv-, 1-v- & 8-v-70, K. Kusigemati).

Distribution : Japan and Europe.

2. **Periope shibuyai** Kusigemati

Periope shibuyai Kusigemati, Ins. Mats. 31 : 10, 1968.

Specimens examined : 1 ♀ (holotype of *shibuyai*), Sapporo, Hokkaido (6-ix-67, K. Kusigemati) ; 1 ♀ & 2 ♂♂, Sapporo, Hokkaido (8- & 18-ix-67, K. Kusigemati).

Distribution : Japan.

9. Genus **Drepanoctonus** Pfankuch

Drepanoctonus Pfankuch, Dtsch. Ent. Ztschr. 1911 : 688, 1911. [Type-species : *Drepanoctonus tibialis* Pfankuch].

This genus has been represented by three described species, *D. tibialis* Pfankuch from Europe, *D. bifusciatus* (Brullé) from Tasmania Is. and *D. auritus* Chiu from Formosa. In the present study has been found another species in Japan, which is new to science.

1. **Drepanoctonus bicolor**, sp. nov.

♀. Head with face a little wider than high; clypeus weakly convex, finely and closely wrinkled transversely, the apical margin being rounded; antennae with 41–43 segments; 1st flagellar segment about 2.3 times as long as wide and about 1.3 times as long as the 2nd. Scutellum strongly punctured, the punctures becoming sparser medially. Metapleuron finely and rather sparsely wrinkled on lower half. Forewing with nervulus postfurcal by 2/5–1/2 of its own length. Propodeum strongly and densely punctured and covered with dense hairs, and basal area being glabrous; apical transverse carina almost obsolete, so that areola incompletely confluent with petiolar area. Hind femur about 3.7 times as long as wide in lateral view. First abdominal tergite about 1.4 times as long as wide at apex; 3rd and 4th tergites with a very weak or obsolete median longitudinal carina.

Black. Mandible black basally, rusty ferruginous apically, the apical teeth being black; palpi infuscate; antennae blackish. Tegula blackish brown, a little paler apically; subtegular ridge tinged with dark brown. Legs black; front femur on inner side and front tibia yellowish brown; middle and hind tarsi infuscate to blackish. Abdomen brown; 1st tergite black; 2nd tergite blackish, a little paler apically; 7th and 8th tergites, subgenital plate and pygogyum dark brown to black.

Length: Body 9.0–10.0 mm., forewing 6.6–7.3 mm.

♂. Differs from the female, apart from usual sexual differences, only by the colouration as below:—

Palpi whitish yellow; tegula whitish yellow, darker apically. Legs paler than in female; front coxa at apex, all trochanters on ventral side and middle femur at apex yellowish brown; front femur more extensively yellow; front and middle tibiae and tarsi pale yellow, the dorsal side of the middle tibia being dark brown; hind tibia infuscate with a yellow subbasal broad band. Abdomen with 2nd tergite dark brown to black, gradually paler towards apex. In one specimen (1 ♂) from Soranuma-dake coxae and trochanters entirely black.

Length: Body 10.0 mm., forewing 7.0 mm.

Holotype (♀): Aizankei, Hokkaido, 19-vii-67 (K. Kusigemati). Paratypes: Soranuma-dake, Hokkaido, 1 ♂, 3-vii-64 (H. Takada), 1 ♂, 17-vii-67 (K. Kusigemati), 1 ♂, 1-vii-68 (T. Kocha); Ashoro, Hokkaido, 1 ♀, 23-vii-67 (A. Nakanishi).

Distribution: Japan.

This species is very closely related to *D. auritus* Chiu from Formosa, from which it is easily distinguished by the 4th abdominal tergite without median longitudinal carina, by the black 1st abdominal tergite without the apico-lateral yellow spot, by the almost blackish 2nd tergite in female and by the brown 3rd to 6th tergites in both sexes.

10. Genus **Carria** Schmiedeknecht

Carria Schmideknecht, Ent. mon. Mag. 60: 112, 1924. [Type-species: *Carria paradoxa* Schmiedeknecht].

In my previous paper (1968) two species of this genus are recorded to occur in Japan. In the present paper one new species is added to the fauna of Japan.

Key to the species

1. Abdomen (Fig. 27) elongate ; hind edges of 3rd to 6th tergites concave ; 1st tergite without median longitudinal carinae ; epipleura of 3rd to 5th tergites overlapping. Mandible finely and obliquely striate. Hind femur more slender, 3.0 times as long as wide in lateral view. ..... 3. *concava*, sp. nov.
- Abdomen not elongate ; hind edges of 3rd to 6th tergites truncate ; 1st tergite with strong median longitudinal carinae ; epipleura of 3rd to 5th tergites not overlapping. Mandible sparsely punctured. Hind femur stouter, 2.0-2.3 times as long as wide in lateral view. 2
2. Propodeum with areola confluent with petiolar area ; lateral longitudinal carinae strong. Clypeus more or less impressed, with apical margin concave ; temple strongly swollen. Forewing (Fig. 66) with nervulus postfurcal by about 1/2 of its own length ; basal vein gently curved. ..... 1. *shimamatsensis* Kusigemati
- Propodeum with areola separated from petiolar area ; lateral longitudinal carinae obsolete. Clypeus flat apically, with apical margin weakly convex ; temple flat. Forewing (Fig. 67) with nervulus postfurcal by 5/7 of its own length ; basal vein angularly curved. ..... 2. *incarinata* Kusigemati

1. **Carria shimamatsensis** Kusigemati (Fig. 66)

Carria shimamatsensis Kusigemati, Kontyû 36 : 174, 1968.

Specimens examined : Shimamatsu, Hokkaido, 1 ♀ (holotype of *shimamatsensis*), 12-vi-67, K. Kusigemati leg. ; Shimamatsu, Hokkaido, 1 ♂, 13-vi-65, 2 ♀♀, 12-vi-67, 1 ♀, 10-vi-68, K. Kusigemati leg. ; Sapporo, Hokkaido, 2 ♂♂ & 2 ♀♀, 27-v-68, K. Kusigemati leg.

Distribution : Japan.

2. **Carria incarinata** Kusigemati (Fig. 67)

Carria incarinata Kusigemati, Kontyû 36 : 175, 1968.

Specimen examined : Kirishima-yama, Kagoshima, Kyushu, 1 ♀ (holotype of *incarinata*), 26-v-66, K, Kusigemati leg.

Distribution : Japan.

3. **Carria concava**, sp. nov. (Figs. 27 & 65)

♀. Face and clypeus combined about 1.3 times as wide as high, moderately strongly convex, finely and densely rugoso-punctured transversely, with a dull prominence at each lower corner ; clypeus narrow, the apical part being more or less impressed with the apical margin weakly reflexed and strongly concave ; malar space very narrow, 1/5 as long as width of mandible ; mandible very wide, widest at middle, the outer surface being finely obliquely rugoso-punctured except for apical part, and the

apical lower margin being margined by a fine carina ; frons rather weakly convex, sparsely and weakly punctured, the bottom being finely and transversely striate ; temple very wide, strongly convex, finely and sparsely punctured ; distance between lateral ocelli and eyes about 1.7 times as long as diameter of an ocellus ; antennae with 21 or 22 segments ; 1st flagellar segment about 1.5 times as long as wide and about 1.3 times as long as the 2nd. Mesonotum weakly convex, more finely and densely punctured than in the preceding two species ; notauli rather long, weakly impressed. Scutellum convex, rather sparsely punctured. Propodeum weakly mat, densely covered with short hairs wholly ; median longitudinal carinae weak, sometimes the median greater part being obsolete ; propodeal spiracle small, circular. Metapleuron surrounded with sparse hairs, so that the median portion being not haired and impunctured. Forewing (Fig. 65) with basal vein gently curved ; nervellus strongly inclivous. Hind femur slender, about 3.0 times as long as wide in lateral view. Abdomen (Fig. 27) elongate, depressed basally, cylindric apically ; 1st to 3rd tergites finely and scatteringly punctured, the punctures becoming closer basally ; 4th to 6th tergites very sparsely hairy, the hairs being a little denser laterally ; 1st tergite about 1.4 times as long as wide at apex, without median longitudinal carinae ; 2nd tergite about 1.3 times as long as wide at apex and about as long as the 3rd ; hind edges of 3rd to 6th tergites weakly concave ; epipleura of 3rd to 5th tergites very wide, overlapping.

Black. Mandible black with apical half dark ferruginous ; palpi blackish ; antennae blackish, apex of pedicel dark brown. Tegula dark brown. Legs black ; 2nd trochanters, femora at extreme apex, tibiae and tarsi infuscate.

Length : Body 6.2 mm., forewing 4.1 mm.

♂. Unknown.

Holotype (♀) : Jôzankei, Hokkaido, 23-v-67, K. Kusigemati leg. Paratype : 1 ♀, Soranuma-dake, Hokkaido, 26-vi-65, K. Kusigemati leg.

Distribution : Japan.

This species is rather aberrant, being easily distinguished from any other congeneric species by the elongate abdomen, by the concave hind edges of the 3rd to 6th abdominal tergites, by the 1st tergite without median longitudinal carina and by the very wide epipleura of the 3rd to 5th tergites.

11. Genus **Hypsicera** Latreille

Hypsicera Latreille, In Cuvier : Régne animal ... nouvelle édition 5 : 288, 1829. [Type-species : (*Ichneumon femoralis* Gravenhorst) = *Ichneumon femoralis* Fourcroy].

Metacoelus Foerster, Verh. Naturh. Ver. Rhainlande 25 : 161, 1868. [Type-species : (*Exochus femoralis* Gravenhorst) = *Metacoelus femoralis* (Fourcroy)].

Polyclistus Foerster, Verh. Naturh. Ver. Rhainlande 25 : 161, 1868. [Type-species : *Ichneumon femoralis* Fourcroy].

Plesioexochus Cameron, Trans. South African Phil. Soc. 15 : 102, 1905. [Type-species : (*Plesioexochus rufipes* Cameron) = *Ichneumon femoralis* Fourcroy].

In 1970 Momoi and Kusigemati gave nine species of *Hypsicera* occurring in Ryukyu Is. On this occassion are added to the fauna of Japan five other species, of which

four are new to science.

Key to the species

1. Front and middle tarsal claws pectinate. 2
- Front and middle tarsal claws simple (except for female of *carinata*). 10
2. Propodeum with basal area separated from areola (Fig. 21). 3
- Propodeum with basal area confluent with areola. 4
3. Propodeum with areola separated from basal area behind costula. Apex of penis with 4 setae on each side. ..... 7. *watanabei* Momoi and Kusigemati
- Propodeum with areola separated from basal area far before costula (Fig. 21). Apex of penis without setae. ..... 8. *makiharai*, sp. nov.
4. Antennal scrobe of frons strongly concave, unsculptured and polished. Second abdominal tergite with sublateral longitudinal carinae obtuse, becoming an obtuse round ridge posteriorly. 5
- Antennal scrobe of frons not or weakly differentiated in structure and sclupture. Second abdominal tergite with sublateral longitudinal carinae sharp throughout (except for *postfurcalis*). 7
5. Propodeum with 2nd lateral area as long as wide ; propodeal spiracle linear. Scutellum rather strongly convex. Hind leg entirely blackish brown in male or dark reddish brown and with blackish brown markings in female. ..... 1. *bicolor* Momoi and Kusigemati
- Propodeum with 2nd lateral area longer than wide ; propodeal spiracle elliptic or ovate. Scutellum exactely flat. Hind leg almost entirely light brown to light reddish brown. 6
6. Head with face longitudinally or obliquely and strongly rugoso-punctured ; frons transversely rugulose with fine punctures, the antennal scrobe being more strongly concave. Hind femur 2.3 times as long as wide in lateral view. ..... 2. *yoshimotoi* Momoi and Kusigemati
- Head with face strongly and closely punctured ; frons finely and closely punctured, the antennal scrobe being less strongly concave. Hind femur about 2.0 times as long as wide in lateral view. ..... 3. *femoralis* (Fourcroy)
7. Forewing with nervulus postfurcal by about 3/2 of its own length (Fig. 68). Antennae with 1st flagellar segment about as long as apical width. Second abdominal tergite with sublateral longitudinal carinae obtuse. ... 14. *postfurcalis*, sp. nov.
- Forewing with nervulus postfurcal by 1/2–3/5 of its own length. Antennae with 1st flagellar segment 1.5–2.6 times as long as apical width. Second abdominal tergite with sublateral longitudinal carinae sharp. 8
8. Head with face strongly and rather sparsely punctured ; frons strongly and closely punctured. Hind leg reddish brown. ..... 4. *intermedia* Momoi and Kusigemati
- Head with face weakly and transversely rugoso-punctured ; frons finely punctured. Hind leg yellowish brown. 9
9. Head with mandible unidentate (Fig. 31) ; frons polished, faintly and sparsely punctured. Hind femur 2.7 times as long as wide in lateral view ; hind tibia with basal and apical blackish bands distinct. ..... 5. *rugosa*, sp. nov.
- Head with mandible bidentate ; frons finely and closely punctured. Hind femur

2.4 times as long as wide in lateral view ; hind tibia with basal and apical blackish bands indistinct. ..... 6. *harrelli* Momoi and Kusigemati

10. Propodeum with costula absent (Fig. 18). Legs more or less blackish ; hind femur 1.6–1.8 times as long as wide in lateral view. Metapleuron vertical. .... 13. *parva*, sp. nov.

– Propodeum with costula present (Figs. 22 & 23). Legs yellowish brown to reddish brown ; hind femur 1.8–3.5 times as lons as wide in lateral view. Metapleuron weakly convex. 11

11. Propodeum with basal area separated from areola by a strong carina (Figs. 22 & 23). Apex of penis without setae. 12

– Propodeum with basal area confluent with areola. Apex of penis with spins. ... 13

12. First abdominal tergite with median longitudinal carinae extending to near apex of tergite ; 2nd tergite whithout sublateral longitudinal carinae. Head with face transversely rugulose ; antennae with 20 or 21 segments. Legs moderately stout; hind femur 2.3–2.7 times as long as wide in lateral view. .... 9. *brevicornis* Momoi and Kusigemati

– First abdominal tergite with median longitudinal carinae present on basal 3/5–5/7 of tergite ; 2nd tergite with sublateral longitudinal carinae. Head with face finely and closely punctured ; antennae with 39–41 segments. Legs slender ; hind femur 3.2–3.5 times as long as wide in lateral view. .... 10. *carinata* Momoi and Kusigemati

13. Second abdominal tergite with sublateral longitudinal carinae absent. Forewing with radius originating beyond middle of stigma ; stigma more broader, 3.3 times as long as wide. ..... 11. *incarinata* Momoi and Kusigemati

– Second abdominal tergite with sublateral longitudinal carinae presnt. Forewing with radius originating from just middle of stigma ; stigma more narrower, about 3.8 times as long as wide. ..... 12. *nigribasis* Momoi and Kusigemati

1. **Hypsicera bicolor** Momoi and Kusigemati

Hypsicera bicolor Momoi and Kusigemati, Pacific Insects 12 : 406, 1970.

Specimens examined : 1 ♀, Kyôto, Honshu (14-vi-58, K. Iwata) ; 1 ♂, Mitsunekantoyama, Hachijo-jima (30-v-64, Y. Hirashima & M. Shiga) ; 1 ♂, Nanbara-kyo, Hiroshima, Honshu (1-xi-35, K. Egawa) ; 1 ♂, Yona, Okinawa (24-iii-64, C. M. Yoshimoto & J. Harrell) ; 2 ♂♂ & 2 ♀♀ (one the holotype of *bicolor*), Amami-ôshima, Amami-shotô (28-vi-59, K. Kamijo).

The present specimens (2 ♂♂) from Hiroshima and Hachijo-jima differs from those from Amami-ôshima in the following characters :—

♂. Leg with middle coxa dark reddish brown; hind coxa black; hind femur and tibia similar to female in colouration.

Distribution : Japan and Ryukyu Is.

2. **Hypsicera yoshimotoi** Momoi and Kusigemati

Hypsicera yoshimotoi Momoi and Kusigemati, Pacific Insects 12 : 407, 1970.

Specimens examined : 1 ♀ (holotype of *yoshimotoi*) , Karayama, Ishigaki, Sakishima-

shotô, (14-18-iii-64, in Malaise trap, C. M. Yoshimoto and J. Harrell) ; 2 ♀♀, Yuwan-dake, Amami-ôshima (18-iii-63, C. M. Yoshimoto) ; 1 ♀, Banna, Ishigaki-jima, Sakishima-shotô (21-22-v-64, in Malaise trap, J. L. Gressit) ; 1 ♀, Karayama, Ishigaki-jima, Sakishima-shotô (14-18-iii-64, in Malaise trap, C. M. Yoshimoto and J. Harrell).

Distribution : Ryukyu Is.

3. **Hypsicera femoralis** (Fourcroy)

Ichneumon femoralis Fourcroy, Entomologia parisiensis 1785 : 396, 1785.

Exochus laevis Cresson, Proc. Ent. Soc. Philadelphia 3 : 286, 1964.

Metacoelus femoralis Holmgren, Öfver. Svensk. Akad. Förh. 30 : 61, 1873.

Hypsicera femoralis: Townes and Townes, U. S. Nat. Mus. Bull. 216 : 161, 1959 ; Chiu, Bull. Taiwan Agr. Res. Inst. 20 : 30, 1962.

This species is new to Japan. Having compared the specimens (3 ♀♀) examined with an authentic North American specimens (1 ♂ & 1 ♀) of *femoralis* I have come to the conclusion that the present materials should be identified with *femoralis*. In the specimens examined the tegula and legs are a little darker.

Specimens examined : 1 ♀, Sapporo, Hokkaido (3-x-59, S. Momoi) ; 2 ♀♀, Sapporo, Hokkaido (13-viii- & 2-ix-68, K. Kusigemati).

Distribution : Japan, China, Formosa, Hawaii, Australia, Africa, Europe, North America and South America.

4. **Hypsicera intermedia** Momoi and Kusigemati

Hypsicera intermedia Momoi and Kusigemati, Pacific Insects 12 : 40, 1970.

Specimens examined: 1 ♀, Inunaki-yama, Fukuoka, Kyushu (30-ix-65, T. Saigusa) ; 1 ♂ & 5 ♀♀, Ambo, Yaku-shima, Kagoshima, Kyushu (31-v- & 7-vi-69, K. Kusigemati) ; 1 ♀ (holotype of *intermedia*), Yuwan-dake, Amami-ôshima, Amami-shotô (16-17-vii-63, C. M. Yoshimoto) ; 1 ♀, Amami-ôshima, Amami-shotô (9-v-66, K. Kusigemati).

Distribution : Japan and Ryukyu Is.

5. **Hypsicera rugosa**, sp. nov. (Fig. 31)

In general structures this species resembles most closely *H. harrelli*, from which it differs clearly in having the unidentate mandible, the slender hind femur and the finely and sparsely punctured frons, etc. as below :—

♀. Face and clypeus combined 4/5 as wide as high, shallowly and closely punctured with fine transverse wrinkles between punctures ; clypeus with apical margin weakly concave medially; malar space 1.3-1.6 times as long as basal width of mandible ; mandible (Fig. 31) very narrow, strongly tapering towards apex, unidentate ; distance between lateral ocelli and eyes 5/7 as long as diameter of an ocellus ; occipital carina absent ; antennae long, filiform, with 38-43 segments ; 1st flagellar segment 2.2-2.6 times as long as wide and 1.6-1.8 times as long as the 2nd. Mesonotum with notauli short, shallowly impressed. Hind femur about 2.6 times as long as wide in lateral view ; front and middle tarsal claws rather strongly pectinate. Abdomen with 1st tergite

about 1.5 times as long as wide at apex, with median longitudinal carinae on basal 2/3 ; 2nd tergite with sublateral longitudinal carinae strong and attaining to apex.

Black. Palpi pale yellow ; scape yellowish brown, with an infuscate lateral stripe ; pedicel and flagellum dark brown, the latter being a little paler basally. Face on upper median part, interantennal process, pronotum on humeral angle, tegula and subtegular ridge yellowish brown. Legs yellowish brown ; hind tibia yellowish brown, black at base and infuscate on apical 1/4.

Length : Body 4.5-6.0 mm., forewing 3.6-4.3 mm.

♂. Unknown.

Holotype (♀) : Yuwan-dake, Amami-ôshima, Amami-shotô, 6-v-66, K. Kusigemati leg. Paratypes : 5 ♀♀, same locality as the holotype but 6-v-66 and 8-v-66 ; 1 ♀, Hyakuna, Okinawa (14-vii-70, H. Makihara) ; 1 ♀, Fukuoka, Kyushu (26-vi-62, S. Ide).

Distribution : Japan and Ryukyu Is.

6. **Hypsicera harrelli** Momoi and Kusigemati (Fig. 67)

Hypsicera harrelli Momoi and Kusigemati, Pacific Insects 12 : 410, 1970.

On this occassion the following description of the male, which was previously unknown, may be given :—

♂. Face loosely rugoso-punctured dorsally, strongly punctured ventrally, the punctures becoming sparser and weaker ventrally ; clypeus polished, with a few weak punctures ; malar space about 1.2 times as long as basal width of mandible ; antennae with 39-41 segments ; 1st flagellar segment 2.3-2.6 times as long as wide and 1.3-1.5 times as long as the 2nd ; distance between lateral ocelli and eyes 7/9 as long as diameter of an ocellus ; frons polished, finely and rather sparsely punctured. Scutellum weakly convex, more sparsely haired than in female. Front and middle tarsal claws weakly pectinate, with 1 or 2 teeth. Abdomen with 2nd tergite more broadly punctured. Legs a little paler than in female ; hind tibia with basal band distinct.

Length : Body 5.4-6.2 mm., forewing 3.9-4.5 mm.

Specimens examined : 2 ♀♀, Osuzu-yama, Miyazaki, Kyushu (22-v-66, K. Kusigemati) ; 1 ♀, Miyanoura-dake, Yaku-shima, Kyushu (17-viii-66, S. Ôga) ; 4 ♂♂ & 7 ♀♀, Amami-ôshima, Amami-shotô (6-, 8- & 10-v-66, K. Kusigemati) ; 1 ♀, Hyakuna, Okinawa (14-vii-70, H. Makihara) ; 4 ♀♀ (one the holotype of *harrelli*), Karayama, Ishigaki-jima, Sakishima-shotô (14-18-iii-64, in Malaise trap, C. M. Yoshimoto & J. Harrell) ; 1♀, Shoshi, Okinawa (23-iii-64, C. M. Yoshimoto & J. Harrell).

Distribution : Japan and Ryukyu Is.

7. **Hypsicera watanabei** Momoi and Kusigemati

Hypsicera watanabei Momoi and Kusigemati, Pacific Insects 12 : 409, 1970.

Specimens examined : 2 ♂♂ (one the holotype of *watanabei*), Yuwan, Amami-ôshima, Amami-shotô (6-v-66, K. Kusigemati) ; 1 ♂, Yuwan-dake, Amami-ôshima (8-v-66, K. Kusigemati) ; 1 ♂, Amami-ôshima (30-iv-67, M. Suwa).

Distribution : Ryukyu Is.

8. **Hypsicera makiharai**, sp. nov. (Fig. 21)

♂. Face and clypeus combined about 3/4 as wide as high; face loosely and strongly rugoso-punctured on upper portion, closely punctured on lower portion, the punctures becoming sparser ventrally; clypeus with a few punctures, the apical margin being truncate; malar space approximately as long as basal width of mandible; mandible narrow, almost parallel-sided, bidentate; distance between lateral ocelli and eyes about 1/2 as long as diameter of an ocellus; frons rather strongly and closely punctured, with a V-shaped prominence just below anterior ocellus, the antennal scrobe being weakly concave, polished; occipital carina present above and laterally, absent below; antennae filiform, with 32–37 segments; 1st flagellar segment 2.7–3.0 times as long as wide and 1.3–1.6 times as long as the 2nd. Scutellum weakly convex, sparsely hairy, the hairs sparser towards apex. Forewing with nervulus postfurcal by about 1/2 of its own length. Propodeum (Fig. 21) completely areolated; areola separated from basal area far before costula (Fig. 21). Hind femur about 2.4 times as long as wide in lateral view; front and middle tarsal claws strongly pectinate. Abdomen with 1st tergite 1.2 times as long as wide at apex, with median longitudinal carinae on basal 3/5; 2nd tergite about 5/7 as long as wide at apex, with sublateral longitudinal carinae obtuse; apex of penis without setae.

Black. Palpi yellowish brown; mandible dark brown; face on upper median part, interantennal process, tegula, pedicel and scape dirty yellowish brown; flagellum blackish brown, a little paler baso-ventrally. Legs light yellowish brown; hind coxa and femur light reddish brown.

Length: Body 5.8–6.4 mm., forewing 4.3–4.9 mm.

♀. Unknown.

Holotype (♂): Sonai, Yonakuni-jima, Sakishima-shotô (6–8–vii–70, H. Makihara). Paratype: 1 ♂, Kagoshima, Kyushu (30–ix–70, K. Kusigemati).

Distribution: Japan and Ryukyu Is.

This species resembles closely the preceding species *H. watanabei*, but it differs from the latter by the areolation of the propodeum, by the stouter hind femur and by the penis without setae.

9. **Hypsicera brevicornis** Momoi and Kusigemati (Figs. 23 & 79)

Hypsicera brevicornis Momoi and Kusigemati, Pacific Insects 12: 413, 1970.

Specimens examined: 1 ♂, Sapporo, Hokkaido (27–viii–65, M. Miyazaki); 1 ♂ (holotype of *brevicornis*), Amami-ôshima, Amami-shtô (1–v–59, K. Kamijo); 1 ♂, Amami-ôshima, Amamishotô (2–iii–64, H. Takada); 4 ♂♂, Yuwan-dake, Amami-ôshima, Amami-shotô (8– & 9–v–66, K. Kusigemati).

Distribution: Japan and Ryukyu Is.

10. **Hypsicera carinata** Momoi and Kusigemati (Figs. 22 & 78)

Hypsicera carinata Momoi and Kusigemati, Pacific Insects 12: 412, 1970.

♀. Face and clypeus combined 3/5–2/3 as wide as high, tranversely wrinkled on median upper portion; malar space 1.0–1.4 times as long as basal width of mandible;

mandible narrow, strongly tapering towards apex, unidentate ; frons rather flat, finely and closely punctured ; distance between lateral ocelli and eyes 1.1–1.3 times as long as diameter of an ocellus ; occipital carina absent ; antennae long, filiform, with 42 or 43 segments ; 1st flagellar segment about 3.5 times as long as wide and 1.8–2.2 times as long as the 2nd. Mesonotum with notauli short, strongly impressed ; scutellum strongly convex. Propodeum (Fig. 22) completely and strongly areolated ; 2nd lateral area covered with dense hairs wholly ; propodeal spiracle elliptic. Metapleuron weakly convex, with a hair band along upper margin. Forewing with nervulus postfurcal by 1/2 of its own length ; nervellus (Fig. 78) almost vertical. Legs slender ; hind femur about 3.5 times as long as wide in lateral view ; front and middle tarsal claws weakly pectinate at extreme base, with 1 or 2 teeth. Abdomen with 1st tergite about 1.9 times as long as wide at apex, with strong median longitudinal carinae on basal 2/3 ; 2nd tergite about 6/7 as long as wide at apex, the sublateral longitudinal carinae being very strong and attaining to apex.

Black. Palpi whitish yellow ; antennae dirty yellowish brown, a little darker dorsally, the ventral side of scape and apex of pedicel being paler. Mandible, interantennal process, face on upper margin, pronotum on humeral angle and subtegular ridge fulvous. Tegula yellowish brown. Legs light yellowish brown ; hind tibia at both ends sometimes a little darker.

Length : Body 5.5–5.8 mm., forewing 4.0–4.3 mm.

♂. Antennae with 43 or 44 segments ; 1st flagellar segment 2.5–3.0 times as long as wide and 1.5–1.8 times as long as the 2nd. Apex of penis without setae ; clasper slender, pointed and very sparsly hairy. Hind femur 2.9–3.1 times as long as wide in lateral view ; hind coxa, femur and tibia sometimes dark brown.

Length : Body 5.1–5.8 mm., forewing 4.0–4.5 mm.

Specimens examined : 1 ♀, Jôzankei, Hokkaido (2-viii-65, K. Kusigemati) ; 1 ♂, Haguro-san, Yamagata, Honshu (3-ix-66, K. Kusigemati) ; 1 ♀, Iide-san, Yamagata, Honshu (25-vi-66, A. Nakanishi) ; 2 ♂♂, Senjoga-dake, Yamagata, Honshu (30-vii-61, A. Nakanishi) ; 1 ♂, Okukinu, Tochigi, Honshu (15-ix-57, S. Momoi) ; 2 ♂♂, Nachi, Wakayama, Honshu (21-ix-65, H. Takada) ; 1 ♂, Hiko-san, Fukuoka, Honshu (25-vi-65, A. Nakanishi) ; 1 ♀, Sobo-san, Ôita, Kyushu (8-ix-33, K. Yasumatsu) ; 1 ♀, Kirishima-yama, Kagoshima, Kyushu (26-v-66, K. Kusigemati) ; 2 ♀♀, Miyanoura-dake, Yaku-shima, Kagoshima (17-viii-66, S. Ôga) ; 3 ♂♂ & 4 ♀♀, Ambo, Yaku-shima, Kagoshima (31-v- & 7-v-69, K. Kusigemati) ; 5 ♂♂, Kosugidani, Yaku-shima, Kagoshima (1-3-vi-67, K. Kusigemati) ; 5 ♂♂ & 2 ♀♀, Yuwan-dake, Amami-ôshima, Amami-shotô (6- & 8-v-66, K. Kusigemati) ; 1 ♂ (holotype of *carinata*), Amami-ôshima, Amami-shotô (24-v-65, H. Takada) ; 1 ♂, Yona, Okinawa (27-xi-63, G. A. Samuelson) ; 1 ♀, Yona, Okinawa (12-vi-70, H. Makihara).

Distribution : Japan and Ryukyu Is.

11. **Hypsicera incarinata** Momoi and Kusigemati

Hypsicera incarinata Momoi and Kusigemati, Pacific Insects 12 : 411, 1970.

The female of this species was previously unknown. On the basis of the present specimens a description of the female may be given below :—

♀. Face and clypeus combined as wide as high; face strongly and transversely rugoso-punctured, the lower part being closely punctured; clypeus polished, with a few punctures on upper part; malar space about 1.5 times as long as basal width of mandible; mandible rather wide, weakly tapering towards apex; distance between lateral ocelli and eyes about 1.1 times as long as diameter of an ocellus; frons finely and rather closely punctured, with a weak V-shaped prominence just below anterior ocellus, the antennal scrobe being polished, weakly concave; occipital carina entirely absent; antennae short, stout, 28-segmented; 1st flagellar segment 2.3 times as long as wide and 1.9 times as long as the 2nd. Scutellum hardly convex, with sparse hairs. Forewing with nervulus postfurcal by 4/7 of its own length. Propodeum with areola confluent with basal area; costula present; 2nd lateral area sparsely haired wholly. Hind femur 2.0 times as long as wide in lateral view; front and middle tarsal claws simple. Abdomen with 1st tergite about 1.3 times as long as wide at apex, with median longitudinal carinae on basal 3/4; 2nd tergite about 2/3 as long as wide at apex, with obsolete sublateral longitudinal carinae.

Black. Resembles the male in colour except antennae and legs are darker; basal band of hind tibia more distinct.

Length: Body 5.6 mm., forewing 4.1 mm.

Specimens examined: 1 ♂ & 1 ♀, Eboshi-dake, Kagoshima, Kyushu (15-v-70, K. Kusigemati); 1 ♀, Kagoshima, Kyushu (30-ix-70, K. Kusigemati); 1 ♂ (holotype of *incarinata*), Banna, Ishigaki-jima, Sakishima-shotô (20-v-64, G. A. Gressit); 1 ♂, Karayama, Ishigaki-jima (14-18-iii-64, in Malaise trap, C. M. Yoshimoto & J. Harrell); 1 ♂, Ishigaki-jima (25-30-xi-52, G. Bohart); 2 ♂♂, Ushikumori, Iriomote-jima, Sakishima-shotô (3-7-xi-63, in Malaise trap, G. A. Samuelson).

Distribution: Japan and Ryukyu Is.

12. **Hypsicera nigribasis** Momoi and Kusigemati

Hypsicera nigribasis Momoi and Kusigemati, Pacific Insects 12: 411, 1970.

Specimens examined: 1 ♂, Towada-ko, Aomori, Honshu (26-viii-66, K. Kusigemati); 1 ♂, Kanayama near Matsumoto, Nagano, Honshu (24-vii-64, A. Nakanishi); 1 ♂, Osuzu-yama, Miyazaki, Kyushu (22-v-66, K. Kusigemati); 1 ♂, Kurino-dake, Kagoshima, Kyushu (23-v-69, K. Kusigemati); 1 ♂, Ariake-yama, Tsushima, Kyushu (12-vii-68, S. Miyamoto & A. Nakanishi); 1 ♂, Terayama near Kagoshima, Kyushu (8-v-70, K. Kusigemati); 3 ♂♂, Miyanoura-dake, Yaku-shima, Kyushu (17-viii-66, S. Ôga); 1 ♂. Nase, Amami-ôshim, Amami-shotô (4-v-66, K. Kusigemati); 6 ♂♂, Yuwan-dake, Amami-ôshima, Amami-shotô (6- & 8-v-66, K. Kusigemati); 2 ♂♂ (one the holotype of *nigribasis*), Okinawa (10-iii-65, H. Kuroda); 1 ♂, Hentona, Okinawa (25-iii-64, C. M. Yoshimoto).

Distribution: Japan and Ryukyu Is.

13. **Hypsicera parva**, sp. nov. (Fig. 18)

♀. Face and clypeus combined approximately as wide as high, shallowly and closely punctured with fine transverse wrinkles between punctures; clypeus rather flat, very sparsely punctured; malar space 1.4-1.7 times as long as basal width of mandible;

mandible rather wide, weakly tapering towards apex, frons evenly convex, finely and closely punctured and mat below; distance between lateral ocelli and eyes about 1.1 times as long as diameter of an ocellus; antennae short, filiform, with 23-26 segments; 1st flagellar segment 1.1-1.4 times as long as wide and about 1.3 times as long as the 2nd. Mesonotum finely and sparsely punctured; notauli present as a triangular pit at extreme base; Propodeum (Fig. 18) rather elongate, almost flat; costula absent; propodeal spiracle small, circular; 2nd lateral area with 7-15 hairs on apicolateral area. Metapleuron vertical, without hairs. Forewing with nervulus postfurcal by about 1/2 of its own length; nervellus strongly inclivous. Hind femur about 1.8 times as long as wide in lateral view; front and middle tarsal claws simple. Abdomen with 2nd tergite about 2/3 as long as wide at apex, finely and scatteringly punctured, without sublateral longitudinal carinae.

Black. Palpi, tegula and subtegular ridge yellowish brown. Face on upper margin and interantennal process brownish. Antennae dark brown, darkened towards apex. Legs dark brown to black; front femur, middle and hind femora at both ends, front and middle tibiae and tarsi yellowish brown.

Length: Body 4.1-4.4 mm., forewing 3.1-3.3 mm.

♂. Unknown.

Holotype (♀): Shimamatsu, Hokkaido, 8-v-65, K. Kusigemati leg. Paratypes: 1 ♀, Sapporo, Hokkaido (11-vi-67, K. Kusigemati); 1 ♀, Wanizuka-yama, Miyazaki, Kyushu (23-v-66, K. Kusigemati).

Distribution: Japan.

This species is very closely related to *H. cuneata* Townes from North America, but it is at once distinguishable by the relative length of the 1st flagellar segment and by the transversely wrinkled face.

14. **Hypsicera postfurcalis**, sp, nov. (Fig. 68)

♀. Face and clypeus combined about 4/5 as wide as high; face strongly and closely punctured, the upper margin strongly projecting; clypeus polished, almost impunctured; malar space about 2.0 times as long as basal width of mandible; mandible very narrow, bidentate; frons weakly and evenly convex, weakly and closely punctured; distance between lateral ocelli and eyes about 1.6 times as long as diameter of an ocellus; occipital carina absent; antennae short, filiform, with 33 or 34 segments; 1st flagellar segment about as long as wide and 1.4 times as long as the 2nd. Mesonotum with notauli present as a ovoidal pit. Propodeum with 2nd lateral area with a few (1-5) hairs on apical part; propodeal spiracle long-ovate. Forewing (Fig. 68) with nervulus postfurcal by about 1.5 times of its own length; nervellus vertical. Hind femur 2.4-2.7 times as long as wide in lateral view; tarsal claws of front and middle legs strongly pectinate at base. Abdomen with 1st tergite about 1.3 times as long as wide at apex, with median longitudinal carinae on basal 2/3; 2nd tergite with sublateral longitudinal carina weak and attaining to apex.

Black. Palpi and tegula whitish yellow. Face on upper margin, interantennal process, pronotum on humeral angle and subtegular ridge brownish. Antennae dirty yellowish brown, darker dorsally. Legs light yellowish brown; hind tibia with a basal

black band.

Length : Body 3.3–3.8 mm., forewing 2.6–3.1 mm.

♂. Unknown.

Holotype (♀) : Shimamatsu, Hokkaido, 15-ix-67, K. Kusigemati leg. Paratype. 1 ♀, same data as the holotype.

Distribution : Japan.

This species is close to *H. parva*, sp. nov., but is at once distinguishable from the latter by the propodeum with costula, by the strongly postfurcal nervulus and by the yellowish brown legs. Furthermore, it is allied to *H. globosa* Chiu from Formosa, but easily separated by the relative length of the 1st flagellar segment and hind femur, and by the propodeum with the basal area confluent with the areola.

12. Genus **Stethoncus** Townes

Stethoncus Townes, U. S. Nat. Mus. Bull. 216 : 167, 1959. [Type-species : *Stethoncus arcticus* Townes].

This is a small genus, being represented by only three described species, *S. arcticus* Townes from North America, *S. sulcator* Aubert from Europe and *S. indicator* Aubert from India. On this occasion I give Japan as a new locality of *S. sulcator*.

1. **Stethoncus sulcator** Aubert

Stethoncus sulcator Aubert, Bull. Soc. ent. Mulhouse 1963 : 85, 1963.

Stethoncus sulcator : Aubert, Beitr. Ent. 15 : 78, 1965.

This species is new to Japan. On the basis of the present specimens a brief redescription may be given below :—

♀. Antennae somewhat compressed, with 24–27 segments, median segments being about 2/3 as long as wide ; transverse carina across top of face rather strongly up-bowed. Mesonotum and upper margin of pronotum distinctly and rather sparsely punctured ; mesopleuron more sparsely and weakly punctured than mesonotum ; mesosternal sulcus broad and deep ; mesosternum with a pair of strong tubercles at hind end ; metapleuron with sparse hairs along upper margin. Forewing with intercubitus separated from 2nd recurrent vein by 6/7 of its own length. Hind femur about 1.9 times as long as wide in lateral view. Abdomen with 2nd tergite 5/7 as long as wide at apex, rather sparsely and faintly punctured, with a deep groove along lateral margin extending from base to apical 1/5.

Black. Palpi yellowish brown ; antennae yellowish brown to bark drown, a little darker dorsally. Face on upper median part and interantennal process tinged with dark brown. Tegula dark brown ; subtegular ridge dark brown to black. Legs fulvous ; hind coxa except at apex and sometimes hind femur dark brown to black.

Length : Body 4.4–4.9 mm., forewing 3.0–3.5 mm.

♂. Unknown.

Specimens examined : 1 ♀, Rausu-dake, Hokkaido (4-viii-67, A. Nakanishi) ; 2 ♀♀,

Sapporo, Hokkaido (20-vi-65 & 23-vi-68, K. Kusigemati).

Distribution : Japan and Europe.

13. Genus **Synosis** Townes

Synosis Townes, U. S. Nat. Mus. Bull. 216 : 168, 1959. [Type-species : *Synosis clepsidra* Townes].

This genus is represended by the three species in the world : *S. clepsidra* Townes from North America, *S. watanabei* Kusigemati and *S. hayachinensis* Kusigemati from Japan. In the course of the present investigation has been found in Japan another species, which is new to science. The Japanese species may be distinguished by the following key :—

Key to the species

1. Propodeum with costula presnt ; median longitudinal carinae almost touching each other at base of areola ; 1st pleural area separated from 2nd pleural area by a weak carina. Scutellum exactly flat. ..... 3. *hayachinensis* Kusigemati
- Propodeum with costula usually absent ; median longitudinal carinae more distant at base of areola (Fig. 24) ; 1st pleural area confluent with 2nd pleural area. Scutellum convex. 2
2. Head with face 1.5 times as wide as high, transversely striate on median dorsal portion ; malar space not striate, and black. Hind femur 2.7-3.1 times as long as wide in lateral view. Second and 3rd abdominal tergites finely punctured laterally, impunctured medially. ..... 1. *watanabei* Kusigemati
- Head with face 1.2 times as wide as high, transversely striate wholly ; malar space vertically striate, and dark brown. Hind femur 2.7 times as long as wide in lateral view. Second and 3rd abdominal tergites strongly and rather closely punctured. ..... 2. *nakanishii*, sp. nov.

1. **Synosis watanabei** Kusigemati

Synosis watanabei Kusigemati, Kontyû 36 : 26, 1968.

As a supplement to the original description the following features may be added :—

Face finely striate on median dorsal portion ; antennae with 37 or 38 segments. Propodeum with costula absent or present as a short stub on lateral longitudinal carina. Hind femur 2.7-3.1 times as long as wide in lateral view.

Specimens examined : 1 ♀ (holotype of *watanabei*), Shikotsu-ko, Hokkaido (15-vi-29, C. Watanabe) ; 2 ♀♀, Zenibako, Hokkaido (23-vi-68, M. Miyazaki & H. Takizawa).

Distribution : Japan.

2. **Synosis nakanishii**, sp. nov. (Fig. 24)

This species closely resembles to *S. watanabei*, from which it may be separated by the following characters :—

♀. Face about 1.2 times as wide as high, finely and densely striate transversely, between the wrinkles with weak punctures ; clypeus shallowly and sparsely punctured ; malar space about as long as basal width of mandible, weakly and longitudinally wrinkled ; mandible moderately tapering towards apex, sparsely punctured basally, the upper tooth being obviously longer than the lower one ; distance between lateral ocelli and eyes about as long as diameter of an ocellus ; antennae 31-segmented ; 1st flagellar segment 2.2 times as long as wide and 1.3 times as long as the 3rd. Propodeum areolated as in Fig. 24 ; costula present as a short stub on lateral longitudinal carina ; areola confluent with basal area. Hind femur about 2.7 times as long as wide in lateral view ; front spur of middle tibia 1.7 times as long as the hind spur. Abdominal tergites strongly and densely punctured, the punctures becoming weaker towards apical segments ; 2nd tergite strongly punctured except at apex, 7/8 as long as wide and 1.2 times as long as the 3rd.

Length : Body 4.9 mm., forewing 4.5 mm.

♂. Unknown.

Holotype (♀) : Nukabira near Obihiro, Hokkaido, 19-vii-67, A. Nakanishi leg. The holotype is deposited in the collection of the Entomological Laboratory, Kyushu University.

Distribution : Japan.

This species may be distinguishable from any other congeneric species by the wrinkled face and malar space, by the stout hind femur and by the strongly and densely punctured 2nd and 3rd abdominal tergites.

3. **Synosis hayachinensis** Kusigemati

Synosis hayachinensis Kusigemati, Kontyû 36 : 27, 1968.

Specimen examined : 1 ♀ (holotype of *hayachinensis*), Hayachine-san, Iwate, Honshu (30-viii-66, K. Kusigemati).

Distribution : Japan.

14. Genus **Exochus** Gravenhorst

Exochus Gravenhorst, Ichneumonologia europaea 2 : 328, 1829. [Type-species : *Ichneumon gravipes* Gravenhorst].

Amesolytus Foerster, Verh. Naturh. Ver. Rhainlande 25 : 161, 1868. [Type-species : *Amesolytus ferrugineus* Ashmead].

Mima Davis, Trans. Amer. Ent. Soc. 24 : 206, 1897. [Type-species : *Mima washingtonensis* Davis].

Xanthexochus Morley, Fauna of British India ... Hymenoptera 3 : 292, 1913. [Type-species : *Xanthexochus scutellatus* Morley].

This is the largest and commonest genus of this subfamily. So far as I am aware, six species of the genus have been known to occur in Japan. In the course of the present study I have found twenty one other species, of which sixteen are new to science and the rest new to Japan.

Key to the species

1. Third abdominal tergite with epipleuron wedge-shaped, the basal 3/4 of the mesal edge being straight or slightly concave. 2
– Third abdominal tergite with epipleuron semicircular or subrectangular, the basal 3/4 of the mesal edge being strongly convex. 10
2. Propodeum with apical transverse carina absent but distinct between the lateral and pleural longitudinal carinae. Front spur of middle tibia 4/5 as long as the hind one. Frons yellow laterally, the yellow marking continuous to top of eye. Pronotum yellow on upper margin ; metapleuron tinged with yellowish brown. Third to 5th abdominal tergites brown, with a pair of black spots, respectively. ..... 7. *rufigaster*, sp. nov.
– Propodeum with apical transverse carina complete and strong. Front spur of middle tibia less than 4/5 as long as the hind one. Frons entirely black, or partly yellow, the yellow marking being not continuous to top of eye. Pronotum, metanotum and abdomen entirely black. 3
3. Forewing with nervulus postfurcal by more than 1/3 of its own length. Hind femur 2.2–2.8 times as long as wide in lateral view. 4
– Forewing with nervulus interstitial with basal vein, or slightly postfurcal. Hind femur 2.1–2.3 times as long as wide in lateral view. 9
4. Propodeum with costula absent or present as a short stub on lateral longitudinal carina. Inner margins of eyes convergent below ; mandible wide, the lower margin being narrowly flanged. Forewing with basal vein angularly curved. ... 5
– Propodeum with costula present. Inner margins of eyes parallel-sided ; mandible narrow, the lower margin being not flanged. Forewing with basal vein gently curved. 6
5. Front spur of middle tibia obviously shorter than the hind one. Propodeum with areola straight on posterior margin. Face (Fig. 7), clypeus (Fig. 7) and femora (Fig. 45) black. ..... 5. *convergens*, sp. nov.
– Front spur of middle tibia approximately equal to the hind one in length. Propodeum with areola arched on posterior margin. Face and clypeus yellowish brown ; femora (Fig. 44) ferruginous. ..... 6. *angularis*, sp. nov.
6. Propodeum with basal area separated from areola by a carina. Frons with a yellow marking on each side. Coxae light brown. Second to 7th abdominal tergites tinged with yellowish brown laterally. ..... 1. *flavomarginatus* Holmgren
– Propodeum with basal area confluent with areola. Frons entirely black. Coxae fulvous or black. 7
7. Forewing (Fig. 73) with nervulus postfurcal by 1/5 of its own length. Hind femur (Fig. 41) infuscate, about 2.3 times as long as wide in lateral view. Face entirely black. ..... 4. *aizankeanus*, sp. nov.
– Forewing (Fig. 74) with nervulus postfurcal by 1/2 of its own length. Hind femur (Fig. 42) light brown, about 2.7 times as long as wide in lateral view. Face entirely yellw, or only yellow on upper portion. 8
8. Face entirely yellow ; scutellum and postscutellum black. Hind coxa black ; hind femur (Fig. 42) without dark brown spot ; hind tibia (Fig. 42) light brown, slightly darkened towards apex. ..... 2. *prosopius* Gravenhorst

- Face (Fig. 6) bicoloured, yellow on upper 2/3 and black on lower 1/3. Scutellum at apex and postscutellum yellow. Hind coxa brown; hind femur with a dark brown spot on apicodorsal portion; hind tibia pale yellow, black on basal 1/6 and on apical 2/5. ..... 3. *yasumatsui* Momoi, et al.

9. Propodeum with pleural area more densely hairy. Middle and hind femora reddish brown; hind tibia reddish brown, pale at base and infuscate at apex. .... 8. *nigrifaciatus* Momoi, et al.
- Propodeum with pleural area less densely hairy. Middle and hind femora (Fig. 48) black; hind tibia (Fig. 48) black, pale at base. ..... 9. *nasuzanus*, sp. nov.

10. Head with occipital carina complete dorsally. 11
- Head with occipital carina absent dorsally, or if partially present dorsally it is incomplete medially. 13

11. Head with interantennal process not prolonged, its point not close to frons. Mesonotum with notauli very short but distinct. Body yellow, with black markings; coxae yellow. ..... 12. *affinis* Momoi and Kusigemati
- Head with interantennal process prolonged as an attenuate point that comes close to frons or actually touches frons. Mesonotum with notauli absent. Body black, with yellow markings; coxae black. 12

12. Head with interantennal process not touching frons, separated from it by a distinct gap. Legs with femora, tibiae and tarsi yellowish brown to light reddish brown. ..... 10. *mitratus* Gravenhorst
- Head with interantennal process touching and fused with frons. Legs (Fig. 50) blackish. ..... 11. *turgidus* Holmgren

13. Median half of clypeal margin strongly convex or weakly angled medially; mandible in female with a strong subbasal transverse groove, immediately apicad of which the mandible is strongly inflated; mandible in male not specialized. ... 14
- Median half of clypeal margin truncate or weakly concave; mandible not swollen and without subbasal transverse groove in both sexes. 15

14. Malar space about half length of basal width of mandible. Antennae with 1st flagellar segment 2.0–2.3 times as long as wide. Frons black, yellow on inner orbit. Mesopleuron black with a large yellow spot; mesosternum, metapleuron and propodeum black. Hind tibia (Fig. 51) pale yellow, black on both ends. .... 13. *decoratus* Holmgren
- Malar space 6/7 as long as basal width of mandible. Antennae with 1st flagellar segment 1.8 times as long as wide. Frons, meso- and metapleuron, mesosternum and hind tibia (Fig. 54) yellow; propodeum black with yellow pleural areas. ... . 14. *hiraniwensis*, sp. nov.

15. Propodeum with 2nd lateral area covered with hairs wholly, without costula. Antennae with 22 or 23 segments; 1st flagellar segment more slender, arched towards outer side, about 3.2 times as long as wide. Pale spots at top of eyes elongate and somewhat convergent posteriorly. ..... 15. *shimamatsensis*, sp. nov.
- Propodeum with 2nd lateral area only partly hairy or almost bare, with or without costula. Antennae with 26–36 segments (except for *caudatus*); 1st flagellar segment stouter, straight, 1.7–2.8 times as long as wide. Pale spots at top of eyes subcircular or subtriangular. 16

16. Propodeum with costula absent, or present as a short stub on lateral longitudinal

carina. 17
- Propodeum with costula present. 20
17. Ovipositor long, surpassing apex of abdomen, and evenly curved upwards. Propodeum with areola confluent with petiolar area. Hindwing (Fig. 76) with nervellus strongly inclivous. ..... 24. *caudatus*, sp. nov.
- Ovipositor short, not suspassing apex of abdomen and straight. Propodem with areola not confluent with petiolar area. Hind wing (Fig. 77) with nervellus slightly inclivous. 18
18. Face moderately and evenly convex, 1.1 times as wide as high ; malar space and mandible black. Scutellum and postscutellum entirely black. Legs with coxae and trochanters black ; femora, tibiae and tarsi reddish brown. .... 27. *bicoloripes*, sp. nov.
- Face strongly convex transversely, 1.3–1.5 times as wide as high ; malar space and mandible yellow. Scutellum black, yellow apically ; postscutellum yellow. Legs fulvous ; hind tibia infuscate at both ends. 19
19. Head with clypeus weakly concave medially, black, yellowish on apicolateral corner ; face black, yellow on upper margin ; frons black with a yellow marking on each lower side. ..... 26. *latifasciatus*, sp. nov.
- Head with clypeus rather truncate, yellow with a median apical spot ; face entirely yellow ; frons entirely black. ..... 25. *firmus*, sp. nov.
20. Head with inner and outer orbits yellow, the former yellow area continuous to top of eye and the latter one not attaining to top of eye. 21
- Head with frons entirely black, or with lower lateral yellow markings ; outer orbit entirely black. 22
21. Propodeum with costula very weak but complete ; areola incompletely confluent with petiolar area. Face entirely yellow. Pronotum black, the humeral angle being yellowish brown. ..... 22. *kanayamensis*, sp. nov.
- Propodeum with costula strong ; areola separated from petiolar area by a strong carina. Face bicoloured, blackish ventrally, yellowish dorsally. Upper margin of pronotum broadly margined with yellow. ..... 23. *ornatus* Momoi and Kusigemati
22. Hind femur slender, 2.5 times as long as wide in lateral view. Antennae with 25–27 segments. Face yellow on upper portion, black on lower portion, clypeus yellow, blackish on median third. Scutellum and postscutellum black ; pronotum on humeral angle yellow. Front and middle coxae yellow ; hind coxa black. ... . 21. *bifasciatus*, sp. nov.
- Hind femur stout, about 2.1 tmes as long as wide in lateral view. Antennae more than 31 segments. Face and clypeus black, or with a yellow upper marking. Scutellum, postscutellum and pronotum on humeral angle black or yellow. Coxae black or reddish brown. 23
23. Coxae reddish brown. 24
- Coxae more or less black. 25
24. Antennae setaceous, with 36 segmets ; 1st flagellar segment 1.7 times as long as wide. Propodeum with median longitudinal carinae strong on 1st lateral area and obsolete on 2nd lateral area. Hind tibia (Fig. 55) reddish brown, except at base whitish yellow. ..... 19. *unidentatus* Uchida
- Antennae filiform, with 31–34 segments ; 1st flagellar segment 2.4 times as long as

wide. Propodeum with median longitudinal carinae strong throughout. Hind tibia (Fig. 56) bicoloured, infuscate at extreme base and on apical 1/2, elsewhere whitish yellow. ..... 20. *erythropus*, sp. nov.

25. Mandible not margined at lower margin. Face black with a Λ-shaped yellow marking. Femora and tibiae lemon yellow (Fig. 53). Pronotum on humeral angle and subtegular ridge yellow. ..... 14. *oshimensis* Uchida
- Mandible margined at lower margin. Face almost entirely black, without Λ-shaped marking. Femora reddish or dark brown ; front and middle tibiae fulvous ; hind tibia (Figs. 52 & 57) reddish brown or infuscate, with a whitish subbasal band. Pronotum on humeral angle and subtegular ridge black. 26

26. Antennae setaceous. Hind femur 2.1 times as long as wide in lateral view. Hind tibia (Fig. 52) reddish brown, whitish yellow on basal third. .... 18. *setaceous*. sp. nov.
- Antennae filiform. Hind femur 2.3 times as long as wide in lateral view. Hind tibia (Fig. 57) blackish on basal 1/7 and apical 3/5, whitish yellow on median 1/4. ..... 17. *borealis*, sp. nov.

1. **Exochus flavomarginatus** Holmgren (Fig. 43)

Exochus flavomarginatus Holmgren, Svensk. Vetensk. Akad. Handl. 75 : 80, 1854.

Exochus flavomarginatus : Thomson, Dtsch. Ent. Ztschr. 31 : 209, 1887 ; Morley, Ichneumonologia Britannica 4 : 45, 1911.

This species is new to Japan. Having compared the specimens (2 ♀♀) examined with an authentic European specimen (1 ♂) of *flavomarginatus* I have come to the conclusion that the present material should be identified with *flavomarginatus*. In the specimens examined the inner orbit is black and the spiracle of the propodeum is rather elliptic than oval.

Length : Body 6.0 mm., forewing 4.6 mm.

Specimens examined : 1 ♀, Ôgino-sen, Hyogo, Honshu (8-vi-66, T. Naito) ; 1 ♀, Osuzu-yama, Miyazaki, Kyushu (22-v-66, K. Kusigemati).

Host : *Scoporia truncicolella* Staint (after Morley, 1911, in Europe).

Distribution : Japan and Europe.

It should be noted that no male specimen has yet been discovered in Japan, and that this species is to be referred to the *pulatus* group of Townes and Townes (1959).

2. **Exochus prosopius** Gravenhorst (Figs. 42 & 74)

Exochus prosopius Gravenhorst, Ichneumonologia europaea 2 : 349, 1829.

Exocchus prosopius : Thomson, Dtsch. Ent. Ztschr. 31 : 209, 1887 ; Morley, Ichneumonologia Britannica 4 : 43, 1911.

This species is new to Japan. In general appearance it is very similar to the following species, *E. yasumatsui*, but differs from the latter in having the colouration of the face, scutellum, postscutellum and legs as mentioned in the present key.

Length : Body 5.5-8.0 mm., forewing 4.8-6.1 mm.

Specimens examined. Japan (38 ♂♂ & 4 ♀♀) : Hokkaido—Iwaobetsu, Toikanbetsu, Taisetsu-zan, Nukabira, Satsunai-dake, Yubari-dake, Sapporo, Soranuma-dake, Shimamatsu and Eniwa-dake ; Honshu—Kamikôchi and Kita-Alps.

Distribution : Japan and Europe.

This species belongs to the *pulatus* group of Townes and Townes (1959).

3. **Exochus yasumatsui** Momoi, Kusigemati and Nakanishi (Figs. 6 & 71)

Exochus yasumatsui Momoi, Kusigemati and Nakanishi, Mushi 41 : 210. 1968.

♂. Agrees with the female description, except in the following characters :—

Face a little wider than in female in relative width ; antennae with 34–38 segments ; 1st flagellar segment 1.9–2.3 times as long as wide and 1.2–1.6 times as long as the 2nd. Hind femur about 2.6 times as long as wide in lateral view. Face, clypeus, malar space and gena on lower part yellow. Prepectus with a large yellow spot.

Length : Body 6.3–7.9 mm., forewing 4.7–5.7 mm.

Specimens examined. Japan (120 ♂♂ & 63 ♀♀) : Hokkaido—Kamuikotan, Taisetauzan, Sapporo, Jôzankei, Muine-yama, Soranuma-dake, Shimamatsu, Nopporo and Tôya ; Honshu—Hayachine-san, Haguro, Nakawa near Nagano, Kamikôchi, Subashiri, Kyoto, Ôgino-sen and Kongosan near Ôsaka ; Shikoku—Ishizuchi-yama ; Kyushu—Hiko-san, Kurume, Miyazaki, Wanizuka-yama, Kirishima-yama, Kurino-dake, Terayama near Kagoshima, Eboshi-dake near Taniyama and Kagoshima.

Host : *Udea testacea* Butler (Kagoshima, on *Brassica oleracea*).

Distribution : Japan.

This species belongs to the *pulatus* group of Townes and Townes (1959).

4. **Exochus aizankeanus**, sp. nov. (Figs. 41 & 73)

♀. Face about 1.2 times as wide as high, rather strongly and closely punctured ; clypeus more sparsely punctured than face, the apical margin being very weakly concave medially ; inner margin of eyes almost parallel-sided ; malar space about 2/3 as long as basal width of mandible ; mandible rather strongly tapering towards apex, the lower margin being margined with a weak carina ; occipital carina absent above and below, present laterally as an obsolete carina ; spots at top of eyes small, touching margin of eyes ; antennae rather long, with 31–37 segments ; 1st flagellar segment 1.5–1.8 times as long as wide and about 1.5 times as long as the 2nd. Mesonotum with notauli present as an ovoidal pit at base. Propodeum with costula strong ; basal area completely fused with areola ; median longitudinal carina weakly curved at base of areola ; areola almost parallel-sided ; 2nd lateral area with hairs on apicolateral part ; propodeal spiracle elliptic. Metapleuron polished, with very sparse hairs along upper and hind margins. Forewing (Fig. 73) with basal vein roundly curved ; nervellus slightly inclivous. Hind femur about 2.3 times as long as wide in lateral view ; front spur of middle tibia about 3/4 as long as the hind one. Abdomen with 1st tergite about 1.4 times as long as wide at apex ; 2nd tergite about 4/5 as long as wide at apex ; epipleuron of 3rd tergite narrowly wedge-shaped, the inner margin being straight.

Black. Palpi infuscate ; mandible blackish ; face on upper part and interantennal

process slightly tinged with yellowish brown ; small spots at top of eyes yellow ; antannae blackish. Legs (Feg. 41) with coxae and trochanters dark brown, yellowish brown at apex ; femora yellowish brown, the hind one being darker than the front and middle ones ; tibiae and front and middle tarsi light brown, the hind tibia being infuscate apically ; hind tarsus pale yellow, the 1st to 4th segments at apex and the 5th being infuscate.

Length : Body 4.6-6.2 mm., forewing 4.0-4.5 mm.

♂. Antennae with 30-34 segments ; 1st flagellar segment about 2.0 times as long as wide and about 1.3 times as long as the 2nd. Propodeum with median longitudinal carinae more strongly curved at base of costula. Metapleuron sparse hairs on median portion. Legs darker than in female.

Length : Body 5.5-6.5 mm., forewing 4.5-5.0 mm.

Holotype (♀) : Aizankei, Hokkaido (19-vii-62, Y. Miyatake). Paratypes : 1 ♀, same data as the holotype ; 1 ♀, Aizankei, Hokkaido (2-viii-55, K. Morimoto) ; 1 ♂, Taisetsuzan, Hokkaido (22-26-vii-57, T. Uchida) ; 2 ♂♂, Shimamatsu, Hokkaido (15-vi-65, K. Kusigemati). The holotype is deposited in the collection of the Entomological Laboratory, Kyushu University.

Distribution : Japan.

This species belongs to the *pulatus* group of Townes and Townes (1959). It is closely related to *E. flavomarginatus*, from which it is easily separated from the latter by the areola of the propodeum confluent with the basal area, by the entirely black frons and by the black coxae.

5. **Exochus convergens**, sp. nov. (Figs. 7 & 45)

♀. Face about 1.2 times as wide as high, slightly convex, very strongly and rather closely punctured ; clypeus with apical margin weakly convex ; innner margins of eyes rather strongly convergent below (Fig. 7) ; malar spece 1/2 as long as basal width of mandible ; mandible very wide, strongly tapering towards apex, the lower margin bearing a narrow flange on basal 3/5 ; occipital carina absent ; eyes without spots at top ; antennae short, with 22 or 23 segments ; 1st flagellar segment about 2.3 times as long as wide and about 1.8 times as long as the 2nd. Mesonotum with notauli present as an ovoidal pit at base. Propodeum with costula entirley absent ; basal area conflunt with areola ; median longitudinal carinae straight and rather strongly widened towards apex ; 1st and 2nd lateral areas densely hairy, the hairs becoming sparser apically ; propodeal spiracle small and circular. Metapleuron shiny, very sparsely haired wholly. Forewing with basal vein angularly bent ; nervellus strongly inclivous. Hind femur 2.2-2.5 times as long as wide in lateral view ; front spur of middle tibia 3/7-4/7 as long as the hind one. Abdomen with 1st tergite about as long as or a little longer than apical width ; 2nd tergite 1/2-2/3 as long as wide at apex ; epipleuron of 3rd tergite narrowly wedge-shaped, the inner margin being very weakly concave basally.

Black. Palpi infuscate ; interantennal process pale yellow ; scape and pedicel black ; flagellum dark brown to black, paler ventrally. Tegula blackish, yellowish at base. Legs (Fig. 45) black ; front femur on apical 1/4, middle and hind tibiae at base and front tarsus dirty yellowish brown ; front tibia yellowish brown ; middle and hind

tibiae and tarsi infuscate.

Length : Body 5.5-6.3 mm., forewing 4.2-4.5 mm.

♂. Agrees with the above-mentioned description of the female, except in the following aspects : —

Propodeum with costula present and strong. Flagellum on ventral side and tibiae paler.

Length : Body 5.5-6.2 mm., forewing 4.2-4.6 mm.

Holotype (♀) : Shimamatsu, Hokkaido (15-vi-65, K. Kusigemati). Paratypes : 1 ♀, Sapporo, Hokkaido (26-vi-56, S. Momoi) ; 1 ♂, Soranuma-dake, Hokkaido (25-vi-65, Kusigemati) ; 2 ♂♂ & 4 ♀♀, Shimamatsu, Hokkaido (12-vi-64, 13-vi-65 & 15-vi-65, K. Kusigemati) ; 2 ♂♂, Sapporo, Hokkaido (2-vi-68, K. Kusigemati).

Distribution : Japan.

This species belongs to the *pulatus* group of Townes and Townes (1959). It is very similar to *E. angularis*, from which it differs by the black face and clypeus, by the blackish legs and by the obviously shorter front spur of the middle tibia.

6. **Exochus angularis**, sp. nov. (Figs. 44 & 72)

♀. Face about as wide as high, rather strongly and closely punctured ; clypeus with apical margin truncate ; inner margins of eyes slightly convergent below ; malar space 3/5 as long as basal width of mandible ; mandible wide, strongly tapering towards apex, the lower margin being narrowly flanged on basal 3/5 ; occipital carina perfectely absent ; antennae rather long, with 36 or 37 segments ; 1st flagellar segment 2.6-2.9 times as long as wide and about 1.6 times as long as the 2nd. Mesonotum with notauli forming an ovoidal pit at base. Propodeum with costula absent or present as a very short stub on lateral longitudinal carina ; median longitudinal carinae almost straight or slightly curved at base of costula ; basal area confluent with areola, a little widened towards apex ; propodeal spiracle long ovate. Metapleuron polished, with scattered hairs at posterior corner. Forewing with basal vein angularly curved (Fig. 72). Middle tibia with front spur a little shorter than the hind one. Abdomen with 1st tergite 1.1 times as long as wide at apex ; 2nd tergite about 4/5 as long as wide at apex.

Black. Face, clypeus, malar space, mouth parts and lower line of gena yellow. Face with a dark brown ventral stripe on median part ; tentrial pit dark brown ; apical margin of clypeus margined with yellowish brown or dark brown. Antennae dark brown, paler dorsally. Tegula whitish basally, dirty yellowish brown apically. Legs (Fig. 44) yellowish brown to reddish brown ; front and middle coxae yellowish brown, blackish at base ; hind coxa black, yellowish brown at apex ; femora at apex, tibia at base and tarsi pale yellow.

Length : Body 6.0-6.5 mm., forewing 5.0 mm.

♂. Unknown.

Holotype (♀) : Togakushi, Nagano, Honshu (6-vii-66, M. Honda). Paratypes : 2 ♀♀, same data as the holotype ; 1 ♀, Ashoro, Hokkaido (23-vii-67, A. Nakanishi). The holotype is deposited in the collection of the Entomological Laboratory, Kyushu Uni-

versity.

Distribution : Japan.

This species belongs to the *pulatus* group of Townes and Townes (1959). It is closely related to the preceding species, *E. angularis*, sp, nov., from which it differs by the tibial spurs of the middle tibia approximately equal in length and by the yellowish brown face and clypeus.

7. **Exochus rufigaster**, sp. nov. (Figs. 8 & 49)

♀. Face about 8/9 as wide as high, weakly and rather sparsely punctured ; clypeus almost impunctured, the apical median part being weakly impressed ; malar space about as long as basal width of mandible ; occipital carina absent above and below, present laterally as a fine carina ; antennae with 34–36 segments ; 1st flagellar segment 2.0–2.3 times as long as wide and about 1.7 times as long as the 2nd. Mesonotum with notauli very short and strong. Metapleuron polished, bare, sometimes with a few hairs on posterior part. Propodeum with costula present ; median longitudinal carinae absent but present on basal area ; apical transverse carina almost absent but visible between pleural and lateral carinae, and mesad of lateral longitudinal carina usually as a projecting stub ; basal area, areola, 2nd lateral and petiolar areas bare, sometimes with a few hairs along lateral margin of 2nd lateral and petiolar areas ; 1st and 2nd pleural areas rather sparsely haired. Forewing with nervulus postfurcal by 2/5–1/2 of its own length. Hind femur about 2.3 times as long as wide in lateral view ; front spur of middle tibia 4/5 as long as the hind one. Abdomen with 1st tergite 1.5 times as long as wide at apex ; 2nd tergite 4/5 as long as wide at apex.

Black. Face (Fig. 8) yellow to yellowish brown, gradually darkened below ; clypeus yellowish brown, with a dark brown spot on apical portion. Inner orbit broadly yellow, the yellow marking fused with spot at top of eye. Mouth parts, malar space, gena on front part, outer orbit on lower 2/3, cuneate marking on upper margin of pronotum, upper spots of prepectus and mesopleuron, tegula, subtegular ridge, scutellum on apical and lateral margins and legs yellow to yellowish brown. Propodeum on apical half and pleural area sometimes tinged with dark brown. Legs (Fig. 49) light brown. Abdominal tergites reddish brown ; 1st or 2nd tergites black ; 2nd to 4th or 5th tergites often with a pair of dark brown spots ; 5th and rarely 6th tergites blackish dorsally, reddish brown laterally. In some specimens hind femur at base and hind tibia at both ends dark brown.

Length : Body 5.5–6.0 mm., forewing 4.3–5.0 mm.

♂. Antennae with 32–35 segments ; 1st flagellar segment 2.5–2.8 times as long as wide. Yellowish areas more clearly stained with yellow than in female. Face entirely lemon yellow ; inner orbits more extensively marked with yellow, often fused each other ; upper margin of pronotum more extensively yellow ; yellow spot of mesopleuron fused with spot of prepectus ; scutellum almost entirely yellow ; propodeum entirely black. Abdomen blackish, each tergite with a yellow apical band, sometimes tinged with dark brown throughout.

Length : Body 6.0–6.7 mm., forewing 4.3–5.0 mm.

Holotype (♀) : Sapporo, Hokkaido (20-ix-66, K. Kusigemati). Paratypes : 2 ♂♂ &

1 ♀, Ashoro, Hokkaido (19-vii- & 22-vii-67, A. Nakanishi) ; 2 ♂♂, Ashoro (23-vii-67, M. Honda) ; 1 ♂, Ashoro (23-vii-67, T. Saigusa) ; 1 ♀, Apoi-dake, Hokkaido (27-vi-67, K. Kusigemati) ; 1 ♀, Taisetsu-zan, Hokkaido (30 vii 67, K. Kusigemati) ; 1 ♂, Kanayama, Yamanashi, Honshu (25 vii-64, A. Nakanishi) ; 1 ♀, Senjoga-dake, Nagano, Honshu (22-vii-64, A. Nakanishi).

Distribution : Japan.

This species belongs to *pictus* group of Townes and Townes (1959). It resembles *E. pictus*, from which it is readily distinguished by the brownish abdomen with a pair of dark brown spots and by the yellowish hind coxa.

8. **Exochus nigrifaciatus** Momoi, Kusigemati and Nakanishi

Exochus nigrifaciatus Momoi, Kusigemati and Nakanishi, Mushi 41 : 211, 1968.

As a supplement to the original description the following male description may be added :—

♂. Malar space a little longer than female ; antennae with 39 or 40 segments; 1st flagellar segment 1.2-1.6 times as long as wide. Hind femur about 2.4 times as long as wide in lateral view ; coxae daker than female.

Length : Body 8.5 mm., forewing 6.0 mm.

Specimens examined : 1 ♀ (holotype of *nigrifaciatus*), Mitai, Takachihomachi, Miyazaki, Kyushu (24-x-64, K. Yasumatsu & T. Nishida) ; 2 ♂♂, Jôzankei, Hokkaido (25 vi-64 & 20-vi-67, K. Kusigemati).

Distribution : Japan.

This species belongs to the *gravipes* group of Townes and Townes (1959).

9. **Exochus nasuzanus**, sp. nov. (Fig. 48)

This new species is similar to the preceding species, *E. nigrifaciatus*, from which it may be separated by the following characters :—

♀. Face about 1.2 times as wide as high; mandible strongly tapering towards apex, at most with a feeble notch delimiting the lower tooth which is therefore absent or obsolete ; spots at top of eyes small, touching margin of eye ; occipital carina absent above and below, present laterally as a very fine carina ; antennae with 39 or 40 segments ; 1st flagellar segment 1.5-1.9 times as long as wide and about 1.4 times as long as the 2nd. Mesonotum with notauli present as an ovoidal impression, the long axis of the impression paralleling mesoscutal margin. Propodeum with basal area incompletely confluent with areola. Middle tibia with front spur about 2/3 as long as the hind spur. Abdomen with 1st tergite about 1.5 times as long as wide at apex ; 3rd tergite with epipleuron wedge-shaped, the inner margin being very weakly concave basally.

Black. Palpi infuscate ; small spots at top of eyes weakly tinged with yellowish brown. Tegula blackish, pale yellow basally. Legs black ; front femur dark brown ; middle and hind femur (Fig. 48) and middle and hind (Fig. 48) tibiae except for basal pale yellow band dark brown to black ; hind femur sometimes tinged with dark-brown;

front tibia and tarsus yellowish brown; middle tarsus yellowish brown, darkened towards apex; hind tarsus with 1st to 4th segments at apex and last segment dark brown, elsewhere pale yellow.

Length: Body 6.2–8.5 mm., forewing 4.1–5.9 mm.

♂. Differs from the female, apart from usual sexual differences, in the following characters:—

Malar space a little longer than female in relative length; interantennal process sometimes yellowish; legs more or less paler; basal yellow band of middle tibia indistinct.

Length: Body 6.8–9.7 mm., forewing 5.3–7.0 mm.

Holotype (♀): Nasu-dake, Tochigi, Honshu (9-x-67, K. Kusigemati). Paratypes: 3 ♂♂, Apoi-dake, Hokkaido (21-22-viii-57, S. Momoi); 1 ♂, Aizankei, Hokkaido (7-vii-67, A. Nakanishi); 1 ♀, Taisetsu-zan, Hokkaido (30-vii-67, K. Kusigemati); 1 ♂, Haguro, Yamagata, Honshu (3-ix-66, K. Kusigemati); 2 ♂♂ & 1 ♀, same locality as the holotype but 8-9-x-67; 3 ♂♂, Kyoto, Honshu (12- & 26-ix-65, H. Takada).

Distribution: Japan.

This species belongs to the *gravipes* group of Townes and Townes (1959).

10. **Exochus mitratus** Gravenhorst

Exochus mitratus Gravenhorst, Ichneumonologia europaea 2: 350, 1829.

Exochus mitratus: Thomson, Dtsch. Ent. Ztschr. 31: 208, 1887; Townes and Townes, U. S. Nat. Mus. Bull. 216: 181, 1959.

In 1959 H. & M. Townes gave Japan as a locality of the species. On the basis of the present specimen a brief redescription may be given below:—

♂. Face about 1.5 times as wide as high, strongly punctured; apex of interantennal process not touching frons, separated from it by a distinct gap; malar space about 4/7 as long as basal width of mandible; antennae 31-segmented; 1st flagellar segment 1.6 times as long as wide and 1.2 times as long as the 2nd. Metapleuron polished, with a few hairs on lower portion. Propodeum completely areolated; 2nd lateral area rather sparsely haired wholly. Forewing with nervulus postfurcal by 3/8 of its own length. Hind femur about 2.1 times as long as wide in lateral view; front spur of middle tibia 3/5 as long as the hind one; 2nd segment of middle tarsus about 1.3 times as long as wide. First abdominal tergite 8/9 as long as wide at apex; 2nd tergite about 5/9 as long as wide at apex; punctuation of abdominal tergites a little more weaker and sparser than in *E. turgidus*.

Black. Interantennal process and upper margin of face whitish; spots at top of eyes very small, circular, whitish; antennae entirely blackish. Pronotum and subtegular ridge entirely black, tegula dirty yellowish brown apically, pale yellow basally. Coxae black; trochanters blackish, yellowish or reddish brown at extreme apex; femora light reddish brown; tibiae and tarsi fulvous, the base of tibiae being a little paler.

Length: Body 7.5 mm., forewing 5.4 mm.

Specimens examined: 1 ♂, Kurohime-yama, Nagano, Honshu (8-vi-59, K. Kamijo).

Distribution : Japan, Europe and North America.

This species belongs to the *mitratus* group of Townes and Townes (1959).

11. **Exochus turgidus** Holmgren (Fig. 50)

Exochus turgidus Holmgren, Svenska Vetensk. Akad. Handle. 4 : 312, 1856.

Exochus turgidus : Thomson, Dtsch. Ent. Ztschr. 31 : 208, 1887 ; Townes and Townes, U. S. Nat. Mus. Bull. 216 : 183, 1959.

This species is new to Japan. On account of the interantennal process fused with the frons at apex, the blackish hind femur, etc. the present specimen (1 ♀) from Japan should be identified with *turgidus*. In this specimen the face on the upper margin, tegula and front femur and tibia are darker.

Length : Body 9.5 mm., forewing 6.6 mm.

Specimen examined : 1 ♀, Yamade, Hokkaido (2-vi-59, S. Nishiguchi).

Distribution : Japan, Europe and North America.

It is notable that no male specimen has been discovered in Japan. This species belongs to the *mitratus* group of Townes and Townes (1959).

12. **Exochus affinis** Momoi and Kusigemati

Exochus affinis Momoi and Kusigemati, Pacific Insects 12 : 414, 1970.

Specimens examined : 1 ♂ (holotype of *affinis*), Sata-misaki, Kagoshima, Kyushu (26-iv-63, H. Takada) ; 1 ♀, Kyoto, Honshu (24-ix-65, H. Takada) ; 1 ♀, Ôyama-misaki, Kôchi, Shikoku (1-v-32, Y. Sugihara) ; 1 ♂, Noma-misaki, Kagoshima, Kyushu (22-v-66, S. Ôga) ; 1 ♂ & 2 ♀♀, Ôyama, Okino-erabu, Amami-shotô (28-30-vii-63, C. M. Yoshimoto) ; 1 ♂, Inaba, Iriomote-jima, Yaeyama-shotô (10-iii-64, C. M. Yoshimoto & J. Harrell) ; 1 ♀, Komi, Iriomote-jima, Yaeyama-shotô (12-iv-62, Y. Arita).

Distribution : Japan and Ryukyu Is.

This species is very closely related to the *mitratus* group of Townes and Townes (1959), but it differs from the latter in having the normal interantennal process, the mesonotum with distinct notauli and the yellow body with black markings.

13. **Exochus decoratus** Holmgren (Fig. 51)

Exochus decoratus Holmgren, Öfvers. Svenska Vetensk. Akad. Förh. 30 : 64, 1873.

Exochus decoratus : Thomson, Dtsch. Ent. Ztschr. 31 : 312, 1887 ; Townes and Townes. U. S. Nat. Mus. Bull. 216 : 263, 1959.

This species is characterized by the following aspects :—

♀. Clypeus with a few large punctures ; malar space 1/2 as long as basal width of mandible ; antennae with 27-29 segments ; 1st flagellar segment about 2.2 times as long as wide. Propodeum with costula complete, sometimes present as a short stub on lateral longitudinal carina. Forewing with nervulus postfurcal by about 1/2 of its own length. Hind femur 2.0-2.3 times as long as wide in lateral view. Abdomen with 2nd tergite 6/7 as long as wide at apex.

Black. Face, clypeus, malar space, mouth parts, gena on lower 2/5, tegula, subtegular ridge and postscutellum yellow. Yellow area of frons continuos to top of eye. Pronotum black, with the humeral angle, lower corner and hind margin yellowish brown ; mesonotum sometimes with a yellow median spot ; prepectus with a yellow spot ; mesopleuron sometimes with a yellow median spot, which is fused with that of the prepectus. Antennae pale dark brown, paler ventrally. Legs (Fig. 51) pale yellow to light brown ; hind tibia (Fig. 51) blackish at both ends.

♂. Antennae with 26-29 segments ; 1st flagellar segment about 2.7 times as long as wide. Yellow markings of gena, prepectus and mesopleuron more extensive. Legs paler than in female ; hind coxa often blackish on basidorsal side.

Length : Body 5.5-7.1 mm., forewing 4.2-5.8 mm.

Specimens examined : 1 ♂, Sapporo, Hokkaido (10-viii-58, S. Momoi) ; 2 ♀♀, Sapporo, Hokkaido (10-vii-65 & 27-viii-66, H. Takada) ; 1 ♂, Aizankei, Hokkaido (3-viii-66, K. Kamijo) ; 1 ♂ & 2 ♀♀, Hiraniwa near Kuji, Iwate, Honshu (27-viii-66, K. Kusigemati) ; 1 ♀, Chokai-san, Yamagata, Honshu (4-ix-66, K. Kusigemati).

Distribution : Japan, Europe and North America.

This species belongs to the *mandiblaris* group of Townes and Townes (1959).

14. **Exochus hiraniwensis**, sp. nov. (Fig. 54)

♀. Face 1.2 times as wide as high, weakly and rather sparsely punctured ; clypeus almost impunctured, the apical margin being strongly convex medially ; malar space 6/7 as long as basal width of mandible ; antennae with 29 segments ; 1st flagellar segment about 1.8 times as long as wide. Propodeum with 2nd lateral area without hairs. Forewing with nervulus postfurcal by about 3/5 of its own length. Hind femur 2.1 times as long as wide in lateral view ; front spur of middle tibia 1/2 as long as the hind one. Abdomen with 1st tergite abont 1.2 times as long as wide at apex ; 2nd tergite 4/5 as long as wide at apex.

Fulvous. Head except for blackish ocellar area and vertex, pronotum except for blackish upper portion, propleuron, median spot of mesonotum, mesopleuron except for posterior brown spot, prepectus, sterna, metapleuron, tegula, subtegular ridge, scutellum, postscutellum, lateral area of propodeum and legs (Fig. 54) fulvous. Mesonotum black with a large yellow spots ; propodeum black except for lateral areas. Abdomen black.

Length : Body 6.8 mm., forewing 4.6 mm.

♂. Unknown.

Holotype (♀) & paratype (1 ♀) : Hiraniwa near Kuji, Iwate, Honshu (27-viii-66, K. Kusigemati).

Distribution : Japan.

This species belongs to the *mandiblaris* group of Townes and Townes (1959). It differs from the preceding species, *E. decoratus*, by the long malar space and by the colouration of the head and thorax.

15. **Exochus shimamatsensis**, sp. nov. (Fig. 62)

♀. Face about 1.3 times as wide as high, sharply and somewhat sparsely punctured ;

clypeus very sparsely punctured, the apical margin being weakly concave medially; malar space about 1/2 as long as basal width of mandible; mandible strongly tapering towards apex; inner margin of eyes strongly convergent below; frons with a strong V-shaped prominence; temple sparsely haired; occipital carina absent above and below, present laterally as a fine carina; spots at top of eyes elongate, slightly slanted posteriorly touching margin of eye, the two spots being appearing like abreviated parentheses around the hind ocelli; antennae short, with 22 or 23 segments; 1st flagellar segment gently curved towards outer side, about 3.2 times as long as wide and 1.9 times as long as the 2nd. Mesonotum with notauli very shortly but strongly impressed. Scutellum rather long, almost flat, scatteringly haired. Propodeum without costula; basal area confluent with areola; 2nd lateral area with rather dense hairs but bare on inner apical corner; propodeal spiracle short-ovate. Metapleuron polished, without hairs or with only 1-3 hairs along upper margin. Forewing with nervulus postfurcal by 1/2 of its own length; basal vein rather angularly curved. Hind femur about 2.0 times as long as wide in lateral view; front spur of middle tibia 1/2 as long as the hind one. Abdomen with 1st tergite about as long as wide at apex; 2nd tergite 3/5 as long as wide at apex; epipleuron of 3rd tergite subtruncate apically, the inner margin being evenly convex.

Black. Face, clypeus, mouth parts, frons on lower side, gena on lower line, pronotum on humeral angle, tegula and subtegular ridge yellow, the median apical margin of clypeus being dark brown. Scape and pedicel yellow ventrally, dark brown dorsally; flagellum yellowish brown, darker dorsally. Legs yellowish brown; front and middle coxae on basal half and hind coxa except at apex, blackish; front and middle femora on apical 1/5, hind femur (Fig. 62) on apical 1/3 but 2/5 on the dorsal side, front tibia on basal half, middle tibia on basal 1/3 and dorsal side, and hind tibia (Fig. 62) on basal 1/3 but 5/7 on the dorsal side, yellow; tarsi pale yellow.

♂. Propodeum with costula complete but weakly defined. Antennae with 22 segments; 1st flagellar segment 3.6 times as long as wide. Legs light yellowish brown; front and middle coxae and hind one except at blackish base yellowish brown.

Length: Body 4.9-5.3 mm., forewing 4.0 mm.

Holotype (♀): Sapporo, Hokkaido (27-vii-65, K. Kusigemati). Paratypes: 1 ♀, Shimamatsu, Hokkaido (25-vii-65, K. Kusigemati); 1 ♂, Hiraniwa near Kuji, Iwate, Honshu (27-viii-66, K. Kusigemati).

Distribution: Japan.

This species is similar to the European species, *E. fletcheri* Bridgman, but easily separated from the latter by the propodeum with costula in female, by the vertical spot which is touched the margin of the eye and by the colouration of the coxae and tibiae. This species belongs to the *signifrons* group of Townes and Townes (1959).

16. **Exochus oshimensis** Uchida (Fig. 53)

Exochus oshimensis Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25: 267, 1930.

Exochus oshimensis: Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 33: 210, 1932.

Specimens examined: 1 ♀ (holotype of *oshimensis*), Ôshima (=Izu-ôshima), Japan

(2-iv-28, K. Sato) ; 1 ♀, Kyoto, Honshu (15-vii-61, H. Takada) ; 1 ♀, Shimonoseki, Yamaguchi, Honshu (6-v-66, M. Miyazaki) ; 1 ♂, Ukiha, Fukuoka, Kyushu (5-v-64, I. Yoshimura) ; 1 ♀, Uearata, Kagoshima, Kyushu (9-iv-60, M. Noda) ; 2 ♀♀, Kogashira, Kagoshima (23-xi-69, K. Kusigemati) ; 1 ♀, Eboshi-dake near Taniyama, Kagoshima (15-v-70, K. Kusigemati) ; 2 ♀♀, Taihorin, Formosa (xii-09 & xi-10, S. G. Sauter).

Distribution : Japan and Formosa.

The Formosan specimens examined differ from the Japanese ones by the front and middle coxae and trochanters dirty yellowish brown, and by the scutellum yellow laterally and apically.

This species belongs to the *tibialis* group of Townes and Townes (1959).

17. **Exochus borealis**, sp. nov. (Fig. 57)

♀. Face about 1.2 times as wide as high, rather weakly and closely punctured ; clypeus with apical margin truncate ; malar space about 5/7 as long as basal width of mandible ; mandidle strongly tapering towards apex, the outer surface strongly and sparsely punctured, the lower margin being margined by a fine carina and the lower tooth being very small ; spots at to of eyes very small, not touching margin of eye ; antennae filiform, with 31-33 segments ; 1st flagellar segment 1.9-2.2 times as long as wide. Propodeum with costula complete and strong ; basal area confluent with areola ; 2nd lateral area with hairs at apicolateral corner ; propodeal spiracle elliptic. Metapleuron polished, with sparse hairs at hind corner. Forewing with nervulus postfurcal by 3/8 of its own length ; nervellus slightly inclivous. Hind femur about 2.3 times as long as wide in lateral view ; front spur of middle tibia 3/5 as long as the hind one. Abdomen with 1st tergite about 1.2 times as long as wide at apex, with median longitudinal carinae on basal 5/8 ; 2nd tergite about 5/7 as long as wide at apex ; epipleuron of 3rd tergite subtruncate apically, the inner margin being evenly convex. Ovipositor short and straight.

Black. Palpi yellowish brown ; mandible black, apical third brownish. Coxae and trochanters blackish, the apex of coxae being yellowish ; front and middle femora, tibiae and tarsi yellowish brown ; hind femur (Fig. 57) dark brown, more or less paler basidorsally ; hind tibia (Fig. 57) blackish on basal 1/5 and apical 3/5, pale yellow on subbasal 1/4 ; hind tarsus pale yellow, the 1st and 2nd segments at apex and the 4th and 5th segments infuscate.

Length : Body 5.1-7.3 mm., forewing 4.0-4.6 mm.

♂. Differs from the female, apart from usual sexual differenes, in the following features :-

Antennae with 33-39 segments ; 1st flagellar segment 1.8-2.4 times as long as wide. Face black with a Λ-shaped yellow marking on upper area, the marking not attaining to margin of eye ; interantennal process and scape on under side yellow. Front and middle coxae on apical half pale yellow ; hind femur darker.

Length : Body 6.0-6.2 mm., forewing 4.5-4.9 mm.

Holotype (♀) : Eniwa-dake, Hokkaido (1-vii-66, K. Kusigemati). Paratypes : 1 ♂,

Shimamatsu, Hokkaido (8-vii-65, K. Kusigemati) ; 1 ♀, same data as the holotype ; 1 ♂, Jôzankei, Hokkaido (20-vi-67, K. Kushigemati) ; 1 ♀, Asama-yama, Nagano, Honshu (10-vii-66, Y. Miyatake).

Distribution : Japan.

This species belongs to the *tibialis* group of Townes and Townes (1959). It is very closely related to *E. erythropus*, sp. nov., from which it is readily distinguished by the black face, mandible and coxae and by the darker hind femur. Furthermore, it is closely allied to the European species, *E. alpinus*, but easily separated from the latter by the entirely black face and by the propodeum with the areola subparallel-sided.

18. **Exochus setaceous**, sp. nov. (Fig. 52)

This new species is very similar to *E. unidentatus*, from which it may be separated by the following characters :–

♀. Face rather strongly convex, very strongy and closely punctured ; clypeus with apical margin moderately concave ; malar space about 5/9 as long as basal width of mandible ; mandible rather short, strongly tapering towards apex ; spots at top of eyes small, triangular, touching margin of eye ; occipital carina present above and laterally as a very fine carina, but absent on median dorsal portion and below ; antennae somewhat setaceous, short, with 31 segments ; 1st flagellar segment 2.1 times as long as wide and 1.9 times as long as the 2nd. Propodeum completely areolated except for basal area confluent with areola. Hind femur about 2.1 times as long as wide in lateral view ; front spur of middle tibia 1/2 as long as the hind one.

Black. Palpi dirty yellowish brown ; mandible black, with ferruginous apical teeth ; interantennal process, face on upper margin, frons on lower lateral side tinged with yellowish brown ; spots at top of eyes yellow. Scutellum at apex and postscutellum fulvous. Legs with coxae dark brown to black ; trochanters dark brown ; femora (Fig. 52) reddish brown ; front and middle tibiae yellowish brown, more or less paler basally ; hind tibia (Fig. 52) reddish brown, and yellowish brown on basal 1/4 ; front and middle tarsi yellowish brown ; hind tarsus infuscate, the basal half on 1st segment being pale yellow.

Length : Body 7.3 mm., forewing 5.2 mm.

♂. Antennae with 31-33 segments ; 1st flagellar segment 2.1-2.5 times as long as wide and about 1.5 times as long as the 2nd. Hind femur about 2.3 times as long as wide in lateral view. Face on upper margin, interantennal process and frons on lower lateral side yellow. Legs darker than in female ; hind tibia with a distinct white band near base and more extensive than in female.

Length : Body 6.9-9.1 mm., forewing 5.6-6.6 mm.

Holotype (♀) : Nagano, Honshu (2-xi-47, K. Kamijo). Paratypes : 1 ♂, Sapporo, Hokkaido (8-viii-56, S. Momoi) ; 1 ♂, Odaito, Hokkaido (1-viii-67, T. Saigusa) ; 2 ♂♂, Noji-yama, Hiroshima, Honshu (2-iv-35, K. Egawa) ; 2 ♂♂, Izu-ôshima, Tokyo, Honshu (2-iv-28, K. Sato).

Distribution : Japan.

This species belongs to the *tibialis* group of Townes and Townes (1959). It is most closely related to *E. unidentatus*, from which it differs by the more strogly and closely punctured face, by the strong median longitudinal carinae of the propodeum and by the black coxae.

19. **Exochus unidentatus** Uchida (Fig. 55)

Exochus unidentatus Uchida, Mushi 24 : 52, 1932.

This species is new to Japan. On the basis of the present specimens a brief redescription will be given below :—

♀. Malar space about 2/3 as long as basal width of mandible ; mandible short, lower margin not margined, the lower tooth being distinct but very small ; antennae somewhat setaceous, with 38 segments ; 1st flagellar segment 1.7 times as long as wide and 1.4–1.7 times as long as the 2nd ; occipital carina present laterally as a very fine carina, absent above and below. Propodeum with median longitudinal carinae strong on 1st lateral area and weak or absent on 2nd lateral area, the other carinae being strong ; 2nd lateral area with dense hairs at apicolateral corner. Metapleuron polished, with sparse hairs along upper margin and on posterior 1/3. Forewing with nervulus postfurcal by about 1/2 of its own length.

Black. Palpi dark brown ; mandible black, yellowish brown on apical half, the apical teeth being ferruginous. Face on upper margin and frons on lower lateral side often tinged with brown. Antennae blackish, dark brown ventrally. Tegula dirty yellowish brown. Legs (Fig. 55) reddish brown ; coxae at base sometimes dark brown ; front tibia at base, sometimes entirely, middle and hind tibiae (Fig. 55) at base pale yellow ; hind tarsus whitish yellow, the apex of the 1st to 4th segments and the 5th being dark brown.

Length : Body 7.4–8.4 mm., forewing 5.2–6.2 mm.

♂. Malar space 4/5 as long as basal width of mandible ; antennae with 37–39 segments. Propodeum with median longitudinal carinae strong wholly. Hind femur rather slender than in female. Face with a Λ-shaped yellow marking on upper area, the yellow marking not attaining to margin of eye ; malar space often partly yellow ; frons with a yellow marking on each side. Legs more or less paler than in female but hind coxa except at apex dark brown.

Length : Body 7.3–7.7 mm., forewing 5.2–5.7 mm.

Specimens examined. Japan (1 ♂ & 3 ♀♀) : Hokkaido—Sakiwakanai near Horonobe (1-vii-67, T. Saigusa & T. Naito). China (17 ♂♂ & 2 ♀♀) : Henglingkuan, Schansi-Province (7-, 9- & 12-v-43, K. Yasumatsu).

Distribution : Japan and China.

This species belongs to the *tibialis* group of Townes and Townes (1959).

20. **Exochus erythropus**, sp. nov. (Fig. 56)

In general structures this new species resembles most closely *E. borealis*, sp. nov., from which it differs clearly by the following characters :—

♀. Face moderately and closely punctured ; clypeus with apical margin very weakly concave medially ; malar space about 2/3 as long as basal width of mandible ; mandible strongly tapering towards apex, at most with a feeble notch delimiting the lower tooth which is therefore absent or almost obsolete ; spots at top of eyes small, circular, touching margin of eye ; antennae filiform, with 31-34 segments ; 1st flagellar segment 2.4 times as long as wide. Legs with hind femur about 2.1 times as long as wide in lateral view.

Black. Mandible dirty yellowish brown except for brown teeth and extreme base ; interantennal process and face on upper margin yellow, the yellow marking being not attained margin of eye. Tegula yellow on basal half, dirty yellowish brown on apical half. Pronotum on humeral angle and subtegular ridge tinged with yellowish brown. Legs (Fig. 56) reddish brown ; front and middle coxae at apex, trochanters, front and middle tibiae on basal half pale yellow ; hind tibia (Fig. 56) bicoloured, infuscate at base and on apical 1/2, elsewhere whitish yellow, and gradually darkend towards apex ; tarsi whitish yellow, the apex of the 1st to 4th segments and the 5th being infuscate.

Length : Body 5.2-6.6 mm., forewing 3.9-4.9 mm.

♂. Unknown.

Holotype (♀) : Nasu-dake, Tochigi, Honshu (8-x-67, K. Kusigemati). Paratypes : 3 ♀♀, Shimamatsu, Hokkaido (15-ix-67 & 14-vii-68, K. Kusigemati) ; 1 ♀, Soranuma-dake, Hokkaido (29-viii-65, K. Kusigemati) ; 1 ♀, same data as the holotype ; 1 ♀, Haku-san, Gifu, Honshu (1-viii-62, A. Nakanishi) ; 1 ♀, Kanayama, Yamanashi, Honshu (25-vii-64, A. Nakanishi) ; 1 ♀, Kujû-san, Ôita, Kyushu (25-ix-67, A. Nakanishi).

Distribution : Japan.

21. **Exochus bifasciatus**, sp. nov. (Fig. 61)

♀. Face about as wide as high ; malar space about 3/5 as long as basal width of mandible ; mandible rather weakly tapering towards apex, the outer surface being very finely punctured, the lower tooth very small, and the lower margin not margined by a carina ; spots at top of eyes subtriangular, touching margin of eye ; antennae filiform, with 26 or 27 segments ; 1st flagellar segment 2.6 times as long as wide and about 1.3 times as long as the 2nd. Scutellum weakly concave. Propodeum with costula present ; basal area confluent with areola ; propodeal spiracle ovate. Hind femur 2.5 times as long as wide in lateral view ; front spur of middle tibia about 1/2 as long as the hind one. Ovipositor normal in length and straight.

Black. Mouth parts pale yellow ; interantennal process, spots at top of eyes, face, tegula and subtegular ridge lemon yellow, the face on lower 1/3 being blackish ; clypeus yellow, black on median third. Scape blackish, pale yellow on ventral side ; pedicel and flagellum blackish. Legs (Fig. 61) light brown to yellowish brown ; hind coxa black except at apex pale yellow ; front and middle coxae at apex, femora at apex, and tibiae at base lemon yellow ; hind tibia (Fig. 61) dark brown except at base, infuscate at apex ; hind tarsus whitish yellow, the 1st segment on apical half, the 2nd to 4th except at base and the 5th being infuscate.

Length : Body 5.2 mm., forewing 4.8 mm.

♂. Antennae with 25-27 segments ; 1st flagellar segment about 2.4 times as long as wide. Hind femur 2.2-2.5 times as long as wide in lateral view. Face, clypeus, malar space and gena on lower part yellow. Legs a little paler than in female ; femora more clearly yellow at apex.

Length : Body 4.9-5.5., forewing 4.3-4.5 mm.

Holotype (♀) : Jôzankei, Hokkaido (27-ix-67, K. Kusigemati). Paratypes : 1 ♂, Sapporo, Hokkaido (17-vii-57, K. Kamijo) ; 18 ♂♂ & 1 ♀, Sapporo, Hokkaido (27-viii-64, 20-vii-65, 27-viii-65, 11-vii-67, 23-viii-67, 27-v-68 & 2-vi-68, K. Kusigemati) ; 4 ♂♂, Tôya, Hokkaido (9- & 10-vii-67, K. Kusigemati) ; 1 ♀, Sapporo, Hokkaido (21-vii-64, H. Takada).

Distribution : Japan.

This species belongs to the *tibialis* group of Townes and Townes (1959). It is easily distinguished from any other species of the group by the slender hind femur and by the pecurial colour pattern of the face and clypeus.

22. **Exochus kanayamensis**, sp. nov.

♀. Face as wide as high, moderately strongly convex ; clypeus evenly and weakly convex, the apical margin being truncate ; malar space 3/5-5/7 as long as basal width of mandible ; mandible rather strongly tapering towards apex, sparsely and weakly punctured basally, the lower margin not margined with carina ; frons evenly and weakly convex, with a weak median longitudinal carina ; spots at top of eyes large, continuous to inner orbital markings ; occipital carina present laterally, absent above and below ; antennae filiform, 24-segmented ; 1st flagellar segment 2.8-3.0 times as long as wide at apex, and 1.7-1.9 times as long as the 2nd. Mesonotum with notauli very short, densely impressed as a oval pit. Scutellum short, exactly flat. Propdeum with costula weak but complete ; 2nd lateral area with rather sparse hairs on basal and lateral areas ; areola incompletely fused with petiolar area. Forewing with nervulus postfurcal by 4/7-5/7 of its own length ; basal vein rather roundly curved ; nervellus rather strongly inclivous. Hind femur 2.1 times as long as wide in lateral view ; front spur of middle tibia 2.0-2.2 times as long as the hind one. Abdomen with 1st tergite about as long as wide at apex, with median longitudinal carinae on basal 4/9 ; 2nd tergite about 5/7 as long as wide at apex.

Black. Face, clypeus, interantennal process, mouth parts except for apical teeth, inner orbit, spots at top of eyes, outer orbit, lower part of gena, malar space, tegula and subtegular ridge yellow, the inner orbital markings continuous to top of eye ; antennae yellowish brown, darker dorsally. Pronotum weakly tinged with dirty yellowish brown along upper margin, the posterior portion being paler. Mesonotum black, sometimes with a median, large dark brown spot. Scutellum black basally, yellow to yellowish brown apically. Legs (Fig. 46) pale yellow to dark brown ; middle coxae at base, hind coxa except at apex and sometimes hind femur dark brown, sometimes black ; femora at apex, tibiae except at apico-ventral portion and tarsi pale yellow. Abdomen black ; extreme apex of each tergite faintly tinged with reddish brown.

Length : Body 4.2-4.4 mm., forewing 3.4-3.8 mm.

♂. Unknown.

Holotype (♀) and paratypes (2 ♀♀) : Kanayama, Masutomi, Yamanashi, Honshu (24-vii-64, A. Nakanishi). The holotype is deposited in the collection of the entomological Laboratory, Kyushu University.

This species belongs to the *tibialis* group of Townes and Townes (1959). It resembles to the following species, *E. ornatus*, from which it is easily distinguished by the incompletely areolated propodeum, by the yellow face, etc. as mentioned in the key.

23. **Exochus ornatus** Momoi and Kusigemati

Exochus ornatus Momoi and Kusigemati, Pacific Insects 12 : 413, 1970.

The male of this species has not yet been described. The present male speciemens, however, resemble closely the female, apart from usual sexual differences, except for the following points :—

♂. Malar space 5/7-6/7 as long as basal width of mandible. Scutellum weakly convex. Abdomen with 2nd tergite a little shorter than apical width. Face entirely yellow ; gena and upper portion of pronotum more extensively yellow ; prepectus yellow on dorsal half ; mesopleuron usually with a large yellow marking, the marking fused with yellow marking of prepectus. Legs a little paler than in female ; hind coxa dark brown to black baso-dorsally.

Length : Body 5.1-6.1 mm., forewing 3.9-4.5 mm.

Specimens examined. Japan (54 ♂♂ & 56 ♀♀) : Hokkaido—Rishiri-tô, Rebun-tô, Taisetsu-zan, Ashoro, Akan, Sapporo, Jôzankei, Muine-yama, Soranuma-dake, Eniwa-dake, Shikotsu-kô, Aizankei, Shimamatsu and Okushiri-tô ; Honshu—Chokaisan, Gassan and Hiraniwa near Kuji ; Kyushu—Kurume, Hiko-san, Wanizuka-yama, Kurino-dake, Kirishima-yama, Terayama near Kagoshima and Yaku-shima. Ryukyu Is. (1 ♂ & 3 ♀♀, one the holotype of *ornatus*)—Amami-ôshima.

Distribution : Japan and Ryukyu Is.

In female specimens from Kyushu, Honshu and Hokkaido face black on lower 1/3-2/3 ; clypeus blackish except for apical part, sometimes entirely blackish ; legs a little darker.

24. **Exochus caudatus**, sp. nov. (Figs. 60 & 76)

♀. Face rather weakly and closely punctured ; malar space about 1/3 as long as basal width of mandible ; mandible bidentate, the lower margin being not margined ; at top of eyes subtriangular, touching margin of eye ; occipital carina entirely absent ; antennae filiform, with 23-25 segments ; 1st flagellar segment 2.4-2.8 times as long as wide and 1.4-1.8 times as long as the 2nd. Propodeum without costula ; areola confluent with basal and petiolar areas. Hindwing (Fig. 76) with nervellus strongly inclivons. Hind femur about 2.2 times as long as wide in lateral view ; front spur of middle tibia about 4/9 as long as the hind one. Ovipositor long, surpassing apex of abdomen and evenly curved upwards.

Black. Mouth parts pale yellow ; face dark brown, with a pair of large yellow spots just below antennal sockets, the spots being fused each other and with interantennal process ; clypeus, scutellum and postscutellum tinged with dirty yellow. Pronotum on

humeral angle, tegula and spots at top of eyes lemon yellow. Antennae dark brown dorsally, dirty yellowish brown ventrally. Legs (Fig. 60) yellowish brown ; hind coxa dark brown at base ; femora (Fig. 60) at apex and on dorsal side, front and middle tibiae on basal half and hind tibia (Fig. 60) except at apex, and tarsi lemon yellow to pale yellow.

Length : Body 4.5-5.4 mm., forewing 3.7-4.1 mm.

♂. Differs from the female, apart from usual sexual differences, by the following aspects :—

Malar space 3/7 as long as basal width of mandible ; face, clypeus and frons on lower corner yellow ; gena with a yellow elongate marking, the marking touching lower margin of eye.

Length : Body 5.0 mm., forewing 4.0 mm.

Holotype (♀) : Shimamatsu, Hokkaido (15-vi-65, K. Kusigemati). Paratypes : 3 ♂♂ & 3 ♀♀, same locality as the holotype but 15-vi-65 & 10-vi-68 ; 1 ♀, Sapporo, Hokkaido (3-vii-65, K. Kusigemati).

Distribution : Japan.

This species belongs to the *tibialis* group of Townes and Townes (1959). It may be recognized by the strongly inclivous nervellus, by the long and curved ovipositor and by the slender hind femur.

25. **Exochus firmus**, sp. nov. (Fig. 47)

♀. Face 1.3 times as wide as high, strongly convex transversely ; clypeus evenly convex, the apical margin being rather truncate, malar space about 1/2 as long a basal width of mandible ; mandible moderately long, rather strongly tapering towards apex, with a few fine punctures, the lower margin not margined ; frons with a distinct V-shaped prominence just below anteriour ocellus, a weak median longitudinal carina ; spots at top of eyes large, subtriangular, touching margin of eye ; occipital carina present laterally but very weak ; antennae filiform, 27-segmented ; 1st flagellar segment 2.0 times as long as wide and 1.6 times as long as the 2nd. Mesonotum with notauli very short, deeply impressed. Scutellum rather long, almost entirely flat. Propodeum with costula present as a short stub on lateral longitudinal carina ; 2nd lateral area polished, with a few hairs on apicolateral portion. Forewing with nervulus postfurcal by 3/8 of its own length ; basal vein rather angularly curved ; nervellus inclivous as in *caudatus*. Hind femur 1.9 times as long as wide in lateral view ; front spur of middle tibia about 1/2 as long as the hind one. Abdomen with 1st tergite 1.1 times as long as wide at apex, with median longitudinal carinae on basal 4/7 ; 2nd tergite 4/5 as long as wide at apex.

Black. Face, interantennal process, malar space, tegula and subtegular ridge yellow ; mandible yellow, the apical teeth being dark brown ; clypeus yellow, with a median apical dark brown spot. Pronotum black, the upper margin being broadly margined with yellow. Antennae with scape blackish brown, yellowish ventrally ; pedicel and flagellum dirty yellowish brown, darker dorsally. Scutellum dark brown, yellow apically. Postscutellum yellowish. Legs (Fig. 47) yellow to yellowish brown ; front and

middle coxae at apex, femora at apex, front tibia on basal half, hind tibia except for blackish apical 1/3, front tarsus, middle and hind tarsi except for blackish last segments, whitish yellow to yellow. Abdomen black ; extreme apex of each tergite weakly tinged with reddish brown.

Length : Body 6.2 mm., forewing 4.5 mm

♂. Unknown.

Holotype (♀) : Sapporo, Hokkaido, 27-vi-66, H. Nochi leg.

Distribution : Japan.

This species belongs to the *tibialis* group of Townes and Townes (1959). It is mostly related to *E. suishanus* Uchida from Formosa, but differs from the latter by the head with occipital carina and by the entirely black gena and frons.

26. **Exochus latifasciatus**, sp. nov. (Figs. 59 & 77)

♀. Face about 1.5 times as wide as high, strongly convex transversely ; clypeus more or less impressed on apical portion, the apical margin being weakly concave medially ; malar space 1/2 as long as basal width of mandible ; mandible long, the lower margin being not margined ; antennae filiform, with 29 segments ; 1st flagellar segment 2.7 times as long as wide and 1.7 times as long as the 2nd. Mesonotum with notauli very short but strongly impressed. Scutellum rather long, almost flat. Propodeum with costula obsolete but present as a short stub on lateral longitudinal carina. Forewing with nervulus postfurcal by 3/4 of its own length ; nervellus less strongly inclivous than in *caudatus* (Fig. 77). Hind femur 2.1 times as long as wide in lateral view ; front spur of middle tibia 2/3 as long as the hind one.

Black. Face on upper margin, interantennal process, sometimes malar space, mandible except for brownish apical teeth, frons on lower side, spots at top of eyes, pronotum on humeral angle and tegula lemon yellow. Scape blackish dorsally, yellow ventrally ; pedicel and flagellum dark brown, dirty yellowish brown ventrally and apically. Scutellum at extreme apex and postscutellum tinged with yellow. Legs light brown ; front and middle coxae and femora at apex, hind femur (Fig. 59) at apex and on dorsal third, front and middle tibiae and tarsi pale yellow ; hind tibia (Fig. 59) pale yellow, infuscate at base and on apical 1/5 ; hind tarsus pale yellow, the last segment on apical half being infuscate.

Length : Body 7.5 mm., forewing 5.1 mm.

♂. Unknown

Holotype (♀) : Shimamatsu, Hokkaido (19-viii-67, A. Nakanishi). The holotype is deposited in the collection of the Entomological Laboratory, Kyushu University.

Distribution : Japan.

This species belongs to the *tibialis* group of Townes and Townes (1959). It is similar to the following species, *E. bicoloripes*, sp. nov., but readily distinguished from the latter by the broad face, by the long mandible and by the light brown coxae and femora.

27. **Exochus bicoloripes**, sp. nov. (Fig. 58)

♀. Face 1.1 times as wide as high ; malar space 1/2 as long as basal width of mandible ; mandible rather short, strongly tapering towards apex ; spots at top of eyes very small, ovate, touching margin of eye ; occipital carina absent above and below, present laterally as a vestige ; antennae filiform, with 31 segments ; 1st flagellar segment about 1.9 times as long as wide and 1.3 times as long as the 2nd. Forewing with basal vein roundly curved. Propodeum with costula absent ; propodeal spiracle elliptic. Metapleuron polished, with scattered hairs on posterior half. Hind femur about 2.3 times as long as wide in lateral view ; front spur of middle tibia about 2/5 as long as the hind one.

Black. Palpi infuscate ; mandible black with ferruginous apical teeth ; spots at top of eyes yellow ; antennae blackish, more or less paler apically. Legs (Fig. 58) reddish brown ; coxae and trochanters black ; hind tarsus infuscate, the 1st segment being whitish yellow on basal 3/4.

Length : Body 6.5 mm., forewing 5.3 mm.

♂. Malar space 3/5-5/9 as long as basal width of mandible ; antennae with 31 or 32 segments ; 1st flagellar segment about 2.4 times as long as wide. Hind femur 2.3-2.6 times as long as wide in lateral view. Propodeum with costula complete and strong. Legs more or less paler than in female.

Length : Body 6.1-9.4 mm., forewing 4.6-5.1 mm.

Holotype (♀) : Aizankei, Hokkaido (7-viii-67, A. Nakanishi). Paratypes : 1 ♂, Yubari-dake, Hokkaido (16-vii-67, A. Nakanishi) ; 2 ♂♂, Taisetsu-zan, Hokkaido (12-viii-67. A. Nakanishi) ; 1 ♂, Yubari-dake, Hokkaido (10-viii-66, K. Kusigemati) ; 1 ♂, Yambetsu, Kunashiri, Kuriles (22-25-vii-35, T. Uchida) The holotype is deposited in the collection of the Entomological Laboratory, Kyushu University.

Distribution : Japan and Kuriles.

This species belongs to the *tibialis* group of Townes and Townes (1959). It is similar to *E. suishanus* Uchida from Formosa, but readily distinguished from the latter by the black face, clypeus and coxae, by the reddish brown hind tibia and by the roundly curved basal vein of the forewing.

28. **Exochus hakonensis** Ashmead

Exochus hakonensis Ashmead, Proc. U. S Nat. Mus. 30 : 184, 1906.

Exochus hakonensis : Uchida, Jour. Fac. Agr. Hokkaido Imp. Univ. 25 ; 268, 1930 ; Townes, Momoi & Townes, Mem. Amer. Ent. Inst. 5 : 358, 1965.

Distribution : Japan.

As this species has not yet been known exactly to me, it is excluded from the present key.

Host List

Host	Parasite
Yponomeutidae	
***Yponomeuta malinella* Zeller	*Chorinaeus funebris* (Gravenhorst)
Glyphipterygidae	
***Anthophila fabriciana* Linné	*Triclistus pallipes* Holmgren
Gelechidae	
***Gelechia bilineata* Zeller	*Triclistus globulipes* (Desvignes)
***Anacampsis populella* Clerck	*Triclistus podagricus* (Gravenhorst)
**A. rhoifructella* Clemens	*Chorinaeus funebris* (Gravenhorst)
Oecophoridae	
***Depressaria heracleana* Linné	*Chorinaeus funebris* (Gravenhorst)
***Agonopterix costata* Haworth	*Triclistus podagricus* (Desvignes)
Oletreutidae	
**Ancylis comptana* Fröhlich	*Chorinaeus funebris* (Gravenhorst)
**Strepsicrates smithiana* Walsingham	〃
**Tetralopha asperatella* Clemens	〃
**Grapholita conversana* Clemens	〃
Cymolomia hartigiana Ratzerburg	*Triclistus globulipes* (Desvignes)
***Epinotica semifuscana* Steph.	〃
***Zeiraphera griseana* Hübner	*T. pallipes* Holmgren
Z. truncata Oku	*Trieces nigrifaciatus* Kusigemati
Tortricidae	
**Argyrotaenia lutosana* Clemens	*Chorinaeus funebris* (Gravenhorst)
**Choristoneura fumiferana* Clemens	*C. longicalcar* Thomson
***Archips cerasivorana* Fitch	*Triclistus pallipes* Holmgren
A. piceanus Linné	*T. globulipes* (Desvignes)
A. issikii Yasuda	〃
***Tortrix viridana* Linné	〃
Zeiraphera truncata Oku	*T. podagricus* (Gravenhorst)
Homona magnanima Diakonoff	*Trieces homonae* Kusigemati
Zeiraphera truncata Oku	*T. nigrifaciatus* Kusigemati
Pyraustidae	
***Terealopha asperatella* Clemens	*Choinaeus funebris* (Gravenhorst)
***Scoparia truncicolella* Staint.	*Exochus flavomarginatus* Holmgren
***Pyrausta olivalis* Schiff.	*E. prosopius* Gravvenhorst

* This host-relationship occur in North America (after H. & M. Townes, 1959)
** This host-relationship occur in Europe (after Morley, 1911 or Meyer, 1936)

Host	Parasite
Phycitidae	
***Homoeosoma nimbella* Zeller	*Exochus prosopius* Gravenhorst
Pyralida	
Udea testacea Butler	*Exochus yasumatsui* Momoi, et al.
***Salebria formosa* Haworth	*Chorinaeus flavipes* Bridgman
**Acrobasis betulella* Hulst	*C. funebris* (Gravenhorst)
Nolidae	
Mimerastria mandschuriana Obertür	*Triclistus mimerastriae*, sp. nov.
Noctuidae	
***Euxanthis angustana* Hübner	*Chorinaeus funebris* (Gravenhorst)
Prodenia litura Fabricius	*Metopius browni* Ashmead
Acronicta major Brem	*Metopius dissectorius* (Panzer)
***Simyra albovenosa* Goeze	〃
Anomis flava Fabricius	*Triclistus kamijoi* Momoi et Kusigemati
Geometridae	
***Biston hirtaria* Clerck	*Metopius dissectorius* (Panzer)
***Amphidasis betularia* Linné	〃
***Ennomos alniaria* Linné	〃
***Gonodontis bidentata* Clerck	〃
***Hygrochroa syringaria* Linné	〃
***Eupithecia trisignaria* Herrich-Schäffer	*Triclistus podagricus* (Gravenhorst)
** 〃	*T. pallipes* Holmgren
Lasiocampidae	
***Lasiocampa quercus* Linné	*Metopius dissectorius* (Panzer)

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Explanation of Plates.

Plate I. Head in frontal view (Figs. 1-8) and propodeum in dorsal view (Figs. 9-15). Fig. 1, *Chorinaeus robustus*, ♀ ; 2, *C. orbitalis*, ♀ ; 3, *C. borealis*, ♀ ; 4, *Trieces mandiblaris*, ♀ ; 5, *T. mandiblaris*, ♂ ; 6, *Exochus yasumatsui*, ♀ ; 7, *E. convergens*, ♀ ; 8, *E. rufigaster*, ♀ ; 9, *Triclistus aitkini*, ♀ ; 10, *T. rubellus*, ♀ ; 11, *T. mimerastriae*, ♀ ; 12, *T. japonicus*, ♀ ; 13, *T. uchidai*, ♀ ; 14, *T. nigrifemoralis*, ♀ ; 15, *T. kamijoi*, ♀.

Plate II. Propodeum in dorsal view (Figs. 16-24), abdomen in dorsal view (Figs. 25-27), metapleuron in lateral view (figs. 28-29), mandible in frontal view (Figs. 30-31), apical part of penis in ventral view (Figs. 32-35) and hind legs in lateral view (Figs. 36-37). Fig. 16, *Triclistus nigripes*, ♀ ; 17, *T. dimidiatus*, ♀ ; 18, *Hypsicera parva*, ♀ ; 19, *Colpotrochia (Scallama) nigra*, ♀ ; 20, *Triclistus minutus*, ♀ ; 21, *Hypsicera makiharai*, ♂ ; 22, *H. carinata*, ♀ ; 23, *H. brevicornis*, ♂ ; 24. *Synosis nakanishii*, ♀ ; 25, *Colpotrochia (Colpotrochia) sadensis*, ♀ ; 26, *C. (Scallama) osuzensis*, ♂ ; 27, *Carria concava*, ♀ ; 28, *Triclistus crassus*, ♀ ; 29, *T. uchidai*, ♀ ; 30, *Trieces mandiblaris*, ♀ ; 31, *Hypsicera rugosa* ♀ ; 32, *Chorinaeus flavipes*, ♂ ; 33, *C. borealis*, ♂ ; 34, *C. longicalcar*, ♂ ; 35, *C. clypeatus*, ♂ ; 36, *Colpotrochia (Scallama) nigra*, ♀ ; 37, *C. (Colpotrochia) sadensis*, ♀.

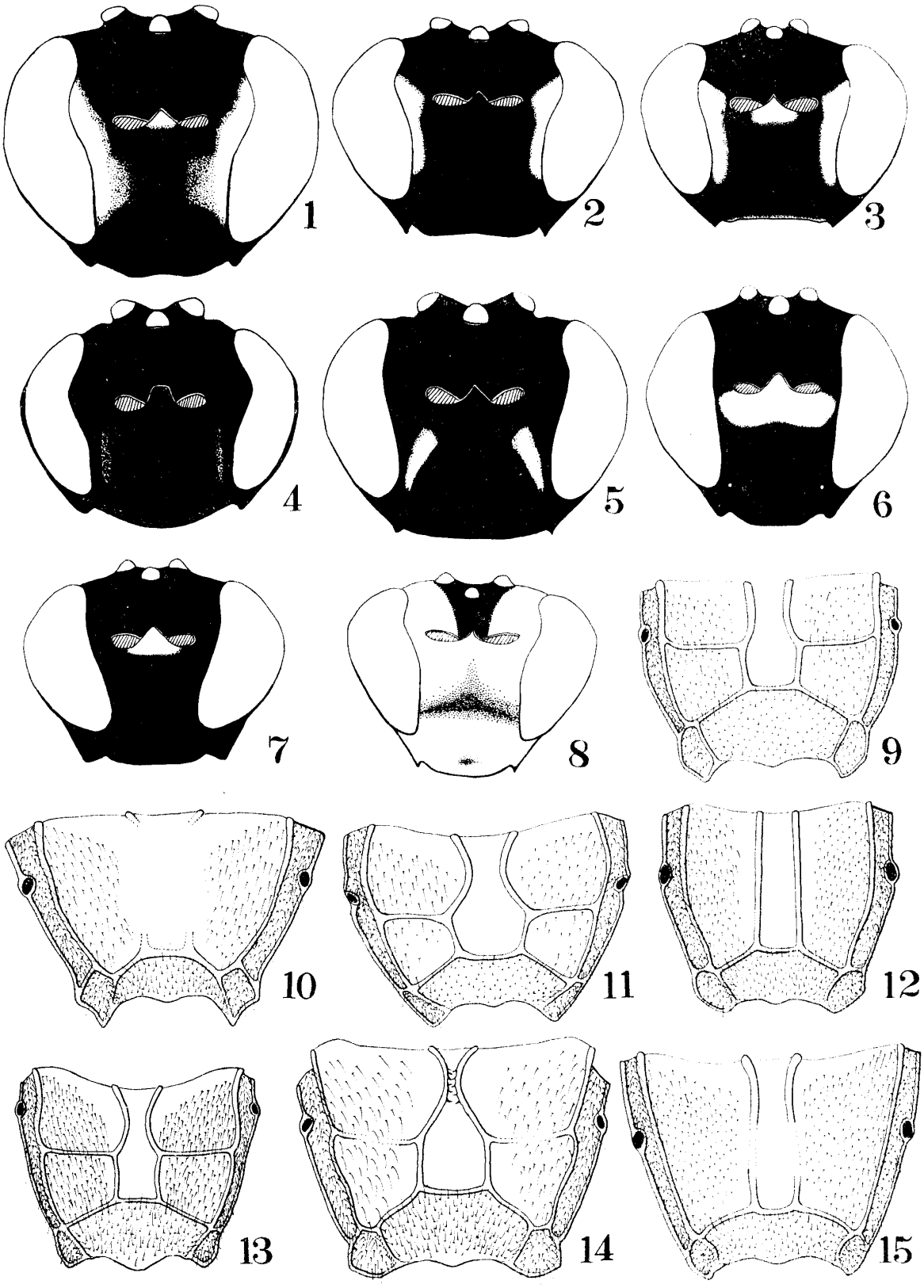
Plate III. Hind legs in lateral view, ♀. Fig. 38, *Triclistus nigripes* ; 39, *T. aitkini* ; 40, *Colpotrochia (Scallama) osuzensis* ; 41, *Exochus aizankeanus* ; 42, *E. prosopius* ; 43, *E. flavomarginatus* ; 44, *E. angularis* ; 45, *E. convergens* ; 46, *E. kanayamensis* ; 47, *E. firmus*.

Plate IV. Hind legs in dorsal view, ♀. Fig. 48, *Exochus nasuzanus* ; 49, *E. rufigaster* ; 50, *E. turgidus* ; 51, *E. decoratus* ; 52, *E. setaceous* ; 53, *E. oshimensis* ; 54, *hiraniwensis*.

Plate V. Hind legs in lateral view, ♀. Fig. 55, *Exochus unidentatus* ; 56, *E. erythropus* ; 57, *E. borealis* ; 58, *E. bicoloripes* ; 59, *E. latifasciatus* ; 60, *E. caudatus* ; 61, *E. bifasciatus* ; 62, *E. shimamatsensis*.

Plate VI. Forewing, ♀. Fig. 63, *Triclistus uchidai* ; 64, *T. nigrifemoralis* ; 65, *Carria concava* ; 66, *C. shimamatsensis*, 67, *C. incarinata* ; 68, *Hypsicera postfurcalis* ; 69, *H. harrelli* ; 70, *Exochus convergens*.

Plate VII. Forewing (Figs. 71-74) and hindwing (Figs. 75-79). Fig. 71, *Exochus yasumatsui*, ♀ ; 72, *E. angularis*, ♀ ; 73, *E. aizankeanus*, ♀ ; 74, *E. prosopius*, ♀ ; 75, *E. bicoloripes*, ♀ ; 76, *E. caudatus*, ♀ ; 77, *E. latifasciatus*, ♀ ; 78, *Hypsicera carinata*, ♀ ; 79, *H. brevicornis*, ♂.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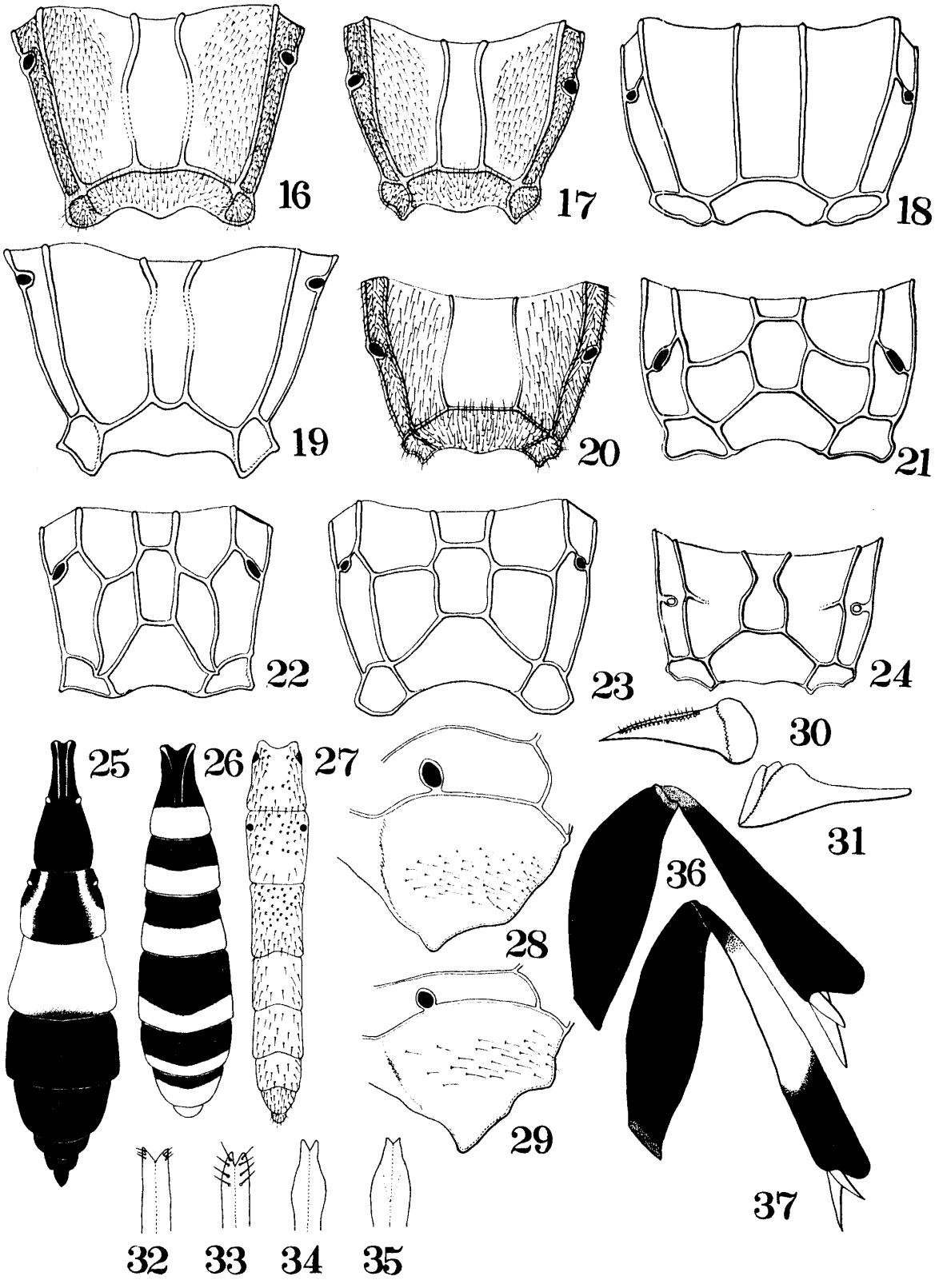
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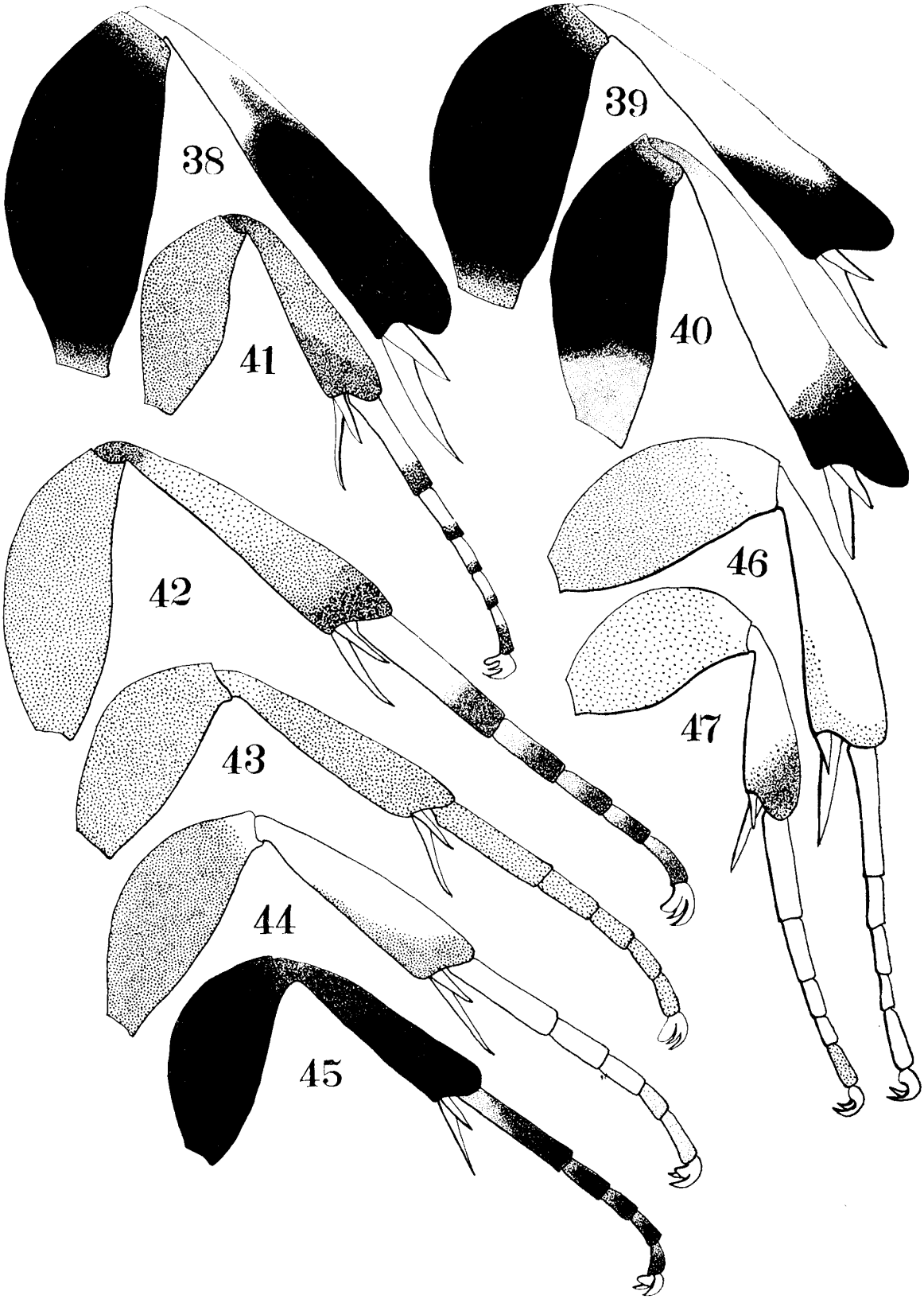
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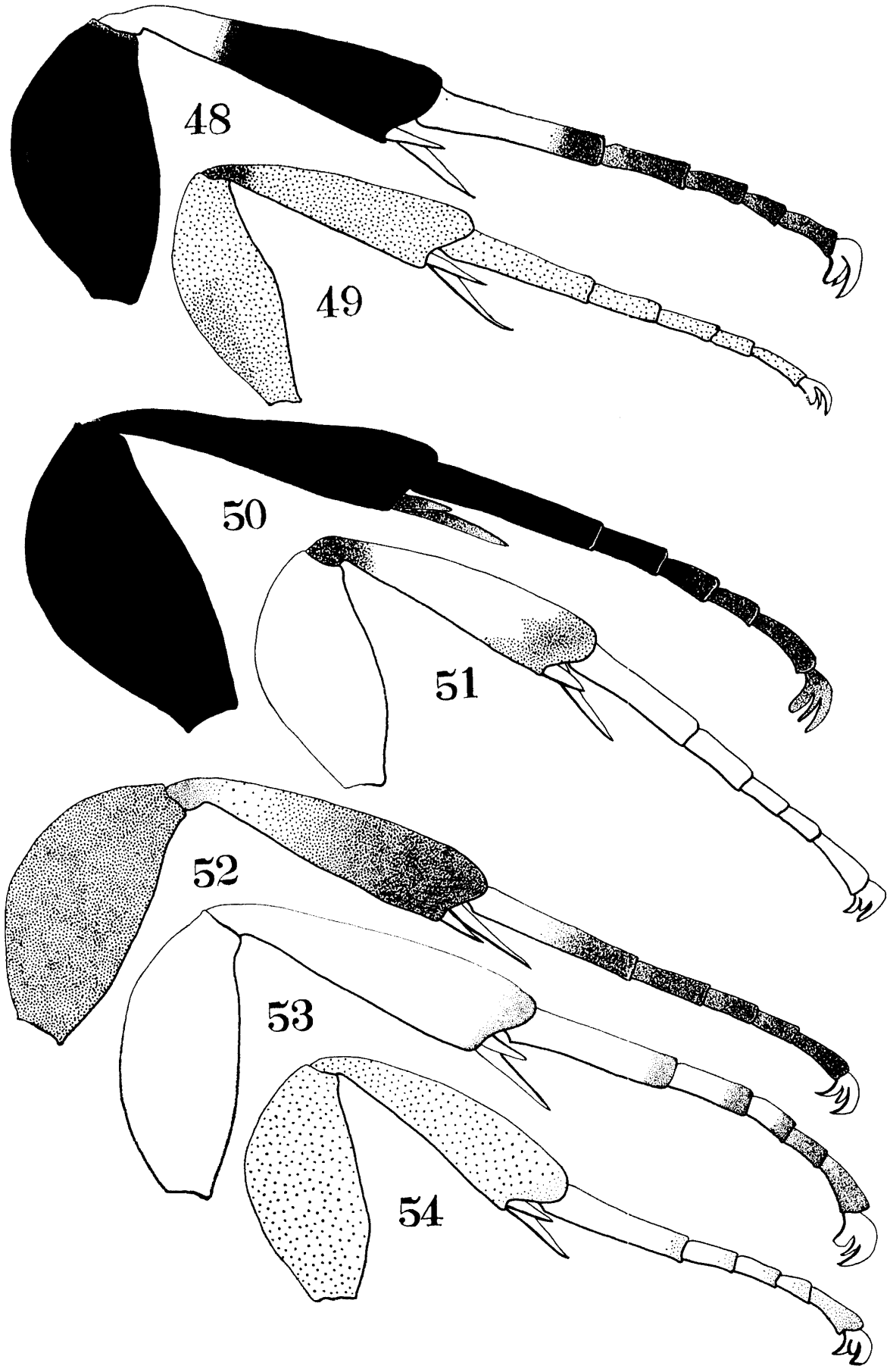
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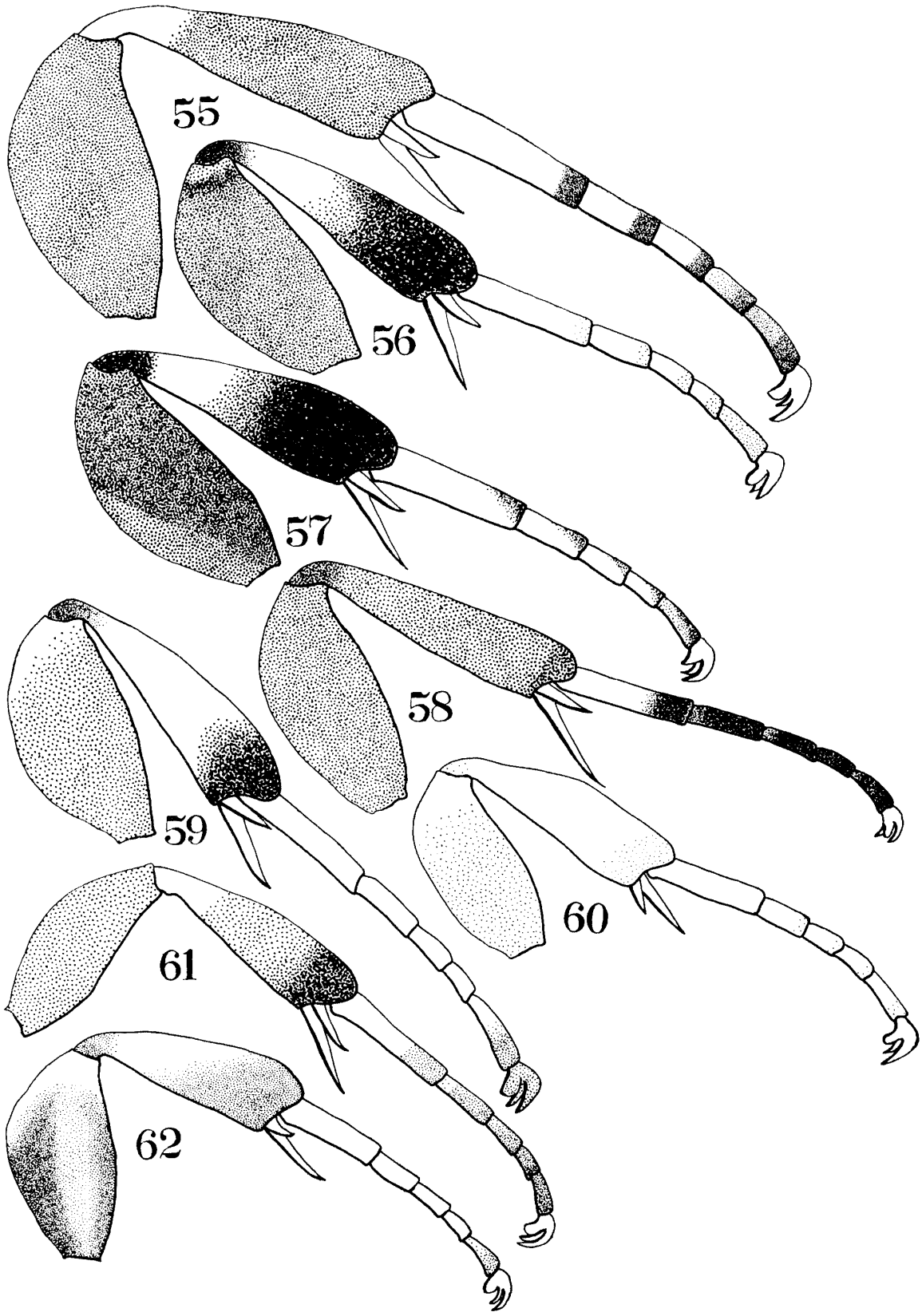
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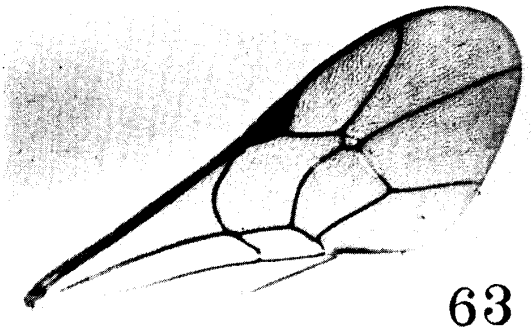

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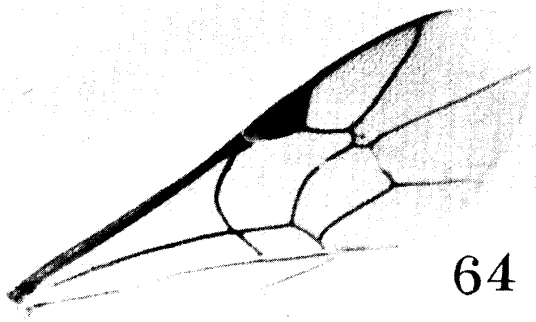

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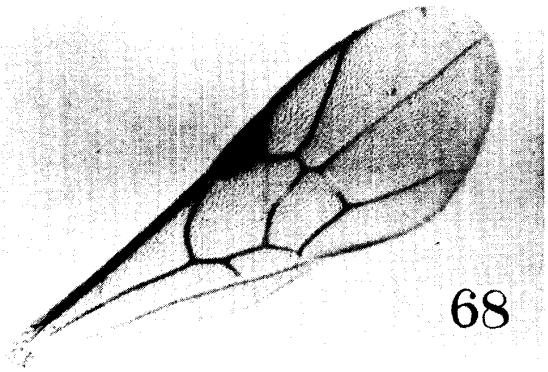

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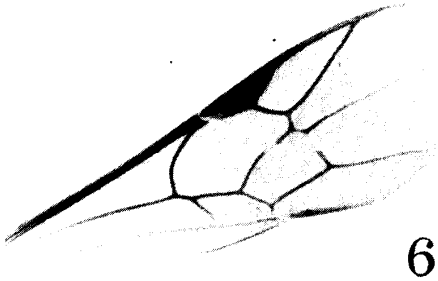

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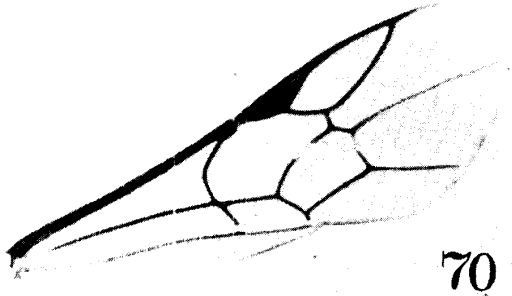

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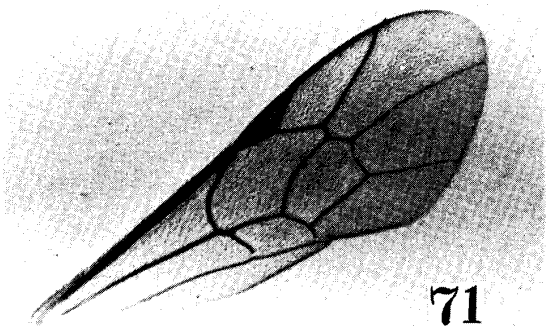
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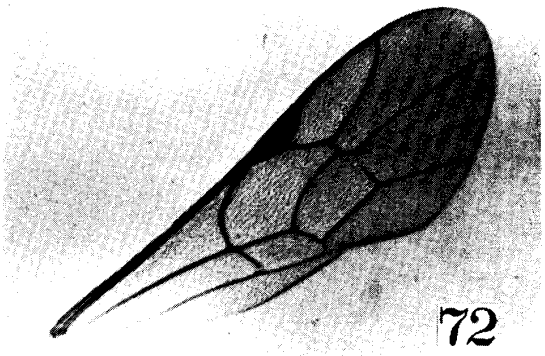
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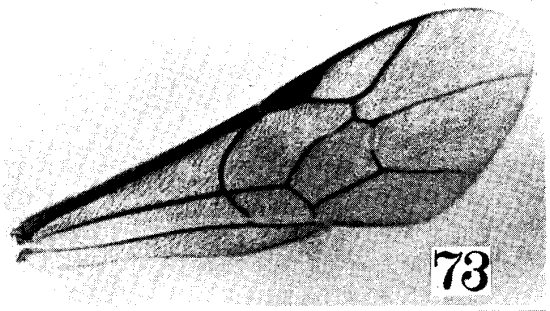
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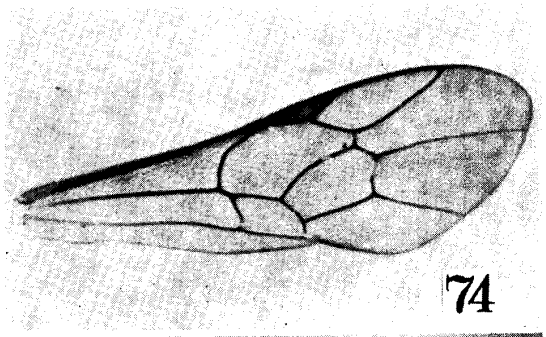
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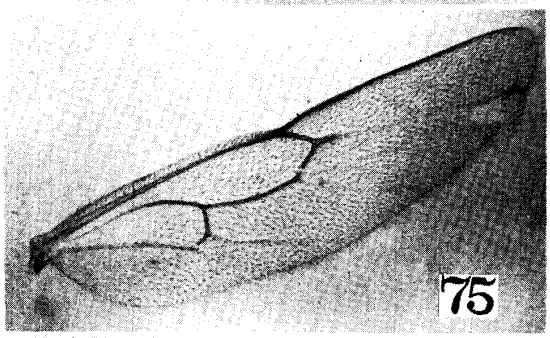
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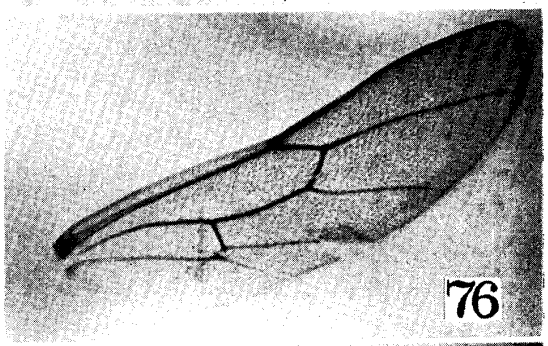
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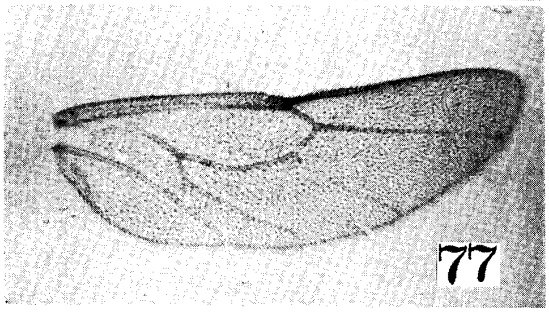
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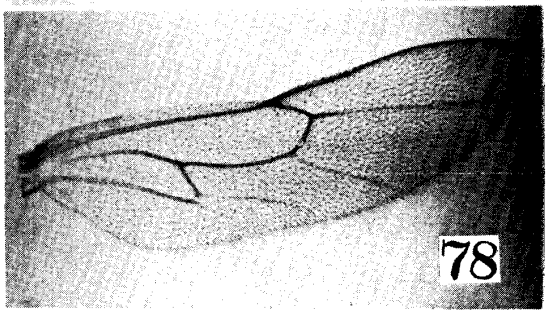
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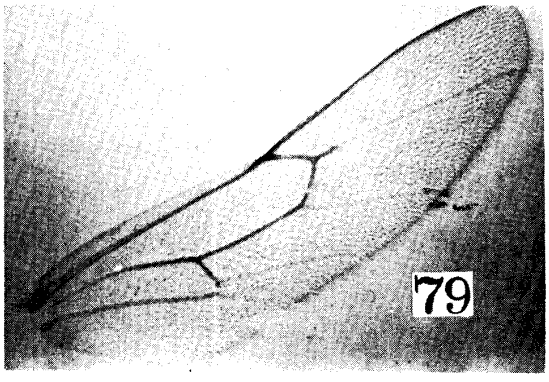
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