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A CONTRIBUTION TO THE KNOWLEDGE OF THE BRACONID FAUNA OF THE EMPIRE OF JAPAN (*Hymenoptera*)

By

Chihisa WATANABE

(With Plates I-V)

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I. INTRODUCTION

The *Braconidae*, a large family of the superfamily *Ichneumonoidea* or Ichneumon Flies, are widely distributed over the world, containing as many as 5000 described species. It appears that most of the species, in the larval stage, are parasitic on other insects, belonging to *Lepidoptera*, *Coleoptera*, *Hymenoptera*, and *Diptera*. The hosts are almost usually destroyed as the result of this parasitism. As natural control agents of insect-pests, therefore, many species of this family assume an important rôle. More-

over, it is a well-known fact that some Braconid parasites against noxious insects have been introduced artificially into the countries where they did not previously live with great success.

So far as the writer's investigations go, more than 170 species falling in this family have been obtained in the Empire of Japan, including Japan Proper (Honshu, Shikoku, Kiushu, and Hokkaido), Saghalien (Karafuto), Formosa (Taiwan), and Korea (Chosen). These species have been partly described by W. H. ASHMEAD (10)¹⁾, P. CAMERON (23, 31, 33), R. A. CUSHMAN (43, 44), G. ENDERLEIN (53-57), S. MATSUMURA (104-112), C. F. W. MUESEBECK (127), S. A. ROHWER (143), F. SMITH (135), J. SONAN (155, 156), H. L. VIERECK (170-173), F. WALKER (178), C. WATANABE (179-193), etc., but up to the present time no general work on this family has been published.

Since 1929 the present writer has made a systematic study on this group, and this contribution is the first attempt to classify the species inhabiting this country, arranging them in proper systematic order. In general the faunistic study may be not only important in relation to systematic entomology, but also fundamental from the standpoint of applied entomology.

Examining the materials both in the collection of the Entomological Institute of the Hokkaido Imperial University and in SAUTER's Formosa-collection of the "Deutsches Entomologisches Institut", the writer could have revised most of the species described in this country. However, all the type-specimens described by foreign authors are kept abroad; and also Far Eastern and Indo-Australian Braconids, of which the literature is widely scattered, have been neither so exhaustively investigated nor so well summarized as those of Europe for comparison with the present ones. Accordingly, there exists a considerable difficulty in revising the present species completely. Indeed, a work of this kind can never be absolutely complete, so it is only to be hoped at present that those who may discover errors or omissions may be kind enough to call attention thereto, indicating the manner in which the corrections should be made.

In the present study 240 species have been arranged at the writer's disposal, though there may be, of course, many more native species yet undiscovered.

The following 30 species are new to science, and all the type-specimens are deposited in the Entomological Institute of the Hokkaido Imperial University, Sapporo:—

1) Reference is made by numbers in parentheses to "Bibliography".

1. *Bracon yakui* sp. nov.
2. *Bracon nipponensis* sp. nov.
3. *Spathius japonicus* sp. nov.
4. *Rhogas daisetsuzanus* sp. nov.
5. *Rhogas oyeyamensis* sp. nov.
6. *Rhogas lymantriae* sp. nov.
7. *Rhogas wadai* sp. nov.
8. *Rhogas drymoniae* sp. nov.
9. *Rhogas microculatus* sp. nov.
10. *Rhogas sapporensis* sp. nov.
11. *Chelonus tosensis* sp. nov.
12. *Chelonus moriokensis* sp. nov.
13. *Ascogaster epinotiae* sp. nov.
14. *Phanerotoma producta* sp. nov.
15. *Earinus jezoensis* sp. nov.
16. *Braunsia postfurcalis* sp. nov.
17. *Braunsia matsumurai* sp. nov.
18. *Braunsia antefurcalis* sp. nov.
19. *Microdus aino* sp. nov.
20. *Microtypus takeuchii* sp. nov.
21. *Microgaster takeuchii* sp. nov.
22. *Microgaster coenonymphae* sp. nov.
23. *Microplitis theretrae* sp. nov.
24. *Streblocera nigrithoracica* sp. nov.
25. *Pygostolus septentrionalis* sp. nov.
26. *Leiophron antennalis* sp. nov.
27. *Leiophron aino* sp. nov.
28. *Cardiocliles japonicus* sp. nov.
29. *Macrocentrus gigas* sp. nov.
30. *Phaenocarpa jezoensis* sp. nov.

The following 42 species are new to the Braconid fauna of the Empire of Japan:—

1. *Atanycolus initiator* (FABRICIUS)
2. *Atanycolus sculpturatus* (THOMSON)
3. *Coeloides scolyticida* WESMAEL
4. *Cyanopterus flavator* (FABRICIUS)
5. *Spathius exarator* (LINNÉ)
6. *Odontobracon sjöstedti* FAHRINGER

7. *Doryctes imperator* HALIDAY
8. *Hormius moniliatus* NEES
9. *Macrostomion sumatranum* (ENDERLEIN)
10. *Pelecystoma luteum* (NEES)
11. *Rhogas dissector* NEES
12. *Rhogas praetor* REINHARD
13. *Rhogas ductor* THUNBERG
14. *Rhogas tristis* (WESMAEL)
15. *Rhogas procerus* (WESMAEL)
16. *Chelonus gravenhorstii* (NEES)
17. *Chelonus inanitus* (LINNÉ)
18. *Chelonus carbonator* MARSHALL
19. *Ascogaster rufidens* WESMAEL
20. *Sigalphus irrorator* (FABRICIUS)
21. *Microdus rufipes* (NEES)
22. *Microgaster tomentosae* WILKINSON
23. *Microgaster globata* (LINNÉ)
24. *Microplitis ocellatae* (BOUCHÉ)
25. *Microplitis spinolae* (NEES)
26. *Microplitis tuberculifer* (WESMAEL)
27. *Microplitis medianus* (RUTHE)
28. *Microplitis mediator* (HALIDAY)
29. *Apanteles insidens* (RATZEBURG)
30. *Dinocamptus terminatus* (NEES)
31. *Euphorus pallidipes* (CURTIS)
32. *Meteorus albiditarsus* (CURTIS)
33. *Meteorus versicolor* (WESMAEL)
34. *Eubadizon extensor* (LINNÉ)
35. *Blacus trivialis* HALIDAY
36. *Centistes lucidator* (NEES)
37. *Ichneutes reunitor* NEES
38. *Proterops nigripennis* WESMAEL
39. *Cardiochiles saltator* (FABRICIUS)
40. *Brullèia euphemia* TURNER
41. *Helcon (Helcon) tardator* NEES
42. *Phaenocarpa pratellae* (CURTIS)

Before going further the present writer wishes to acknowledge his indebtedness to Professor Emeritus SHONEN MATSUMURA, of the Hokkaido

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II. PARASITISM

As in the case of the *Ichneumonidae*, the parasitic life of the *Braconidae* is limited for the most part to the larval stage, the adults being highly developed and free-living forms. The hosts are almost usually destroyed as the direct result of this parasitism; in this respect parasites of this kind are sometimes called "parasitoides" to distinguish them from true parasites which do not directly kill their hosts as, for example, the *Anoplura*, *Mallophaga*, and *Aphaniptera*.

In general the *Braconidae* are said to be internal parasites or endoparasites, the eggs being inserted within the bodies of the hosts. The vast majority of the larvae live inside the larvae of their hosts only, and subsequently sometimes complete their development within the host-pupae, while a few are said to be true pupal parasites. Moreover, it is an interesting fact that many species of the subfamily *Cheloninae* lay their eggs in the eggs of their hosts, but they complete their development within the

host-larvae. Parasites confined to adults are less frequent; well-known examples are both *Perilitus* and *Dinocamptus* which are parasitic on Coleopterous adults.

At the commencement of the life cycle the parasites behave as true parasites, absorbing the blood of their hosts, while the hosts continue to feed and grow. Sooner or later, the fat-body and the like which are less vital of the organs are attacked, and then the hosts are usually almost destroyed at last.

In one case the death of the hosts happens subsequently to the emergence of the grown-up parasite-larvae. This phenomenon occasionally occurs when the parasites are insignificant in size as compared with their hosts. In another case the whole body of the host is consumed gradually until at last only the exoskeleton is left. Such a parasite is relatively large in size in comparison with its host. Parasites of this kind become, in the biological sense, internal predators. Moreover, in certain species of *Macrocentrus*, of which the reproduction and development are brought about by polyembryony, the grown larvae emerge from the host-bodies, and feed on them externally. In such a case it is very difficult to draw a definite line of division between a parasite and a predator.

The following phases of parasitism occur in attacking an individual host:—

Solitary parasitism—This parasitism results when any individual host is attacked by only one individual parasite. Many instances of this kind are seen among *Braconidae*.

Gregarious parasitism—This is the normal and regular procedure with Braconid parasites: two or more parasites of the same species attack a single individual host, some times as many as 100 or more individuals issuing from the same individual host as, for example, in *Apanteles*. On the other hand, if two or more individuals of the same species, which is normally a solitary parasite, occur in an individual host, they almost usually become dwarfs, and often do not complete their development as the result of scarcity of food.

Synchronous parasitism—This is almost an accidental and irregular occurrence among parasitic *Hymenoptera* and *Diptera*, in which an individual host is attacked at the same time by two or more individuals of different species of primary parasites. As the result of this parasitism the death of one or more weak species of the parasites frequently occurs. A well-known example is afforded by the Braconid parasites, *Opius humilis* SILVERSTRI, *Opius tryoni* (CAMERON), and *Opius fullawayi* (SILVERSTRI), of

the Mediterranean Fruit Fly (*Ceratitis capitata* WIEDEMANN) in the Hawaiian Islands. In this case *Opius humilis* is usually killed by the others.

Furthermore, the *Braconidae* are often attacked by their own specific parasites which are termed secondary parasites: it frequently occurs that species of the *Ichneumonidae* and of various families of the *Chalcidoidea* are bred from the cocoons of many *Braconidae*.

It is a well-known fact that the larvae of this family spin cocoons varying in shape and colour: most of them make cocoons near by or outside their host-bodies, while some others have their own cocoons within the cocoons of their hosts. Furthermore, species of *Rhogas* and of its related genera form cocoons inside, protected by the indurated skins of the host-larvae. Some species of *Meteorus* construct characteristic pensile cocoons, often found hanging from the leaves or twigs of trees. Especially the silk cocoons spun by the larvae of the subfamily *Microgasterinae* are characteristic and sometimes of great assistance in the determination of the species.

Among the *Braconidae* there are many species, of which the host-relationships are unknown, but it is an obvious fact that *Lepidoptera*, *Coleoptera*, *Hymenoptera*, and *Diptera* are frequently selected by the parasites as the hosts. A valuable list of the hosts recorded in this paper will be given on later pages.

A few species of this family seem to be monophagous, and many others may be polyphagous, sometimes as many as fifty different hosts being attacked by a single species.

Some groups of the *Braconidae* are restricted to certain hosts which are in comparatively closed taxonomic relationships. Thus, the species of *Helcon* constantly select Cerambycid larvae as their hosts; *Opius* and its related genera are only known to develop in Dipterous larvae; *Ichneutes* and *Proterops* are always parasitic on the larvae of saw-flies (*Tenthredinidae*), while *Perilitus* and *Dinocamptus* appear to attack only Coleopterous adults; the species of *Elasmosoma* are the guests of ants (*Formicidae*), and so on. On the other hand, some other groups are frequently quite complicated in host-selection. For example, most species of *Spathius* are undoubtedly parasitic on Coleopterous borers, although some appear to select certain Lepidopterous borers in the stems of grasses. A large number of *Apanteles* are parasitic on the larvae of various families of *Lepidoptera*, while a few are said to develop in the larvae of other orders—*Coleoptera*, *Hymenoptera*, and *Diptera*. In the present state of knowledge comparatively little is known regarding the determining factors

of the host-selection.

The Braconid subfamilies and the tribes, all of which are treated in this paper with the orders of the hosts, are shown in the following table:—

Parasites	Hosts			
	<i>Leptoptera</i>	<i>Coleoptera</i>	<i>Hymenoptera</i>	<i>Diptera</i>
I. Subfamily <i>Braconinae</i>	++	++	+	+
1. Tribe <i>Braconini</i>	++	++	+	+
2. Tr. <i>Exothecini</i>	++	++	+	+
3. Tr. <i>Spathiini</i>	+	++		
4. Tr. <i>Hecabolini</i>		++		
5. Tr. <i>Doryctini</i>	+	++		
6. Tr. <i>Hormiini</i>	++	++		
7. Tr. <i>Rhogadini</i>	++			
II. Subfam. <i>Cheloninae</i>	++	++	+	++
1. Tr. <i>Triaspidini</i>		++		++
2. Tr. <i>Chelonini</i>	++		+	+
III. Subfam. <i>Agathiinae</i>	++	++		
IV. Subfam. <i>Microtyyinae</i>	++			
V. Subfam. <i>Neoneurinae</i>			++	
VI. Subfam. <i>Microgasterinae</i>	++	+	+	+
VII. Subfam. <i>Helconinae</i>	++	++	++	++
1. Tr. <i>Euphorini</i>		++		
2. Tr. <i>Meteorini</i>	++	+		
3. Tr. <i>Calyptini</i>	++	++		
4. Tr. <i>Blacini</i>		++		
5. Tr. <i>Leiothronini</i>	++			
6. Tr. <i>Ichneutini</i>			++	

Parasites	Hosts			
	<i>Lepidoptera</i>	<i>Coleoptera</i>	<i>Hymenoptera</i>	<i>Diptera</i>
7. Tribe <i>Cardiochilini</i>	++			
8. Tr. <i>Opiini</i>				++
9. Tr. <i>Helconini</i>		++		
10. Tr. <i>Macrocentrini</i>	++			
VIII. Subfam. <i>Cenocoeiinae</i>		++		
IX. Subfam. <i>Alysiinae</i>				++
++ frequent + rare				

The host-selection would appear to depend upon the habits of the adults, especially upon the oviposition of the females, and yet the stock of knowledge in regard to the habits is rather meagre, being limited to a few of the economically important species. The adults probably take pollen, honey-dew and other organic materials as food in nature, and in the laboratory their lives are prolonged by water sweetened with sugar, honey, or fruit-juice. Moreover, it is an interesting fact that the adults absorb the blood of their own hosts. In this case the actual feeding takes place at punctures made by the ovipositor through which the blood of the host exudes. This peculiar method of feeding may be somewhat connected with the host-selection as BISCHOFF (15) points out:—"Möglicherweise spielt der Geschmackssinn auch eine Rolle, wenn es sich darum handelt, zu entscheiden, ob ein Wirt zur Eiablage geeignet ist."

III. CLASSIFICATION

In structure and habits the *Braconidae* are closely related to the *Ichneumonidae*, but are easily distinguished from the latter by having only one recurrent nervure, and by the absence of a real articulation between the 2nd and 3rd abdominal segments. Furthermore, on account of the flexibility of the abdominal segments, the present writer is much inclined to the opinion that the *Paxylommatidae* and *Aphidiidae*, both of which

have been combined with the *Braconidae* by certain authors, should be treated as distinct families as HANDLIRSCH (78) points out.

Family **BRACONIDAE**

Insects of this family were as early as 1758 already described by C. VON LINNÉ (98), and now nearly 450 genera containing as many as 5000 species have been recognized in the world.

C. WESMAEL (195) was the first systematist who divided this family into smaller natural groups in his "Monographie des Braconides de Belgique, 1835-1838", and then TH. A. MARSHALL, Gy. V. SZÉPLIGETI, and others followed him. Recently, his groups have been recognized by HANDLIRSCH (78) in most cases as equivalent to subfamilies. The classification of this family has been made also by A. FÖRSTER (65), TH. A. MARSHALL (101, 102), K. W. VON DALLA TORRE (46), W. H. ASHMEAD (3), Gy. V. SZÉPLIGETI (163), A. HANDLIRSCH (78), J. FAHRINGER (61), and others. These systematists, however, have taken somewhat divergent views about the arrangement of the subfamilies and tribes. In this paper the present writer is inclined to agree with HANDLIRSCH and FAHRINGER.

The terminology of the body parts used in this paper is explained by the diagrams given in Plate I.

Nine subfamilies are found in this country, being distinguished as in the following key:—

Key to the Subfamilies

1. Abdomen attached normally to the propodeum just above the hind coxae 2
- Abdomen attached to the propodeum at the end of the dorsum far above the hind coxae; head transverse, the mouth-parts normal VIII. *Cenocoelinae*
2. Mandibles attached normally, the tips touching or crossing at a point 3
- Mandibles attached abnormally, the tips turned outwardly, not meeting when closed IX. *Alysiinae*
3. Clypeus not emarginated nor impressed anteriorly, fitting closely to the mandibles 4
- Clypeus emarginated or impressed anteriorly, forming with the mandibles a semicircular opening I. *Braconinae*
4. Abdomen segmented normally, with 4 to 8 sutures, the venter depressed or slightly compressed... .. 5
- Abdomen not distinctly segmented, without sutures, or at most with 2 or 3 sutures, the venter strongly concave II. *Cheloniinae*
5. Second cubital cell minute, often imperfect 6
- Second cubital cell large, quadrangular, sometimes entirely obsolete ... VII. *Helconinae*
6. Radial cell of the fore wing simple, not divided by a transverse nervure... .. 7
- Radial cell of the fore wing divided by a transverse nervure; maxillary palpi 2-jointed labial palpi 1-jointed V. *Neoneurinae*

- 7. Radial cell of the fore wing large, the radius extending to the apex of the wing ... 8
- Radial cell of the fore wing minute, narrow, the radius not extending to the apex of the wing ... III. *Agathinae*.
- 8. Second intercubitus and radius of the fore wing imperfect; maxillary palpi not more than 5-jointed; labial palpi 3-jointed; parapsidal furrows obsolete ... VI. *Microgasterinae*
- Radius of the fore wing indicated, the intercubitus complete or entirely wanting; maxillary palpi 6-jointed; labial palpi 4-jointed; parapsidal furrows strongly indicated ... IV. *Microtypinae*

I. Subfamily **BRACONINAE**

Cyclostomini WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., IX, p. 14 (1835).

Braconinae HANDLIRSCH, Handbuch d. Entomologie, Bd. III, p. 748 (1924).

This subfamily is easily distinguished from the others by having the clypeus emarginated or impressed anteriorly, forming with the mandibles a semicircular opening. The following seven tribes occur in this subfamily:—

Key to the Tribes

- 1. Occiput not margined ... 2
- Occiput distinctly margined throughout, rarely only at the sides ... 4
- 2. Nervulus postfurcal ... 3
- Nervulus interstitial, rarely antefurcal ... 1. *Braconini*
- 3. Minute species (1.5-4 mm.) ... 2. *Exothecini*
- Large species (7-20 mm) ... *Braconini* p.p. (*Eurobracon*, *Spinaria*)
- 4. Fore wing with three cubital cells ... 5
- Fore wing with two cubital cells; head cubital or subcubital ... 4. *Hecabolini*
- 5. Abdomen sessile or subsessile ... 6
- Abdomen petiolate; head cubital... 3. *Spathiini*
- 6. Head transverse, more or less contracted behind the eyes ... 7
- Head cubital, not contracted behind the eyes ... 5. *Doryctini*
- 7. Nervus parallelus interstitial... 6. *Hormiini*
- Nervus parallelus inserted in the 2nd discoidal cell, not interstitial ... 7. *Rhogadini*

I. Tribe **Braconini**

This group is probably the largest and the most difficult to be classified of all tribes of this subfamily.

Including in this tribe the genus *Spinaria* BRULLÉ, which has been treated as a member of the tribe *Exothecini* by certain authors, there are 16 genera in total known to exist in this country.

It appears that most of the species are parasitic on many *Lepidoptera* and *Coleoptera*, but a few are said to attack *Hymenoptera* and *Diptera*.

Key to the Genera

- 1. Nervulus interstitial, rarely antefurcal; eyes of the male as large as those of the female 2

- Nervulus postfurcal; eyes of the male larger than those of the female 15
2. Frons deeply excavated behind the antennae; head cubital 3
- Frons almost usually flat, rarely excavated, in the latter case the suture between the 2nd and 3rd tergites crenulate; head transverse, rarely cubital 4
3. Second joint of the antennae distinctly shorter than the 3rd; scapus with a tooth at the apex; 2nd tergite with a median raised area 1. *Atanycolus* FÖRSTER
- Second joint of the antennae as long as the 3rd; scapus simple, without a tooth; 2nd tergite without a median raised area 2. *Coeloides* WESMAEL
4. Eyes not large 5
- Eyes very large, kidney-shaped; 2nd tergite with a median raised area; suture between the 2nd and 3rd tergites crenulate; 1st abscissa of the cubitus curved at the base... .. 3. *Curriea* ASHMEAD
5. Second and third tergites with oblique lateral impressions 6
- Second and third tergites without oblique lateral impressions 13
6. Abdomen abnormal, short, round; five or six tergites visible above; 2nd and 3rd tergites very large, almost united 7
- Abdomen normal, not round, often elongate, the usual number of tergites visible above 8
7. Eyes pubescent; 2nd abscissa of the radius distinctly longer than the 1st intercubitus; five tergites visible above, the last tergite slightly emarginated medially at the apex 4. *Chelonogastra* ASHMEAD
- Eyes naked; 2nd abscissa of the radius as long as the 1st intercubitus; six tergites visible above, the last tergite strongly emarginated medially at the apex 5. *Philomacroploea* CAMERON
8. Abdomen oblong; 1st to 3rd tergites transverse 9
- Abdomen elongate; 1st to 3rd tergites longer than broad 6. *Stenobracon* SZÉPLIGETI
9. Second tergite with a median raised area or a median longitudinal carina 10
- Second tergite without a median raised area or a median longitudinal carina 12
10. Third to fifth tergites with a transverse deep furrow at each hind margin, the furrows crenulate or punctate 11
- Third to fifth tergites without a transverse furrow at each hind margin 7. *Ipoobracon* THOMSON
11. Second abscissa of the radius as long as the 1st 8. *Syntomerus* ENDERLEIN
- Second abscissa of the radius longer than the 1st 9. *Campyloneurus* SZÉPLIGETI
12. Suture between the 2nd and 3rd tergites smooth and shining 10. *Cyanopterus* SZÉPLIGETI
- Suture between the 2nd and 3rd tergites crenulate... .. 21. *Iphiaulax* FÖRSTER
13. Second abscissa of the radius as long as the 1st intercubitus 14
- Second abscissa of the radius twice as long as the 1st intercubitus 12. *Bracon* FABRICIUS
14. Second tergite with an oblique furrow on each side, the furrows converging, but not meeting apically 13. *Shirakia* VIERECK
- Second tergite without oblique furrows 14. *Habrobracon* ASHMEAD
15. Abdomen abnormal, longitudinally striate, only five tergites visible above; 3rd to 5th tergites with a tooth at the middle of the hind margin; 3rd and 4th tergites with a lateral hind angle produced into a tooth; pronotum with a sharp spine at the middle; ovipositor very short 15. *Spinaria* BRULLÉ
- Abdomen normal, elongate as in *Stenobracon*, the usual number of tergites visible above;

2nd tergite with a median raised area; pronotum without a spine; abdomen without teeth; ovipositor at least as long as the abdomen16. *Eurobracon* ASHMEAD

I. Genus *Atanycolus* FÖRSTER

Atanycolus FÖRSTER, Verh. Nat. Ver. Preuss. Rheinl., XIX, p. 238 (1862).

Coelobracon THOMSON, Opusc. ent., p. 1787 (1892).

Melanobracon ASHMEAD, Proc. U. S. Nat. Mus., XXIII, p. 138 (1900).

Iphiaulax (Atanycolus) HÉLLEN, Acta Soc. Fauna et Flora Fennica, 56, p. 11 (1927).

Genotype—*Atanycolus denigrator* (LINNÉ)

It appears that most of the species falling in this genus are parasitic on wood-boring *Coleoptera* and *Lepidoptera*. In this case the following two species are added to the Braconid fauna of Japan.

Key to the Species

- I. Parapsidal furrows impressed; 2nd to 4th tergites smooth and shining; head yellowish red with a black spot at the stemmaticum; ovipositor of the female longer than the body, 12-17 mm. Length, 7-11 mm. (♀), 5-7 mm. (♂) 1. *initiator* (NEES)
- Parapsidal furrows obsolete; 2nd to 4th tergites rugose; head black; ovipositor of the female longer than the body, 10 mm. Length, 7 mm. (♀), 4-5 mm. (♂) 2. *sculpturatus* (THOMSON)

I. **Atanycolus initiator* (FABRICIUS)

Ichneumon initiator FABRICIUS, Ent. syst., II, p. 161 (1793).

Bracon initiator FABRICIUS, Syst. Piez., p. 110 (1804); NEES, Hymen Ichneum. affin. Monogr., I, p. 101 (1834); RATZBURG, Ichneum. d. Forstinsect., I, p. 46 (1844), II, p. 39 (1848).

Coeloides initiator WESTWOOD, Introd. mod. Classif. Insect., II, p. 64 (1840); MARSHALL, Spec. Hymén. Europe, IV, p. 222, ♀ ♂ (1888), V, Suppl., p. 119, ♀ ♂, Pl. VI, fig. 2 (1897); DALLA TORRE, Cat. Hymen., IV, p. 253 (1898).

Bracon (Vifio) genalis THOMSON, Opusc. ent., p. 1800, ♀ ♂ (1892).

Atanycolus initiator SZÉPLIGETI, Gen. Insect., 22-24, p. 19 (1904).

Atanycolus (Coelobracon) initiator FAHRINGER, Opusc. bracon., Bd. I, p. 129, ♀ ♂ (1926), Bd. III, p. 326 (1934).

Iphiaulax (Atanycolus) initiator HÉLLEN, Acta Soc. Fauna et Flora Fennica, 56, p. 10 (1927).

In a series of the present specimens the 1st tergite except the lateral sides and the median raised area of the 2nd tergite are fuscous.

Hosts—*Acanthocinus aedilis* LINNÉ, *Cerambyx scopoli* FUESSLY, *Crioccephalus rusticus* LINNÉ, *Rhagium inquisitor* LINNÉ, *Tetropium castaneum* LINNÉ, *T. fuscum* FABRICIUS, *Aegeria flaviventris* STAUDINGER, and *A. vespi-formis* LINNÉ (after FAHRINGER, in Europe).

Habitat: Saghalien (Ichinosawa, 2 ♀ ♀, 25. VII, 1924, S. MATSUMURA; Toyohara, 1 ♀, 23. VII, 1924, S. MATSUMURA; Konuma, 1 ♂, 7. VII, 1930, C. WATANABE, 1 ♀, 15. VII, 1931, K. TAMANUKI; Tonnai, 1 ♂,

* This species is new to the fauna of the Empire of Japan.

10. VII, 1930, C. WATANABE; Kashiho, 1 ♀, 1. VIII, 1932, H. KÔNO; Tomarikishi, 2 ♀ ♀, 20. VII, 1933, T. UCHIDA; Horo, 4 ♀ ♀, IX, 1933, K. TAMANUKI).

General Distribution: Europe; West Asia; Siberia; Saghalien.

2. ***Atanycolus sculpturatus** (THOMSON)

Bracon (Vipio) sculpturatus THOMSON, Opusc. ent., p. 1800, ♀ (1892).

Atanycolus sculpturatus DALLA TORRE, Cat. Hymen., IV, p. 296 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 19 (1904).

Coeloides sculpturatus MARSHALL, Spec. Hymén. Europe, V, Suppl., p. 118, ♀ (1898).

Atanycolus (Coelobracon) sculpturatus FAHRINGER, Opusc. bracon., Bd. I, p. 135, ♀ ♂ (1926).

In a series of the present specimens the four anterior tarsi are brown.

Habitat: Saghalien (Konuma, 1 ♂, 7. VII, 1930, C. WATANABE; Ton-nai, 4 ♂ ♂, 10. VII, 1930, C. WATANABE); Hokkaido (Jôzankei, 1 ♂, 23. VII, 1930, C. WATANABE).

Gen. Distr.: Europe; Siberia; Saghalien; Japan.

2. Genus **Coeloides** WESMAEL

Coeloides WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., XI, p. 59 (1838).

Genotype—*Coeloides scolyticida* WESMAEL

1. ***Coeloides scolyticida** WESMAEL

Coeloides scolyticida WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., XI, p. 220 (1838); RATZEBURG, Ichneum. d. Forstinsect., III, p. 41, ♀ ♂ (1852); MARSHALL, Trans. Ent. Soc. London, p. 67, ♀ ♂, Pl. II, fig. 6 (1885); id., Spec. Hymén. Europe, IV, p. 222, ♀ ♂ (1888); THOMSON, Opusc. ent., p. 1845, ♀ ♂ (1892); DALLA TORRE, Cat. Hymen., IV, p. 253 (1889); SZÉPLIGETI, Gen. Insect., 22-24, p. 20 (1904); FAHRINGER, Opusc. bracon., Bd. I, p. 149, ♀ ♂ (1926).

This species is widely variable in colour and size: in one series from Saghalien the head and thorax are tinged with brown, the antennae are 33 to 37-jointed, and the body-length is 3 to 3.5 mm., while in another series from Hokkaido the head and thorax are yellowish red, the antennae are 42 to 44-jointed, and the body-length is 6 to 7 mm.

Hosts—*Scolytus scolytus* FABRICIUS (after FAHRINGER, in Europe); *Scolytus esuriensis* BLANDFORD (in Hokkaido); *Ips japonicus* NIISHIMA (in Saghalien).

This parasite was bred from the larva of *Scolytus esuriensis* BLANDFORD by Dr. S. MATSUMURA on June 24th, 1915, at Sapporo and from the larva of *Ips japonicus* NIISHIMA by K. TAMANUKI, on July 24th, 1933, at Horo, Saghalien.

Habitat: Saghalien (Horo, 19 ♀ ♀, 24. VII, 1933, 13 ♀ ♀, IX, 1933, K. TAMANUKI); Hokkaido (Sapporo, 8 ♀ ♀, 24. VII, 1915, S. MATSUMURA; Kami-Otoineppu, 1 ♀, 11. VII, 1930, C. WATANABE).

Gen. Distr.: Europe; Saghalien; Japan.

3. Genus *Curriea* ASHMEAD

Curriea ASHMEAD, Proc. U. S. Nat. Mus., XXIII, p. 137 (1900).

Genotype—*Curriea fasciatipennis* ASHMEAD

This genus containing 12 species has been hitherto recognized only in Africa, but in the course of the present study the writer has become convinced that *Melanobracon tibialis* ASHMEAD from Japan ought to be transferred to this genus. Furthermore, this genus may be combined with *Megalommum* SZÉPLIGETI¹⁾, which is, on the whole, found in the Indo-Australian region, as SZÉPLIGETI (163) pointed out: indeed, it differs from the latter only by the crenulate suture between the 2nd and 3rd tergites, but the writer is inclined to the opinion that it should be treated as a distinct genus until fuller studies can be completed.

I. *Curriea tibialis* (ASHMEAD) (Pl. IV, Fig. 2)

Melanobracon tibialis ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 159, ♀ (1906).

Atanycolus tibialis FAHRINGER, Opusc. bracon., Bd. I, p. 579, ♀ (1928).

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

♀. Brownish yellow; antennae except the two basal joints, tips of the mandibles, hind tibiae except the apex, and four anterior tarsi black; ovipositor brownish red, with the sheath black. Length, 7–9 mm.

Head subcubital, smooth and shining; frontal excavation shallow, with a longitudinal median ridge; eyes very large, emarginated at a point considerably above the antennae; face narrowed, closely reticulate-rugose, pubescent; antennae shorter than the body, gradually narrowed towards the apex, 52 to 62-jointed. Thorax smooth and shining; parapsidal furrows shallow; propodeum smooth, without a median longitudinal carina. Radius inserted at the middle of the stigma; 1st abscissa of the radius about half the length of the 2nd, vertical; 1st abscissa of the cubitus curved inwardly at the middle; recurrent nervure received in the 1st cubital cell a short distance from the apex; nervulus strongly antefurcal, oblique; 2nd discoidal cell elliptical; medial nervure swollen and curved; radial cell of the hind wings sessile. Abdomen smooth and shining, as long as the head and thorax taken together; 1st tergite 1.5 times as long as broad at the apex, with a longitudinal crenulate furrow on the lateral sides; 2nd tergite transverse, with a longitudinal smooth furrow on the lateral sides, extending

1) Term. Flüz., XXIII, p. 50 (1900).

from the base to the apical fourth, and with a triangular median area defined by two oblique crenulate furrows at the base; 3rd tergite shorter than the 2nd; suture between the 2nd and 3rd tergites deeply crenulate; hypopygium acute; ovipositor about two-thirds the length of the abdomen, with the sheath flat, slightly dilated towards the apex, and covered uniformly with short black hairs.

♂. Unknown.

Habitat: Honshu (Gifu, after ASHMEAD; Shizuoka, 1 ♀, VII, 1930, M. YAGO; Kibune, 1 ♀, 19. IX, 1930, K. TAKEUCHI; Kyoto, 1 ♀, 15. VII, 1924, 1 ♀, 10. IX, 1924, 1 ♀, 24. VI, 1932, 1 ♀, 10. IX, 1932, 1 ♀, 5. X, 1932, K. TAKEUCHI; Hakuba, 1 ♀, 17. VIII, 1917, K. TAKEUCHI; Hanazono, near Kyoto, 1 ♀, 10. IX, 1922, M. SUZUKI).

Gen. Distr.: Japan.

Remarks—This species resembles *Curriea antefurcalis* SZÉPLIGETI¹⁾ from Kamerun, Africa, but is easily distinguished from the latter by the colour of the wings and by the structure of the 2nd tergite.

4. Genus *Chelonogastra* ASHMEAD

Chelonogastra ASHMEAD, Proc. U. S. Nat. Mus., XXIII, p. 139 (1900).

Monocoila ROMAN, Ent. Tidskr., XXXI, p. 133 (1910).

Ectemnoplex ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 110 (1920).

Genotype—*Chelonogastra koebelei* ASHMEAD

This genus is divided by FAHRINGER into two subgenera, *Chelonogastra* ASHMEAD (**Subgenotype**: *C. koebelei* ASHMEAD) and *Monocoila* ROMAN (**Subgenotype**: *C. pectoralis* HOLMGREN), but in the course of the present study the writer has become convinced that *Monocoila* should be considered identical with *Chelonogastra*. Furthermore, *Chelonogastra pleuralis* ASHMEAD from Japan may be transferred to the next genus, *Philomacroploea* CAMERON.

Key to the Species

1. Black; belly yellowish white; wings infuscate; median raised area of the 2nd tergite longitudinally striate; ovipositor about from half to two-thirds the length of the abdomen. Length, 5.5–8 mm. 1. *koebelei* ASHMEAD
- Head black, the mouth-parts reddish yellow; thorax and four anterior legs reddish yellow; hind legs black; abdomen whitish yellow, the basal three tergites except the lateral sides and the 4th at the base black; wings subhyaline; median raised area of the 2nd tergite smooth and shining; ovipositor about one-fourth the length of the abdomen. Length, 3–5.5 mm. 2. *peruliventris* (ENDERLEIN)

1) Ergeb. d. II. deutsch. Zentral. Afrik. Exped., Bd. I, Zool., p. 139, ♀ (1910–1911); FAHRINGER, Opusc. bracon., Bd. II, p. 157 (1928).

1. *Chelonogastra koebelei* ASHMEAD

Chelonogastra koebelei ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 195, ♀, Pl. XIV, fig. 3 (1906); ISHII, Nip. Kon. Zukan, p. 380, ♀, fig. 740 (1932); WATANABE, Ins. Mats., VIII, p. 184, ♂ (1934).

Iphiaulax (Chelonogastra) koebelei FAHRINGER, Opusc. bracon., Bd. I, p. 591, ♀ (1928).

Habitat: Honshu (Atami, after ASHMEAD; Wakayama, 1 ♀, 1927, F. WADA; Harima, 1 ♀, 30. VI, 1912, T. TAKAMUKU); Shikoku (Hirooka, Kochi-ken, 1 ♀, 21. IX, 1934, H. OKAMOTO); Kiushu (Kumamoto, 1 ♀, 12. IX, 1907, H. KAWAMURA).

f. *formosana* nov. f.

♀ ♂. Closely resembles the typical form in general structure and colour, but may be immediately separated from the latter in having the 4th and 5th tergites striate-rugose as in the preceding tergites, not shagreened. Length, 6-8 mm.

Habitat: Formosa (Kusukusu, 1 ♀, 20. IV, 1928, S. MATSUMURA; Koshun, 1 ♀, 5. VII, 1906, S. MATSUMURA, 2 ♂ ♂, 7. IV, 1912, H. SAUTER).

Gen. Distr.: Japan; Formosa.

2. *Chelonogastra peruliventris* (ENDERLEIN)

Ectenoplax peruliventris ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 110, ♀ ♂ (1920).

Chelonogastra peruliventris WATANABE, Ins. Mats., VIII, p. 184, ♀ (1934).

Habitat: Formosa (Takao, after ENDERLEIN; Koshun, after WATANABE); Kiushu (Yufu, 1 ♂, 7. VII, 1928, K. TAKEUCHI); Honshu (Tokyo, 1 ♀, 16. IX, 1913, S. HIRAYAMA; Kyoto, 1 ♀, 1. X, 1924, K. TAKEUCHI; Hira-san, 1 ♀, 28. IX, 1928, K. TAKEUCHI).

Gen. Distr.: Formosa; Japan.

5. Genus *Philomacroptoea* CAMERON

Philomacroptoea CAMERON, Spol. Zeyl., III, p. 87 (1905).

Genotype—*Philomacroptoea basimacula* CAMERON

This genus approaches nearest to the genus *Chelonogastra* ASHMEAD, but is easily differentiated from the latter by the naked eyes and the venation of the fore wing as well as by the structure of the abdomen as WATERSON¹⁾ pointed out.

1. *Philomacroptoea pleuralis* (ASHMEAD)

Chelonogastra pleuralis ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 196, ♀ (1906); WATANABE, Ins. Mats., VIII, p. 184, ♀ (1934).

Iphiaulax (Chelonogastra) pleuralis FAHRINGER, Opusc. bracon., Bd. I, p. 591, ♀ (1928).

1) Proc. Ent. Soc. Washing., XXXI, pp. 167-168 (1929).

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

♀. Reddish yellow, often with fuscous markings. Head normal, not produced greatly behind the eyes; eyes naked; propodeum smooth and shining, with a median longitudinal carina; 2nd abscissa of the radius as long as the 1st intercubitus; six tergites visible above, the 2nd without a median raised area at the base, and the 6th strongly emarginated medially at the apex; ovipositor as long as the abdomen. Length, 3-4 mm.

Habitat: Honshu (Atami, after ASHMEAD; Tottori, 2 ♀ ♀, 1906, S. MATSUMURA); Formosa (Koshun and Taihorin, after WATANABE; Kagi, 1 ♀, 21. II, 1909, S. MATSUMURA).

Gen. Distr.: Japan; Formosa.

6. Genus *Stenobracon* SZÉPLIGETI

Stenobracon SZÉPLIGETI, Term. Füz., XXIV, p. 359 (1901).

Elpheca CAMERON, Journ. Straits Br. Roy. Asiatic Soc., XXXIX, p. 121 (1903).

Phanaulax CAMERON, Ent. Tidskr., LIII, p. 43 (1910).

Genotype—*Stenobracon oculatus* SZÉPLIGETI

1. *Stenobracon trifasciatus* SZÉPLIGETI

Stenobracon trifasciatus SZÉPLIGETI, Notes Leyden Mus., XXIX, p. 214, ♀ ♂ (1908); ROMAN, Arkiv Zool., 8 A, No. 24, p. 22 (1913); FAHRINGER, Ent. Mitt., XVII, p. 27, ♀ ♂ (1928); WATANABE, Trans. Sapporo Nat. Hist. Soc., XII, p. 64 (1932); id., Ins. Mats., VIII, p. 184 (1934).

Stenobracon maculata MATSUMURA, Schäd. u. Nützl. Insect. Zucker. Pflanz. Formosas, pp. 50 & 84, ♀, Pl. XXX, fig. 8 (1910); id., Mém. Soc. Ent. Belg., XVIII, p. 148, ♀ (1911); SHIRAKI, Extra Report Agr. Exp. Stat. Formosa, No. 15, p. 135, ♀ ♂, Pl. XI, fig. 1 (1917); SONAN, Trans. Nat. Hist. Soc. Formosa, XX, p. 333, ♀ ♂ (1929); MATSUMURA, 6000 Ill. Insect. Japan-Empire, p. 75, fig. 410, ♂ (1931); ISHII, Nip. Kōn. Zukan, p. 375, fig. 731, ♀ (1932).

Stenobracon maculatus FAHRINGER, Ent. Mitt., XVII, p. 28 (1928).

Macrocentrus javanicus ISHIDA, Kansho Meichu Chosa Hokoku, I, p. 109, ♀ ♂, II, Pl. XVI, figs. 1-3 (1915).

Hemibracon elegantulus ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 62, ♀ ♂ (1920).

Hosts—*Chilo infuscatellus* SNELLEN, *Schoenobius incertellus* WALKER, and *Scirophaga nivella* FABRICIUS (after WATANABE, in Formosa).

Habitat: Formosa (Ako, Shinka, Hoozan, and Horisha, after WATANABE; Kagi, after ENDERLEIN).

Gen. Distr.: Java; Sumatra; China; Philippines; Formosa.

Remarks—Judging from the descriptions of *Stenobracon oculatus* SZÉPLIGETI¹⁾ and *Stenobracon fuscicornis* (CAMERON)²⁾, they seem identical with the present species.

1) Term. Füz., XXIV, p. 360, ♂ (1901).

2) Soc. Ent., XXV, p. 20, ♀ ♂ (1910) (as *Phanaulax*).

7. Genus *Ipobracon* THOMSON

Ipobracon THOMSON, Opusc. ent., p. 1787 (1892).

Iphiaulax (*Ipobracon*) FAHRINGER, Opusc. bracon., Bd. I, p. 169 (1926).

Genotype—*Ipobracon nigrator* (ZETTERSTEDT)

Key to the Species

- 1. Head transverse; wings flavohyaline, infuscate at the apical margin, a transverse black band runs outwardly from the parastigma; ground colour yellowish brown; ovipositor as long as the propodeum and abdomen united. Length, 16.5 mm... ..
 1. *horishanus* (MATSUMURA)
- Head cubital; wings slightly infuscate, without a black band; head reddish yellow; thorax and abdomen black; ovipositor a little longer than the body. Length, 7.5-9 mm. ...
 2. *taiwanus* (WATANABE)

1. *Ipobracon horishanus* (MATSUMURA)

Iphiaulax horishana MATSUMURA, Thous. Ins. Jap., Suppl. IV, p. 152, ♀, Pl. LII, fig. 2 (1912); id., Ill. Thous. Ins. Jap., II, p. 142, ♀, Pl. XV, fig. 2 (1930).

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

♀. Yellowish brown; antennae, tips of the mandibles, tarsi at the apex, and ovipositor-sheath black; wings flavohyaline, infuscate at the outer margin; a transverse black band runs outwardly from the parastigma; stigma yellowish brown, with a black spot at the apical angle. Length, 16.5 mm.

Head transverse, smooth and shining, with long yellow hairs; frontal excavation deep, with a median carina; face closely rugose, pubescent. Thorax smooth and shining, the parapsidal furrows slightly impressed, smooth. Radius inserted at the basal third of the stigma; 1st abscissa of the radius about one-fourth the length of the 2nd; 2nd cubital cell 2 times as long as high; recurrent nervure just received in the 1st cubital cell; 1st abscissa of the cubitus curved inwardly at the base; nervulus interstitial, curved outwardly. Abdomen longer than the head and thorax united, spindle-shaped, smooth and shining; 1st tergite 1.5 times as long as broad at the apex, with a longitudinal deep furrow on the lateral sides, the median raised area with a longitudinal carina at the middle; 2nd tergite shorter than broad at the apex, with a strong oblique furrow on both sides, and with a longitudinal median carina extending from the base to the apex; 3rd tergite shorter than the 2nd, with an oblique furrow on both sides, and the following transverse; 2nd suture broad, strongly crenulate; hypopygium acute, not surpassing the abdomen; ovipositor as long as the propodeum and abdomen united, 10 mm., the sheath covered uniformly with white hairs.

♂. Unknown.

Habitat: Formosa (Horisha, 1 ♀, **Holotype**, VI, 1908, S. MATSUMURA).

Gen. Distr.: Formosa.

2. ***Ipobracon taiwanus*** (WATANABE)

Merinotus taiwanus WATANABE, Ins. Mats., VIII, p. 183, ♀ ♂ (1934).

In the course of the present study the writer has become convinced that this species should be removed from *Merinotus* to *Ipobracon*, since the 2nd tergite lacks two converging carinae.

Habitat: Formosa (Hoozan, Kosempo, Koshun, Fusho, and Taihorin, after WATANABE).

Gen. Distr.: Formosa.

8. Genus ***Syntomernus*** ENDERLEIN

Syntomernus ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 121 (1920).

Genotype—*Syntomernus pusillus* ENDERLEIN

This genus is represented by the following unique species.

1. ***Syntomernus pusillus*** ENDERLEIN

Syntomernus pusillus ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 121, ♀ ♂ (1920).

The writer has not seen any representative of this species.

Habitat: Formosa (Takao, after ENDERLEIN).

Gen. Distr.: Formosa.

9. Genus ***Campyloneurus*** SZÉPLIGETI

Campyloneurus SZÉPLIGETI, Term. Füz., XXIII, p. 51 (1900).

Iphiaulax (Campyloneurus) FAHRINGER, Opusc. bracon., Bd. I, p. 582 (1928).

Genotype—*Campyloneurus bicolor* SZÉPLIGETI

The vast majority of the species falling in this genus have been reported from the Indo-Australian and Ethiopian regions. There is only a single species in Formosa.

1. ***Campyloneurus cingulicauda*** ENDERLEIN

Campyloneurus cingulicauda ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 105, ♀ (1920); WATANABE, Ins. Mats., VIII, p. 182, ♀ ♂ (1934).

Habitat: Formosa (Taihorin, after ENDERLEIN; Koshun, Kosempo, and Taihorin, after WATANABE; Kuraru, 1 ♀, 19. IV, 1928, J. SONAN; Raisha, 1 ♀, 13. III, 1926, J. SONAN; Kusukusu, 2 ♀ ♀, 17. IV, 1928, S. MATSUMURA; Taiheizan, 1 ♀, 21. VIII, 1923, J. SONAN; Koshun, 1 ♀, 25. IV, 1922, K. TAKEUCHI).

Gen. Distr.: Formosa.

10. Genus *Cyanopterus* HALIDAY

Cyanopterus HALIDAY, Ent. Magaz., III, p. 22 (1836).

Bracambus THOMSON, Opusc. ent., p. 1787 (1892).

Cyanopteridea VIERECK, Proc. U. S. Nat. Mus., XL, p. 476 (1911).

Iphiaulax (*Cyanopterus*) FAHRINGER, Opusc. bracon., Bd. I, p. 183 (1926).

Genotype—*Cyanopterus flavator* (FABRICIUS)

1. **Cyanopterus flavator* (FABRICIUS)

Ichneumon flavator FABRICIUS, Ent. Syst., II, p. 161 (1793).

Bracon flavator FABRICIUS, Syst. Piez., p. 110 (1804); Nees, Hymen. Ichneum. affin. Monogr. I, p. 98 (1834); MARSHALL, Spec. Hymén. Europe, IV, p. 137, ♀ ♂ (1888); DALLA TORRE, Cat. Hymen., IV, p. 268 (1898).

Bracon flavulator RATZEBURG, Ichneum. d. Forstinsect., I, p. 46., ♂ (1844).

Bracombus flavator MARSHALL, Spec. Hymén. Europe, V, Suppl., p. 42 (1897).

Iphiaulax flavator SZÉPLIGETI, Gen. Insect., 22-24, p. 22 (1904).

Cyanopterus flavator SZÉPLIGETI, Ann. Mus. Nat. Hist. Hung., IV, p. 585 (1906).

Iphiaulax (*Cyanopterus*) *flavator* FAHRINGER, Opusc. bracon., Bd. I, p. 185, ♀ ♂ (1926); HELLÉN, Acta Sci. Fauna et Flora Fennica, 56, No. 12, p. 14, ♀ (1927).

In the present specimens the antennae are 69-(♀) and 67-(♂) jointed, and the ovipositor is as long as the abdomen. Length 12 mm. (♀), 10 mm. (♂).

Cocoons: White, transparent, cylindrical, 15 × 6 mm. in size.

Hosts—*Pogonochaerus fascicularis* DE GEER, *Hesperophanes pallidus* OLIVAR, and *Hesperophanes griseus* FABRICIUS (after FAHRINGER, in Europe); *Monochamus rosenmülleri* CEDERHJELM (in Hokkaido).

This species is parasitic on the larva of *Monochamus rosenmülleri* in Hokkaido.

The cocoon occurs in the trunk of *Picea jezoensis* shut in by a thick corky lid at the end of the tunnel made by the larva of *Monochamus rosenmülleri*. On April 2nd, 1934, two cocoons of this parasite were collected at Mt. Tokachi, Hokkaido, and from them there appeared on June 9th a male, and on June 15th a female.

Habitat: Hokkaido (Mt. Tokachi, 1 ♀, 1 ♂, C. WATANABE).

Gen. Distr.: Europe; North Africa; Japan.

11. Genus *Iphiaulax* FÖRSTER

Iphiaulax FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 234 (1862).

Genotype—*Iphiaulax impostor* (SCOPOLI)

This genus has a world-wide distribution, an especially great number of the species being found in the tropical regions. Only three species, however, have been described from the present faunistic region.

Key to the Species

1. Wings entirely infuscate; head black; thorax and abdomen scarlet-red, with three black spots on the mesonotum; 2nd tergite rugose; ovipositor a little shorter than the abdomen, the sheath slightly dilated towards the apex. Length, 7-12 mm. *I. impostor* (SCOPOLI)
- Wings infuscate apically, an irregular hyaline streak runs outwardly from the parastigma, the rest flavohyaline; 1st to 3rd tergites longitudinally striate-rugose; ovipositor as long as the 2nd to 4th tergites united, the sheath not dilated towards the apex. Length, 10-14 mm. *I. garampiana* (MATSUMURA)

1. *Iphiaulax impostor* (SCOPOLI)

Ichneumon impostor SCOPOLI, Ent. Carn., p. 287 (1763).

Bracon impostor NEES, Hymen, Ichneum. affin. Monogr., I, p. 93, II, p. 399 (1834); MARSHALL, Spec. Hymén. Europe, IV, p. 80, ♀ ♂ (1888), V, Suppl., p. 39 (1897); THOMSON, Opusc. ent., p. 1801 (1892).

Iphiaulax impostor FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 234 (1862); KAWALL, Bull. Soc. Nat. Moscou, XXXVIII, p. 340 (1865); DALLA TORRE, Cat. Hymen., IV, p. 298 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 22 (1904); MATSUMURA, 6000 Ill. Insect. Japan-Empire, p. 74, fig. 407, ♀ (1931); ISHII, Nip. Kon. Zukan, p. 376, fig. 732, ♀ (1932).

Bracon sp. NAKAGAWA, Dobutsugaku Zasshi, XII, p. 276, ♀ ♂, Pl. IV, figs. 4-6 (1900); ONUKI, Jitsuyō Konchu Gaku, p. 255, fig. 177, ♀ (1903).

Iphiaulax (Iphiaulacidea) impostor FAHRINGER, Opusc. bracon., Bd. I, p. 203 (1926), Bd. III, p. 328 (1934).

Iphiaulax (Iphiaulax) impostor HELLÉN, Acta Soc. Fauna et Flora Fennica, 56, No. 12, p. 14 (1927).

This species is widely variable in colour: in a series of the present specimens from Japan and Korea the thorax is scarlet-red as in the abdomen, the ventral surface is black and the mesonotum has three black spots.

Hosts—*Plagionotus arcuatus* LINNÉ, *Monochamus sutor* LINNÉ, *Acanthocinus attilis* LINNÉ, and *Saperda populnea* LINNÉ (after FAHRINGER, in Europe); *Apriona germari* HOPE (after NAKAGAWA, in Japan).

Habitat: Hokkaido (Sapporo, 1 ♀, 28. V, 1904, S. MATSUMURA; Jōzankei, 1 ♀, 31. VIII, 1907, S. MATSUMURA); Honshu (Tokyo, 1 ♀, 5. VII, 1914, S. HIRAYAMA, 2 ♀ ♀, 1 ♂, 21. VII, 1923, M. YAMANAKA; Iwawaki-san, Kawachi, 1 ♀, 18. VII, 1913, S. ISSIKI; WAKAYAMA, 2 ♀ ♀, VIII, 1928, F. WADA; Kyoto, 1 ♀, 29. VIII, 1925, K. TAKEUCHI; Oyeyama, 1 ♀, 1. IX, 1928, M. KATO); Shikoku (Sasayama, Ehime-ken, 2 ♀ ♀, 21. VII, 1916, S. MATSUMURA; Kōchi, 1 ♀, IX, 1929, 1 ♀, 20. VI, 1930, 1 ♀, 1 ♂, 18. V, 1931, 1 ♀, 10. V, 1933, Y. SUGIHARA); Korea (Shuotsu, 2 ♀ ♀ 19. VIII, 1926, S. Ito).

Gen. Distr.: Europe; West Asia; Siberia; North Africa; North America; Japan; Korea.

2. *Iphiaulax garampiana* (MATSUMURA)

Glyptomorpha garampiana MATSUMURA, Thous. Ins. Jap., Suppl. IV, p. 156, ♀, Pl. LII, fig. 6 (1912).

Iphiaulax garampiana MATSUMURA, Ill. Thous. Ins. Jap., II, p. 145, ♀, Pl. XV, fig. 6 (1930).

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

♀. Yellowish brown; occiput, vertex, frontal excavation, antennae, and ovipositor-sheath black; tips of the mandibles and hind tarsi except the basal half of the 1st joint fuscous; wings flavohyaline on the basal half, the rest infuscate, and an irregular hyaline streak runs outwardly from the base of the stigma; stigma yellowish brown, the apical third black. Length, 10-14 mm.

Head transverse, smooth and shining, with long yellow hairs; frons excavated shallowly, with a median longitudinal furrow; face dull, with a median longitudinal furrow; antennae as long as the body. Thorax smooth and shining; parapsidal furrow shallowly impressed, smooth. Radius inserted at the basal third of the stigma; 1st abscissa of the radius about one-fourth the length of the 2nd; 2nd cubital cell 3 times as long as high; 1st intercubitus oblique, the 2nd vertical; recurrent nervure just received in the 1st cubital cell; 1st abscissa of the cubitus straight; nervulus interstitial. Abdomen spindle-shaped, longer than the head and thorax united; 1st tergite broadened towards the apex, as long as broad at the apex, the median raised area longitudinally striate-rugose; 2nd to 4th tergites with an oblique furrow on each side; 2nd and 3rd tergites longitudinally striate-rugose except the smooth area defined by the oblique furrows, and the following tergites smooth and shining; 2nd and 3rd sutures broad, crenulate; ovipositor as long as the 2nd to 4th tergites united, the sheath slender, not dilated towards the apex, covered uniformly with black hairs.

♂. Unknown.

Habitat: Formosa (Garampi, 1 ♀, **Holotype**, S. MATSUMURA; Koshun, 1 ♀, 25. IV, 1918, J. SONAN, 1 ♀, 20. IV, 1922, K. TAKEUCHI; Horisha, 1 ♀, 3. VII, 1929, C. WATANABE).

Remarks—This species is closely allied to *Bracon agrausi* CAMERON¹⁾ from India (which may be a species referable to the present genus and not to *Bracon*).

Species of *Iphiaulax* not included in the key

3. *Iphiaulax sauteri* ENDERLEIN

Iphiaulax sauteri ENDERLEIN, Arch. Naturgesch., 84 A, Heft II, p. 128, ♀ ♂ (1920).

1) Mem. Manch. Philos. Soc., XLI, p. 34, ♀, Pl. III fig. 6 (1897).

The type of this species has not been seen by the present writer, but judging from the original description, it seems identical with *Iphiaulax impostor* (SCOPOLI).

Habitat: Formosa (Takao, after ENDERLEIN).

Gen. Distr.: Formosa.

12. Genus *Bracon* FABRICIUS

Bracon FABRICIUS, Syst. Piez., p. 102 (1804).

Microbracon ASHMEAD, Bull. Colorado Biol. Assoc., I, p. 15 (1890).

Macrodyctium ASHMEAD, Proc. U. S. Nat. Mus., XXIII, p. 138 (1900).

Tropidobracon ASHMEAD, Proc. U. S. Nat. Mus., XXIII, p. 139 (1900).

Anisosoma VIERECK, Proc. U. S. Nat. Mus., XLIV, p. 640 (1913).

Genotype—*Bracon minuator* FABRICIUS

This is one of the largest and most widely distributed genera in this tribe, containing as many as 500 species. Although only thirteen species including two new species are found in the present fauna, there can be no doubt that many more native species ought to be discovered.

Key to the Species

1. Plate of the 1st tergite narrowed towards the base, 2 times as long as broad at the apex
... .. 2
- Plate of the 1st tergite parallel-sided, at least 3 times as long as broad at the apex
... .. 9
2. All the tergites smooth and shining; suture between the 2nd and 3rd tergites deep, slightly sinuate 3
- All the tergites not entirely smooth and shining, at least the 2nd tergite sculptured 4
3. Head, thorax, and legs black; abdomen brownish yellow, with a black marking at the base of the median area of the 1st tergite; wings uniformly infusate; ovipositor a little shorter than the abdomen. Length, 3 mm. *1. nigrorufum* (CUSHMAN)
- Brownish red; vertex, occiput, and mesonotum except the lateral lobes black; legs reddish yellow; wings infusate, becoming paler towards the apex; ovipositor a little shorter than the abdomen. Length, 3 mm. *2. isomera* (CUSHMAN)
4. Two basal tergites sculptured; suture between the 2nd and 3rd tergites sinuate, crenulate
... .. 5
- All the tergites reticulate-rugose; suture between the 2nd and 3rd tergites straight, smooth 6
5. Propodeum without a longitudinal median carina; antennae 29 to 31-jointed; 2nd tergite irregularly striate-rugose; 3rd and 4th tergites dull, the rest smooth and shining; ovipositor as long as the abdomen. Length, 3.5 mm. *3. flavinus* FAHRINGER
- Propodeum with a longitudinal median carina; antennae 31 to 34-jointed; 2nd tergite rugosely punctate, the rest smooth and shining; ovipositor a little shorter than the abdomen. Length, 4.5 mm. *4. apoderi* WATANABE
6. Ground colour reddish yellow; wings hyaline 7
- Ground colour black; wings slightly infusate 8
7. Mesonotum, propodeum, and three basal tergites possessing black markings; propodeum

- with a median longitudinal carina from the base to the middle; antennae reddish yellow, 37- (♀), 39 or 40-jointed (♂); abdomen reticulate-rugose, the last tergite normal, acute; ovipositor about half the length of the abdomen. Length, 3.5 mm. 5. *onukii* WATANABE
- Third to fifth (to sixth in the male) tergites with a black spot on each side; propodeum with a strong longitudinal median carina; antennae black, 37 to 46- (♀), 49 or 50-jointed (♂); abdomen reticulate-rugose, the 6th tergite emarginated medially at the apex, the rest retracted; ovipositor shorter than the 6th tergite. Length, 7 mm. 6. *koshunensis* WATANABE
8. Propodeum smooth and shining, without a median carina; belly and lateral margins of the three basal tergites whitish; antennae 37 to 41-jointed (♀ ♂); ovipositor as long as the abdomen. Length, 6 mm. 7. *kuro* WATANABE
- Propodeum slightly rugose, with a short median carina at the apex; orbitus broadly reddish brown; antennae 28-jointed; abdomen reticulate-rugose; ovipositor about one-fourth the length of the abdomen. Length, 3.5 mm. 8. *yakui* sp. nov.
9. First abscissa of the cubitus straight; abdomen black, with a white band at the apical margin of each tergite; ovipositor as long as the hind femur. Length, 3.5-4 mm. 9. *chinensis* SZÉPLIGETI
- First abscissa of the cubitus curved inwardly; abdomen black, without white bands; ovipositor as long as the hind femur. Length, 6 mm. 10. *nipponensis* sp. nov.

I. ***Bracon nigrorufum*** (CUSHMAN)

Microbracon sp. KAMBE, Ann. Agr. Exp. Stat. Govern.-Gen. Chosen, V, No. 4, p. 198, ♀ ♂ (1930).

Microbracon nigrorufum CUSHMAN, Proc. U. S. Nat. Mus., LXXIX, p. 15, ♀ ♂ (1931).

Bracon nigrorufum FAHRINGER, Opusc. bracon., Bd. III, p. 338, ♀ ♂ (1934); WATANABE, Ins. Mats., X, p. 43 (1935).

Hosts—*Pectinophora gossypiella* SAUNDERS (after KAMBE, CUSHMAN, and WATANABE, in Korea); *Grapholitha molesta* BUSCK (after KAMBE, in Korea).

Habitat: Korea (Moppo).

Gen. Distr.: Korea; North China.

2. ***Bracon isomera*** (CUSHMAN)

Microbracon sp. KAMBE, Ann. Agr. Exp. Stat. Govern.-Gen. Chosen, V, No. 4, p. 203, ♀ ♂ (1930).

Microbracon isomera CUSHMAN, Proc. U. S. Nat. Mus., LXXIX, p. 16, ♀ ♂ (1931).

Bracon isomera FAHRINGER, Opusc. bracon., Bd. III, p. 338, ♀ ♂ (1934); WATANABE, Ins. Mats., X, p. 44 (1935).

Host—*Pectinophora gossypiella* SAUNDERS (after KAMBE, CUSHMAN, and WATANABE, in Korea).

Habitat: Korea (Moppo).

Gen. Distr.: Korea.

3. ***Bracon flavinus*** FAHRINGER

Macrodictyum flavipes ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 195, ♀ (1906) (nec *Bracon flavipes* NEES, 1834).

Bracon flavinus FAHRINGER, Opusc. bracon., Bd. I, p. 509 (1928).

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

♀. Head transverse, smooth and shining; antennae shorter than the body, 29 to 31-jointed. Thorax smooth and shining; parapsidal furrows strongly impressed; propodeum smooth and shining, without a median longitudinal carina. Abdomen oblong, a little longer than the head and thorax united; 2nd tergite irregularly striate-rugose, with a smooth median ridge; 3rd and 4th tergites dull, slightly rugose, the rest smooth and shining; ovipositor a little shorter than the abdomen; 2nd suture sinuate, distinctly crenulate. Length, 3.5 mm.

♂. Closely resembles the female, but the antennae longer than the body, 31-jointed; abdomen slenderer than in the female. Length, 3 mm.

Described from the specimen labelled "*Microdictyum flavipes* ASHMEAD, No. 32" and from others collected at Sapporo.

Habitat: Hokkaido (Ishiyama, 1 ♀, 9. X, 1905, S. MATSUMURA; Sapporo, 4 ♀ ♀, 1 ♂, 29. V, 1930, 3 ♀ ♀, 4. VI, 1930, C. WATANABE).

Gen. Distr.: Japan.

4. ***Bracon apoderi*** WATANABE

Bracon apoderi WATANABE, Ins. Mats., VII, p. 180, ♀ ♂ (1933).

Host—*Apoderus balteatus* ROELOFS (after WATANABE, in Honshu).

Habitat: Honshu (Shizuoka).

Gen. Distr.: Japan.

5. ***Bracon onukii*** WATANABE

Braconid sp. TANAKA, Gaichu Kenkyu Seiseki Hokoku, Pt. 2, Niigata Nōji Shikenjō, p. 22, ♀ ♂, Pl. I, fig. 1 (1902).

Braconid sp. ONUKI, Jitsuyō Konchu Gaku, p. 253, fig. 173 (1903).

Anyosoma chilonis NAWA, Insect World, XVII, p. 354, ♀ ♂, Pl. XVIII, figs. 1-13 (1913); id., l. c., XIX, p. 455 (1915); ISHII, Nip. Kon. Zukan, p. 376, ♀ ♂, fig. 733 (1932), (nec VIERECK).

Bracon onukii WATANABE, Trans. Sapporo Nat. Hist. Soc., XII, p. 65, ♀ ♂ (1932); FAHRINGER, Opusc. bracon., Bd. III, p. 343, ♀ ♂ (1934).

Host—*Chilo simplex* BUTLER (after WATANABE, in Japan).

Habitat: Honshu (Gifu, Niigata, and Kurashiki, after WATANABE); Kiushu (Nagasaki and Kumamoto, after WATANABE); Korea (Shariin, after WATANABE).

Gen. Distr.: Japan; Korea.

6. ***Bracon koshunensis*** WATANABE

Bracon koshunensis WATANABE, Ins. Mats., VIII, p. 186, ♀ ♂, fig. 1 (1934).

Habitat: Formosa (Koshun, after WATANABE).

Gen. Distr.: Formosa.

7. ***Bracon kuro*** WATANABE

Bracon kuro WATANABE, Ins. Mats., VIII, p. 185, ♀ ♂ (1934).

Habitat: Formosa (Koshun, after WATANABE).

Gen. Distr.: Formosa.

8. ***Bracon yakui*** sp. nov. (Pl. IV, Fig. 3)

♀. Black; orbitus and mouth-parts reddish brown; palpi dark brown; fore legs except the coxae brownish yellow; middle and hind legs dark brown, all trochanters and middle femora at the apex yellowish; wings slightly infusate; stigma and veins black; abdomen ventrally whitish yellow; ovipositor reddish yellow, the sheath black. Length, 4 mm.

Head transverse, smooth and shining; frons and face finely granulated, pubescent, the former excavated shallowly, with a fine median furrow; antennae shorter than the body, 28-jointed. Thorax smooth and shining, with pubescence; parapsidal furrows obsolete; propodeum slightly rugose, with a short median carina at the apex. Radius inserted at the basal third of the stigma; 1st abscissa of the radius nearly equal to two-fifths the length of the 2nd; 2nd cubital cell slightly narrowed towards the apex; 1st intercubitus oblique, as long as the 2nd abscissa of the radius; 2nd intercubitus vertical, decoloured at both ends; recurrent nervure inserted at the apical fifth of the 1st abscissa of the cubitus; nervulus interstitial; radial cell of the hind wing sessile. Abdomen oblong, as long as the head and thorax united, strongly reticulate-rugose; 1st tergite as long as broad, parallel-sided, with a median knob at the apex, the following tergites transverse; 2nd tergite longer than the 3rd; 2nd suture straight, and crenulate; ovipositor about one-fourth the length of the abdomen, the sheath covered uniformly with black hairs.

♂. Closely resembles the female, but the body is slenderer. Length, 3.5 mm.

Host—*Pygaera anastomosis* LINNÉ (in Hokkaido).

This parasite was bred from the larva of *Pygaera anastomosis* by H. YAKU at Sapporo.

Holotype (♀), **Allotype** (♂), and **Paratypes** (6♀ ♀): Sapporo, 19. VIII, 1929, H. YAKU.

Habitat: Hokkaido (Sapporo).

Remarks—This species comes near *Bracon nigratus* WESMAEL¹⁾, from

1) Nouv. Mém. Acad. Sci. Bruxel., XI, p. 34, ♀ ♂ (1838).

which it is easily distinguished by the structure of the abdomen.

9. ***Bracon chinensis*** SZÉPLIGETI

Bracon chinensis SZÉPLIGETI, Term. Füz., XXV, p. 30, ♂ (1902); id., Gen. Insect., 22-24, p. 35 (1904); FAHRINGER, Opusc. bracon., Bd. I, p. 445, ♂ (1928); WATANABE, Ins. Mats., VIII, p. 185 (1934).

Amyosoma chilonis VIERECK, Proc. U. S. Nat. Mus., XLIV, p. 640, ♀ ♂ (1913); SHIRAKI, Extra Report Agr. Exp. Stat. Formosa, No. 15, p. 132, ♀ ♂, Pl. XII, figs. 9-16 (1917).

Agathis noiratum ISHIDA, Kansho Meichu Chosa Hokoku I, p. 100, ♀, II, Pl. XIV, figs. 9-11 (1915).

Bracon (Amyosoma) chinensis WATANABE, Trans. Sapporo Nat. Hist. Soc., XXII, p. 65, ♀ ♂ (1932).

Hosts—*Chilo simplex* BUTLER, *Chilo infuscatellus* SNELLEN, *Schoenobius incertellus* WALKER, and *Sesamia inferens* WALKER (after WATANABE, in Formosa).

Habitat: Formosa (Tansui, Hoppo, Kosen, Koshun, Taihorin, and Hoozan, after WATANABE); Okinawa (after WATANABE); Korea (Shariin, after WATANABE).

Gen. Distr.: China; Formosa; Korea; Okinawa.

10. ***Bracon nipponensis*** sp. nov. (Pl. II, Fig. 3)

♀. Head and thorax yellowish red; antennae, propodeum, and abdomen black; fore legs yellowish red; four anterior legs black; 1st tergite laterally whitish; wings infusate, an irregular hyaline streak runs outwardly from the base of the stigma; stigma dark brown. Length, 6 mm.

Head subcubital, smooth and shining, with yellowish pubescence; frons possesses a shallow median furrow; antennae stout, a little shorter than the body, 54-jointed. Thorax and propodeum smooth and shining; parapsidal furrows shallowly impressed. Radius inserted at the middle of the stigma; 1st abscissa of the radius about one-fifth the length of the 2nd; 2nd cubital cell 2 times as long as high; 1st intercubitus oblique, the 2nd vertical; 1st abscissa of the cubitus curved inwardly; recurrent nervure and nervulus interstitial; radial cell of the hind wing sessile. Abdomen as long as the head and thorax united, smooth and shining; plate of the 1st tergite parallel-sided, 3 times as long as broad at the apex; 2nd tergite subtriangular, narrowed towards the base, the 3rd tergite as long as the 2nd, and the following ones transverse; 2nd suture smooth; ovipositor as long as the hind femur, the sheath stout, covered uniformly with black hairs; hypopygium acute, not surpassing the abdomen.

♂. Unknown.

Holotype (♀): Wakayama, 1932, F. WADA. **Paratypes**: 1 ♀, Wakayama, 1932, F. WADA; 1 ♀, Niigata, 1918, S. NAKAMURA.

Habitat: Honshu (Wakayama and Niigata).

Remarks—This species is very close to the preceding species, *Bracon chinensis* SZÉPLIGETI, but is immediately separable therefrom by its inwardly curved 1st abscissa of the radius.

Species of *Bracon* not included in the key

11. *Bracon hispae* (VIERECK).

Microbracon hispae VIERECK, Proc. U. S. Nat. Mus., XLIV, p. 642, ♀ ♂ (1913).

The original description is too incomplete to warrant the inclusion of this species in the present key.

Host—*Monochirus callicanthus* BATES (after VIERECK, in Formosa).

Habitat: Formosa (after VIERECK).

Gen. Distr.: Formosa.

12. *Bracon japellus* (ASHMEAD)

Microbracon japellus ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 196, ♀ (1906).

Bracon japellus FAHRINGER, Opusc. bracon., Bd. I, p. 514 (1928).

The true systematic position of this species is not known to the writer.

Habitat: Hokkaido (Sapporo, after ASHMEAD).

Gen. Distr.: Japan.

13. *Bracon semiluteus* WALKER

Bracon semiluteus WALKER, Cist. Ent., I, p. 307, ♀ (1874); DALLA TORRE, Cat. Hymen., IV, p. 288 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 33 (1904); MORLEY, Entomologist, XLVI, p. 134 (1913); FAHRINGER, Opusc. bracon., Bd. I, p. 525 (1928).

MORLEY suggests that this species is a synonym of *Bracon piger* WESMAEL. The writer, however, has not yet seen any representative of it. Furthermore, WALKER gives Japan as a locality of this species without indicating any definite habitat.

13. Genus *Shirakia* VIERECK

Shirakia VIERECK, Proc. U. S. Nat. Mus., XLIV, p. 643 (1913).

Genotype—*Shirakia schoenobii* VIERECK

This genus is represented by the following two species, being parasitic on certain species of *Pyralidae*.

Key to the Species

♀ ♀

1. Wings hyaline; stigma dark brown; ground colour yellowish red; propodeum and abdomen dark brown; 2nd to 5th tergites with a longitudinal yellowish band; 4th and 5th tergites on each side and the following ones reddish yellow; ovipositor about half the length of the abdomen. Length, 4-5 mm. I. *schoenobii* VIERECK

- Wings flavohyaline, infusate at the apical margin, with two transverse black bands; stigma yellow, the basal half black; ground colour reddish yellow; 2nd and 3rd tergites with a black spot on each side; ovipositor as long as the 6th tergite. Length, 9-13 mm. ...
... .. 2. *jokohamensis* (CAMERON)

♂♂

1. Wings hyaline; stigma dark brown; ground colour reddish yellow, without fuscous markings; abdomen slenderer than in the female. Length, 4-5 mm.
... .. 1. *schoenobii* VIERECK
- Wings infusate, an irregular hyaline streak runs outwardly from the base of the stigma; stigma dark brown, the basal half yellow; ground colour reddish yellow, 2nd to 6th tergites with a black spot on each side, the spots of the 4th to 6th tergites sometimes obsolete; abdomen slenderer than in the female. Length, 8-12 mm.
... .. 2. *jokohamensis* (CAMERON)

1. *Shirakia schoenobii* VIERECK

Bracon dorsalis MATSUMURA, Schäd. u. Nützl. Insect. Zucker. Pflanz. Formosas, pp. 49 & 84, ♀, Pl. XXX, fig. 7 (1910); id., Mém. Soc. Ent. Belg., XVIII, p. 148, ♀ (1911) (nec BRULLÉ, 1846).

Shirakia schoenobii VIERECK, Proc. U. S. Nat. Mus., XLIV, p. 643, ♀♂ (1913); WATANABE, Trans. Sapporo Nat. Hist. Soc., XII, p. 63, ♀♂ (1932); id., Ins. Mats., VIII, p. 185 (1934).

Shirakia dorsalis SHIRAKI, Extra Report Agr. Exp. Stat. Formosa, No. 15, p. 125, ♀♂, Pl. XII, figs. 1-8 (1917); GOOT, Levenswijze en Bestrijding van den Witten Rijstboorder op Java, p. 89 (1925).

Hosts—*Chilo simplex* BUTLER, *Schoenobius incertellus* WALKER, and *Sesamia inferens* WALKER (after WATANABE, in Formosa).

Habitat: Formosa (Kagi, Ako, Tainan, Kosen, Koshun, and Hoozan, after WATANABE).

Gen. Distr.: Formosa; Java.

2. *Shirakia jokohamensis* (CAMERON) (Pl. IV, Fig. 4)

Bracon jokohamensis CAMERON, Ins. Ent. Zeitsch., Guben, III, p. 288, ♂ (1910); FAHRINGER, Opusc. bracon., Bd. I, p. 321, ♂ (1927).

Bracon seitzii CAMERON, Int. Ent. Zeitsch., Guben, III, p. 289, ♂ (1910); FAHRINGER, Opusc. bracon., Bd. I, p. 339, ♂ (1927).

Campyloneurus jokohamensis MATSUMURA, 6000 Ill. Insect. Japan-Empire, p. 73, fig. 400, ♀ (1931).

Bracon sp., MORITSUGU, Report Dept. Agr. Govern. Res. Inst. Formosa, No. 50, p. 42, ♀♂ (1931).

Shirakia jokohamensis WATANABE, Ins. Mats., VIII, p. 185, ♀ (1934), IX, p. 8, ♀♂ (1934).

Host—*Scirpophoga nivella* FABRICIUS (after WATANABE, in Formosa).

Habitat: Honshu (Tokyo, Oshima, Wakayama, Katayama, and Hagi, after WATANABE); Shikoku (Ehime-ken and Kôchi-ken, after WATANABE); Kiushu (Nagasaki, after WATANABE); Okinawa (after WATANABE); Formosa (Taihoku, Shinten, Shinka, Hoozan, and Kôhekirin, after WATANABE).

Gen. Distr.: Japan; Formosa.

14. Genus *Habrobracon* ASHMEAD

Habrobracon ASHMEAD, Proc. U. S. Nat. Mus., XXIII, p. 139 (1900).

Genotype—*Habrobracon gelechia* (ASHMEAD)

I. *Habrobracon pectinophorae* WATANABE

Habrobracon hebetor WATANABE, Kontyû, VII, p. 245 (1933) (nec SAY).

Habrobracon pectinophorae WATANABE, Ins. Mats., X, p. 44, ♀ ♂ fig. I (1935).

The specimens determined by the present writer as *Habrobracon hebetor* (SAY) are truly identical with this species.

Hosts—*Pyralis farinalis* LINNÉ (after WATANABE, in Japan); *Pectinophora gossypiella* SAUNDERS (after WATANABE, in Korea).

Habitat: Honshu (Tokyo); Korea (Moppo).

Gen. Distr.: Japan; Korea.

15. Genus *Spinaria* BRULLÉ

Spinaria BRULLÉ, Hist. Nat. Ins. Hymén., IV, p. 512 (1846).

Brownius ASHMEAD, Canad. Entomologist, XXXVIII, p. 7 (1905).

Genotype—*Spinaria armator* (FABRICIUS)

The aberrant genus is easily distinguished from the others by the pronotum with a strong spine. The group, as a whole, seems to exist only in the Indo-Australian region. Two species have been reported from Formosa. Furthermore, DALLA TORRE (46) and SZÉPLIGETI (163) gave Japan as a locality of *Spinaria fuscipennis* BRULLÉ¹⁾, but they may have mistaken Java for Japan.

Key to the Species

- 1. Eyes very large, the distance between the eye and the anterior ocellus shorter than the diameter of an ocellus (♂ ♂) 2
- Eyes kidney-shaped in moderate size, the distance between the eye and the anterior ocellus longer than the diameter of an ocellus (♀ ♀) 3
- 2. Abdomen black, with the two basal tergites on each side pale yellow. Length, 8-9 mm. *I. armator* (FABRICIUS)
- Abdomen reddish yellow, with the two basal tergites on each side pale yellow. Length, 8-9 mm. *2. spinator* (GUÉRIN)
- 3. Abdomen black, with the two basal tergites on each side and the 5th tergite pale yellow. Length, 9-10 mm. *I. armator* (FABRICIUS)
- Abdomen reddish yellow, with the two basal tergites on each side and the 5th tergite pale yellow. Length, 9-10 mm. *2. spinator* (GUÉRIN)

1) Hist. Nat. Insect. Hymén., IV, p. 514 (1846).

1. *Spinaria armator* (FABRICIUS)

Bracon armator FABRICIUS, Syst. Piez., p. 107 (1804).

Spinaria armator BRULLÉ, Hist. Nat. Insect. Hymén., IV, p. 513 (1846); WESTWOOD, Ent. Tidskr. XXV, p. 29 (1882); DALLA TORRE, Cat. Hymen., IV, p. 255 (1898); SZÉPLIGETI, Term. Füz., XXV, p. 45 (1902); id., Gen. Insect., 22-24, p. 47 (1904); WATANABE, Ins. Mats., VIII, p. 187 (1934).

Habitat: Formosa (Taihorin and Koshun, after WATANABE; Shinchiku, 1 ♀, 1-30. VII, 1918, J. SONAN; Koshun, 1 ♀, 11. VII, 1922, K. TAKEUCHI; Taihoku, 1 ♀, 14. V, 1922, K. TAKEUCHI; Tamaho, 1 ♀, 11. VII, 1925, T. UCHIDA).

Gen. Distr.: Sumatra; Java; Formosa.

2. *Spinaria spinator* (GUÉRIN)

Bracon spinator GUÉRIN, DUPERRY: Voy. Conquille. Zool., II, p. 199 (1830).

Spinaria spinator BRULLÉ, Hist. Nat. Insect. Hymén., IV, p. 514 (1846); WESTWOOD, Ent. Tidskr., XXV, p. 28 (1882); DALLA TORRE, Cat. Hymen., IV, p. 256 (1898); SZÉPLIGETI, Term. Füz., XXV, p. 45 (1902); id., Gen. Insect., 22-24, p. 47 (1904); ENDERLEIN, Stett. Ent. Zeit., p. 231 (1905); WILKINSON, Bull. Ent. Res., XXI, p. 275, ♀ ♂ (1930); WATANABE, Ins. Mats., VIII, p. 187, ♀ ♂ (1934).

Host—*Setora nitens* WALKER (after WILKINSON, in Malaya).

Habitat: Formosa (Koshun, Taihorin, and Kosempo, after WATANABE; Taiheizan, 1 ♀, 6. IX, 1923, J. SONAN; Horisha, 1 ♀, 5. V, 1922, K. TAKEUCHI; Kusukusu, 2 ♀ ♀, 21. IV, 1928, S. MATSUMURA).

Gen. Distr.: India; Sumatra; Malaya; Sula Island; Formosa.

16. Genus *Euurobracon* ASHMEAD

Euurobracon ASHMEAD, Proc. U. S. Nat. Mus., XXIII, p. 140 (1900).

Exobracon SZÉPLIGETI, Term. Füz., XXV, p. 45 (1902).

Lissobracon CAMERON, Journ. Straits Br. Roy. Asiat. Soc., XLIV, p. 103 (1905).

Genotype—*Euurobracon yokohamae* (DALLA TORRE)

The writer discussed this genus in his previous paper (191). It is, therefore, unnecessary to consider the group here further than to give a list of the present species.

Key to the Species

1. Radius of the hind wing inserted at the upper end of the basal nervure; ovipositor 6.5 to 9 times as long as the body. Length, 15-24 mm. ... 1. *yokohamae* (DALLA TORRE)
- Radius of the hind wing inserted at the upper sixth of the basal nervure; ovipositor a little longer than the body. Length, 14-20 mm. ... 2. *breviterebrae* WATANABE

1. *Euurobracon yokohamae* (DALLA TORRE)

Bracon penetrator SMITH, Proc. Zool. Soc. London, p. 413, ♀, Pl. XIV, fig. 1 (1877) (nec SMITH, 1863).

Bracon yokohamae DALLA TORRE, Cat. Hymen., IV, p. 295 (1898).

Eurobracon penetrator ASHMEAD, Proc. U. S. Nat. Mus., XXIII, p. 140 (1900); SZÉPLIGETI, Gen. Insect., 22-24, p. 51 (1904); ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 196, Pl. XV, figs. 1-2, ♀ ♂ (1906); MATSUMURA, Thous. Ins. Jap., Suppl. IV, p. 152, ♀, Pl. LII, fig. 3 (1912); FAHRINGER, Ent. Mitt., XVI, p. 256, ♀ ♂ (1927); MATSUMURA, Ill. Thous. Ins. Jap., II, p. 143, ♀, Pl. XV, fig. 3 (1930); id., Ill. Com. Insect. Jap., IV, p. 30, ♀, Pl. VIII, fig. 5 (1932); ISHII, Nip. Kon. Zukan, p. 375, ♀ ♂, fig. 730 (1932).

Exobracon montivagus CAMERON, Soc. Ent., XXV, p. 20, ♀ (1910).

Eurobracon yokohamae VIERECK, Bull. U. S. Nat. Mus., Washing., 83, p. 58 (1914); WATANABE, Ins. Mats., IX, p. 20, ♀ ♂, fig. 1a, (1934).

Eurobracon montivagus FAHRINGER, Ent. Mitt., XVI, p. 263, ♀ (1927).

Iphiaulax (Eurobracon) penetrator FAHRINGER, Opusc. bracon., Bd. I, p. 587, ♀ ♂ (1928); SONAN, Kontyû, VII, pp. 115-123, ♀ ♂ (1932).

Iphiaulax (Eurobracon) montivagus FAHRINGER, Opusc. bracon., Bd. I, p. 586, ♀ (1928).

Host—*Batocera lineolata* CHEVROLAT (after WATANABE, in Japan).

Habitat: Honshu (Yamagata, Mie, Aomori, Niigata, and Tokyo, after WATANABE); Korea (Suigen and Taiyudong, after WATANABE).

Gen. Distr.: Japan; Korea.

2. *Eurobracon breviterebrae* WATANABE

Eurobracon breviterebrae WATANABE, Ins. Mats., IX, p. 21, ♀ ♂, fig. 1 b (1934).

Habitat:—Honshu (Mt. Fuji and Kyoto, after WATANABE).

Gen. Distr.: Japan; South Manchuria.

2. Tribe *Exothecini*

This tribe is composed of a comparatively small number of minute species. Some of the species are known as parasites of *Lepidoptera Coleoptera*, and *Diptera*.

Key to the Genera

1. Radius originating much before the middle of the stigma 1. *Exothecus* WESMAEL
- Radius originating from the middle of the stigma 2. *Coeloreuteus* ROMAN

1. Genus *Exothecus* WESMAEL

Exothecus WESMAEL, Nouv. Mém. Acad. Soc. Bruxel., XI, p. 73 (1838).

Xenobius FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 235 (1862).

Genotype—*Exothecus affinis* WESMAEL

1. *Exothecus albipes* (ASHMEAD)

Xenobius albipes ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 197, ♀ ♂ (1906).

Exothecus albipes FAHRINGER, Opusc. bracon., Bd. III, p. 26, ♀ ♂ (1930).

The present writer has not seen any representatives of this species; the type is in the United States National Museum.

Habitat: Honshu (Atami, after ASHMEAD).
Gen. Distr.: Japan.

2. Genus *Coeloreuteus* ROMAN

Coeloreuteus ROMAN, Ent. Tidskr., XXXI, p. 112 (1910).

Atoreuteus SZÉPLIGETI, Gen. Insect., 22-24, p. 78 (1904).

Genotype—*Coeloreuteus africanus* (SZÉPLIGETI)

1. *Coeloreuteus formosanus* WATANABE

Coeloreuteus formosanus WATANABE, Ins. Mats., VIII, p. 188, ♀ (1934).

Habitat: Formosa (Tainan and Chosokei, after WATANABE).

Gen. Distr.: Formosa.

3. Tribe *Spathiini*

This tribe is apparently differentiated from the others by having a petiolate abdomen. Most of the species falling in this tribe are undoubtedly parasitic on Coleopterous borers, although some others appear to attack certain Lepidopterous borers. Only a single genus has been recognized in the present faunistic region.

1. Genus *Spathius* NEES

Spathius NEES, Nova Acta Akad. Nat. Curios., IX, p. 301 (1818).

Stenophasmus SMITH, Journ. Proc. Linn. Soc. Zool., III, p. 169 (1858).

Genotype—*Spathius exarator* (LINNÉ)

Key to the Species

1. Vertex smooth and shining 2
- Vertex sculptured 3
2. Reddish yellow to brown; propodeum reticulate-rugose, strongly areolate; 1st abscissa of the medial nervure of the fore wing straight; 1st tergite as long as the following ones united; 2nd tergite slightly shagreened at the base; ovipositor as long as the body. Length, 2-7 mm. 1. *exarator* (LINNÉ)
- Reddish yellow; propodeum shagreened, not areolate; 1st abscissa of the medial nervure of the fore wing curved downward; 1st tergite shorter than the following ones united; 1st and 2nd tergites shagreened; ovipositor as long as the abdomen. Length, 3-3.5 mm. 2. *annuliventris* (ENDERLEIN)
3. Vertex transversely striate 4
- Vertex shagreened; ground colour black; legs reddish brown; propodeum shagreened, transversely striate on the apical third, with three longitudinal carinae; fore wing fuscous, with transverse hyaline bands; stigma brown, with a hyaline spot at the base; 1st tergite about half the length of the following ones united; 1st to 3rd tergites shagreened; ovipositor as long as the abdomen. Length, 3.5-5 mm. 3. *bisignatus* WALKER

4. Black; antennae reddish yellow; four anterior coxae and all trochanters pale yellow; 1st abscissa of the medial nervure of the fore wing curved downward; propodeum rugose and areolate, the median basal longitudinal carina longer than the distance from the point of bifurcation to a point in line with emission of the costulae; 1st tergite shorter than the following ones united; 1st and 2nd tergites and the 3rd on the basal half shagreened; ovipositor as long as the abdomen. Length, 5-6.5 mm. ... 4. *apicalis* (WESTWOOD)
- Reddish yellow to reddish brown; antennae with a broad pale ring near the apex; legs pale yellow; hind femora with a fuscous ring near the apex; 1st abscissa of the radius straight; propodeum smooth and shining, areolate, the median basal longitudinal carina about half the distance from its bifurcation to a point in line with emission of the costulae; 1st tergite longer than the following ones united; 2nd tergite smooth and shining; ovipositor a little longer than the body. Length, 4 mm. 5. *japonicus* sp. nov.

1. **Spathius exarator* (LINNÉ)

Ichneumon exarator LINNÉ, Syst. nat., Ed. 10 a, I, p. 564 (1758).
Ichneumon nuttillarius FABRICIUS, Syst. ent., p. 342 (1775).
Cryptus clavatus PANZER, Faun. Insect. German., IX, p. 102 (1809).
Spathius clavatus NEES, Hymen. Ichneum. affin. Monogr., I, p. 12, ♀ ♂ (1834); RATZEBURG, Ichneum. d. Forstinsect., I, p. 48, ♀ ♂ (1844), II, p. 42 (1848), III, p. 41 (1852).
Spathius exarator MARSHALL, Trans. Ent. Soc. London, p. 61, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 194, ♀ ♂ (1888); THOMSON, Opusc. ent., p. 1852, ♀ ♂ (1892); DALLA TORRE, Cat. Hymen., IV, p. 243 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 52 (1904); id., Ann. Mus. Nat. Hung., IV, p. 598 (1906); FAHRINGER, Opusc. bracon., Bd. III, p. 71, ♀ ♂ (1930); WILKINSON, Trans. Ent. Soc. London, LXXIX, p. 508 (1931).

Hosts—*Anobium striatum* OLIVIER, *Anobium pertinax* LINNÉ, *Plilinus pectinicornis* LINNÉ, *Hylesinus fraxini* FABRICIUS, *Ernoporus tiliac* PANZER, and *Scolytus scolytus* FABRICIUS (after FAHRINGER, in Europe).

Habitat: Hokkaido (Sounkyo, 14 ♂ ♂, 16. VII, 1930, C. WATANABE); Honshu (Gifu, 1 ♀, IX, 1920, K. TAKEUCHI).

Gen. Distr.: Europe; West and Central Asia; North Africa; Japan.

2. *Spathius annuliventris* (ENDERLEIN)

Stenophasmus annuliventris ENDERLEIN, Arch. Naturgesch., 78 A, Heft 2, p. 11, ♀ (1912).
Stenophasmus mimeticus ENDERLEIN, Arch. Naturgesch., 78 A, Heft 2, p. 12, ♀ (1912).
Spathius annuliventris WATANABE, Ins. Mats., VIII, p. 189, ♀ ♂ (1934).

Habitat: Formosa (Takao and Cyamma, after ENDERLEIN; Koshun, after WATANABE).

Gen. Distr.: Formosa.

3. *Spathius bisignatus* WALKER

Spathius bisignatus WALKER, Ann. Mag. Nat. Hist., V, p. 309, ♀ ♂ (1860); SZÉPLIGETI, Gen. Insect., 22-24, p. 52 (1904); WILKINSON, Trans. Ent. Soc. London, LXXIX, p. 510, ♀, Pl. XXXVIII, fig. 1 (1931); WATANABE, Ins. Mats., VIII, p. 189, ♀ (1934).

Spathius dinoderi GAHAN, Philip. Jour. Sci., XXVII, p. 84, ♂, Pl. I, fig. 2 (1925).

Host—*Dinoderus minutus* FABRICIUS (after GAHAN, in the Philippines).

Habitat: Formosa (Koshun, after WATANABE).

Gen. Distr.: Ceylon; India; Philippine Islands; Rodrigues Island; Formosa.

4. *Spathius apicalis* (WESTWOOD)

Stenophanus apicalis WESTWOOD, Ent. Tidskr., XXV, p. 43, ♀ ♂ (1882).

Spathius apicalis SZÉPLIGETI, Gen. Insect., 22-24, p. 52 (1904); WILKINSON, Trans. Ent. Soc. London, LXXIX, p. 519, ♀ ♂, fig. 7 (1931); WATANABE, Ins. Mats., VIII, p. 189, ♀ (1934).

Habitat: Formosa (Hoozan, Koshun, and Kosempo, after WATANABE).

Gen. Distr.: Borneo; Formosa.

5. *Spathius japonicus* sp. nov. (Pl. IV, Fig. 1)

♀. Reddish yellow to reddish brown; antennae in the basal third reddish yellow, then becoming brown, the following ten joints, however, pale yellow, the apical several joints dark brown; mandibles at the tips, meso- and metapleurae, and abdomen except the 1st segment dark brown to black; wings subhyaline; stigma and veins brownish yellow, the former with a pale spot at the base; legs pale yellow, the hind femora with a fuscous ring near the apex; ovipositor reddish brown, the sheath fuscous. Length, 4 mm.

Head cubital; face transversely striate-rugose entirely; distance between the facial depressions 2.5 times as long as the distance from the eyes; clypeus short, triangular, truncate at the apical margin; frons, vertex, and occiput transversely striate-rugose; cheeks smooth and shining; antennae longer than the body, 38 or 39-jointed, the 1st joint of the flagellum 1.5 times as long as the 2nd, which is longer than the scapus; distance between the posterior ocellus and the eye 3 times as long as the distance between the posterior ocelli. Scutum of the mesonotum coriaceous, slightly rugose transversely, the parapsidal furrows well marked, crenulate anteriorly, and carinate posteriorly, the carinae converging towards the hind margin, and the scutellum coriaceous, near the anterior margin with four foveae which are separated by three carinae; mesopleurae smooth and shining with a crenulate discal furrow; metapleurae coarsely reticulate-rugose; propodeum smooth and shining, the areolation well marked, the median basal longitudinal carina short, about half the distance from its bifurcation to a point in line with emission of the costulae; 1st abscissa of the medial nervure straight, not curved. Hind coxae transversely striate, with a minute tooth at the lower part of the base. Abdomen longer than the head and thorax united; 1st tergite slender, petiolate, as long as the following ones united,

slightly striate-rugose; 2nd and following tergites smooth and shining; 2nd and 3rd tergites together longer than the rest united; ovipositor a little longer than the body, 4.8 mm.

♂. Unknown.

Holotype (♀): Kuma, Kôchi-ken, 8. IX, 1933, Y. SUGIHARA. **Paratypes**: 1 ♀, Hirooka, Kôchi-ken, 24. IX, 1934, H. OKAMOTO; 2 ♀ ♀, Ushio, Kyoto-fu, 20. IX, 1924, K. TAKEUCHI.

Habitat: Shikoku (Kuma and Hirooka); Honshu (Ushio).

Remarks—This species comes near to *Spathius alipes* WILKINSON¹⁾ from Java, but differs from the latter by the areolation of the propodeum and by the colouration of the antennae.

Species of *Spathius* not included in the key

6. *Spathius fasciatus* WALKER

Spathius fasciatus WALKER, Cist. Ent., I, p. 397, ♀ (1874), DALLA TORRE, Cat. Hymen., IV, p. 245 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 52 (1904); MORLEY, Entomologist, XLVI, p. 134 (1913); FAHRINGER, Opusc. bracon., Bd. III, p. 83, ♀ (1930); WILKINSON, Trans. Ent. Soc. London, LXXIX, p. 507 (1931).

The writer has not seen any representative of this species. Moreover, the original description is too incomplete to allow one to determine the true systematic position.

Habitat: Japan (after WALKER).

4. Tribe *Doryctini*

In general structure this tribe closely resembles the *Braconini*, with which some of these species are often confused, but is easily distinguished from the latter by the margined occiput. Most of the species are parasitic on Coleopterous larvae, while a few are said to attack Lepidopterous larvae.

Key to the Genera

- 1. Occiput margined entirely; hind coxae without teeth 2
- Occiput margined on each side; hind coxae with 1 to 5 teeth (with 2 teeth in the present species); 2nd tergite with an oval raised area in the middle
- 1. *Odontobracon* CAMERON.
- 2. Recurrent nervure received in the 2nd cubital cell; 2nd suture strongly impressed, crenulate; 1st to 5th tergites longitudinally striate 2. *Rhaconotus* RUTHE
- Recurrent nervure interstitial; 2nd suture slightly impressed, almost obsolete; 4th and 5th tergites at least smooth and shining 3. *Doryctes* HALIDAY

1) Trans. Ent. Soc. London, LXXIX, p. 512, ♀ ♂, fig. 3 (1931).

1. Genus *Odontobracon* CAMERON

Odontobracon CAMERON, Biol. Centr.-Amer., I, p. 384 (1887).

Trimorus KRIECHBAUMER, Berlin. Ent. Zeitschr., XXXIX, p. 60 (1894) (nec FÜRSTER).

Zombrus MARSHALL, Spec. Hymén. Europe, V, Suppl., p. 10 (1897).

Neotrimorus DALLA TORRE, Wien. Ent. Zeit., XVII, p. 100 (1898).

Acanthobracon SZÉPLIGETI, Term. Füzt., XXV, p. 47 (1902) (nec KRIECHBAUMER).

Trichobracon CAMERON, Jour. Straits Br. Roy. Asiat. Soc., XLIV, p. 104 (1905).

Genotype—*Odontobracon nigriceps* CAMERON

This genus has been placed in the tribe *Doryctini* by most authors, while it has been included in the tribe *Exothecini* by FAHRINGER. Examining the present species, however, the writer has become convinced that the genus should be placed in this tribe.

Key to the Species

1. Head and thorax yellowish red; antennae, tips of the mandibles, legs, and abdomen black; fore coxae sometimes yellowish red; antennae 45 to 52 jointed; 2nd suture crenulate on each side; ovipositor longer than the abdomen, 3.5-5 mm. Length, 7-14 mm. (♀), 6.5-10 mm. (♂) 1. *bicolor* (ENDERLEIN)
- Body yellowish red; antennae, tips of the mandibles, and legs dark brown to black; fore legs sometimes yellowish red; antennae 60 jointed; 2nd suture smooth and shining; ovipositor shorter than the abdomen, 2.5-4.5 mm. Length, 9-14 mm. (♀) 2. *sjöstedti* FAHRINGER

1. *Odontobracon bicolor* (ENDERLEIN)

Neotrimorus bicolor ENDERLEIN, Arch. Naturgesch., 78 A, Heft 2, p. 29, ♂ (1912).

Odontobracon bicolor FAHRINGER, Ent. Tidskr., L, p. 85, ♀ ♂ (1929); id., Opusc. bracon., Bd. III, p. 55, ♀ ♂ (1930).

Habitat: Formosa (Takao, after ENDERLEIN; Taihoku, 1 ♀, 25. VI, 1911, S. INAMURA; Horisha, 1 ♀, V, 1918, H. KAWAMURA; Heirinpi, 1 ♀, 24. VI, 1926, J. SONAN); Kiushu (Kumamoto, 1 ♀, 28. VII, 2 ♂ ♂, 22. IX, 1 ♀, 3. X, 1907, H. KAWAMURA; Yufu, 3 ♀ ♀, 11 ♂ ♂, 7. VIII, 1928, K. TAKEUCHI); Shikoku (Kôyadaira, 2 ♀ ♀, 5 ♂ ♂, 13. VII, 1928, E. GALLOIS; Iyo, 1 ♀, 18. VIII, 1913, S. ARAKAWA; Kôchi, 1 ♀, 25. VIII, 1934, Y. SUGIHARA); Honshu (Towada, 1 ♀, VII, 1905, S. MATSUMURA; Saitama-ken, 2 ♀ ♀, 2 ♂ ♂, 25. VIII, 1925, T. UCHIDA; Wakayama, 1 ♀, 1 ♂, VIII, 1928, F. WADA; Ibukiyama, 1 ♀, 27. VIII, 1920, K. TAKEUCHI; Kyoto, 1 ♀, VIII, 1927, K. KISHIDA; Hamasaka, 1 ♀, 24. VIII, 1932, I. OKADA).

Gen. Distr.: Formosa; Japan; China.

2. **Odontobracon sjöstedti* FAHRINGER

Odontobracon sjöstedti FAHRINGER, Ent. Tidskr., L, p. 83, ♀ (1929); id., Opusc. bracon., Bd. III, p. 58, ♀ (1930).

Habitat: Korea (Koya-san, 1 ♀, IX, 1926, HASEGAWA; Suigen, 1 ♀, 15. VII, 1919, E. GALLOIS; Sainei, 1 ♀, 20. VII, 1 ♀, 25. VIII, 1934, H. KIM).

Gen. Distr.: China (Prov. Kiangsu, after FAHRINGER); Korea.

2. Genus **Rhaconotus** RUTHE

Rhaconotus RUTHE, Stett. Ent. Zeit., XV, p. 349 (1854).

Genotype—*Rhaconotus aciculatus* RUTHE

1. **Rhaconotus formosanus** WATANABE

Rhaconotus formosanus WATANABE, Ins. Mats., VIII, p. 119, ♀, fig. 1 (1934).

This species comes near to *Rhaconotus oryzae* WILKINSON¹⁾, a parasite of *Schoenobius incertellus* WALKER in India, from which it is easily differentiated in having the abdomen with six tergites visible above, and in having the ovipositor a little longer than the abdomen.

Habitat: Formosa (Koshun, after WATANABE).

Gen. Distr.: Formosa.

3. Genus **Doryctes** HALIDAY

Doryctes HALIDAY, Ent. Magaz., IV, p. 40 (1836).

Ischiogonus WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., XI, p. 125 (1838).

Undamolcus ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 142 (1920).

Genotype—*Doryctes striatellus* (NEES)

Key to the Species

♀ ♀

- 1. Nervulus postfurcal; mesonotum without a longitudinal furrow in the middle; 2nd tergites smooth and shining; ovipositor a little longer than the body. Length, 5-7 mm.
... .. 1. *imperator* (HALIDAY)
- Nervulus interstitial; mesonotum with a fine longitudinal furrow in the middle; 2nd tergite longitudinally striate; ovipositor as long as the abdomen. Length, 7 mm.
... .. 2. *hakonensis* (ASHMEAD)

1. ***Doryctes imperator** (HALIDAY)

Rogas imperator HALIDAY, Ent. Magaz., IV, p. 46, ♀ (1836).

Ischiogonus zonatus WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., XI, p. 127, ♀ (1838).

Bracon praecisus RATZBURG, Ichneum. d. Forstinsect., III, p. 36, ♀ (1852).

Heterospilus imperator FÖRSTER, Verh. Nat. Ver. Preuss. Rheinl., XIX, p. 239 (1862);
DALLA TORRE, Cat. Hymen., IV, p. 232 (1898).

Doryctes imperator REINHARD, Berlin. Ent. Zeitschr., IX, p. 247, ♀ ♂ (1865); MARSHALL,
Trans. Ent. Soc. London, p. 70, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 229, ♀ ♂ (1888);

1) Bull. Ent. Res., XVIII, p. 205, ♀ ♂ (1929).

THOMSON, Opusc. ent., p. 1850, ♀ ♂ (1892); SZÉPLIGETI, Gen. Insect., 22-24, p. 72 (1904); FAHRINGER, Opusc. bracon., Bd. III, p. 158, ♀ ♂ (1930).

Doryctes (Doryctodes) imperator HELLEN, Acta Soc. Fauna et Flora Fennica, 56, p. 40, ♀ ♂ (1927).

In a series of the present specimens the antennae are 36-jointed, and the 2nd tergite is dark brown to black.

Hosts—*Dicerca berolinensis* HERBST and *Acanthocinus acdilis* LINNÉ (after FAHRINGER, in Europe).

Habitat: Hokkaido (Jōzankei, 1 ♀, 18. VII, 1915, T. OKUNI, 1 ♀, 4. X, 1929, C. WATANABE); Honshu (Nagano, 1 ♀, 1928, M. TAKIZAWA).

Gen. Distr.: Europe; Transcaucasia; Japan.

2. *Doryctes hakonensis* (ASHMEAD)

Ischiogonus hakonensis ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 199, ♀ (1906).

Doryctes hakonensis FAHRINGER, Opusc. bracon., Bd. III, p. 155, ♀ (1930).

Habitat: Honshu (Hakone, after ASHMEAD); Hokkaido (Sapporo, 1 ♀, 1. VI, 1929, C. WATANABE).

Gen. Distr.: Japan; China.

Remarks—One variety, *D. hakonensis* var. *aciculatus* FAHRINGER¹⁾, is found at Nanking, China.

5. Tribe *Hecabolini*

To this tribe belong a comparatively small number of minute species, differentiated from those of the other tribes by having two cubital cells in the fore wing. Most of the species are known as parasites of Coleopterous larvae.

Key to the Genera

- | | | | |
|----|------------------------------------------------------------------------------------|--------|-------------------------------|
| 1. | Nervulus indicated | ... .. | 2 |
| - | Nervulus obsolete; nervus parallelus interstitial | ... .. | 1. <i>Ecphylus</i> FÖRSTER |
| 2. | Second tergite with two converging furrows; hind wing in the male without a stigma | ... .. | 2. <i>Eucorystes</i> MARSHALL |
| - | Second tergite without converging furrows; hind wing in the male with a stigma | ... .. | 3. <i>Hecabolus</i> CURTIS |

1. Genus *Ecphylus* FÖRSTER

Ecphylus FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 237 (1862).

Genotype—*Ecphylus silesiacus* (RATZEBURG)

1) Opusc. bracon., Bd. III, p. 156 (1930).

1. ***Ephylus hattorii*** KÔNO et WATANABE

Ephylus hattorii KÔNO et WATANABE, Ins. Mats., IX, p. 68, ♀ ♂, fig. 1 (1935).

Host — *Cryphalus piceus* EGGERS (after KÔNO et WATANABE, in Hokkaido).

Habitat: Hokkaido (Jôzankei).

Gen. Distr: Japan.

2. Genus ***Eucorystes*** MARSHALL

Corystes REINHARD, Berlin. Ent. Zeitschr., IX, p. 258 (1865) (nec LATREILLE, 1802).

Eucorystes MARSHALL, Spec. Hymén. Europe, IV, p. 204 (1838).

Eucorystoides ASHMEAD, Canad. Entomologist, XXXII, p. 368 (1900).

Genotype—*Eucorystes aciculatus* (REINHARD)

1. ***Eucorystes formosanus*** WATANABE

Eucorystes formosanus WATANABE, Ins. Mats., VIII, p. 191, ♀, fig. 3 (1934).

This species differs from *E. aciculatus* (REINHARD)¹⁾, which is the type of this genus, in the structure of the radial cell of the fore wing, but the structure of the abdomen and some other characters resemble those of the latter.

Habitat: Formosa (Koshun).

Gen. Distr.: Formosa.

3. Genus ***Hecabolus*** CURTIS

Hecabolus CURTIS, British Ent., XI, p. 507 (1834).

Auisopelma WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., XI, p. 134 (1838).

Genotype—*Hecabolus sulcatus* CURTIS

1. ***Hecabolus cinctus*** WALKER

Hecabolus cinctus WALKER, Cist. Ent., I, p. 308, ♂ (1874); SZÉPLIGETI, Gen. Insect., 22-24, p. 59 (1904); MORLEY, Entomologist, XLVI, p. 134 (1913); FAHRINGER, Opusc. bracon., Bd. III, p. 87 (1930).

No representatives of this species have yet been seen by the present writer.

Habitat: Japan (after WALKER).

6. Tribe ***Hormiini***

The species falling in this tribe have an interstitial nervus parallelus, and are parasitic on Coleopterous and Microlepidopterous larvae.

1) Berlin. Ent. Zeitschr. IX, p. 259, ♀ ♂, Pl. III, fig. 7 (1865).

Key to the Genera

1. Nervulus strongly postfurcal 2
- Nervulus interstitial or slightly postfurcal, in the latter case the antennae more than 30-jointed and the 1st tergite sessile 3
2. Recurrent nervure received in the 2nd cubital cell; 1st tergite subpetiolate and slender; antennae as long as or longer than the body, more than 27-jointed
... .. 1. *Spathiohornius* ENDERLEIN
- Recurrent nervure interstitial; 1st tergite sessile and short; antennae much shorter than the body, 11 or 12-jointed 2. *Chremylus* HALIDAY
3. Abdomen abnormal, with less than 6 segments 4
- Abdomen normal, with at least 6 segments 5
4. Abdomen longitudinally striate, with only 3 segments; 3rd tergite with the hind angles produced into long, acute spines, nearly as long as the ovipositor; propodeum areolate
... .. 3. *Acanthornius* ASHMEAD
- Abdomen smooth and shining, without spines at the hind angles, the 2nd to 4th tergites united; propodeum with a median longitudinal carina 4. *Hormiellus* ENDERLEIN
5. Antennae more than 32-jointed; nervulus slightly postfurcal; 2nd tergite without oblique furrows 5. *Horniopterus* GIRAUD
- Antennae 17 to 25-jointed; nervulus interstitial; 2nd tergite with two oblique furrows 6. *Hornius* NEES

1. Genus *Spathiohornius* ENDERLEIN

Spathiohornius ENDERLEIN, Arch. Naturgesch., 78 A, Heft 2, p. 21 (1912).

Genotype—*Spathiohornius ornatulus* ENDERLEIN

Key to the Species

1. Head and thorax smooth and shining; antennae 27 or 28-jointed; propodeum with a fine median longitudinal carina; 1st and 2nd tergites coriaceous; 3rd and following tergites smooth and shining; ovipositor as long as the abdomen. Length, 2.7 mm. (♂), 3.6 mm. (♀) 1. *ornatulus* ENDERLEIN
- Head and thorax coriaceous, dull; antennae 37 to 39-jointed; propodeum with three longitudinal carinae; 1st to 5th tergites coriaceous, the basal four tergites longitudinally striate; ovipositor as long as the abdomen. Length, 4 mm. (♀)
... .. 2. *sauteri* WATANABE

1. *Spathiohornius ornatulus* ENDERLEIN

Spathiohornius ornatulus ENDERLEIN, Arch. Naturgesch., 78 A, Heft 2, p. 21, ♀ ♂ (1912).

The writer has not yet seen any representatives of this species, the type being in the "Stettiner Zoologisches Museum". It is placed in the present key, merely basing upon the characters given in the original description.

Habitat: Formosa (Takao, after ENDERLEIN).

Gen. Distr.: Formosa.

2. *Spathiohormius sauteri* WATANABE

Spathiohormius sauteri WATANABE, Ins. Mats., VIII, p. 189, ♀, fig. 2 (1934).

Habitat: Formosa (Anping and Tainan, after WATANABE).

Gen. Distr.: Formosa.

2. Genus *Chremylus* HALIDAY

Chremylus HALIDAY, Ent. Magaz., I, p. 266 (1833).

Paramesorina NAGAMORI, Ann. Zool. Jap., X, p. 349 (1924) (syn. nov.)

Genotype—*Chremylus rubiginosus* (NEES)

1. *Chremylus japonicus* ASHMEAD

Chremylus japonicus ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 200, ♀ (1906); FAHRINGER, Opusc. bracon., Bd. III, p. 178, ♀ (1931).

Paramesorina tineavora NAGAMORI, Ann. Zool. Jap., X, p. 349, Pl. I, ♀ ♂ (1925) (syn. nov.)

This species closely resembles *Chremylus rubiginosus* (NEES), from which it is easily distinguished by the structure of the propodeum. Judging from the original description of *Paramesorina tineavora* NAGAMORI, it may probably be identical with this species.

Hosts—*Tinea pellionella* LINNÉ (after NAGAMORI); *Calandra oryzae* LINNÉ (after FAHRINGER).

Habitat: Honshu (Atami, after ASHMAED; Tokyo, after NAGAMORI).

Gen. Distr.: Japan.

Appendix

Chremylus (?) *concinus* ENDERLEIN

Chremylus concinns ENDERLEIN, Arch. Naturgesch., 78 A, Heft 2, p. 23, ♀ (1912).

It appears that this species does not belong to the genus *Chremylus*, because according to the original description the antennae are very long and 25-jointed, instead of 11 or 12-jointed as in the species of this genus. As no representatives of this species have been examined by the writer, it is impossible to state its true systematic position.

Habitat: Formosa (Takao, after ENDERLEIN).

3. Genus *Acanthormius* ASHMEAD

Acanthormius ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 200 (1906).

Genotype—*Acanthormius japonicus* ASHMEAD

This genus is represented by a single species.

1. *Acanthormius japonicus* ASHMEAD

Acanthormius japonicus ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 200, ♀ (1906);

FAHRINGER, Opusc. bracon., Bd. III, p. 177, ♀ (1931).

The writer has not yet seen any representative of this species, the type being in the United States National Museum.

Habitat: Honshu (Hakone, after ASHMEAD).

Gen. Distr.: Japan.

4. Genus *Hormiellus* ENDERLEIN

Hormiellus ENDERLEIN, Arch. Naturgesch., 78 A, Heft 2, p. 20 (1912).

Genotype—*Hormiellus solocipes* ENDERLEIN

This genus is represented by a single species.

1. *Hormiellus solocipes* ENDERLEIN

Hormiellus solocipes ENDERLEIN, Arch. Naturgesch., 78 A, Heft 2, p. 20, ♀ (1912).

No representatives of this species have been seen by the writer, the type being in the "Stettiner Zoologisches Museum".

Habitat: Formosa (Takao, after ENDERLEIN).

Gen. Distr.: Formosa.

5. Genus *Hormiopterus* GIRAUD

Hormiopterus GIRAUD, Ann. Soc. Ent. France, IX, p. 478 (1869).

Genotype—*Hormiopterus olivieri* GIRAUD

1. *Hormiopterus sulcativentris* ENDERLEIN

Hormiopterus sulcativentris ENDERLEIN, Arch. Naturgesch., 78 A, Heft 2, p. 24, ♀ (1912).

Habitat: Formosa (Takao, after ENDERLEIN).

Gen. Distr.: Formosa.

6. Genus *Hormius* NEES

Hormius NEES, Nova Acta Acad. Nat. Curios., IX, p. 305 (1818).

Genotype—*Hormius moniliatus* NEES

1. **Hormius moniliatus* (NEES)

Bracon moniliatus NEES, Magaz. Ges. Nat. Fr. Berlin, V, p. 36, ♀ ♂ (1811)

Hormius moniliatus NEES, Nov. Acta Acad. Nat. Curios., IX, p. 305 (1818); id., Hymen. Ichneum. affin. Monogr., I, p. 153 (1834); MARSHALL, Trans. Ent. Soc. London, p. 77, ♀ ♂, Pl. III, fig. 3 (1885); id., Spec. Hymén. Europe, IV, p. 256, ♀ ♂ (1888); THOMSON, Opusc. ent., p. 1857, ♀ ♂ (1892); SZÉPLIGETI, Gen. Insect., 22-24, p. 75 (1904); FAHRINGER, Ent. Tidskr., L, p. 87 (1929); id., Opusc. bracon., Bd. III, p. 185, ♀ ♂ (1931).

Hosts—*Pandemis corylana* FABRICIUS (after FAHRINGER, in Europe); *Pyrausta aurata* SCOPOLI (in Hokkaido).

The present specimens were bred from larvae of *Pyrausta aurata*

SCOPOLI, feeding on the leaves of peppermint plants in Hokkaido.

Cocoons: Pure white, cylindrical, and irregularly clustered together as in certain species of *Apanteles*.

Habitat: Hokkaido (Nokkeushi, 1 ♂, 7 ♀, 15. VIII, 1931, S. ISHIDA).

Gen. Distr.: Europe; West Asia; Japan.

7. Tribe *Rhogadini*

This tribe is composed of many species of large or moderate size, parasitic on Lepidopterous larvae. It is a well-known fact that the larvae of the parasites make their own cocoons inside, protected by the indurated skins of the hosts.

Key to the Genera

1. Hind tibial spurs distinctly curved, naked; abdomen long and slender, subpetiolate; 2nd abscissa of the radius 3 or 4 times as long as the 1st 2
- Hind tibial spurs straight, pubescent; abdomen stout, sessile; 2nd abscissa of the radius at least less than 3 times the length of the 1st 4
2. Second abscissa of the radius and 1st intercubitus normal, not swollen; maxillary palpi of the male greatly dilated 3
- Second abscissa of the radius at the basal part and 1st intercubitus at the upper part swollen; maxillary palpi of the male normal, not much dilated 1. *Megarhogas* SZÉPLIGETI
3. Mesopleurae with a discal furrow; 2nd to 4th joints of the maxillary palpi of the male much dilated, cylindrical 2. *Colastomion* BAKER
- Mesopleurae without a discal furrow; 2nd to 4th joints of the maxillary palpi of the male much dilated, flattened, and leaf-like 3. *Macrostomion* SZÉPLIGETI
4. Propodeum with a strong tooth on each side 5
- Propodeum unarmed 6
5. Second basal cell rounded apically; nervulus and apical part of the 1st abscissa of the medial nervure swollen; 1st tergite distinctly narrowed towards the apex 4. *Gyroneuron* KOKUJEW
- Second basal cell normal; 1st tergite nearly parallel-sided 5. *Paragyroneuron* BAKER
6. Third joint of the maxillary palpi normal 7
- Third joint of the maxillary palpi dilated, flattened, and leaf-like 6. *Pelecystoma* WESMAEL
7. First abscissa of the radius shorter than the 2nd 8
- First abscissa of the radius longer than the 2nd; 4th and following tergites concealed beneath the 3rd in the female 7. *Heterogamus* WESMAEL
8. Third tergite rounded at the hind margin; 4th and following tergites concealed beneath the 3rd 8. *Chelonorhogas* ENDERLEIN
- Third tergite truncate at the hind margin; 4th and following tergites visible above 9. *Rhogas* NEES

I. Genus *Megarhogas* SZÉPLIGETI*Megarhogas* SZÉPLIGETI, Gen. Insect., 22-24, p. 83 (1904).**Genotype**—*Megarhogas longipes* SZÉPLIGETII. *Megarhogas perinae* WATANABE*Megarhogas perinae* WATANABE, Ins. Mats., VI, p. 184, ♀ ♂, fig. 1 (1932).Host—*Perina nuda* FABRICIUS (after WATANABE, in Formosa).

Habitat: Formosa (Keibi, Baibara, Kanshirei, and Taihoku, after WATANABE).

Gen. Distr.: Formosa.

2. Genus *Colastomion* BAKER*Colastomion* BAKER, Philip. Jour. Sci., XII, p. 290 (1917); WATANABE, Ins. Mats., VIII, p. 192 (1934).**Genotype**—*Colastomion abdominalis* BAKERThis genus is represented by two species, *C. abdominalis* BAKER and *C. formosanum* (WATANABE), the latter being found in Formosa and the former in the Philippine Islands.I. *Colastomion formosanum* (WATANABE)*Cystomastax formosana* WATANABE, Ins. Mats., VI, p. 186, ♂, fig. 2 (1932).*Colastomion formosanum* WATANABE, Ins. Mats., VIII, p. 192, ♀ ♂ (1934).This species is easily distinguished from *C. abdominalis* in having the basal nervure of the hind wing inserted a short distance from the base of the radius. Further, the male of *C. abdominalis* has not yet been described.

Habitat: Formosa (Koshun, after WATANABE).

Gen. Distr.: Formosa.

3. Genus *Macrostomion* SZÉPLIGETI*Macrostomion* SZÉPLIGETI, Term. Füz., XIII, p. 57 (1900).**Genotype**—*Macrostomion bicolor* SZÉPLIGETIIt appears that grouping of a series of genera on dilated maxillary palpi is unnatural as BAKER (11) points out; indeed, *Macrostomion* SZÉPLIGETI and *Colastomion* BAKER having dilated maxillary palpi belong to a group of genera including *Cystomastax* SZÉPLIGETI,¹⁾ *Megarhogas* SZÉPLIGETI, *Trigonophatnus* CAMERON,²⁾ *Eucystomastax* BRUES,³⁾ and *Macrostomion*-

1) Gen. Insect., 22-24, p. 81 (1904).

2) Ent. Tidskr., XXVIII, p. 36 (1907).

3) Ann. Ent. Soc. America, V, p. 223 (1912).

ella BAKER,¹⁾ while *Pelecystoma* WESMAEL having also dilated maxillary palpi may be placed in another group including *Rhogas* NEES, *Heterogamus* WESMAEL, etc.

1. ***Macrostomion sumatranum** (ENDERLEIN) (Pl. IV, Fig. 6)

Pelecystoma sumatranum ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 147, ♀ ♂ (1920).

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

♂. Reddish yellow; abdomen darker than the head and thorax; stemmaticum and tips of the mandibles black; mesonotum with 3 fuscous markings; wings hyaline, the apical fourth of the fore wing fuscous; stigma and veins brownish yellow, the former at each angle pale. Length, 5.5–7 mm.

Head and thorax dull; face rugose with a weak median ridge; eyes emarginated opposite the insertion of the antennae; maxillary palpi 5-jointed, the 2nd to 4th joints abnormally swollen and flattened; labial palpi 4-jointed. Scutum of the mesonotum trilobed, the parapsidal furrows deep; mesopleural furrow smooth; propodeum possessing a fine median carina; hind tibial spurs naked, distinctly curved; stigma lanceolate, 5 times as long as wide; radius inserted at the basal two-fifths of the stigma; 1st abscissa of the radius nearly equal to one-fifth the length of the 2nd; recurrent nervure inserted in the 1st cubital cell; nervulus slightly postfurcal; radial cell of the hind wing sessile. Abdomen long and slender; 1st tergite nearly 3 times as long as broad at the base, the 2nd quadrate, and the rest transverse; 1st to 3rd tergites and the 4th on the basal three-fourths longitudinally striate-rugose, and the rest punctate-rugose.

♀. Closely resembles the male in general structure and colour, but differs from the latter in the following points:—(1) Maxillary palpi 5-jointed, the 1st joint very short, the 2nd as long as the 3rd, slightly dilated at the apical two-thirds; 3rd and following joints slenderer. (2) Apical two tergites and hypopygium dilated, compressed; ovipositor short, the sheath as long as the apical segment of the abdomen. Length, 8.5 mm.

Habitat: Kiushu (Beppu, 1 ♂, 10. VII, 1916, S. MATSUMURA); Shikoku (Kodakasa-yama, Kôchi-ken, 1 ♂, 3. V, 1933, 1 ♀, 1. X, 1931, Y. SUGIHARA); Formosa (Koshun, 1 ♂, VIII, 1912, H. SAUTER).

Gen. Distr.: Sumatra; Japan; Formosa.

Remarks—This species is related to *Macrostomion amboiensis* FULL-

1) Philip. Jour. Sci., XII, p. 294 (1917).

AWAY¹⁾ in the structure of the maxillary palpi in both sexes.

4. Genus **Gyroneuron** KOKUJEW

Gyroneuron KOKUJEW, Rev. Russe Ent., I, p. 231 (1901).

Genotype—*Gyroneuron mirum* KOKUJEW

This genus is represented by two species, both of which are found in Formosa, although the males have not yet been described.

Key to the Species

1. Frons transversely striate, without a median longitudinal furrow; propodeum strongly reticulate-rugose. Ground colour yellow; thorax except the prothorax, propodeum, 2nd to 4th tergites, and hind femora on the apical third black; wings hyaline; fore wing with a broad fuscous band in the middle; stigma dark brown. Length, 9 mm.
 I. *mirum* KOKUJEW
- Frons smooth, with a median longitudinal furrow; propodeum slightly reticulate-rugose. Ground colour reddish yellow; propodeum at the apex; mesonotum on the lateral borders black; wings hyaline; fore wing without a fuscous band; stigma yellowish brown. Length, 9 mm. 2. *testaceator* WATANABE

1. **Gyroneuron mirum** KOKUJEW

Gyroneuron mirum KOKUJEW, Rev. Russe Ent., I, p. 232, ♀ (1901); SZÉPLIGETI, Gen. Insect., 22-24, p. 78, Pl. III, fig. 23 (1904); FAHRINGER, Opusc. bracon., Bd. III, p. 210, ♀ (1931); WATANABE, Ins. Mats., VIII, p. 193, ♀ (1934).

Habitat: Formosa (Koshun, after WATANABE).

Gen. Distr.: Assam; Formosa.

2. **Gyroneuron testaceator** WATANABE

Gyroneuron testaceator WATANABE, Ins. Mats., VIII, p. 193, ♀, fig. 4 (1934).

Habitat: Formosa (Koshun, after WATANABE).

Gen. Distr.: Formosa.

5. Genus **Paragyryneuron** BAKER

Paragyryneuron BAKER, Philip. Jour. Sci., XII, p. 318 (1917); WATANABE, Ins. Mats., VIII, p. 194 (1934).

Genotype—*Paragyryneuron bicolor* BAKER

This genus is distinguished from *Gyroneuron* KOKUJEW by the 2nd basal cell, which in the former is normal, not rounded apically.

1. **Paragyryneuron flavum** (ENDERLEIN)

Gyroneuron flavum ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 144, ♀ (1920).

Paragyryneuron flavum WATANABE, Ins. Mats., VIII, p. 194, ♀ (1934).

1) Jour. Straits Br. Roy. Asiat. Soc., No. 80, p. 45, ♀ ♂, fig. 1 (1919).

♂. Similar to the female, but differs from the latter in having the hind tarsi entirely fuscous, and also in having the stigma with a small black spot at the apical angle. Length, 11-13 mm.

Habitat: Formosa (Kosempo, after WATANABE; Gyochi, 1 ♂, 9. VIII, 1908, S. MATSUMURA; Taihorin, 1 ♂, 1910, H. SAUTER; Koshun, 1 ♂, 25. IV, 1 ♂, 25. V, 1918, J. SONAN; Tabo, 1 ♀, 23. VIII, 1923, J. SONAN).

Gen. Distr.: Sumatra; Formosa.

6. Genus *Pelecystoma* WESMAEL

Pelecystoma WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., XI, p. 91 (1838).

Genotype—*Pelecystoma luteum* (NEES)

This genus is differentiated from *Rhogas* NEES only by the dilated maxillary palpi. Two species, *P. luteum* (NEES) and *P. tricolor* WESMAEL, have been recognized in the palaearctic region; in this paper the writer gives Japan as a new locality of the former.

1. **Pelecystoma luteum* (NEES)

Rogas luteus NEES, Hymen. Ichneum. affn. Monogr., I, p. 218 (1834).

Pelecystoma luteum WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., XI, p. 92, ♀ ♂, fig. 12 (1838); FÜRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 240 (1862); REINHARD, Berlin. Ent. Zeitschr., IX, p. 244 (1865); VOLLENHOVEN, Pinacogr., p. 6, Pl. IV, fig. 1 (1874); DALLA TORRE, Cat. Hymen., IV, p. 225 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 82 (1904).

Bracon (Aleiodes) luteus RATZEBURG, Ichneum. d. Forstinsect., II, p. 36, ♀ (1848), III, p. 35 (1852).

Pelecystoma lutea MARSHALL, Trans. Ent. Soc. London, p. 85, ♀ ♂, Pl. III, fig. 6 (1885); id., Spec. Hymén. Europe, IV, p. 268, ♀ ♂ (1888); FAHRINGER, Opusc. bracon., Bd. III, p. 207, ♀ ♂ (1931).

Hosts—*Cochlidion limacodes* HUFNAGEL, *Ellopija prosapiaria* LINNÉ, *Papilio machaon* LINNÉ, and *Larentia firmata* HÜBNER (after FAHRINGER, in Europe).

Habitat: Hokkaido (Sapporo, 1 ♂, 11. IX, 1931, S. MATSUMURA).

Gen. Distr.: Europe; Japan.

7. Genus *Heterogamus* WESMAEL

Heterogamus WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., XI, p. 119 (1838).

Genotype—*Heterogamus dispar* (CURTIS)

Key to the Species

♀ ♀

1. Antennae with a white ring in the middle; 1st. abscissa of the radius 2 times as long as the 2nd; fore wing cinereous; hind wing hyaline. Length, 3-6 mm.
 I. *dispar* (CURTIS)

- Antennae without a white ring; 1st abscissa of the radius as long as the 2nd; wings entirely hyaline. Length, 5.5 mm. 2. *thoracicus* ASHMEAD

♂

- Antennae without a white ring; 1st abscissa of the radius 2 times as long as the 2nd; wings entirely hyaline. Length, 3-5 mm. 1. *dispar* (CURTIS)

1. *Heterogamus dispar* (CURTIS)

Rogas dispar CURTIS, Brit. Ent., XI, p. 521, ♀ ♂ (1834).

Aleiodes (Heterogamus) crypticornis WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., XI, p. 120, ♀ ♂ (1838).

Heterogamus dispar VOLLENHOVEN, Pinacogr., p. 6, Pl. IV, fig. 3 (1874); MARSHALL, Trans. Ent. Soc. London, p. 86, ♀ ♂, Pl. IV, figs. 1-2 (1885); id., Spec. Hymén. Europe, IV, p. 269 (1888); THOMSON, Opusc. ent., p. 1682 (1891); DALLA TORRE, Cat. Hymen., IV, p. 224 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 83 (1904); HELLEN, Act. Soc. Fauna et Flora Fennica, 56, p. 19 (1927); FAHRINGER, Opusc. bracon., Bd. III, p. 212, ♀ ♂ (1932).

Heterogamus fuscitipennis ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 198, ♀ (1906); FAHRINGER, Opusc. bracon., Bd. III, p. 214, ♀ (1932) (syn. nov.)

Examining the present specimens from Japan, the writer has become convinced that *Heterogamus fuscitipennis* ASHMEAD should be identified with *Heterogamus dispar* (CURTIS).

Habitat: Hokkaido (Sapporo, after ASHMEAD, 2 ♀ ♀, labelled "*Heterogamus fuscitipennis* ASHMEAD, No. 16", 2 ♀ ♀, 13. IX, 1903, S. MATSUMURA, 1 ♂, 25. VII, 1928, C. WATANABE); Honshu (Sanjo-dake, Nara-ken, 1 ♀, 9. VIII, 1913, S. ISSIKI).

Gen. Distr.: Europe; Japan.

2. *Heterogamus thoracicus* ASHMEAD

Heterogamus thoracicus ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 198, ♀ (1906); FAHRINGER, Opusc. bracon., Bd. III, p. 214, ♀ (1932).

Habitat: Hokkaido (Sapporo, after ASHMEAD, 1 ♀, labelled "*Heterogamus thoracicus* ASHMEAD, No. 25").

Gen. Distr.: Japan.

8. Genus *Chelonorhogas* ENDERLEIN

Chelonorhogas ENDERLEIN, Ent. Mitt., I, p. 258 (1912).

Genotype—*Chelonorhogas rufithorax* ENDERLEIN

This genus is represented by only a single species.

1. *Chelonorhogas rufithorax* ENDERLEIN

Chelonorhogas rufithorax ENDERLEIN, Ent. Mitt., I, p. 258, ♀ (1912); WATANABE, Ins. Mats., VIII, p. 195, ♀ (1934).

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

♂. Black; thorax and propodeum entirely yellowish red; wings subhyaline, the stigma and veins brown. Length, 5 mm.

Head transverse, punctate; frons and face transversely striate-rugose, the latter with a median ridge; eyes small, not emarginated at the inner side; distance between the occiput and the outer orbit as long as the eye-breadth; vertex slightly rounded behind the eyes; distance between the posterior ocelli and the eyes distinctly longer than the diameter of an ocellus; antennae more than 40-jointed (the apex broken off). Thorax smooth and shining, with hair-punctures; parapsidal furrows crenulate; propodeum reticulate-rugose, with a short median carina at the apex. Radius inserted at the middle of the stigma; 1st abscissa of the radius about half the length of the 2nd; 2nd cubital cell a little longer than high, trapeziform; nervulus strongly postfurcal, inserted at the middle of the discoidal cell; radius of the hind wing widened towards the apex. Hind tibial spurs about one-third the length of the hind metatarsus. Abdomen oblong, only three basal tergites visible above as in the genus *Phanerotoma*, the following tergites very short, concealed; 1st tergite gradually narrowed towards the base, as long as broad at the apex, the 2nd transverse, as long as the 3rd, which is rounded at the apical margin; three basal tergites longitudinally striate-rugose, with the median longitudinal carinae almost obsolete; 4th and following tergites smooth, covered densely with white hairs.

♀. Closely resembles the male in general structure and colour, but differs from the latter in the following points:—(1) Antennae 52-jointed. (2) Three basal tergites with a strong longitudinal median carina. (3) Ovipositor reddish yellow, a little shorter than the hind metatarsus, the sheath stout, black. Length, 5.5-6 mm.

Habitat: Formosa (Taihorin, after ENDERLEIN and WATANABE, 1 ♂, V, 1920, H. SAUTER); Kiushu (Yakushima, 1 ♀, 29. VII, 1929, K. TAKEUCHI).

Gen. Distr.: Formosa; Japan.

9. Genus *Rhogas* NEES

Rhogas NEES, Nov. Acta Acad. Nat. Curios., IX, p. 306 (1818) (as *Rogas*).

Alciodes WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., XI, p. 94 (1838).

Schizoides WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., XI, p. 94 (1838).

Camptocentrus KRIECHBAUMER, Berlin. Ent. Zeitschr., XXXIX, p. 61 (1894).

Genotype—*Rhogas dimidiatus* (SPINOLA)

Key to the Species

1. Eyes large; distance between the outer orbit and the occiput shorter than half the breadth of the eye; cheeks very short; distance between the posterior ocelli and the eyes shorter than the diameter of an ocellus 2
- Eyes moderate or small in size; distance between the outer orbit and the occiput as long as or longer than half the breadth of the eyes; cheeks comparatively long; distance between the posterior ocelli and the eyes as long as or longer than the diameter of an ocellus 7
2. Radial cell of the hind wing widened towards the apex 3
- Radial cell of the hind wing not widened towards the apex, the radius parallel with the metacarpus or sinuated at the middle 4
3. Black; legs reddish yellow, the hind tibiae pale, fuscous on the apical half, the hind tarsi black; 2nd abscissa of the radius shorter than the 2nd abscissa of the cubitus; antennae 56 to 64-jointed. Length, 4-9 mm. 1. *dissector* NEES
- Reddish yellow with fuscous markings; head except the mouth-parts black; propodeum on the basal half and abdomen except the two basal tergites fuscous; 2nd abscissa of the radius longer than the 2nd abscissa of the cubitus; antennae 66-jointed. Length, 9 mm. 2. *daisetsuanus* sp. nov.
4. First tergite gradually narrowed towards the base 5
- First tergite parallel-sided, reddish yellow; abdomen somewhat fuscous; antennae brownish yellow, darkened towards the apex, 78-jointed; 1st and 2nd tergites and the 3rd at the base longitudinally striate-rugose. Length, 10 mm. 3. *oyeyamensis* sp. nov.
5. Nervulus inserted at the basal third of the 1st discoidal cell 6
- Nervulus inserted at the middle of the 1st discoidal cell; head and thorax yellowish red; propodeum, abdomen, and legs black; antennae 58 to 68-jointed (♀), 53 to 60-jointed (♂); radius of the hind wing weakly indicated, parallel with the metacarpus. Length, 8-11 mm. 4. *dendrolimi* (MATSUMURA)
6. Reddish yellow; antennae except the two basal joints black, 62 to 70-jointed; radius of the hind wing strongly sinuated at the middle. Length, 8-10 mm. 5. *praetor* REINHARD
- Black; mandibles and palpi pale yellow; legs reddish yellow, hind tibiae and hind tarsi fuscous; antennae 58-jointed; radius of the hind wing parallel with the metacarpus. Length, 7 mm. 6. *lymantriae* sp. nov.
7. Radial cell of the hind wing widened towards the apex 8
- Radial cell of the hind wing not widened towards the apex, the radius parallel with the metacarpus or sinuated at the middle 11
8. Nervulus inserted at the middle of the 1st discoidal cell; 2nd cubital cell subquadrate 9
- Nervulus inserted at the basal third of the 1st discoidal cell; 2nd cubital cell transverse 10
9. Reddish yellow; antennae except the two basal joints black, 61-jointed. Length, 10 mm. 7. *wadai* sp. nov.
- Black; 1st and 2nd tergites and the 3rd at the base brownish red; legs yellowish red; hind femora with a black ring at the apex; hind tibiae and tarsi fuscous, the former with a yellow ring at the base; antennae except the two basal joints yellowish brown, 48 to 54-jointed. Length, 7-9 mm. 8. *ductor* THUNBERG
10. Legs black; tibiae and tarsi of the four anterior legs somewhat brownish 11
- Legs yellowish red; hind tibiae and tarsi black, the former with a pale yellow ring at

- the base; antennae 52 to 56-jointed. Length, 7-9 mm. ... 9. *cariniventris* ENDERLEIN
11. Abdomen entirely black 12
- Two basal tergites and the 3rd at the base reddish brown; antennae 39 to 41-jointed (♀), 54-jointed (♂); mesopleural furrow rugose. Length, 5.5-7 mm. 10. *dimidiatus* (SPINOLA)
12. Vertex narrowed in a straight line behind the eyes; antennae except the two basal joints yellowish brown, 56 to 62-jointed; mesopleural furrow smooth and shining. Length, 7.5-9 mm. 11. *microculatus* sp. nov.
- Vertex rounded behind the eyes; antennae black, 58 to 61-jointed; mesopleural furrow rugose. Length, 9-10 mm. 12. *sapporensis* sp. nov.
13. Second tergite transverse 14
- Second tergite quadrate... .. 15
14. Antennae except the two basal joints dark brown, 42 to 44-jointed; radius of the hind wing weakly indicated, parallel with the metacarpus. Ground colour reddish yellow; 1st tergite with a large fuscous spot; stigma dark brown. Length, 6-7 mm. 13. *drymoniae* sp. nov.
- Antennae reddish yellow, 33 to 36 jointed; radius of the hind wing weakly indicated, parallel with the metacarpus; stigma pallid. Ground colour reddish yellow; propodeum and 1st tergite somewhat fuscous, sometimes thorax and abdomen dark brown, the 2nd and 3rd tergites with a yellowish spot. Length, 5.5-6 mm. 14. *japonicus* ASHMEAD
15. First abscissa of the radius shorter than the 2nd 16
- First abscissa of the radius as long as the 2nd; ground colour reddish yellow; antennae brown, 45-jointed; stigma pallid. Length, 4.5 mm. 15. *narangae* ROHWER
16. Ground colour reddish yellow or black 17
- Ground colour pale yellow; thorax and abdomen with lateral black stripes; stigma pale yellow, the basal third hyaline. Length, 3.5-4.5 mm. 16. *lateralis* BAKER
17. First tergite 2 times as long as broad at the base; ground colour black; palpi and mandibles pale yellow; orbits and legs reddish yellow; antennae black, 45-jointed (♀), 52-jointed (♂). Length, 5-6 mm. 17. *tristis* (WESMAEL)
- First tergite 3 times as long as broad at the base; ground colour reddish yellow, the thorax and the 1st tergite at the base black; antennae yellowish red, darkened towards the apex, 61 to 71-jointed. Length, 9-12 mm. 18. *procerus* (WESMAEL)

I. **Rhogas dissector* NEES

Rhogas dissector NEES, Hymen. Ichneum. affin. Monogr., I, p. 208, ♂ (1834); REINHARD, Berlin. Ent. Zeitsch., VII, p. 252, ♀ ♂ (1863); KAWALL, Bull. Soc. Nat. Moscou, XXXVIII, p. 349, ♀ ♂ (1865); VOLLENHOVEN, Pinacogr., p. 6, Pl. IV, fig. 4 (1874); MARSHALL, Trans. Ent. Soc. London, p. 89, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 275, ♀ ♂ (1888); DALLA TORRE, Cat. Hymen., IV, p. 217 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 85, ♀ ♂ (1904); id., Ann. Mus. Nat. Hungr., IV, p. 612, ♀ ♂ (1906); MORLEY, Entomologist, XLIX, p. 85 & 109 (1916); HELLÉN, Acta Soc. Fauna et Flora Fennica, 56, p. 21, ♀ ♂ (1927); FAHRINGER, Opusc. bracon., Bd. III, p. 241, ♀ ♂ (1932).

Host—*Acronicta rumicis* LINNÉ (after FAHRINGER, in Europe).

Habitat: Hokkaido (Sapporo, 1 ♀, 15. VI, 1929, H. YAKU).

Gen. Distr.: Europe; Japan.

2. *Rhogas daisetsuzanus* sp. nov. (Pl. IV, Fig. 8)

♀. Reddish yellow; head black; mandibles except the tips, and palpi reddish yellow; propodeum with a large fuscous marking near the base; 1st tergite somewhat fuscous at the middle; 3rd and following tergites fuscous; legs reddish yellow, lighter than the body; hind tibiae slightly fuscous on the apical half; wings hyaline, the stigma and veins dark brown. Length, 9 mm.

Head transverse; face elevate, transversely striate, with a median ridge; clypeus convex, smooth and shining, with hair-punctures; eyes large, emarginated opposite the insertion of the antennae; distance between the eyes and the occiput equal to one-third the breadth of the eye; cheeks very short; distance between the posterior ocelli and the eyes shorter than the diameter of an ocellus; antennae a little longer than the body, 66-jointed. Mesonotum with scattered fine punctures; parapsidal furrows deep, slightly crenulate; mesopleurae smooth and shining, reticulate-rugose under the tegulae; propodeum reticulate-rugose, with a median longitudinal carina. Radius inserted at the basal third of the stigma; 1st abscissa of the radius a little longer than half the length of the 2nd; 2nd cubital cell longer than high; 2nd abscissa of the radius longer than the 2nd abscissa of the cubitus; nervulus postfurcal, inserted at the basal third of the 1st discoidal cell. Hind tibial spurs about one-third the length of the hind metatarsus. Abdomen smooth, with hair-punctures; 1st tergite gradually narrowed towards the base, 1.5 times as long as broad at the apex; 2nd tergite subquadrate, the rest transverse; 1st and 2nd tergites with a weak longitudinal median carina; ovipositor as long as the hind tibial spur.

♂. Unknown.

Holotype (♀) Mt. Daisetsu, Hokkaido, 4-10. VII, 1926, T. UCHIDA and H. KONO.

Habitat: Hokkaido (Mt. Daisetsu).

Remarks—This is easily distinguished from its congeneric species by the 2nd abscissa of the radius which is longer than the 2nd abscissa of the cubitus.

3. *Rhogas oyeyamensis* sp. nov. (Pl. II, Fig. 2)

♀. Reddish yellow; tips of the mandibles, stemmaticum black; antennae darkened towards the apex; 2nd and following tergites fuscous; wings hyaline, the stigma and veins reddish yellow. Length, 10 mm.

Head smooth and shining, covered with yellow hairs; antennae long and slender, 78-jointed; vertex rounded behind the eyes; frons with a

median triangular fovea before the anterior ocellus; distance between the eyes and the occiput about one-third the breadth of the eyes; eyes large, strongly emarginated opposite the insertion of the antennae; distance between the posterior ocelli and the eyes a little shorter than the diameter of an ocellus. Thorax smooth and shining, with hair-punctures; parapsidal furrows deep, crenulate; mesopleurae somewhat rugose under the tegulae, with a broad furrow in the middle; propodeum coarsely reticulate-rugose, with a weak median carina at the base. First abscissa of the radius about half the length of the base. First abscissa of the radius about half the length of the 2nd; 2nd cubital cell 2 times as long as high; recurrent nervure inserted a short distance from the apex of the 1st cubital cell, curved outwardly; nervulus postfurcal by its own length; radius of the hind wing parallel with the metacarpus. Legs slender, the hind tibial spurs subequal, a little shorter than one-third the length of the hind metatarsus. First tergite parallel-sided, 2.5 times as long as broad, foveated on each side at the base, irregularly striate-rugose, with a median longitudinal carina, the 2nd quadrate, and the rest transverse; 2nd and 3rd tergites and the 4th on each side longitudinally striate-rugose, the rest smooth, with hair-punctures; 4th tergite laterally margined as in the preceding tergites; ovipositor-sheath surpassing the end of the abdomen, about two-thirds the length of the hind metatarsus; hypopygium acute.

Holotype (♀): Oyeyama, Kyoto-fu, 8. IX, 1928, M. KATO.

Habitat: Honshu (Oyeyama).

Remarks—This species is very distinct from the others in respect to the parallel-sided 1st tergite.

4. *Rhogas dendrolimi* (MATSUMURA) (Pl. IV, Fig. 7)

Rhogas sp. TAKAGI, Bull. Forest Exp. Stat. Govern.-General Chosen, No. 2, p. 42, ♀, Pl. IV, figs. 7-9 (1925).

Phanomeris dendrolimi MATSUMURA, Ann. Mus. Zool. Acad. Sci. PURSS, XXVI, p. 41, ♀ (1925); id., Jour. Coll. Agr. Hokkaido Imp. Univ., XVIII, p. 32, ♀, Pl. IV, fig. 14 (1926); FAHRINGER, Opusc. bracon., Bd. III, p. 9, ♀ (1930).

Phanomeris spectabilis MATSUMURA, Jour. Coll. Agr. Hokkaido Imp. Univ., XVIII, p. 33, ♀, Pl. IV, fig. 15 (1926); FAHRINGER, Opusc. bracon., Bd. III, p. 593, ♀ (1934); KAMIYA, Bull. Forest Exp. Stat. Govern.-General Chosen, No. 18, p. 54 (1934) (syn. nov.)

Rhogas metanastriæ ROHWER, Proc. Ent. Soc. Washing., XXXVI, p. 47, ♂ (1934) (syn. nov.)

Rhogas spectabilis WATANABE, Ins. Mats., X, p. 46 (1935).

Examining the types of *Phanomeris dendrolimi* and *Phanomeris spectabilis*, both of which ought to be transferred to *Rhogas* NEES, the writer can not find any specific difference between them. Moreover, *Rhogas metanas-*

triae ROHWER may be also a synonym of *dendrolimi*.

♀ ♂. Head and thorax yellowish red, sometimes fuscous; palpi, antennae, legs, propodeum, and abdomen dark brown to black. Length, 8–11 mm.

Head coriaceous, dull; face transversely striate-rugose, with a median longitudinal carina; vertex narrowed in a straight line behind the eyes; eyes large as in *Rhogas oyezamensis*; antennae as long as the body, 58 to 68-jointed (♀), 53 to 60-jointed (♂). Thorax coriaceous as in the head; parapsidal furrows crenulate; mesopleural furrows obsolete; propodeum reticulate-rugose, with a median longitudinal carina. First abscissa of the radius about half the length of the 2nd; 2nd cubital cell rectangular; nervulus strongly postfurcal, inserted at the middle of the 1st discoidal cell; radius of the hind wing imperfect, nearly parallel with the metacarpus. First two tergites as well as the base of the 3rd longitudinally striate-rugose, with a longitudinal median carina, the rest slightly reticulate-rugose; ovipositor very short.

The habitats of this species and its hosts as follows:—

(1) *Dendrolimus albolineatus* MATSUMURA

Kuriles (1 ♀, the **Holotype** of *dendrolimi*); Saghalien (Toyohara, 1 ♂, 23. VII, 1923, S. TABATA).

(2) *Dendrolimus spectabilis* BUTLER

Kiushu (Kumamoto & Fukuoka, after KAMIYA); Korea (Keijo, after TAKAGI, MATSUMURA, and KAMIYA, 25 ♀ ♀, 6 ♂ ♂, V–VI, 1933, K. KAMIYA); North China (Tsingtao, after WATANABE).

(3) *Dendrolimus punctata* WALKER

Formosa (Taihoku, after ROHWER).

Gen. Distr.: Saghalien; Japan; Korea; North China; Formosa.

Remarks—This species approaches closely to *Rhogas esenbeckii* HARTIG¹⁾, a parasite of *Dendrolimus pini* LINNÉ in Europe, but is distinguished from the latter by the colouration of the abdomen and legs.

5. **Rhogas praetor* REINHARD

Rhogas praetor REINHARD, Berlin. Ent. Zeitschr., VII, p. 251 & 264. ♀ (1863); MARSHALL, Spec. Hymén. Europe, IV, p. 291. ♀ (1888); DALLA TORRE, Cat. Hymén., IV, p. 222 (1898); SZÉPLIGETI, Gen. Insect., 22–24. p. 86, ♀ (1904); id., Ann. Mus. Nat. Hungr., IV, p. 614. ♀ (1906); MORLEY, Entomologist. XLIX, p. 87 & 112 (1916); LYLE Entomologist, LII, p. 150 (1919); FAHRINGER, Opusc. bracon., Bd. III, p. 268, ♀ ♂ (1932).

1) Jahresber. Fortsch. Forstw., I. p. 255 (1838); FAHRINGER, Opusc. bracon., Bd. III, p. 246, ♀ ♂ (1932).

♀ ♂. Reddish yellow; antennae except the two basal joints, stemmaticum, hind tibiae at the apex, and hind tarsi black; wings hyaline, the stigma and veins yellow to brown. Length, 8-10 mm.

Antennae 62 to 70-jointed (♀), 62-jointed (♂); mesopleurae smooth and shining, under the tegulae somewhat reticulate-rugose; propodeum coarsely reticulate-rugose, with a longitudinal median carina; 1st abscissa of the radius a little shorter than the 2nd; 2nd cubital cell 1.5 times as long as high; nervulus slightly postfurcal; radius of the hind wing strongly sinuated at the middle; 2nd tergite quadrate.

Host—*Smerinthus populi* LINNÉ (after MORLEY, in Europe).

Habitat: Hokkaido (Mt. Daisetsu, 1 ♂, 4-10. VIII, 1926, T. UCHIDA and H. KÔNO; Jôzankei, 1 ♂, 9. VIII, 1 ♂, 15. VIII, 1925, T. UCHIDA); Honshu (Azuma-yama, 1 ♀, 12. VIII, 1932, S. KATO; Niigata, 1 ♀, IX, 1918, NAKAMURA; Kurama-yama, 2 ♀ ♀, 1930, I. SUGITANI); Korea (Suigen, 1 ♂, 25. V, 1928, K. SATO).

Gen. Distr.: Europe; Japan; Korea.

6. *Rhogas lymantriae* sp. nov. (Pl. II, Fig. 1)

♀. Black; mandibles, cheeks, palpi, and legs testaceous; hind tibiae except at the base and their tarsi black; antennae black, the basal two joints dark brown; 1st and 2nd tergites with a yellowish spot near the apex; belly tinged with yellowish brown; wings hyaline, the stigma and veins dark brown, the former with a pale spot at the base; 2nd intercubitus and apical portion of the 1st abscissa of the cubitus decoloured. Length, 7 mm.

Head coriaceous, covered with hairs; vertex narrowed in a straight line behind the eyes; distance between the eyes and the occiput as long as one-fourth the breadth of the eyes; eyes very large, kidney-shaped; distance between the posterior ocelli and the eyes shorter than the diameter of an ocellus; antennae a little shorter than the body, 55-jointed. Thorax coriaceous, covered with hairs; parapsidal furrows slightly crenulate; mesopleural furrows obsolete; propodeum closely reticulate-rugose, with a complete median carina. Radius inserted at the middle of the stigma; 1st abscissa of the radius about half the length of the 2nd; cubital cell 2 times as long as high, gradually narrowed towards the apex; nervulus postfurcal, inserted at the basal third of the 1st discoidal cell; hind wing with a short recurrent nervure; radius nearly parallel with the metacarpus. Hind tibial spurs shorter than one-third the length of the hind metatarsus. Abdomen slender; 1st tergite gradually narrowed towards the base, 2 times as long

as broad at the apex; 2nd tergite quadrate, and the following ones transverse; 1st and 2nd tergites and the 3rd at the base longitudinally striate-rugose, with a median longitudinal carina, the rest smooth, with hair-punctures; ovipositor as long as the hind metatarsus, the sheath flattened, rounded at the apex.

♂. Unknown.

Holotype (♀): Sapporo, 11. VII, 1934, C. WATANABE.

Host—*Lymantria dispar* LINNÉ

One female was bred from a young larva, probably the 2nd instar, of *Lymantria dispar*, on July 11th, 1934.

Remarks—This species comes near to *Rhogas nigricornis* WESMAEL¹⁾, from which it differs in the number of the antennal joints, in the venation of the wings and in the structure of the eyes.

7. ***Rhogas wadai*** sp. nov. (Pl. IV, Fig. 9)

♀. Reddish yellow; tips of the mandibles, stemmaticum, antennae except the two basal joints, femora at the apex, tibiae of the four anterior legs at the apex, and tarsi black; hind tibiae pale yellow, the apical half fuscous. Wings hyaline, the stigma dark brown, the veins yellowish brown. Length, 10 mm.

Head closely reticulate-rugose; vertex rounded behind the eyes; frons flat, transversely striate-rugose; distance between the eyes and the occiput a little shorter than the breadth of the eyes; eyes small, slightly emarginated opposite the insertion of the antennae; cheeks about one-third the length of the eyes; distance between the posterior ocelli and the eyes 2.5 times as long as the diameter of an ocellus; antennae long, 61-jointed. Mesonotum and mesopleurae closely punctate; parapsidal furrows crenulate; propodeum closely reticulate-rugose, with a weak median longitudinal carina. Radius inserted at the middle of the stigma; 2nd abscissa of the radius 1.5 times as long as the 1st; 2nd cubital cell rectangular, 1.5 times as long as high; nervulus strongly postfurcal, inserted at the middle of the 1st discoidal cell; radius of the hind wing parallel with the metacarpus. Hind tibial spurs subequal, about one-third the length of the hind metatarsus. First tergite gradually narrowed towards the apex, 1.5 times as long as broad at the apex; 2nd tergite subquadrate, the following ones transverse; 1st and 2nd tergites and the 3rd at the base longitudinally striate-rugose, with a weak median carina, the rest smooth with hair-

1) Nouv. Mém. Acad. Sci. Bruxel., XI, p. 105, ♀ ♂ (1838).

punctures; ovipositor as long as the two basal joints of the hind tarsi united, the sheath flattened.

Holotype (♀): Hangawa, Kôchi-ken, VI, 1932, H. WADA.

Habitat: Shikoku (Hangawa).

Remarks—This species closely resembles *Rhogas esenbeckii* HARTIG¹⁾, but differs from the latter in the structure of the eyes and in the colouration of the legs.

8. ****Rhogas ductor*** THUNBERG

Rhogas ductor THUNBERG, Bull. Acad. Soc. St. Pétersbourg, VIII, p. 269 (1822); ROMAN, Zool. Bidrag. Upsala, I, p. 252 (1912); FAHRINGER, Opusc. bracon., Bd. III, p. 242, ♀ ♂ (1932).

Rhogas reticulator NEES, Hymen. Ichneum. affin. Monogr., I, p. 211 (1834); REINHARD, Berlin. Ent. Zeitschr., VII, p. 250 & 260, ♀ ♂ (1863); VOLLENHOVEN, Pinacogr., p. 6, Pl. IV, fig. 5, ♀ (1874); MARSHALL, Trans. Ent. Soc. London, p. 90, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 281, ♀ ♂ (1888); THOMSON, Opusc. ent., p. 1668, ♀ ♂ (1891); DALLA TORRE, Cat. Hymen., IV, p. 222 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 86, ♀ (1904); id., Ann. Mus. Nat. Hungr., IV, p. 611, ♀ ♂ (1906); MORLEY, Entomologist, XLIX, p. 85 & 109 (1916).

♀. Antennae 54-jointed, the flagellum yellowish brown, darkened towards the apex; 1st and 2nd tergites and the 3rd at the extreme base yellowish red, the 1st without fuscous markings; femora of the four anterior legs at the apex black; hind tibiae yellowish white, with a broad black ring at the apex; hind tarsi fuscous (in the present specimen from Japan).

Host—*Cosmotriche potatoaria* LINNÉ (after FAHRINGER, in Europe).

Habitat: Honshu (Kyoto, 1 ♀, VIII, 1928, K. TAKEUCHI).

Gen. Distr.: Europe; West Asia; Japan.

9. ***Rhogas cariniventris*** ENDERLEIN

Rhogas cariniventris ENDERLEIN, Ent. Mitt., I, p. 257, ♀ ♂ (1912); WATANABE, Ins. Mats., VIII, p. 195, ♀ ♂ (1934).

Habitat:—Formosa (Pilam, Taihorin, and Anping, after ENDERLEIN; Hoozan and Taihorin, after WATANABE; Yakanron, 1 ♂, I, 1927, K. KIKUCHI; Kanshirei, 1 ♀, 1 ♂, 19-20. XI, 1926, J. SONAN).

Gen. Distr.: Formosa.

10. ***Rhogas dimidiatus*** (SPINOLA)

Bracon dimidiatus SPINOLA, Insect. Ligur., II, p. 123 (1808).

Rhogas dimidiatus NEES, Hymen. Ichneum. affin. Monogr., I, p. 214 (1834); REINHARD, Berlin. Ent. Zeitschr., VII, p. 257, ♀ ♂ (1863), IX, p. 243 (1865); VOLLENHOVEN, Pinacogr., p. 6, Pl. IV, fig. 6 (1874); MARSHALL, Trans. Ent. Soc. London, p. 91, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 283, ♀ ♂ (1888); THOMSON, Opusc. ent., p. 1671, ♀ ♂ (1891); DALLA TORRE, Cat. Hymen., IV, p. 217 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 85 (1904); id., Ann.

1) Jahresber. Forstchr. Forstw., I. p. 255 (1838).

Mus. Nat. Hungr., IV, p. 613 (1906); MORLEY, Entomologist, XLIX, p. 85 & 110 (1916); HELLÉN, Acta Soc. Fauna et Flora Fennica, 56, No. 12, p. 24, ♀ ♂ (1927); FAHRINGER, Opusc. bracon., Bd. III, p. 238, ♀ ♂ (1932); WATANABE, Ins. Mats., X, p. 46 (1935).

This is one of the commonest species in the palaeartic region, being parasitic on the larvae of *Lasiocampidae*, *Lymantridae*, and *Noctuidae*.

Hosts—*Lasiocampa quercus* LINNÉ, *Athetis alsines* BRAHM, *Diacrisia sanio* LINNÉ, *Euxoa tritici* LINNÉ, and *Orgyia dubia* TAUSCHAR var. *splendida* RAMBUR (after FAHRINGER, in Europe); *Euxoa segetis* SCHIFFERMILLER (after WATANABE, in Korea).

Habitat: Korea (Moppo, after WATANABE).

Gen. Distr.: Europe; North Africa; West Asia; Siberia; Korea.

11. *Rhogas microculatus* sp. nov.

♀ ♂. Black, covered with white hairs; mandibles and trochanters at the apex reddish brown; antennae except the basal two joints yellowish brown; wings slightly infuscate, the stigma and veins dark brown. Length, 7.5–9 mm.

Head closely reticulate-rugose; vertex narrowed in a straight line behind the eyes; face with a weak median ridge; frons slightly excavated, transversely striate; distance between the outer orbit and the occiput as long as the breadth of the eyes; eyes small, the distance between the posterior ocelli and the eyes 2 times as long as the diameter of an ocellus; antennae 56 to 61-jointed (♀), 62-jointed (♂). Thorax closely reticulate-rugose as in the head; parapsidal furrows deep, crenulate; mesopleural furrows rugose; propodeum reticulate-rugose, coarser than in the mesonotum, with a longitudinal median carina. First abscissa of the radius half the length of the 2nd; 2nd cubital cell rectangular, 1.5 times as long as high; nervulus postfurcal by its own length; radial cell of the hind wing widened towards the apex; recurrent nervure weakly indicated. Hind tibial spurs subequal, as long as the 1st joint of the hind tarsus. First tergite gradually narrowed towards the base, a little longer than broad at the apex; 2nd tergite as long as broad, longer than the 3rd; 1st and 2nd tergites and the 3rd at the base longitudinally striate-rugose, with a median carina, the rest smooth with hair-punctures; ovipositor a little shorter than the 1st joint of the hind tarsus, the sheath flattened.

Holotype (♀): Ikaho, 19. VII, 1917, K. TAKEUCHI. **Allotype** (♂): Sapporo, 29. VI, 1930, C. WATANABE. **Paratypes**: 1 ♀, Ikaho, 19. VII, 1917, K. TAKEUCHI; 2 ♀ ♀, Sapporo, 9. IX, 1923, T. UCHIDA; 1 ♀, Mt. Fuji, 23. VI, 1911, S. MATSUMURA; 1 ♀, Takao-san, 25. VII, 1926, S. HIRAYAMA.

Habitat: Honshu (Ikaho, Mt. Fuji, and Takao-san); Hokkaido (Sapporo).

12. *Rhogas sapporensis* sp. nov. (Pl. II, Fig. 4)

♀ ♂. Black, covered with white hairs; mandibles, trochanters at the apex reddish brown; tibiae and tarsi of the four anterior legs and tibial spurs yellowish brown; wings slightly infuscate; stigma and veins dark brown. Length, 9–10 mm.

Head reticulate-rugose; vertex rounded behind the eyes; face transversely striate-rugose, with a median ridge; frons excavated, extending nearly to the eyes, smooth and shining with some striae; eyes moderate in size; distance between the posterior ocelli and the eyes longer than the diameter of an ocellus; antennae more than 58-jointed (♀) or 61-jointed (♂). Mesonotum dull, punctate-rugose, transversely striate-rugose under the tegulae, with a smooth area in the middle; mesopleural furrows smooth, with some scattered punctures; propodeum strongly reticulate-rugose, with a median longitudinal carina. First abscissa of the radius about half the length of the 2nd; nervulus postfurcal by its own length; hind wing without a recurrent nervure; radial cell widened towards the apex. Hind tibial spurs subequal, about one-third the length of the hind metatarsus. Abdomen as long as the head and thorax together; 1st tergite slightly narrowed towards the base, a little longer than broad at the apex; 2nd tergite subquadrate, a little longer than the 3rd; 1st and 2nd tergites and the 3rd on the basal half longitudinally striate-rugose, with a strong median longitudinal carina, and the rest smooth with hair-punctures; ovipositor acute, as long as the two basal joints of the hind tarsus united, the sheath stout, flattened:

Holotype (♀): Sapporo, 28. VII, 1929, H. YAKU. **Allotype** (♂): Sapporo, 13. VI, 1929, M. FUKUDA. **Paratypes**: 1 ♀, 1 ♂, Sapporo, 17. VI, 1929, M. FUKUDA; 1 ♂, 2. VI, 1930, K. IGARASHI; Garugawa, 1 ♂, 30. VI, 1929, H. YAKU.

Habitat:—Hokkaido (Sapporo and Garugawa).

Remarks—The present species closely resembles *Rhogas morio* REINHARD¹⁾, but differs from the latter in the structure of the frons and of the 1st tergite.

13. *Rhogas drymoniae* sp. nov. (Pl. II, Fig. 5)

♀. Reddish yellow; tips of the mandibles, stemmaticum, claws, and

1) Berlin. Ent. Zeitschr., VII, p. 255 ♀ ♂ (1863).

ovipositor-sheath black; propodeum and 1st tergite fuscous; antennae dark brown, darkened towards the apex, the two basal joints yellowish; wings hyaline, the stigma and veins dark brown. Length, 7 mm.

Head coriaceous; vertex somewhat transversely striate, with a median ridge at the upper third; frons shallowly excavated; distance between the occiput and the eyes equal to half the breadth of the eyes; eyes moderate in size; distance between the posterior ocelli and the eyes longer than the diameter of an ocellus; antennae as long as the body, 43 or 44-jointed. Thorax coriaceous; prothorax on each side irregularly striate-rugose; parapsidal furrows crenulate; mesopleurae coriaceous, under the tegulae reticulate-rugose, without a distinct furrow; propodeum strongly reticulate-rugose on the basal two-thirds, with a complete median carina, the apical surface declivous, with some longitudinal striae. Radius inserted at the middle of the stigma; 1st abscissa of the radius a little longer than half the length of the 2nd; 2nd cubital cell 1.5 times as long as high, slightly narrowed towards the apex; nervulus postfurcal, inserted at the basal third of the 1st discoidal cell; radius of the hind wing slightly indicated, parallel with the metacarpus. Hind tibial spurs shorter than one-third the length of the hind metatarsus. Abdomen oblong; 1st tergite 1.5 times as long as broad at the apex, gradually narrowed towards the base; 2nd and following tergites transverse; 2nd tergite a little longer than the 3rd; three basal tergites except the apical margin of the 3rd longitudinally striate-rugose, with a median longitudinal carina, the rest coriaceous; ovipositor very short.

♂. Closely resembles the female, from which it differs in the antennae slenderer, 42-jointed and the stigma brownish yellow. Length, 6 mm.

Host—*Drymonia manleyi* LEECH

This species was bred from the larvae of *Drymonia manleyi* LEECH on July 15th, 1931, by T. ISHII, and on June 9th, 1932, by C. WATANABE. It is a solitary parasite, making the cocoon inside, protected by the indurated skin of the victim.

Holotype (♀): Tokyo, 15. VI, 1931, T. ISHII. **Allotype** (♂): Yoshinaga-mura, Shizuoka-ken, 9. VI, 1932, C. WATANABE. **Paratypes**: 10 ♀ ♀, Tokyo, 15. VI, 1931, T. ISHII; 33 ♀ ♀, Akameyama, Mie-ken, 15. VI, 1933, T. TANAKA; 1 ♂, Yoshinaga-mura, Shizuoka-ken, 9. VI, 1932, C. WATANABE.

Habitat: Honshu (Tokyo, Akameyama, and Yoshinaga-mura).

Remarks—This species is closely related to *Rhogas armatus* WESMAEL¹⁾,

1) Nouv. Mém. Acad. Sci. Bruxel., XI, p. 112, ♂ (1838).

but is easily distinguished from the latter by the structure of the head and propodeum.

14. *Rhogas japonicus* ASHMEAD

Rhogas japonicus ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 199, ♀ ♂ (1906); MATSUMURA, Konchu Bunrui Gaku, II, p. 270, ♀, Pl. V, fig. 2 (1915); id., 6000 Ill. Insect. Japan-Empire, p. 74, fig. 409, ♀ (1931); ISHII, Nip. Kon. Zukan, p. 381, ♀ ♂, fig. 742 (1932).

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

♀ ♂. Yellowish red; propodeum and 1st tergite at the base fuscous, sometimes thorax and abdomen dark brown, the first two tergites with a yellowish spot at the middle; antennae reddish yellow, darkened towards the apex; legs reddish yellow; wings hyaline; stigma yellow, often with a fuscous spot at the apex. Length, 5-6 mm.

Head coriaceous, covered with white hairs; vertex rounded behind the eyes; face reticulate-rugose, without a median ridge; distance between the eyes and the occiput equal to half the breadth of the eyes; eyes small in size; distance between the posterior ocelli and the eyes 2 times as long as the diameter of an ocellus; antennae as long as the body, 35 or 36-jointed, rarely 33 or 34-jointed. Thorax coriaceous, covered with white hairs; parapsidal furrows crenulate; propodeum reticulate-rugose, with a complete median carina. Radius inserted at the middle of the stigma; 1st abscissa of the radius about half the length of the 2nd; 2nd cubital cell slightly shorter than the brachial cell, slightly narrowed towards the apex; nervulus postfurcal by its own length; radius of the hind wing slightly sinuated at the middle. Hind tibial spurs short, one-fourth the length of the hind metatarsus. Abdomen oblong, rounded at the apex; 1st tergite gradually narrowed towards the apex, 1.5 times as long as broad at the apex; 2nd to 4th tergites transverse; 2nd tergite a little longer than the 3rd, the rest short; 1st to 3rd tergites longitudinally striate-rugose, with a longitudinal median carina; 4th tergite reticulate, the rest smooth with hair-punctures; ovipositor short.

Host—*Hemerophila atrilineata* BUTLER

The present species is known as a gregarious parasite of the larva of *Hemerophila atrilineata* BUTLER in Japan.

Habitat: Honshu (Gifu, after ASHMEAD; Nagano, 6 ♀ ♀, 5 ♂ ♂, 1920, Nagano Exp. Station); Hokkaido (Sapporo, 8 ♀ ♀, 19 ♂ ♂, 1. VI, 1905, 12 ♀ ♀, 26 ♂ ♂, 20. V, 1906, S. MATSUMURA).

Gen. Distr.: Japan.

Remarks—This species is very variable in colour: the blackish speci-

mens are found in the northern part of Japan (Hokkaido).

15. ***Rhogas narangae*** ROHWER

Rhogas narangae ROHWER, Proc. Ent. Soc. Washing., XXXVI, p. 46, ♂ (1934).

No representative of this species has been seen by the writer. Judging from the original description, it may be transferred to *Heterogamus* WESMAEL, but it will be placed in this genus for the time being until the female has been characterized.

Host—*Nuranga aenescens* MOORE (after ROHWER, in Formosa).

Habitat: Formosa (Taihoku, after ROHWER).

Gen. Distr.: Formosa.

16. ***Rhogas lateralis*** BAKER

Rhogas (Aleiodes) lateralis BAKER, Philip. Jour. Sci., XII, p. 391, ♀ (1917); WATANABE, Ins. Mats., VIII, p. 195, ♀ (1934).

Habitat: Formosa (Koshun, after WATANABE).

Gen. Distr.: Philippine Islands, Formosa.

17. ****Rhogas tristis*** (WESMAEL)

Aleiodes tristis WESMAEL, Nouv. Mém Acad. Sci. Bruxel., XI, p. 114, ♀ ♂ (1838).

Rhogas tristis REINHARD, Berlin. Ent. Zeitschr., VII, p. 250 & 263, ♀ ♂ (1863); VOLLENHOVEN, Pinacogr., p. 6, Pl. IV, fig. 10 (1874); MARSHALL, Trans. Ent. Soc. London, p. 95, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 287, ♀ ♂ (1888); DALLA TORRE, Cat. Hymen., IV, p. 223 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 86 (1904); MORLEY, Entomologist, XLIX, p. 86 (1916).

Rhogas (Aleiodes) tristis THOMSON, Opusc. ent., p. 1675 (1891); FAHRINGER, Opusc. bracon., Bd. III, p. 312, ♀ ♂ (1932).

This species is widely variable in colour; in a series of the present specimens the colouration is as follows:—

♀ ♂. Black; palpi and mandibles pale yellow; orbits reddish brown; legs reddish yellow, without fuscous markings; stigma yellow to yellowish brown, with a pale spot at the hind angle; abdomen black, the 1st and 2nd tergites at the hind margin tinged with rufous. Antennae 45-jointed (♀), 52 jointed (♂). Length, 5-6 mm.

Hosts—*Epinephele tithonus* LINNÉ, *Lycaena hylas* ESPER, *Tephroclystia pimpinellata* HÜBNER, and *Zygaena exulans* HOCHENWARTH et REINER (after FAHRINGER, in Europe).

Habitat: Saghalien (Kurashi, 2 ♂ ♂, 8. VIII, 1934, C. WATANABE & T. INOUE); Hokkaido (Shikaribetsu-ko, 1 ♀, 24-25. VIII, 1934, C. WATANABE).

Gen. Distr.: Europe; West Asia; Siberia; China; Saghalien; Japan.

18. **Rhogas procerus* (WESMAEL)

Aleiodes procerus WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., XI, p. 104 (1838).

Rhogas procerus REINHARD, Berlin. Ent. Zeitschr., VII, p. 251 & 272, ♀ (1863), IX, p. 243 (1865); MARSHALL, Spec. Hymén. Europe, IV, p. 292, ♀, Pl. XIII fig. 1, ♀ (1888); DALLA TORRE, Cat. Hymén., IV, p. 222 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 86 (1904); id., Ann. Mus. Nat. Hungr., IV, p. 614, ♀ ♂ (1906); MORLEY, Entomologist, XLIX, p. 87 (1916); FAHRINGER, Opusc. bracon., Bd. III, p. 270, ♀ ♂ (1932).

♀. Antennae reddish yellow, darkened towards the apex, 65 to 72-jointed; thorax and propodeum black; scutellum of the mesonotum tinged with brown; 1st tergite at the apex broadly fuscous; ovipositor as long as the hind metatarsus, the sheath yellowish brown, fuscous at the apex. Length, 10-12 mm.

♂. Antennae 64 to 66-jointed; thorax mostly black; prothorax and scutellum of the mesonotum entirely reddish yellow; scutum of the mesonotum and mesopleurae with yellowish markings; propodeum reddish yellow, fuscous on the lateral margins; 1st tergites fuscous at the apex. Length, 10 mm.

Habitat: Saghalien (Kaibatô, 2 ♂ ♂, 30. VII, 1934, C. WATANABE & T. INOUE); Honshu (Akakura, 1 ♀, 5. VII, 1927, K. TAKEUCHI; Daisen, 1 ♀, 18. VIII, 1932, I. OKADA); Shikoku (Sasayama, Ehime-ken, 1 ♀, 21. VII, 1916, S. MATSUMURA; Tebako-yama, Kôchi-ken, 1 ♀, 20. VIII, 1931, Y. SUGIHARA).

Gen. Distr.: Europe; Saghalien; Japan.

Species of *Rhogas* not included in the key19. *Rhogas fuscomaculatus* ASHMEAD

Rhogas fuscomaculatus ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 198, ♀ (1906); FAHRINGER, Opusc. bracon., Bd. III, p. 319, ♀ (1932).

Habitat: Hokkaido (Sapporo, after ASHMEAD).

20. *Rhogas pallidinervis* CAMERON

Rhogas pallidinervis CAMERON, Wien. Ent. Zeit., XXIX, Heft II-III, p. 97, ♀ (1910).

Habitat: Kiushu (Tsushima, after CAMERON).

II. Subfamily *CHELONINAE*

Cryptogastrini WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., XI, p. 205 (1835).

Cheloninae HANDLIRSCH, Hand. d. Entomologie, Bd. III, p. 748 (1924).

This is probably one of the most interesting groups not only on account of its structural peculiarities, but also on account of its habits. In some species of this subfamily the eggs are laid in the eggs of other insects,

mostly belonging to *Lepidoptera*, rarely to *Coleoptera* and *Diptera*, the larvae just pupating when the host-larvae have attained full growth.

Two tribes are represented in this subfamily as in the following key:—

Key to the Tribes

1. Fore wing with two cubital cells; recurrent nervure inserted in the 1st cubital cell ...
... .. 1. *Triaspidini* (= *Sigalphini*)
- Fore wing with three cubital cells; recurrent nervure interstitial or inserted in the 2nd cubital cell 2. *Chelonini*

1. Tribe *Triaspidini*

So far as the writer is aware, no species of *Triaspis* HALIDAY (= *Sigalphus* authors, not LATREILLE), the largest and commonest genus of this tribe, has yet been found in the present region, while only one aberrant genus, *Fornicia* BRULLÉ, has been recognized in Formosa. The two genera are distinguished as in the following key:—

Key to the Genera

1. Scutellum of the mesonotum dentate at the apex; abdomen usually divided by two sutures, with a strong longitudinal median carina; 2nd tergite longer than the 3rd; 2nd abscissa of the radius weakly indicated *Fornicia* BRULLÉ
- Scutellum of the mesonotum normal, not dentate at the apex; abdomen not always divided, sometimes the sutures obsolete; 2nd tergite shorter than the 3rd; 2nd abscissa of the radius strongly indicated *Triaspis* HALIDAY

1. Genus *Fornicia* BRULLÉ

Fornicia BRULLÉ, Hist. Nat. Ins. Hymen., IV, p. 511 (1846).

Odontofornicia ENDERLEIN, Ent. Mitt., I, p. 260 (1912).

Genotype—*Fornicia clathrata* BRULLÉ

Key to the Species

1. Wings faintly infuscate apically; stigma and veins dark brown; occiput and cheeks slightly convex, transversely striate; scutellar tooth distinctly divided at the apex. Length, 6 mm.
... .. 1. *arata* (ENDERLEIN)
- Wings entirely hyaline; stigma and costa brown, the remaining veins whitish yellow; occiput and cheeks flat, smooth and shining, with fine scattered punctures; scutellar tooth normally undivided. Length, 5 mm. 2. *ceylonica* WILKINSON

1. *Fornicia arata* (ENDERLEIN)

Odontofornicia arata ENDERLEIN, Ent. Mitt., I, p. 261 (1912); CUSHMAN, Philip. Jour. Sci., XL, p. 235, ♀ ♂ (1929).

Fornicia arata WATANABE, Ins. Mats., VIII, p. 120, ♀, & p. 195, ♀ ♂ (1934).

Habitat: Formosa (Takao, after ENDERLEIN; Takao, Kosempo, Thorton, and Koshun, after WATANABE; Kanshirei, 1 ♀, 20. XI, 1926, J. SONAN; Koshun, 1 ♀, 25. IV, 1922, K. TAKEUCHI).

Gen. Distr.: China (Yeng Kong, after CUSHMAN); Formosa.

2. ***Fornicia ceylonica*** WILKINSON

Fornicia ceylonica WILKINSON, Bull. Ent. Res., XIX, p. 262, ♀ ♂, fig. 2 (1928), XX, p. 107 (1929); WATANABE, Ins. Mats., VIII, p. 195, ♂ (1934).

Host—*Susica nararia* MOORE (after WILKINSON, in Ceylon).

Habitat: Formosa (Taihorin, Fusho, and Hoozan, after WATANABE).

Gen. Distr.: Ceylon; Formosa.

Remarks—Judging from the original description of *Fornicia penang* (CUSHMAN)¹⁾ from Penang Island, it may be identified with the present species.

2. Tribe ***Chelonini***

So far as the writer's studies go, *Chelonus* JURINE, *Ascogaster* WESMAEL, *Phanerotoma* WESMAEL, and *Sigalphus* LATREILLE occur in this country, the last one being new to the fauna.

Key to the Genera

- 1. Abdomen without sutures 2
- Abdomen with two sutures; 1st abscissa of the cubitus always present 3
- 2. First abscissa of the cubitus obsolete; 1st cubital and 1st discoidal cells confluent; eyes pubescent 1. *Chelonus* JURINE
- First abscissa of the cubitus present; 1st cubital and 1st discoidal cells separated; eyes naked 2. *Ascogaster* WESMAEL
- 3. Recurrent nervure inserted in the 1st cubital cell; 2nd cubital cell elongate, rectangular; 2nd abscissa of the radius distinctly longer than the 1st intercubitus; 3rd abdominal segment greatly elongate, with two denticles beneath 3. *Sigalphus* LATREILLE
(= *Sphaeropyx* ILLIGER)
- Recurrent nervure interstitial or inserted in the 2nd cubital cell; 2nd cubital cell subquadrate; 2nd abscissa of the radius as long as or a little longer than the 1st intercubitus; 3rd abdominal segment not elongate, without denticles beneath 4. *Phanerotoma* WESMAEL

I. Genus ***Chelonus*** JURINE

Chelonus JURINE: in PANZER, Krit. Revis., II, p. 99 (1806).

Trachionus HALIDAY, Ent. Magaz., I, p. 265 (1833).

Chelonella SZÉPLIGETI, Ann. Mus. Nat. Hung., VI, p. 403 (1908).

Genotype—*Chelonus inanitus* (LINNÉ)

1) Philip. Jour. Sci., XL, p. 235, ♂ (1929) (as *Odontofornicia*).

This is the commonest and most abundant genus of the tribe. The present writer is much inclined to the opinion that *Chellonella* SZÉPLIGETI should be combined with *Chelonus* JURINE, since the former may be differentiated from the latter on the two following grounds only:—(1) Antennae 16-jointed in the female. (2) Abdomen with an apical fissure in the male. These, however, may be both merely sexual characters of less than generic value, because such a combination of characters does not occur in the case of some species.

Microchelonus SZÉPLIGETI,¹⁾ *Bitomus* SZÉPLIGETI²⁾, *Arichelonus* VIERECK³⁾, *Cubochelonus* BAKER⁴⁾, and *Megachelonus* BAKER⁵⁾, also may be combined with *Chelonus*; indeed, the characters given for them mostly belong to one sex only, no attempt being made to discriminate the other sex.

Key to the Species

♀ ♀

- | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------------------|
| 1. | Antennae 16-jointed | ... .. | 2 |
| - | Antennae more than 16-jointed | ... .. | 6 |
| 2. | Abdomen with two denticles at the terminal lateral angles | ... .. | 3 |
| - | Abdomen without denticles at the terminal lateral angles | ... .. | 4 |
| 3. | Wings hyaline; legs with the coxae yellowish red; tarsi somewhat fuscous; face strongly and coarsely reticulate-rugose; propodeum suddenly declivous from the middle to the apex; abdomen reddish brown at the base. Length, 6 mm. | ... .. | 1. <i>rufosignatus</i> (SONAN) |
| - | Wings infusate, an irregular hyaline streak runs outwards from the base of the stigma; legs black; all trochanters, fore tibiae, and fore tarsi yellowish brown; four anterior tibiae with a broad white ring near the base; propodeum gradually declivous towards the apex; basal third of the abdomen pale yellow. Length, 5 mm. | ... .. | 2. <i>nigrocoxatus</i> (SONAN) |
| 4. | Ventral cavity nearly reaching the apex of the abdomen; frontal depression not margined laterally | ... .. | 5 |
| - | Ventral cavity far from the apex of the abdomen; frontal depression smooth, laterally margined, with a longitudinal median carina; abdomen with two white sub-basal spots; wings hyaline on the basal half, the rest infusate; coxae at the apex, trochanters, fore tibiae, and four anterior tarsi yellowish red to brown; hind tibiae sometimes with a white ring at the apex. Length, 6-7 mm. | ... .. | 3. <i>tabonus</i> SONAN |
| 5. | Antennae long, the last joint 2 times as long as broad; abdomen black, without sub-basal spots; legs black, the hind tibiae without a white ring. Length, 4 mm. | ... .. | 4. <i>tosensis</i> sp. nov. |
| - | Antennae short, the last joint as long as broad; basal third of the abdomen pale yellow, with a fuscous spot at the base; all trochanters, four anterior tibiae, and all tarsi whitish | | |

1) Ann. Mus. Nat. Hung., VI, p. 403 (1908).

2) Notes Leyden Mus., XXXII, p. 89 (1910).

3) Proc. U.S. Nat. Mus., XLIV, p. 641 (1913).

4) Philip. Jour. Sci., XXXI, p. 445 (1926).

5) Philip. Jour. Sci., XXXI, p. 457 (1926).

- yellow; hind tibiae with a broad white ring at the base. Length, 3 mm.
- 5. *pectinophorae* CUSHMAN
6. Antennae more than 18-jointed 7
- Antennae 18-jointed; abdomen pale yellow at the base; legs yellowish red, in the hind legs the coxae at the apex, the femora at the apex, and the tarsi fuscous; ventral cavity reaching the apex of the abdomen; ovipositor exerted. Length, 3.5-5 mm.
- 6. *gravenhorstii* (NEES)
7. Face strongly and coarsely reticulate-rugose; abdomen stout, elliptical; antennae shorter than the body, 23 to 28-jointed 8
- Face finely and closely reticulate-rugose or transversely striate-rugose; abdomen slender, oblong; antennae as long as or longer than the body, more than 30-jointed 10
8. Hind femora entirely black 9
- Hind femora yellowish red; antennae 23 to 25-jointed; abdomen with two small sub-basal spots, which are sometimes obsolete; ovipositor exerted, sickle-shaped. Length, 8-9 mm. 7. *inanilus* (LINNÉ)
9. Frons with a horn between the antennae; antennae 26-jointed; wings hyaline; 3rd abscissa of the radius slightly incurved; abdomen with two sub-basal spots; ovipositor concealed. Length, 6 mm. 8. *formosanus* SONAN
- Frons without a horn; antennae 21-jointed; 3rd abscissa of the radius distinctly incurved; abdomen with two sub-basal spots; ovipositor exerted, sickle shaped. Length, 5.5 mm. 9. *moriokensis* sp. nov.
10. Wings entirely infuscate; antennae dark brown; legs black, with yellowish markings 11
- Wings hyaline; legs with the coxae reddish yellow; hind femora somewhat fuscous at the apex; hind tibiae with a broad white ring at the middle; antennae reddish yellow, darkened towards the apex, compresso-dilated beyond the middle, 36-jointed; abdomen pale yellow on the basal half; ovipositor subexserted. Length, 5 mm.
- 10. *signatus* SONAN
11. Frons and face transversely striate-rugose; antennae slender, not dilated beyond the middle, 28 to 33-jointed; 3rd abscissa of the radius incurved; abdomen without sub-basal spots; ovipositor exerted. Length, 3.5-4 mm. 11. *carbonator* MARSHALL
- Frons and face reticulate rugose; antennae slightly compresso-dilated beyond the middle, 32 to 34-jointed; 3rd abscissa of the radius straight; abdomen with two sub-basal spots; ovipositor exerted. Length, 6-8 mm. 12. *mumakatae* MATSUMURA

• 8 8

1. Abdomen with an apical fissure 2
- Abdomen without an apical fissure 4
2. Apical fissure oval, 1.5 times as broad as high 3
- Apical fissure broadly transverse, 4 times as broad as high; basal third of the abdomen pale yellow; wings hyaline; antennae 24-jointed; hind tibiae with a broad white ring at the base. Length, 3 mm. 5. *pectinophorae* CUSHMAN
3. Antennae reddish brown, 22-jointed; mesonotum coarsely reticulate-rugose; legs reddish yellow, with fuscous markings; wings hyaline. Length, 5 mm.
- 7. *rufosignatus* (SONAN)
- Antennae black, 21-jointed; mesonotum closely reticulate-rugose; legs black, with brownish markings. Wings subhyaline. Length, 3.5 mm. 4. *tosensis* sp. nov.
4. Ventral cavity nearly reaching the apex of the abdomen 5
- Ventral cavity far from the apex of the abdomen; antennae 26 or 27-jointed; abdomen

- with two small sub-basal spots, which are sometimes obsolete. Length, 5 mm.
 3. *tabonus* SONAN
5. Face strongly and coarsely reticulate-rugose; abdomen stout, elliptical 6
 - Face finely and closely reticulate-rugose; abdomen slender, oblong 7
6. Frons with a horn between the antennae; antennae 28-jointed; hind femora dark brown;
 abdomen with two sub-basal spots. Length, 6 mm. 8. *formosanus* SONAN
 - Frons without a horn; antennae 27 to 30-jointed; hind femora brownish red; abdomen
 without sub-basal spots. Length, 8-9 mm. 7. *inanitus* (LINNÉ)
7. Third abscissa of the radius incurved; abdomen without sub-basal spots; antennae 33 or
 34-jointed; hind tibiae without a white ring. Length, 3-4 mm.
 II. *carbonator* MARSHALL
 - Third abscissa of the radius straight; sub-basal spots of the abdomen absent, but rarely
 present; antennae 35-jointed; hind tibiae with a broad white ring at the base. Length,
 6-8 mm. 12. *nunakatae* MATSUMURA

1. ***Chelonus rufosignatus*** (SONAN)

Chelonella rufosignata SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 77, ♀ (non ♂)
 (1932); WATANABE, Ins. Mats., VIII, p. 197, ♀ ♂, fig. 5, ♂ (1934).

Habitat: Formosa (Musha, after SONAN; Koshun, after WATANABE).

Gen. Distr.: Formosa.

2. ***Chelonus nigricoxatus*** (SONAN) (Pl. V, Fig. 11)

Chelonella nigricoxata SONAN, Trans. Soc. Nat. Hist. Formosa, XXII, p. 77, ♀ (non ♂) (1932).

♀. Stigma large, as long as the 1st and 2nd abscissae of the radius united, the 1st a little longer than the 2nd, both of which lie in a straight line, not angled; 3rd abscissa of the radius slightly incurved; 1st intercubitus decoloured, as long as the 2nd abscissa of the radius; nervulus postfurcal, oblique, inserted at the basal third of the 1st discoidal cell; abdomen denticulate at the apex; ovipositor exerted.

Described from SONAN's unique type which is, in fact, the female.

♂. Unknown.

Habitat: Formosa (Rikiriki, 1 ♀, **Holotype**, after SONAN).

Gen. Distr.: Formosa.

3. ***Chelonus tabonus*** SONAN (Pl. V, Fig. 14)

Chelonus tabonus SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 71, ♀ ♂ (1932); WATANABE, Ins. Mats., VIII, p. 196, ♀ ♂ (1934), X, p. 47, ♀ ♂ (1935).

Chelonella yami SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 74, ♀ (1932).

Chelonus inanitus WATANABE, Kontyû, VII, p. 247, ♀ ♂ (1933) (nec LINNÉ).

Host—*Sylepta derogata* FABRICIUS (after WATANABE, in Japan and North China).

Habitat: Hokkaido (Jôzankei, 1 ♀, 30. VIII, 1907, S. MATSUMURA); Honshu (Tokyo, after WATANABE); Formosa (Kosen, Tabo, Banshiryo, and Kô:ôsho, after SONAN; Pilam, Anping, Takao, Taihorin, Koshun, and Ko-

sempo, after WATANABE).

Gen. Distr.: Formosa; Japan; North China.

Remarks—Judging from the original description of *Magachelonus areolellus* BAKER¹⁾ from the Philippine Islands, the present species stands nearest to it.

4. ***Chelonus tosenis*** sp. nov. (Pl. II, Fig. 6)

♀. Black; mandibles, tibiae, and tarsi dark brown; wings subhyaline. Length, 4 mm.

Head transverse; face closely reticulate-rugose; clypeus punctate, somewhat rugose on the upper part; cheeks, vertex, and occiput striate-rugose; frons shallowly depressed, transversely striate-rugose; antennae a little shorter than the body, slightly dilated beyond the middle, the apical joints 2 times as long as broad. Scutum of the mesonotum coarsely reticulate-rugose, with a fine longitudinal median carina; parapsidal furrows distinctly indicated; meso- and metapleurae coarsely rugose; scutellum of the mesonotum closely rugose; propodeum coarsely reticulate-rugose, with two short median and two strong lateral denticles. First abscissa of the radius longer than the 2nd, and the 3rd straight; radial cell larger than the stigma; 1st intercubitus as long as the 2nd abscissa of the cubitus; 2nd intercubitus as long as the 1st abscissa of the radius; nervulus postfurcal by its own length; radius of the hind wing weakly indicated, petiolate, slightly sinuated at the middle. Abdomen oblong, longitudinally striate-rugose, the rugosity becoming reticulate towards the apex, with two oblique carinae at the base; ventral cavity nearly reaching the apex of the abdomen; ovipositor straight, exerted.

♂. Closely resembles the female in general structure and colour, but differs from the latter as follows:—

Antennae as long as the body, not dilated beyond the middle, 21-jointed; abdomen possessing an apical fissure which is small, oval, 1.5 times as broad as high. Length, 4 mm.

Holotype (♀), **Allotype** (♂), and **Paratypes** (1 ♀, 1 ♂): Hirooka, Kôchi-ken, 22. IV, 1934, H. OKAMOTO.

Habitat: Shikoku (Hirooka, Kôchi-ken).

Remarks—This species approaches very near to *Chelonus elaeplula* SILVESTRI²⁾, from which it differs in the colour of the legs and in the structure of the apical fissure of the abdomen.

1) Philip. Jour. Sci., XI, IV, p. 459, ♀ ♂ (1926).

2) Lab. Zool. Gen. Agr. Protici, III, p. 154 (1908); FAHRINCE, Opusc. bracon, Bd. III, p. 442, ♀ ♂ (1934).

5. *Chelonus pectinophorae* CUSHMAN

Chelonella sp. KAMBE, Ann. Agr. Exp. Stat. Govern.-Gen. Chosen, V, No. 4, p. 204 (1930).

Chelonus (Chelonella) pectinophorae CUSHMAN, Proc. U. S. Nat. Mus., LXXIX, p. 11, ♀ ♂ (1931); FAHRINGER, Opusc. bracon., Bd. III, p. 458, ♀ ♂ (1934).

Chelonella nitobei SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 74, ♀ ♂ (1932) (syn. nov.)

Chelonella pectinophorae CHU, 1934 Year Book, Bureau Ent. Hangchow, p. 20 (1935).

Chelonus pectinophorae WATANABE, Ins. Mats., X, p. 47 (1935).

Examining a paratype (♀, Shirin, 12. X, 1930) of *Chelonella nitobei* the writer has become convinced that it should be identified with the present species.

Hosts—*Pectinophora gossypiella* SAUNDERS (after KAMBE, CUSHMAN, and WATANABE); *Eucosma schistaceana*. SNELLEN (after SONAN, in Formosa); *Earias cupreoviridis* WALKER (after CHU, in China).

Habitat: Korea (Moppo, after KAMBE, CUSHMAN, and WATANABE); Hokkaido (Sapporo, 1 ♂, 4. VII, 1927, 1 ♀, 2 ♂ ♂, 23. VII, 1930, C. WATANABE); Formosa (Taihoku, Tainan, Shirin, and Arisan, after SONAN; Anping, 4 ♀ ♀, V, 1912, H. SAUTER).

Gen. Distr.: Korea; Japan; Formosa; China.

6. *Chelonus gravenhorstii* (NEES)

Sigalphus gravenhorstii NEES, Magaz. Ges. Naturf. Fr. Berlin, VII, p. 272 (1813).

Chelonus gravenhorstii NEES, Nov. Acta Acad. Nat. Curios., IX, p. 310 (1818); id., Hymen. Ichneum. affin. Monogr., I, p. 296 (1834); MARSHALL, Spec. Hymén. Europe, IV, p. 371, ♀ ♂ (1889); THOMSON, Opusc. ent., p. 1713 (1891); DALLA TORRE, Cat. Hymen., IV, p. 201 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 95 (1904); id., Ann. Mus. Nat. Hung., VI, p. 407 (1908); LYLE, Entomologist, LVII, p. 12 (1924).

Chelonus (Chelonella) gravenhorstii FAHRINGER, Opusc. bracon., Bd. III, p. 448, ♀ ♂ (1934).

This is easily distinguished from its congeneric species by having 18-jointed antennae.

Habitat: Saghalien (Noda, 1 ♀, 6. VIII, 1934, C. WATANABE).

Gen. Distr.: Europe; Saghalien.

7. **Chelonus inanitus* (LINNÉ)

Cynips inanitus LINNÉ, Syst. nat., Ed. 12 a, I, p. 919 (1767).

Ichneumon oculator FABRICIUS, Syst. ent., p. 338 (1775).

Chelonus inanitus NEES, Hymen. Ichneum. affin. Monogr., I, p. 209 (1834); THOMSON, Opusc. ent., p. 566 (1874); MARSHALL, Trans. Ent. Soc. London, p. 118, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 330, ♀ ♂ (1889); SZÉPLIGETI, Term. Füz., XIX, p. 173 & 234 (1896); DALLA TORRE, Cat. Hymen., IV, p. 202 (1898); id., Gen. Insect., 22-24, p. 95 (1904); MORLEY, Entomologist, XL, p. 181 (1907); SZÉPLIGETI, Ann. Mus. Nat. Hung., VI, p. 406, ♀ ♂ (1908); LYLE, Entomologist, LVI, p. 228, ♀ ♂ (1923); BRUKS, Proc. Amer. Acad. Arts Sci., LXI, p. 391 (1926); FAHRINGER, Opusc. bracon., Bd. III, p. 484, ♀ ♂ (1934).

In a series of the present females the antennae are 25 or 26-jointed,

and the sub-basal yellowish spots of the abdomen are very small in size.

Hosts—*Oligia literosa* HOWARD, *Arenostola elymi* TREITSCHKE, *Semasia aemulana* SCHÄGFFER, and *Semasia tripoliana* BARRETT (after FAHRINGER, in Europe).

Habitat: Saghalien (Shisuka, 2 ♀ ♀, 8. VIII, 1914, S. ISSIKI; Otani, 1 ♀, 22. VIII, 1914, S. ISSIKI).

Gen. Distr.: Europe; North Africa; West and Central Asia; Saghalien.

8. *Chelonus formosanus* SONAN

Chelonus formosanus SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 70, ♀ (1932); WATANABE, Ins. Mats., VIII, p. 120, ♀, & p. 196, ♀ ♂ (1934).

Hosts—*Criphlis loreyi* DUPONCHEL and *Prodenia litura* FABRICIUS (after SONAN, in Formosa).

Habitat: Formosa (Taihoku, Koshun, and Taichu, after SONAN; Throton, Koshun, Kosempo, and Pilan, after WATANABE; Tainan, 1 ♀, 31. III, 1909, M. ISHIDA).

Gen. Distr.: Formosa.

9. *Chelonus moriokensis* sp. nov. (Pl. V. Fig. 12)

♀. Black; palpi dark brown; mandibles rufous; abdomen with a pale yellowish spot on each side of the base; wings infuscate, the stigma and veins dark brown, all coxae and trochanters, and hind femora except the apex black. Length, 5.5 mm.

Head strongly reticulate-rugose; cheeks and occiput striate-rugose; clypeus with scattered punctures; frontal depression shallow, without a median carina; antennae short, a little longer than the head and thorax together, not dilated beyond the middle, 21-jointed. Thorax strongly reticulate-rugose as in the head; parapsidal furrows obsolete; propodeum transverse, with three longitudinal carinae at the middle, and with a short denticle on each side. Radial cell larger than the stigma; 1st abscissa of the radius as long as the 2nd, both of which lie in a straight line, and the 3rd distinctly incurved; 1st intercubitus oblique, as long as the 2nd abscissa of the radius; recurrent nervure interstitial; nervulus postfurcal by its own length; radius of the hind wing sessile, sinuated at the middle. Abdomen stout, elliptical, as long as the head and thorax united, striate-rugose, with two converging basal carinae; ventral cavity nearly reaching the apex; ovipositor exerted, the sheath sickle-shaped, as long as the hind metatarsus.

♂. Unknown.

Holotype (♀): Morioka, 12. VIII, 1925, HASEGAWA.

Habitat: Honshu (Morioka).

Remarks—This species closely resembles *Chelonus pannonicus* SZÉPLIGETI¹⁾, but is distinguished from the latter by the 3rd abscissa of the radius being incurved.

10. *Chelonus signatus* SONAN

Chelonus signatus SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 72, ♀ (1932).

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

♀. Frontal depression shallow, not laterally margined; maxillary palpi long, nearly reaching the tegulae; 1st abscissa of the radius as long as the 2nd; 1st intercubitus oblique, a little shorter than the 2nd abscissa of the cubitus; 2nd intercubitus decoloured, as long as the 1st abscissa of the radius; nervulus postfurcal, oblique; basal portion of the 2nd abscissa of the medial nervure about one-fifth the length of the apical portion.

Described from SONAN's unique type.

♂. Unknown.

Habitat: Formosa (Raisha, after SONAN).

Gen. Distr.: Formosa.

11. *Chelonus carbonator* MARSHALL

Chelonus carbonator MARSHALL, Trans. Ent. Soc. London, p. 125, ♀ ♂ (1885); id., spec. Hymén. Europe, IV, p. 336, ♀ ♂ (1889); SZÉPLIGETI, Term Füz., XIX, p. 175 & 236, ♀ ♂ (1896); DALLA TORRE, Cat. Hymén., IV, p. 200 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 94 (1904); MORLEY, Entomologist, XL, p. 180 & 181 (1907); SZÉPLIGETI, Ann. Mus. Nat. Hung., VI, p. 408 (1908); LYLE, Entomologist, LVI, p. 148 & 229 (1923); FAHRINGER, Opusc. bracon., Bd. III, p. 479, ♀ ♂ (1934).

In a series of the present specimens the antennae are 31 or 32-jointed, and the abdomen has a small pale yellowish spot on each side.

Habitat: Saghalien (Shisuka, 1 ♀, 8. VIII, 1914, S. ISSIKI; Sakae-hama, 1 ♀, 19. VIII, 1914, S. ISSIKI).

Gen. Distr.: Europe; West and Central Asia; Siberia; Saghalien.

12. *Chelonus munakatae* MATSUMURA

Chelonus munakatae MATSUMURA: in MUNAKATA, Entra Rep. Agr. Exp. Stat. Aomori, No. 2, p. 68, ♀ ♂, Pl. II, fig. 2, ♂ (1912); NAWA, Insect World, Gifu, XIX, p. 457 (1915); KUWAYAMA, Rep. Agr. Exp. Stat. Hokkaido, No. 47, p. 36 (1928); SONAN, Trans. Nat. Hist. Soc. Formosa, XX, p. 115, ♀ ♂ (1930); WATANABE, Trans. Sapporo Nat. Hist. Soc., XII, p. 67; ♀ ♂ (1932); ISHII, Nip. Kon. Zukan, p. 378, ♀ ♂, fig. 737, ♂ (1932); FAHRINGER, Opusc. bracon., Bd. III, p. 490, ♀ ♂ (1934).

Chelonus chilonis CUSHMAN, Proc. Haw. Ent. Soc., VII, p. 244, ♀ ♂ (1929).

1) Term. Füz., XIX, p. 174, ♀ ♂ (1896).

Host—*Chilo simplex* BUTLER (in Japan and China).

Habitat: Hokkaido (Sapporo, after WATANABE); Honshu (Aomori and Kurashiki, after WATANABE); Kiushu (Nagasaki, after Rep. Agr. Exp. Stat. Nagasaki); Korea (Shariin, after WATANABE).

Gen. Distr.: Japan; Korea; China.

Species of *Chelonus* not included in the key

13. *Chelonus arisanus* SONAN

Chelonus arisanus SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 71, ♀ ♂ (1932).

Habitat: Formosa (Arisan, after SONAN).

Gen. Distr.: Formosa.

14. *Chelonus gohoi* SONAN

Chelonus gohoi SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 73, ♀ (1932).

Habitat: Formosa (Funkiko, after SONAN).

Gen. Distr.: Formosa.

15. *Chelonus mushanus* (SONAN)

Chelonella mushana SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 75, ♂ (1932).

Habitat: Formosa (Musha, after SONAN).

Gen. Distr.: Formosa.

16. *Chelonus rokkinus* (SONAN)

Chelonella rokkinina SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 76, ♀ (1932).

Habitat: Formosa (Rokki, after SONAN).

Gen. Distr.: Formosa.

2. Genus *Ascogaster* WESMAEL

Ascogaster WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., IX, p. 226 (1835).

Ascogaster BAKER, Philip. Jour. Sci., XXXI, p. 482 (1926) (syn. nov.)

Genotype—*Ascogaster instabilis* WESMAEL

This genus has a world-wide distribution. It is easily distinguished from *Chelonus* by the structure of the 1st cubital and 1st discoidal cells, which in the former are distinctly separated, not confluent. Five species have been recognized in this country.

Key to the Species

- 1. Clypeus denticulate; abdomen without a white spot 2
- Clypeus rounded, not denticulate; antennae 42 or 43-jointed (♀), 46-jointed (♂); abdomen with a large white spot on the basal half; legs reddish yellow; hind tibiae and tarsi fuscous, the former with a broad white ring at the base. Length, 5 mm.
 I. *formosensis* SONAN

2. Abdomen without a denticle at the apex; clypeus bi- or tridenticulate 3
 - Abdomen with a denticle at the apex; clypeus not denticulate; antennae 34 to 36-jointed; legs black, the fore tibiae and tarsi yellowish brown; mesonotum strongly reticulate-rugose as in the propodeum. Length, 3.5 mm. 2. *epinotiae* sp. nov.
 3. Clypeus bidenticulate; abdomen slender; antennae reddish yellow, fuscous at the apex, 30 to 38-jointed; legs reddish yellow, the hind coxae black except the apex, the hind femora and tibiae on each apex fuscous; hind tarsi fuscous, with a white ring at the base. Length, 3-5 mm. 3. *rufipes* (LATREILLE) (= *arisanicus* SONAN)
 - Clypeus tridenticulate; abdomen stout; antennae brown, reddish yellow at the underside of the base, 30 to 33-jointed; legs reddish yellow, all coxae black; femora, tibiae, and tarsi of the hind legs fuscous, the last without a white ring at the base. Length, 3-5 mm. 4. *rufidens* WESMAEL

1. ***Ascogaster formosensis*** SONAN

Ascogaster formosensis SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 78, ♀ ♂ (1932);
 WATANABE, Ins. Mats., VIII, p. 198, ♀ ♂, (1934).

Habitat: Formosa (Funkiko, Taito, and Arisan, after SONAN; Funkiko, Toen, and Shinsharyo, after WATANABE).

Gen. Distr.: Formosa.

2. ***Ascogaster epinotiae*** sp. nov. (Pl. V, Fig. 15)

♀. Black; palpi and tibial spurs pale yellow; tibiae and tarsi of the fore legs yellowish brown; wings hyaline, the stigma and veins dark brown. Length, 3.5 mm.

Head strongly reticulate-rugose; face with a short median ridge; frons flat, not excavated; clypeus smooth, with hair-punctures, the hind margin rounded, sharply acute at the apex; antennae slightly dilated before the middle, 34 to 36-jointed. Thorax strongly reticulate-rugose, the parapsidal furrows obsolete; propodeum reticulate-rugose, the posterior part declivous, with four strong denticles. First abscissa of the radius as long as the 2nd, and the 3rd almost straight; 1st abscissa of the cubitus slightly curved; recurrent nervure interstitial; nervulus postfurcal, inserted at the basal third of the 2nd abscissa of the medial nervure. Hind legs stout, the coxae punctate. Abdomen oblong, reticulate-rugose, at the apex projecting into a denticle; ventral cavity narrowed towards the apex, not reaching the apex; genital organ usually concealed.

♂. Unknown.

Host—*Epinotia diriana* GUENÉE (in Hokkaido).

Four females were bred from the larvae of *Epinotia diriana* on July 14th, 1927, at Sapporo.

Holotype (♀) and **Paratypes** (3 ♀ ♀): Sapporo, 14. VII, 1927.

Habitat: Hokkaido (Sapporo).

Remarks—The present species comes nearest to *Ascogaster lapponicus* THOMSON¹⁾ from North Europe, but is easily distinguished from the latter by the strongly reticulate-rugose thorax and by the stout hind legs.

3. *Ascogaster rufipes* (LATREILLE)

Sigalphus rufipes LATREILLE, Gen. Crust. u. Insect., IV, p. 14 (1809); NEES, Magaz. Ges. Naturf. Fr. Berlin, VII, p. 262 (1813).

Sigalphus elegans NEES, Magaz. Ges. Naturf. Fr. Berlin, VII, p. 264 (1813).

Chelonus rufipes HALIDAY, Ent. Magaz., I, p. 266 (1833); NEES, Hymen. Ichneum. affin. Monogr., I, p. 283 (1834).

Ascogaster rufipes BLANCHARD, Hist. Nat. Insect., III, p. 337 (1840); RATZEBURG, Ichneum. d. Forstinsect., II, p. 24 (1848), III, p. 24 (1852); KAWALL, Bull. Soc. Nat. Moscou, XXXVIII, p. 351 (1865); REINHARD, Berlin. Ent. Zeitschr., XI, p. 362 & 365 (1867); THOMSON, Opusc. ent., p. 583 (1874); MARSHALL, Trans. Ent. Soc. London, p. 143, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 357, ♀ ♂ (1889); THOMSON, Opusc. ent., p. 1717 (1891); LALLA TORRE, Cat. Hymen., IV, p. 197 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 98 (1904); LYLE, Entomologist, LVII, p. 84 (1924); FAHRINGER, Opusc. bracon., Bd. III, p. 542, ♀ ♂ (1934).

Ascogaster elegans REINHARD, Berlin. Ent. Zeitschr., XI, p. 362 & 366 (1867); MARSHALL, Trans. Ent. Soc. London, p. 144, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 355, ♀ ♂ (1889); SZÉPLIGETI, Term. Füz., XIX, p. 177 & 238, ♀ ♂ (1896); id., Gen. Insect., 22-24, p. 98 (1904); id., Ann. Mus. Nat. Hung., VI, p. 410 (1908); LYLE, Entomologist, LVII, p. 85 (1924).

Ascogaster maculata & *rubrifex* BRUES, Proc. Amer. Acad. Arts Sci., LXI, p. 393 (1926).

Ascogaster arisanicus SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 79, ♂ (1932) (syn. nov.)

Hosts—*Psecadia funerella* FABRICIUS, *Steganoptycha ustomaculana* CURTIS, *Coleophora gryllipennela* BOUCHÉ, *Earias chlorana* LINNÉ, *Eyrepija cribrum* LINNÉ, *Yponomeuta padellus* LINNÉ, *Grapholitha laplasteriana* CURTIS, *Acalla holmiana* LINNÉ, *Cacoecia podana* SCOPOLI, and *Notocelia uddmanniana* LINNÉ (after FAHRINGER, in Europe).

Habitat: Saghalien (Ochiho, 1 ♂, 2. VIII, 1914, S. ISSIKI; Taran-domari, 1 ♂, 27. VII, 1934, C. WATANABE & T. INOUE; Kaibatô, 2 ♀ ♀, 30. VII, 1934, C. WATANABE & T. INOUE); Hokkaido (Kamuikotan, 1 ♂, 20. VII, 1927, K. DOI; Shikaribetsu-ko, 1 ♂, 24. VIII, 1934, C. WATANABE; Sounkyo, 1 ♀, 17. VII, 1930, C. WATANABE; Sapporo, 1 ♀, 12. VII, 1931, C. WATANABE); Honshu (Mt. Hakuba, 1 ♀, 1. VII, 1932, K. TAKEUCHI); Shikoku (Kôchi, 1 ♂, 18. VII, 1933, Y. SUGIHARA); Formosa (Arisan, after SONAN; Tappan, 1 ♂, 24. IV, 1907, S. MATSUMURA).

Gen. Distr.: Europe; West Asia; North Africa; Saghalien; Japan; Formosa.

4. **Ascogaster rufidens* WESMAEL

Ascogaster rufidens WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., IX, p. 231, ♂ (1835); REIN-

1) Opusc. ent., p. 588 (1874).

HARD, Berlin. Ent. Zeitschr., XI, p. 362 & 365, ♀ ♂ (1867); THOMSON, Opusc. ent., p. 584, ♀ ♂ (1874); MARSHALL, Trans. Ent. Soc. London, p. 145, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 359, ♀ ♂ (1889); THOMSON, Opusc. ent., p. 1718, ♀ ♂ (1891); DALLA TORRE, Cat. Hymen., IV, p. 196 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 89 (1904); id., Ann. Mus. Nat. Hung., VI, p. 410 (1908); LYLE, Entomologist, LVII, p. 85, ♀ ♂ (1924); FAHRINGER, Opusc. bracon., Bd. III, 540, ♀ ♂ (1934).

Hosts—*Arctia caja* LINNÉ, *Gracilaria syringella* FABRICIUS, *Blasodacna hellerella* DUPONCHEL, *Gelechia vulgella* HÜBNER, *Pandemis ribeana* HÜBNER, and *Cacoecia xylosteana* LINNÉ, (after FAHRINGER, in Europe).

Habitat: Saghalien (Tokombo, 1 ♂, 28. VII, 1934, C. WATANABE & T. INOUE).

Gen. Distr.: Europe; Saghalien.

Species of *Ascogaster* not included in the key

5. *Ascogaster atamiensis* ASHMEAD

Ascogaster atamiensis ASHMEAD, Proc. U. S. Nat. Mus., XXIII, p. 191, ♀ (1906); FAHRINGER, Opusc. bracon., Bd. III, p. 516 (1934).

The original description is too incomplete to include this species in the present key.

Habitat: Honshu (Atami, after ASHMEAD).

Gen. Distr.: Japan; China (Prov. Kiangfu, after FAHRINGER).

3. Genus *Sigalphus* LATREILLE

Sigalphus LATREILLE, Hist. Nat. Crust. Ins., III, p. 327 (1802).

Sphaeropyx ILLIGER, in ROSSI: Fauna Etrusca, Ed. 2a, II, p. 54 (1807).

Rhytigaster WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., IX, p. 247 (1835).

Genotype—*Sigalphus irrorator* (FABRICIUS)

Only a single species, *Sigalphus irrorator* (FABRICIUS), has been recognized in the palaearctic region. On this occasion the writer gives Japan as a new locality of this species.

I. **Sigalphus irrorator* (FABRICIUS)

Ichneumon irrorator FABRICIUS, Syst. ent., p. 340 (1775).

Cryptus irrorator FABRICIUS, Syst. Piez., p. 88 (1804).

Sigalphus irrorator LATREILLE, Hist. Nat. Crust. Insect., XIII, p. 189 (1805); FAHRINGER Opusc. bracon., Bd. III, p. 548, ♀ ♂ (1934).

Sphaeropyx irrorator ILLIGER, Magaz. Insect., VI, p. 192 (1807); MARSHALL, Trans. Ent. Soc. London, p. 150, ♀ ♂, Pl. V, fig. 3 (1885); id., Spec. Hymén. Europe, IV, p. 384, ♀ ♂, Pl. XIV, fig. 4 (1888); DALLA TORRE, Cat. Hymen., IV, p. 190 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 100 (1904).

Rhytigaster irrorator WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., IX, p. 248 (1835); THOMSON, Opusc. ent., p. 555 (1874).

Chelonus (*Rhytigaster*) *irrorator* RATZEBURG, Ichneum. d. Forstinsect., III, p. 25 (1852).

Hosts—*Acrionicta psi* LINNÉ, *Acrionicta tridens* SCHIFFERMILLER, and *Calophasia lunula* HUFNAGEL (after FAHRINGER, in Europe).

Habitat: Hokkaido (Sapporo, 1 ♀, 12. VI, 1934, Y. SUGIHARA); Honshu (Aomori, 1 ♀, non deta, S. MATSUMURA; Daisen, 1 ♀, 18. VIII, 1932, I. OKADA).

Gen. Distr.: Europe; West and North Asia; Japan.

4. Genus ***Phanerotoma*** WESMAEL

Phanerotoma WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., XI, p. 165 (1838).

Genotype—*Phanerotoma dentata* (PANZER)

Key to the Species

- 1. Abdomen oblong, rounded at the apex 2
- Abdomen lancet-shaped, sharply pointed at the apex, reddish yellow, with fuscous markings; antennae 23-jointed, fuscous at the apex; propodeum with a small tooth on both sides; 2nd suture sinuated; nervulus inserted at the basal third of the 1st discoidal cell; 1st abscissa of the radius shorter than the 2nd intercubitus, about one-fourth the length of the 2nd abscissa of the radius. Length, 6.5 mm. 3. *producta* sp. nov.
- 2. Nervulus inserted at the basal third of the 1st discoidal cell; body reddish yellow with or without fuscous markings; antennae reddish yellow, at the apex fuscous, 23-jointed; propodeum without a lateral tooth on both sides; 1st abscissa of the radius distinctly shorter than the 2nd; wings hyaline, the stigma brown, pale at the base. Length, 3-5 mm. 1. *planifrons* (NEES)
- Nervulus inserted at the middle of the 1st discoidal cell; body reddish yellow, without fuscous markings; antennae dark brown, 23-jointed; propodeum areolate medially, with a strong tooth on both sides; 2nd suture slightly sinuated; wings hyaline, slightly infuscate on the apical half; stigma dark brown; middle tibiae almost straight. Length, 7-9 mm. 2. *flava* ASHMEAD

I. ***Phanerotoma planifrons*** (NEES)

Sigalphus planifrons NEES, Magaz. Ges. Naturf. Fr. Berlin, VII, p. 259, Pl. IV, fig. 3 (1813).

Chelonus planifrons NEES, Hymen. Ichneum. affin. Monogr., I, p. 281 (1834); RATZEBURG, Ichneum. d. Forstinsect., III, p. 247, ♀ ♂ (1852).

Phanerotoma planifrons MARSHALL, Spec. Hymén. Europe, IV, p. 381, ♀ ♂ (1889); KOKUJEW, Horae Soc. Ent. Russ., XXIX, p. 92, ♀ ♂ (1895); DALLA TORRE, Cat. Hymen., IV, p. 192 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 101 (1904); LYLE, Entomologist, LVII, p. 102, fig. 2 (1924); FAHRINGER, Opusc. bracon., Bd. III, p. 573, ♀ ♂ (1934).

Chelonus diversus WALKER, C st. ent., I, p. 308, ♂ (1874); SZÉPLIGETI, Gen. Insect., 22-24, p. 94 (1904) (syn. nov.)

Phanerotoma diversus MORLEY, Entomologist, XLVI, p. 134 (1913); MATSUMURA, Konchu Bunrui Gaku, II, p. 269. Pl. V, fig. 27 (1915); id., 6000 Ill. Insect. Japan-Empire, p. 74, fig. 408 (1931); FAHRINGER, Opusc. bracon., Bd. III, p. 581 (1934).

Phanerotoma flavida ENDERLEIN, Ent. Mitt., I, p. 259, ♀ ♂ (1912); SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 80 (1932); WATANABE, Ins. Mats., VIII, p. 198, ♀ ♂ (1934) (syn. nov.)

Phanerotoma flavida ENDERLEIN, ab. *brevisecta* ENDERLEIN, Ent. Mitt., I, p. 260, ♀ ♂ (1912); SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 81 (1932) (syn. nov.)

Phanerotoma bicolor SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 81, ♀ (1932); WATANABE, Ins. Mats., VIII, p. 198, ♂ (1934) (syn. nov.)

Phanerotoma grapholithae MUESEBECK, Proc. Ent. Soc. Washing., XXV, p. 50, ♀ ♂ (1933) (syn. nov.)

Phanerotoma formosana ROHWER, Proc. Ent. Soc. Washing., XXXVI, p. 45, ♂ (1934) (syn. nov.)

Examining a large number of the present specimens, the writer has become convinced that *P. diversus* (WALKER) and *P. grapholithae* MUESEBECK from Japan, *P. flavida* ENDERLEIN, *P. bicolor* SONAN, and *P. formosana* ROHWER from Formosa should be combined with *P. planifrons* (NEES); indeed, the characters used for differentiation of species by the above authors are very unstable, merely being based on colour.

Hosts—*Grapholitha strobilella* LINNÉ and *Hyphantidium* (*Cacaremma*) *terebella* ZINCKEN (after FAHRINGER, in Europe); *Grapholitha molesta* BUSCK (after MUESEBECK, in Japan and Korea); *Glyphodes pyloalis* WALKER (after ROHWER, in Formosa).

Habitat: Hokkaido (Kanayama, 1 ♀, 5. VIII, 1931, C. WATANABE; Jōzankei, 1 ♀, 15. IX, 1911, S. MATSUMURA; Sapporo, 4 ♀ ♀, 1 ♂, 1. VIII, 1903, S. MATSUMURA, 5 ♀ ♀, 1 ♂, 25. VII, 1932, C. WATANABE); Honshu (Takatsu, Kanagawa-ken, after MUESEBECK; Tokyo, 1 ♂, VII, 1916, S. MATSUMURA; Tomioka, Kanagawa-ken, 1 ♀, 7. VIII, 1933, T. SHIMIZU; Yoshinaga-mura, Shizuoka-ken, 2 ♀ ♀, 3 ♂ ♂, VII-VIII, 1928, C. WATANABE; Kyoto, 1 ♀, 1. VII, 1923, 1 ♂, 25. IX, 1923, 1 ♂, 20. VI, 1924, 1 ♀, 20. VII, 1925, 1 ♀, 27. VIII, 1925, K. TAKEUCHI; Hanazono, Kyoto-fu, 1 ♀, 10. IX, 1922, M. SUZUKI; Takasago, 3 ♀ ♀, 6 ♂ ♂, non deta, S. MATSUMURA); Korea (Suigen, 1 ♀, 1925, K. SATO); Formosa (Anping, Takao, and Yentempo, after ENDERLEIN; Tainan, Takezaki, Taito, Koshun, Arisan, Kanshirei, and Kōtoshō, after SONAN; Taihoku, after ROHWER; Tainan and Anping, after WATANABE).

Gen. Distr.: Europe; West and Central Asia; Siberia; North Africa; Ceylon; Japan; Korea; Formosa.

2. *Phanerotoma flava* ASHMEAD

Phanerotoma flava ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 191, ♀ (1906); ISHII, Nip. Kor. Zukan, p. 379, fig. 739 (1932); WATANABE, Ins. Mats., VIII, p. 198, ♂ (1934); FAHRINGER, Opusc. bracon., Bd. III, p. 562, ♀ (1934); CHU, 1934 Year Book, Bureau Ent. Hangchow, p. 20 (1935).

Phanerotoma taiwana SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 81, ♀ ♂ (1932).

Habitat: Honshu (Tokyo, 1 ♀, 27. VIII, 1913, S. HIRAYAMA; Yoko-

hama, 1 ♂, VII, 1928, S. MINOWA); Shikoku (Kôchi, 2 ♂ ♂, 25. VII, 1930, Y. SUGIHARA; Umaji, Kôchi-ken, 1 ♀, 9. IX, 1934, H. WADA; Iyo, 1 ♂, non deta, ARAKAWA); Kiushu (Kumamoto, 1 ♀, 1 ♂, 15. VII, 1907, H. KAWAMURA); Okinawa (Naha, after SONAN); Korea (Onseiri, 1 ♂, 25. VII, 1924, T. UCHIDA); Formosa (Nanto and Taihoku, after SONAN; Koshun, after WATANABE; Taihoku, 1 ♂, 20. IV, 1922, K. TAKEUCHI; 1 ♀, 18. VI, 1925, S. MATSUMURA, 1 ♂, 11. VII, 1925, T. YOSHIDA, 1 ♂, 20. VIII, 1926, J. SONAN; Horisha, 1 ♂, 5. V, 1922, K. TAKEUCHI).

Gen. Distr.: Japan; Korea; Formosa; China (Hangchow, after CHU).

3. *Phanerotoma producta* sp. nov. (Pl. V, Fig. 13)

♂. Reddish yellow; antennae at the apex weakly fuscous; stemmaticum and tips of the mandibles dark brown; mesonotum, propodeum, and abdomen possessing fuscous markings; apical third of the hind tibiae fuscous. Length, 6.5 mm.

Head subquadrate, reticulate-rugose; occiput strongly curved inwardly; clypeus smooth and shining, with hair-punctures, the apical margin rounded, with three teeth at the middle; frons shallowly excavated, irregularly striate-rugose; antennae a little shorter than the body, slender, not dilated at the middle, 23-jointed. Thorax slightly granulate, with scattered hair-punctures; parapsidal furrows fine; mesopleural furrows strongly marked, smooth and shining; propodeum strongly reticulate-rugose, with a transverse carina at the middle, and with a small tooth on both sides. Radius inserted at the apical fourth of the stigma; 1st abscissa of the radius about one-fourth the length of the 2nd; 3rd abscissa of the radius slightly curved inwardly; 2nd cubital cell strongly narrowed towards the apex; 1st intercubitus curved, the 2nd straight, decoloured, a little longer than the 1st abscissa of the radius; recurrent nervure interstitial; nervulus postfurcal, inserted at the basal third of the 1st discoidal cell; radius of the hind wing weakly marked, petiolate. Middle tibiae slender, not dilated being almost straight. Abdomen strongly depressed, lancet-shaped, strongly converging towards the apex; 1st tergite longer than the 2nd, with two basal convergent carinae extending beyond the middle of the tergite; 3rd tergite almost 2 times as long as the 2nd, sharpened at the apex; all tergites longitudinally striate-rugose; 1st suture crenulate and straight, and the 2nd crenulate, sinuated at the middle.

♀. Essentially as in the male, except that the abdomen is slenderer and more strongly sharpened at the apex. Length, 6.5 mm.

Holotype (♂): Tateyama, 11. VIII, 1905, S. MATSUMURA. **Allotype**

(♀): Sapporo, 28. VII, 1915, S. MATSUMURA. **Paratypes:** 1 ♂, Tateyama, 11. VIII, 1905, S. MATSUMURA; 1 ♀, Tokyo, 27. VIII, 1913, S. HIRAYAMA; 1 ♂, Kagoshima, 10, VIII, 1903.

Habitat: Hokkaido (Sapporo); Honshu (Tateyama, Tokio); Kiushu (Kagoshima).

Remarks—*Phanerotoma acuminata* SZÉPLIGETI¹⁾ from Hungary resembles the present species in the structure of the abdomen, but that original description is too incomplete to allow a comparison with the present species.

Appendix

Phanerotoma dentata (PANZER)

Chelonus dentatus PANZER, Fauna Insect. German., VIII, p. 88 (1805).

Phanerotoma dentata FAHRINGER, Opusc. bracon., Bd. III, p. 564, ♀ ♂ (1934).

FAHRINGER gives Japan and Korea as localities of this species, without indicating any definite habitats. The writer has not yet seen any representatives of this species.

III. Subfamily **AGATHIINAE**

Agathidides MARSHALL, Trans. Ent. Soc. London, p. 261 (1885).

Agathiinae FAHRINGER, Opusc. bracon., Bd. I, p. 20 (1925).

Braconinae MUESEBECK, Proc. U. S. Nat. Mus., LXIX, p. 2 (1927).

The narrow radial cell of the fore wing, the small 2nd cubital cell, and the inmarginated occiput readily distinguish this subfamily.

Most of the species falling in this group seem parasitic on the larvae of *Lepidoptera* and *Coleoptera*, although nothing is known regarding the host-relationships of most of the present species. Seven genera occur in this country.

Key to the Genera

1. First cubital cell confluent with the 1st discoidal cell 2
- First cubital cell completely separated from the 1st discoidal cell; 2nd cubital cell quadrate or subquadrate, broadly sessile; parapsidal furrows obsolete; tarsal claws with a large tooth at the base 1. *Earinus* WESMAEL
2. Tarsal claws—at least those of the anterior legs—distinctly cleft 3
- Tarsal claws simple or with a broad tooth at the base; ovipositor always elongate... 5
3. Frontal depression margined 4
- Frontal depression not margined; face normal, not rostriform; 2nd cubital cell quadrate; all tarsal claws cleft; ovipositor very short 2. *Euagathis* SZÉPLIGETI
4. Face elongate, rostriform; 2nd cubital cell quadrate, without a stump of vein; claws of

1) Ann. Mus. Nat. Hung., VI, p. 410, ♀ (1908).

- the four anterior legs cleft, and those of the hind tarsi with a broad tooth; ovipositor long
 3. *Cremnops* FÖRSTER
- Face normal; 2nd cubital cell quadrate, with a stump of vein; claws of the hind tarsi
 simple; ovipositor very short 4. *Disophrys* FÖRSTER
5. Second cubital cell quadrate, with a stump of vein; abdomen slender, the 2nd and 3rd
 tergites with a straight transverse impression; all tarsal claws always with a broad tooth
 6
- Second cubital cell petiolate, triangular, rarely quadrate, without a stump of vein; abdomen
 stout, the 2nd tergite with a curved transverse impression, the 3rd without an impression,
 rarely with a straight one; tarsal claws simple, sometimes with broad tooth... .. 7
6. Parapsidal furrows obsolete 5. *Laccogathis* WATANABE
- Parapsidal furrows distinctly indicated 6. *Braunsia* KRIECHBAUMER
7. Face elongate, rostriform *Agathis* LATREILLE¹⁾
- Face normal, not rostriform 7. *Microdus* NEES

1. Genus *Earinus* WESMAEL

Earinus WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., X, p. 8 (1837).

Diatmetus FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 246 (1862).

Genotype—*Earinus gloriatorius* (PANZER)

1. *Earinus jezoensis* sp. nov. (Pl. V, Fig. 1)

♀. Black; mandibles, palpi, and tegulae reddish yellow; legs yellowish red, the hind coxae black, the hind tibiae yellowish white, apically black, the hind tarsi fuscous; wings hyaline, the stigma and veins yellowish brown. Length, 6 mm.

Head transverse, smooth and shining, with scattered white hairs; face densely pubescent, with a median flat tooth between the insertion of the antennae, and with a short median furrow; clypeal foveae large; antennae as long as the body, 38-jointed. Thorax smooth and shining, pubescent; parapsidal and mesopleural furrows obsolete; propodeum coarsely punctate-rugose, with two median carinae, the median area surrounded by the carina, shallowly depressed. Radial cell slender, longer than the stigma; 2nd abscissa of the radius a little shorter than the 1st; 2nd cubital cell subquadrate; recurrent nervure inserted in the 1st cubital cell, the apical portion of the 1st abscissa of the cubitus as long as the 2nd; nervulus slightly postfurcal; radius of the hind wing nearly parallel with the fore margin; a decoloured longitudinal vein branched from the middle of the nervulus in the discoidal cell; tarsal claws with a broad tooth at the base. Abdomen as long as the head and thorax united; 1st tergite 2 times as long as broad at the apex, gradually narrowed towards the base, with two

1) No species of this genus has yet been represented in the present fauna.

longitudinal carinae; 2nd and 3rd tergites transverse, with a curved transverse impression; two basal tergites weakly striate-rugose longitudinally, the rest smooth and shining; ovipositor a little shorter than the thorax and abdomen united, 4 mm.

♂. Differs from the female in the following points:—

Coxae yellowish red with fuscous markings; antennae slenderer, 38-jointed; carination of the propodeum more distinctly marked; 2nd cubital cell distinctly quadrate. Length, 5.5 mm.

Holotype (♀): Shikaribetsu-ko, Hokkaido, 29. VII, 1931, C. WATANABE. **Allotype** (♂): Nopporo, Hokkaido, 23. V, 1929, T. UCHIDA.

Habitat: Hokkaido (Shikaribetsu-ko and Nopporo).

Remarks—This species is closely related to *E. transversus* LYLE¹⁾ from Britain, but is distinguished from the latter by the longer ovipositor and by the entirely smooth and shining 3rd tergite.

2. Genus *Euagathis* SZÉPLIGETI

Euagathis, SZÉPLIGETI, Term. Füz., XXIII, p. 62 (1900), XXV, p. 66 (1902).

Genotype—*Euagathis bifasciata* SZÉPLIGETI

1. *Euagathis japonica* SZÉPLIGETI

Euagathis japonica SZÉPLIGETI, Term. Füz., XXV, p. 68, ♀ (1902); id., Gen. Insect., 22-24, p. 123 (1904); ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 171 (1920).

This species was recorded from Japan by SZÉPLIGETI without indicating any definite habitat. The present writer has not yet seen any representative of this species.

Habitat—Japan (after SZÉPLIGETI).

2. *Euagathis formosana* ENDERLEIN

Euagathis formosana ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 178, ♀ (1920); WATANABE, Ins. Mats., VIII, p. 199, ♀ ♂ (1934).

Euagathis formosana var. *obscurior* ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 179, ♂ (1920).

According to ENDERLEIN this species is differentiated from *E. japonica* SZÉPLIGETI by the colouration of the hind tibiae and by the structure of the 1st tergite. These characters, however, seem to be of less than specific value: in a series of the present specimens from Formosa the hind tibiae are not always entirely black, but often possess a yellowish ring at the base, and the longitudinal median furrow of the 1st tergite is sometimes weakly developed, not always being obsolete. Consequently it appears that

1) Entomologist, LIII, p. 249, ♀ (1920).

E. formosana may be identified with *E. japonica*, but these will be kept as distinct species until most of the congeneric species are fully characterized.

Habitat: Formosa (Takao and Korroton, after ENDERLEIN; Taihorin, Kosempo, and Koshun, after WATANABE; Gyochi, 2 ♀ ♀, 11. VI, 1908, S. MATSUMURA; Kusukusu, 1 ♀, 20. IV, 1928, J. SONAN; Rikiriki, 1 ♀, 20. III, 1924, N. TAKEDA; Horisha, 1 ♀, 28. VII, 1928, C. WATANABE; Rimogan, 1 ♀, 22. VII, 1928, C. WATANABE).

Gen. Distr.: Formosa.

3. Genus *Cretnops* FÖRSTER

Cretnops FÖRSTER, Verh. Nat. Ver. Preuss. Rheinl., XIX, p. 246 (1862).

Bracon VIERECK, U. S. Nat. Mus., Bull. 83, p. 23 (1914); MORRISON, Proc. U. S. Nat. Mus., LII, p. 307 (1917); MUESEBECK, Proc. U. S. Nat. Mus., LXIX, p. 9 (1927).

Genotype—*Cretnops desertor* (LINNÉ)

I. *Cretnops atricornis* (SMITH)

Agathis atricornis SMITH, Trans. Ent. Soc. London, p. 398, ♀ (1874); DALLA TORRE, Cat. Hymen., IV, p. 138 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 126 (1904).

Cretnops alternans ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 185, ♀ ♂ (1920); WATANABE, Ins. Mats., VIII, p. 199, ♀ ♂ (1934) (syn. nov.)

Examining a great number of the present specimens, the writer has become convinced that *C. alternans* ENDERLEIN should be combined with *C. atricornis* (SMITH): indeed, except for the colour of the head, there is no specific difference between them. Based on the colouration of the body, the present representatives are divided into the following three groups:—

Group I. The head is yellowish red, without fuscous markings. The representatives apparently agree with the description of *alternans* ENDERLEIN, being found in the southern part of this country.

Habitat: Formosa (Takao and Taihorin, after ENDERLEIN; Taihorin, Paroe, Pilam, Kosempo, and Koshun, after WATANABE; Koshun, 1 ♀, 2 ♂ ♂, 8. VII, 1906, S. MATSUMURA, 1 ♀, 25. IV, 1922, K. TAKEUCHI; Kanshirei, 2 ♂ ♂, 20. XI, 1926, J. SONAN; Rokki, 1 ♂, 21. IX, 1927, J. SONAN; Tamaho, 1 ♀, 11. VII, 1925, T. UCHIDA; Horisha, 1 ♀, 30. IV, 1907, S. MATSUMURA; Arisan, 1 ♀, 9. V, 1922, K. TAKEUCHI; Urai, 1 ♀, 18. X, 1925, J. SONAN; Riukiu Islands (Yayeyama, 2 ♀ ♀, 5 ♂ ♂, 1909, S. SAKAGUCHI; Okinawa, 2 ♀ ♀, 3 ♂ ♂, 1911, S. SAKAGUCHI); Korea (Suigen, 1 ♂, 1925, K. SATO; Kaya-san, 1 ♀, 2 ♂ ♂, IX, 1926, HASEGAWA; Gyokusenji, 1 ♀, 21. VI, 1926, HASEGAWA).

Group II. The head is mostly yellowish red, with the vertex black. The representatives agree with the description of *atricornis* SMITH, being

found in the central part of this country.

Habitat: Kiushu (Yufu, 1 ♂, 7. VIII, 1928, K. TAKEUCHI; Moji, 1 ♂, 24. VI, 1929, M. YAMANAKA; Miyazaki, 1 ♂, 27. VII, 1929, M. YAMANAKA; Hirao, 1 ♂, 22. X, 1931, FUJINO & HASHIMOTO); Shikoku (Iyo, 2 ♀ ♀, 1 ♂, 17. VII, 1916, S. MATSUMURA; Kôchi, 1 ♂, 22. V, 1933, 1 ♂, 17. VIII, 1933, Y. SUGIHARA; Hôngawa, 2 ♂ ♂, VI, 1932, H. WADA; Hirooka, 1 ♀, 3 ♂ ♂, 1. IX, 1934, H. OKAMOTO); Honshu (Tajima, 1 ♂, 8. VIII, 1932, I. OKADA; Kobe, 1 ♂, 23. VII, 1928, M. YAMANAKA; Mino, 1 ♀, 20. IX, 1931, I. SUGITANI; Nara, 1 ♂, 1927, S. SAKAGUCHI; Wakayama, 1 ♀, 4 ♂ ♂, 1927, F. WADA; Sanjodake, 1 ♂, 8. VII, 1913, S. ISSIKI; Kibune, 1 ♀, 3 ♂ ♂, 8. IX, 1933, K. TAKEUCHI; Yoshinaga-mura, Shizuoka-ken, 1 ♀, 9. VI, 1923, C. WATANABE).

Group III. The head is entirely black, and the thorax is also black. The wings of the female are lighter than those of the other groups. The representatives are found in the alpine region of Honshu and in the northern part of Japan.

Habitat: Honshu (Mt. Koma, 1 ♀, 15. VIII, 1924, K. TAKEUCHI; Iwate-ken, 1 ♀, 1 ♂, non deta, OGASAWARA; Bantai-san, 1 ♂, 4. VII, 1927, S. MATSUMURA; Azuma-yama, 1 ♂, 3. VII, 1931, S. KATO; Namita, Nagano-ken, 1 ♀, 30. VI, 1933, KUBO; Towada, 1 ♀, VII, 1905, S. MATSUMURA); Hokkaido (Sapporo, 1 ♀, 15. IX, 1929, C. WATANABE).

Gen. Distr.: Japan; Korea; Formosa.

Remarks—SZÉPLIGETI¹⁾ gave Java as a habitat of *C. atricornis* (SMITH), but ENDERLEIN²⁾ treated that specimen (♀) as the female of *C. persimilis* SZÉPLIGETI. *C. desertor* (LINNÉ) from Europe, *C. persimilis* SZÉPLIGETI from Java, *C. lemniscatus* ENDERLEIN and *C. posticeniger* ENDERLEIN from Sumatra, are closely related to the present species.

4. Genus *Disophrys* FÖRSTER

Disophrys FÖRSTER, Verh. Nat. Ver. Preuss. Rheinl., XIX, p. 246 (1862).

Pseudagathis KRIECHBAUMER, Berlin. Ent. Zeitschr., XXXIX, p. 65 (1894).

Genotype—*Disophrys inculcator* (LINNÉ)

ENDERLEIN (57) gave Formosa as a habitat of *Disophrys concolor* SZÉPLIGETI and *D. erythrocephala* CAMERON. No representatives of these species, however, have yet been seen by the writer, so the following key is based upon these original descriptions and ENDERLEIN's notes.

1) Notes Leyden Mus., XXIX, p. 228 (1908).

2) Arch. Naturgesch., 84 A, Heft 11, p. 184 (1920).

Key to the Species

1. Yellowish red; antennae and hind tibiae at the apex black; hind tarsi brown; wings hyaline; stigma and veins brown, with the former on the basal half yellow; parapsidal furrows weakly crenulate; mesopleural furrows with 15 or 16 short transverse carinae. Length, 7 mm. I. *concolor* SZÉPLIGETI
2. Black; head, pro- and mesothorax, four anterior legs except the middle coxae, and hind trochanters reddish brown; wings infuscate, the stigma and veins black; parapsidal furrows with 6 strong transverse carinae; mesopleural furrows with 9 to 14 long, strong, transverse carinae. Length, 10 mm. 2. *erythrocephala* CAMERON

1. ***Disophrys concolor* SZÉPLIGETI**

Disophrys concolor SZÉPLIGETI, Notes Leyden Mus., XXIX, p. 229, ♀ ♂ (1908); ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 189, ♂ (1920).

Habitat: Formosa (Takao, after ENDERLEIN).

Gen. Distr.: Java; Ceylon; Formosa.

2. ***Disophrys erythrocephala* CAMERON**

Disophrys erythrocephala CAMERON, Mem. Manch. Philoso. Soc., XLIV, p. 91, ♂ (1900); SZÉPLIGETI, Gen. Insect. 22-24, p. 124 (1904); ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 189, ♂ (1920).

Habitat: Formosa (Takao, after ENDERLEIN).

Gen. Distr.: India; Formosa.

5. Genus ***Laccagathis* WATANABE**

Laccagathis WATANABE, Ins. Mats., VIII, p. 121 (1934).

Genotype—*Laccagathis formosana* WATANABE

This genus was erected by the writer for the reception of three species, *Laccagathis formosana*, *L. japonica*, and *L. mindanaensis*. It comes nearest to *Braunsia* KRIECHBAUMER, from which it is differentiated by the absence of the parapsidal furrows.

Key to the Species

♀ ♀

1. Abdomen black dorsally, with yellowish markings; hind legs reddish yellow; 2nd abscissa of the radius very short; 2nd intercubitus just received in the junction of the radius and 1st intercubitus; median area of the propodeum without transverse carinae; areas between the longitudinal carinae on the basal half of the 1st tergite smooth and shining. Length, 14 mm. 1. *formosana* WATANABE
2. Abdomen dorsally and hind legs black; 2nd abscissa of the radius about half the length of the 1st; median area of the propodeum with two short transverse carinae; areas between the longitudinal carinae on the basal half of the 1st tergite obliquely striate. Length, 11 mm. 2. *japonica* WATANABE

1. *Laccagathis formosana* WATANABE*Laccagathis formosana* WATANABE, Ins. Mats., VIII, p. 121, ♀, fig. 2 (1934).

Habitat: Formosa (Heirinbi, after WATANABE).

Gen. Distr.: Formosa.

2. *Laccagathis japonica* WATANABE*Laccagathis japonica* WATANABE, Ins. Mats., VIII, p. 123, ♀ (1934).

Habitat: Honshu (Gifu, after WATANABE).

Gen. Distr.: Japan.

6. Genus *Braunsia* KRIECHBAUMER*Braunsia* KRIECHBAUMER, Berlin. Ent. Zeitschr., XXXIX, p. 63 (1894).Genotype — (*Braunsia bicolor* KRIECHBAUMER)= *Braunsia bilunata* ENDERLEIN

Key to the Species

1. Second cubital cell subtriangular; median area of the propodeum well developed; apical half of the 1st tergite longitudinally striate; ovipositor as long as the propodeum and abdomen united 2
- Second cubital cell rectangular; median area of the propodeum obsolete; 1st tergite smooth and shining; ovipositor longer than the body; ground colour reddish brown; wings yellowish hyaline, without black markings; nervulus postfurcal; mesopleural furrows smooth and shining. Length, 10-11 mm. 1. *postfurcalis* sp. nov.
2. Fore wing with a black band; ground colour yellowish red; mesopleural furrows smooth and shining; nervulus postfurcal; antennae black except the two basal joints. Length, 9-13 mm. 2. *matsumurai* sp. nov.
- Fore wing without a black band; head and thorax black; abdomen and legs yellowish red; mesopleural furrows crenulate; nervulus antefurcal; antennae yellowish brown. Length, 7-10 mm. 3. *antefurcalis* sp. nov.

1. *Braunsia postfurcalis* sp. nov.

♀. Reddish brown; mesonotum somewhat fuscous; four anterior legs yellowish; wings flavohyaline, apically somewhat infusate, the stigma and veins brownish yellow; ovipositor-sheath black. Length, 11 mm.

Head transverse, smooth and shining, pubescent; frontal depression broad and deep; antennae slender, longer than the body, 48-jointed. Thorax smooth and shining, pubescent; parapsidal furrows deep, smooth and shining; scutellum of the mesonotum anteriorly marked by a deep fovea; mesopleural discal furrows smooth and shining; propodeum smooth and shining, rugose near the anterior margin, with a short median carina at the base; spiracles oblong. Radial cell a little longer than the stigma; 2nd abscissa of the radius shorter than the 1st; 2nd cubital cell rectangular, with a stump

of vein inserted at the upper third of the 2nd intercubitus; nervulus postfurcal, curved outwardly. Claws of the tarsi with a broad tooth. Abdomen long and slender; 1st tergite subpetiolate, more than 4 times as long as broad at the apex, smooth and shining, with a longitudinal carina on each side; 2nd and 3rd tergites quadrate, the four divisions equal in length, the three basal divisions weakly striate longitudinally, the last one smooth and shining; ovipositor longer than the body, 13 mm.

♂. Closely resembles the female in general structure and colour, but the antennae are 46-jointed and the abdomen is slenderer than in the female. Length, 10 mm.

Holotype (♀): Sapporo, 3. VIII, 1929, K. IGARASHI. **Allotype** (♂): Ikaho, 19. VII, 1927, K. TAKEUCHI. **Paratype**: 1 ♀, Hagi, 9. VIII, 1904, S. MATSUMURA.

Habitat: Hokkaido (Sapporo); Honshu (Ikaho and Hagi).

2. ***Braunsia matsumurai*** sp. nov. (Pl. III, Fig. 4)

♀. Yellowish red; antennae except the two basal joints dark brown; abdomen sometimes fuscous dorsally; wings flavohyaline, the apical third slightly infuscate, a fuscous band runs outwards from the parastigma; stigma and veins yellowish red, the parastigma black; four anterior legs reddish yellow; hind legs yellowish brown, the tibiae and tarsi somewhat fuscous; ovipositor-sheath black. Length, 12-13 mm.

Head transverse, smooth and shining; frontal depression deep, with a short ridge between the antennae; antennae as long as the body, 45 or 46-jointed, the scapus stout, shorter than the 1st joint of the flagellum. Thorax smooth and shining; parapsidal furrows deep, smooth and shining; scutellum of the mesonotum placed posterior to a deep fovea, in which five short carinae are developed; mesopleurae with a discal furrow in the middle; propodeum smooth and shining, with a longitudinal carina which is bifurcate at the junction of the costulae, the spiracles large, oblong. Radial cell as large as the stigma; 2nd abscissa of the radius very short, the 2nd cubital cell, therefore, subtriangular, with a short stump of vein; apical portion of the 1st abscissa of cubitus as long as the 2nd; nervulus slightly postfurcal; radial cell of the hind wing sessile. Abdomen long and slender; 1st tergite 3 times as long as broad at the apex, gradually narrowed towards the base, with a strong longitudinal carina on each side, the area between the carinae transversely striate; 2nd and 3rd tergites quadrate; basal division of the 2nd tergite longer than the apical one; both divisions of the 3rd tergite equal in length; basal half of the 1st tergite to the basal

division of the 3rd longitudinally striate, the rest smooth and shining; ovipositor as long as the propodeum and abdomen united, 9 mm.

♂. Differs from the female in the following points:—

Antennae slenderer, 45 or 46-jointed; wings more broadly infusate than in the female. Length, 9–10 mm.

Holotype (♀) and **Allotype** (♂): Tomioka, 20. VIII, 1933, T. SHIMIZU. **Paratypes**: 1 ♀, Muroran, 20. VIII, 1929, M. YAMANAKA; 1 ♂, Mt. Hakuba, 1. VII, 1932, K. TAKEUCHI; 1 ♂, Mt. Koma, 15. VIII, 1924, K. TAKEUCHI; 1 ♀, Gifu, 20. VIII, 1921, K. TAKEUCHI; 1 ♀, Oyeyama, 8. IX, 1928, M. KATO; 2 ♀ ♀, Kibune, 8. IX, 1933, K. TAKEUCHI; 1 ♂, Wakayama, 1927, F. WADA; 1 ♂, Kôchi, 24. IX, 1930, K. HASHIMOTO; 1 ♀, Kôchi, VI, 1932, H. WADA; 1 ♀, Kôchi, 17. VIII, 1933, Y. SUGIHARA; 1 ♂, Kumamoto, 2. IX, 1907, H. KAWAMURA; 1 ♀, Sobo-san, 7. IX, 1933, K. YASUMATSU; 1 ♀, Ushio, 20. VIII, 1925, K. TAKEUCHI.

Habitat: Hokkaido (Muroran); Honshu (Tomioka, Mt. Hakuba, Mt. Koma, Gifu, Oyeyama, Kibune, and Wakayama); Shikoku (Kôchi); Kiushu (Kumamoto, Sobo-san, and Ushio).

Remarks—This species is named in honour of Dr. S. MATSUMURA, Professor Emeritus of the Hokkaido Imperial University.

3. *Braunsia antefurcalis* sp. nov. (Pl. V, Fig. 2)

Head and thorax black; abdomen and legs yellowish red; antennae yellowish brown; palpi pale; wings subhyaline, the stigma and veins yellowish brown. Length, 7–8 mm.

Head transverse, smooth and shining, pubescent; frontal depression broad; antennae a little longer than the body, 44 to 46-jointed, the scapus stout, cylindrical, shorter than the 1st joint of the flagellum. Thorax smooth and shining, pubescent; parapsidal furrows smooth and shining; scutellum of the mesonotum anteriorly marked by four deep foveae which are separated by three carinae; mesopleural furrows crenulate; propodeum transversely striate-rugose, with a triangular median area surrounded with carinae, the spiracles oblong. Radial cell as long as the stigma; 2nd subscissa of the radius very short, the 2nd cubital cell, therefore, subtriangular; 2nd intercubitus bending at the upper third, from which a short stump of vein is branched; nervulus slightly antefurcal; radial cell of the hind wing petiolate. Abdomen long, slender; 1st tergite 4 times as long as broad at the apex, subpetiolate, longitudinally striate on the basal third, with a longitudinal carina on both sides; 2nd and 3rd tergites quadrate, the apical division of the both tergites shorter than the basal one; 2nd tergite and

the basal division of the 3rd longitudinally striate, the rest smooth and shining; ovipositor as long as the propodeum and abdomen united, 5-6 mm.

♂. Essentially as in the female, except that the antennae are slenderer, 46-jointed, the wings more infusate, the 1st tergite possessing a fuscous marking, and the apical division of the 3rd tergite and the following ones black. Length, 10 mm.

Holotype (♀): Yakushima, 9. IX, 1931, K. TAKEUCHI. **Allotype** (♂): Kajigamori, near Kôchi, 14. VI, 1931, Y. SUGIHARA. **Paratypes**: 1 ♀, Miyazaki, 15. V, 1907, M. KURISAKI; 1 ♀, Sapporo, 7. X, 1913, T. OKUNI.

Habitat: Kiushu (Yakushima and Miyazaki); Shikoku (Kôchi); Hokkaido (Sapporo).

Appendix

Braunsia smithii (DALLA TORRE)

Agathis flavipennis SMITH, Jour. Proc. Linn. Soc. Zool., VII, p. 12, ♀ (1863) (nec BRULLÉ¹⁾, 1846, from India).

Agathis smithii DALLA TORRE, Cat. Hymen., IV, p. 143 (1898).

Microdus flavipennis SZÉPLIGETI, Term. Füz., XXV, p. 74 & 75, ♀ (1902).

Braunsia flavipennis SZÉPLIGETI, Gen. Insect., 22-24, p. 130 (1904).

In 1902 SZÉPLIGETI gave Japan as a habitat of this species, of which the type-locality is Ceram. However, the writer would not include it in the present fauna, until it is more fully characterized.

7. Genus *Microdus* NEES

Microdus NEES, Magaz. Ges. Naturf. Fr. Berlin, VI, p. 184 (1812).

Eumicrodus FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 247 (1862).

Therophilus WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., X, p. 15 (1837).

Bassus VIERECK, U. S. Nat. Mus., Bull. 83, p. 20 (1914); MUESEBECK, Proc. U. S. Nat. Mus., XLIX, p. 22 (1927).

Genotype — *Microdus calculator* (FABRICIUS)

This group is treated by some American specialists under the name of *Bassus*, on the other hand that name is used for a genus of *Ichneumonidae* by authors of Europe and Japan; in order to avoid confusion the writer is much inclined to the opinion that this group should be treated under the name of *Microdus*.

1) Hist. Nat. Insect. Hymén., IV, p. 484, ♂ (1846).

Key to the Species

1. Second cubital cell large, triangular, subpetiolate 2
- Second cubital cell very small, circular, distinctly petiolate; 1st tergite longitudinally striate-rugose; basal half of the hind tibiae white; antennae 28-jointed; ovipositor a little shorter than the abdomen. Length, 3.5-5 mm. 1. *rudimentarius* ENDERLEIN
2. Abdomen, at least the 1st tergite, longitudinally striate-rugose basally 3
- Abdomen smooth and shining; legs with the coxae yellowish red; hind tibiae pale yellow, apically fuscous; hind tarsi black; antennae 38-jointed (♀); ovipositor longer than the body. Length, 6 mm. 2. *aino* sp. nov.
3. Two basal tergites striate-rugose 4
- First tergite weakly striate-rugose basally, the rest smooth and shining; frontal depression deep, with a plate between the antennae; wings apically infuscate; hind legs black, their tibiae with a white ring at the base; prothorax and mesonotum scarlet-red or black; ovipositor as long as the propodeum and abdomen united. Length, 9-10 mm. 3. *cancellatus* ENDERLEIN (= *sauteri* WATANABE)
4. Head and thorax scarlet-red; 3rd tergite smooth and shining, without a transverse impression 5
- Head and thorax black; 3rd tergite striate-rugose basally, with a straight transverse impression 6
5. Second tergite with a broad white band at the base, the basal area weakly rugose, but not striate; antennae 33 to 35-jointed; spiracles of the propodeum small; ovipositor a little shorter than the thorax and abdomen united. Length, 5.5-7 mm. 4. *albifuscatus* WATANABE
- Second tergite black, the basal area striate-rugose; antennae 40 to 42-jointed; spiracles of the propodeum large; ovipositor as long as the thorax and abdomen united. Length, 6-7 mm. 5. *formosanus* WATANABE
6. Third tergite with a strong transverse impression; legs reddish yellow; hind coxae sometimes fuscous basally; hind tibiae whitish, apically fuscous; hind tarsi black; antennae 32 to 34-jointed; propodeum weakly reticulate-rugose, with a short median carina at the base; ovipositor as long as the thorax and abdomen united. Length, 4-4.5 mm. 6. *rufipes* NEES
- Third tergite with a weak transverse impression; four anterior legs, except the coxae brownish yellow; hind legs black with some brownish markings; antennae 31-jointed; propodeum strongly reticulate-rugose, with a short median carina at the base; ovipositor as long as the thorax and abdomen united. Length, 4 mm. 7. *diversus* (MUESEBECK)

1. *Microdus rudimentarius* ENDERLEIN

Microdus rudimentarius ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 202, ♀ (1920); WATANABE Ins. Mats., VIII, p. 200, ♀ ♂ (1934).

Habitat: Formosa (Takao, after ENDERLEIN; Takao, Koshun, Pilam, after WATANABE); Kiushu (Sobo-san, 1 ♂, 20. VII, 1930, K. YASUMATSU).
Gen. Distr.: Formosa; Japan.

2. *Microdus aino* sp. nov. (Pl. V, Fig. 3)

♀. Black; palpi pale yellow; mandibles, tegulae, and legs yellowish red; hind tibiae whitish yellow, apically fuscous; hind tarsi black; wings

subhyaline, the stigma and veins yellowish brown; belly of the abdomen tinged with brown. Length, 6 mm.

Head transverse, smooth and shining, with scattered pubescence; frons with a median longitudinal furrow; antennal pits margined; antennae as long as the body, 38-jointed. Thorax smooth and shining, pubescent; parapsidal and mesopleural furrows crenulate; propodeum reticulate-rugose, with two carinae diverging in the middle and enclosing an ovate median area. Radial cell very narrow, as long as the stigma; 2nd cubital cell triangular, subpetiolate; nervulus postfurcal. Abdomen lancet-shaped, longer than the head and thorax united, entirely smooth and shining; 1st tergite 2 times as long as broad at the apex, narrowed towards the apex, without a carina; 2nd tergite cubital, with a curved transverse impression; 3rd and following tergites transverse; ovipositor longer than the body, 7 mm.

♂. Unknown.

Holotype (♀): Otaru, 18. VII, 1932, T. UCHIDA.

Habitat: Hokkaido (Otaru).

Remarks—This species comes nearest *Microdus tumidulus* NEES¹⁾ from Europe and Siberia, but differs from the latter in the structure of the 1st tergite and in the number of the antennal joints.

3. *Microdus cancellatus* ENDERLEIN

Microdus cancellatus ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 201, ♂ (1920); WATANABE, Ins. Mats., VIII, p. 120, ♂, & p. 199, ♀ ♂ (1934).

Microdus sauteri WATANABE, Ins. Mats., VIII, p. 200, ♀ ♂, fig. 6, a (1934) (syn. nov.)

In the course of the present study the writer has become convinced that *sauteri* should be identified with *cancellatus*: indeed, the former only differs from the latter in the colour of the prothorax and mesonotum.

Habitat: Formosa (Korroton, after ENDERLEIN; Koshun, after WATANABE).

Gen. Distr.: Formosa.

4. *Microdus albifasciatus* WATANABE

Microdus albifasciatus WATANABE, Ins. Mats., VIII, p. 201, ♀ ♂, fig. 6, b (1934).

Habitat: Formosa (Koshun, after WATANABE).

Gen. Distr.: Formosa.

5. *Microdus formosanus* WATANABE

Microdus formosanus WATANABE, Ins. Mats., VIII, p. 202, ♀ ♂, fig. 6, c (1934).

Habitat: Formosa (Koshun, after WATANABE; Taiheizan, 1 ♀, 26. VIII, 1923, J. SONAN; Kanshirei, 1 ♀, 22. IV, 1922, K. TAKEUCHI).

1) Magaz. Ges. Naturf. Fr. Berlin, VI, p. 189 (1812).

Gen. Distr: Formosa.

6. **Microdus rufipes* NEES

Microdus rufipes NEES, Magaz. Ges. Naturf. Fr. Berlin, VI, p. 189 (1812); id., Hymen. Ichneum. affn. Monogr., I, p. 146 (1834); RATZBURG, Ichneum. d. Forstinsect., II, p. 47, ♀ ♂ (1848), III, p. 45 (1852); REINHARD, Berlin. Ent. Zeitschr., XI, p. 353 & 356, ♀ ♂ (1867); MARSHALL, Trans. Ent. Soc. London, p. 275, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 587, ♀ ♂ (1890); DALLA TORRE, Cat. Hymen., IV, p. 135 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 131 (1904); id., Ann. Mus. Nat. Hung., VI, p. 422 (1908); LYLE, Entomologist, LIII, p. 227 (1920).

Agathis (Microdus) rufipes THOMSON, Opusc. ent., p. 2230, ♀ (1895).

Braunsia germanica ENDERLEIN, Zool. Jahrb. Syst., XX, p. 436 (1904).

Braunsia rufipes ENDERLEIN, 30. Ber. Westpreuss. Bot. Zool. Ver. Danzig, p. 118 (1907); id., Arch. Naturgesch., 84 A, Heft 11, p. 198 (1920).

On account of the 3rd tergite possessing a transverse impression this species was removed by ENDERLEIN into *Braunsia*, but it may be placed in *Microdus*, since the 2nd cubital cell is triangular and petiolate, without a stump of vein, and the transverse impression of the 2nd tergite is curved.

Hosts—*Pardia tripunctana* FABRICIUS, *Coleophora gryphipennella* BOUCHÉ, and *Tortrix variegana* HÜBNER (after MARSHALL and LYLE, in Europe).

Habitat: Honshu (Oyeyama, near Kyoto, 1 ♀, 8. IX, 1928, M. KATO).

Gen. Distr.: Europe; Japan.

7. *Microdus diversus* (MUESEBECK)

Bassus diversus MUESEBECK, Proc. Ent. Soc. Washing., XXXV, p. 48, ♀ (1933).

Host—*Grapholitha molesta* BUSCK (after MUESEBECK, in Japan).

Habitat: Honshu (Mitsuoka, Nagano-ken, after MUESEBECK).

Gen. Distr.: Japan.

IV. Subfamily *MICROTYPINAE*

Mimagathinae ENDERLEIN, Zool. Anz., XXVIII, p. 449 (1905).

Microtypinae SZÉPLIGETI, Ann. Mus. Nat. Hung., VI, p. 426 (1908).

Mimagathidini ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 162 (1920).

So far as the writer is concerned, *Mimagathis* ENDERLEIN and *Stantonia* ASHMEAD may be identified with *Microtypus* RATZBURG; *Mimagathinae* is, therefore, apparently to be a synonym of *Microtypinae*. Furthermore, an aberrant genus *Orgilus* HALIDAY is placed in this group by ENDERLEIN (57). The present writer is inclined to follow him.

Key to the Genera

- | | |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 1. Second intercubitus present; 2nd cubital cell triangular ... | I. <i>Microtypus</i> RATZBURG
(= <i>Stantonia</i> ASHMEAD)
(= <i>Mimagathis</i> ENDERLEIN) |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------|

- Second intercubitus obsolete 2. *Orgilus* HALIDAY

1. Genus *Microtypus* RATZEBURG

Microtypus RATZEBURG, Ichneum. d. Forstinsect., II, p. 47 (1848).

Stantonia ASHMEAD, Proc. U. S. Nat. Mus., XXVIII, p. 146 (1904).

Mimagathis ENDERLEIN, Zool. Anz., XXVIII, p. 450 (1905).

Genotype—*Microtypus wesmaelii* RATZEBURG

This genus containing as many as twenty species is widely distributed throughout the world. Former authors have taken somewhat divergent views about the position of this genus; at first RATZEBURG (140) placed it between *Microdus* and *Microgaster*, and then MARSHALL (102), DALLA TORRE (46), and SZÉPLIGETI (163) included it in their subfamily DIOSPILINAE, while ASHMEAD (3) treated it as a member of his tribe *Macrocentrini*. Nothing is known regarding the host-relationships of this genus. Three species occur in this country, one of which is new to science.

Key to the Species

- 1. Second intercubitus curved outwardly, but not bent; propodeum without a median longitudinal carina 2
- Second intercubitus bent at the upper third; propodeum with a median longitudinal carina; ovipositor as long as the abdomen; mesonotum black on the middle lobe, 2nd and 3rd tergites with black markings. Length, 5.5-6 mm. 1. *sauteri* WATANABE
- 2. Propodeum shining, with scattered fine punctures, and with some short transverse carinae at the middle; thorax and abdomen reddish yellow, without black markings; ovipositor as long as the thorax and abdomen united. Length, 6 mm. 2. *issikii* WATANABE
- Propodeum punctate-rugose, with some irregular transverse carinae at the middle; mesonotum, propodeum, and abdomen with black markings; ovipositor as long as the abdomen. Length, 6-7 mm. 3. *takeuchii* sp. nov.

1. *Microtypus sauteri* (WATANABE)

Stantonia sauteri WATANABE, Ins. Mats., VI, p. 188, ♀ ♂, fig. 3, b (1932), VIII, p. 203 (1934).

Habitat: Formosa (Koshun, after WATANABE).

Gen. Distr.: Formosa.

2. *Microtypus issikii* (WATANABE)

Stantonia issikii WATANABE, Ins. Mats., VI, p. 187, fig. 3, a (1932).

Habitat: Formosa (Kuraru, after WATANABE).

Gen. Distr.: Formosa.

3. *Microtypus takeuchii* sp. nov. (Pl. IV, Fig. 5)

♀. Reddish yellow; mandibles at the tips, stemmaticum, and three lobes of the mesonotum black; scapus at the outside and the apical third

of the antennae fuscous; propodeum with a black spot on both sides; legs reddish yellow; hind coxae at the apex, hind lower trochanters, hind femora at the apex, and 5th joint of all the tarsi black; hind tarsi except the 5th joint yellowish white; wings hyaline, the fore wing slightly infuscate apically; stigma and veins brown, the tegulae black; 1st tergite at the basal third and at the hind margin, the 2nd at the hind margin, the 3rd and 4th on the apical half black; ovipositor brownish red, the sheath black. Length, 6 mm.

Head strongly punctate, with yellowish pubescence; occiput margined laterally; antennae longer than the body, 51-jointed, the scapus truncate obliquely on the apical surface. Thorax finely punctate; parapsidal furrows deep, crenulate; scutellum of the mesonotum anteriorly bifoveate, the foveae separated by a sharp median carina; mesopleurae with a discal crenulate furrow; propodeum punctate-rugose, with irregular transverse carinae at the middle. Second intercubitus colourless, slightly curved outwardly, but not bent; 1st discoidal cell sessile; nervulus interstitial. Abdomen as long as the head and thorax united, finely coriaceous, with yellowish pubescence; 1st tergite as long as the 2nd and 3rd tergites united, the 2nd a little longer than the 3rd, the rest short, transverse; ovipositor a little shorter than the abdomen, 3 mm.

♂. Differs from the female in the following points:—

Black markings more eminent; frons with a black spot; mesopleurae on the lower third, scutellum of the mesonotum at the apex, propodeum on the apical third, and 4th to 6th tergites black; antennae longer than the body, 51-jointed. Length, 7 mm.

Holotype (♀): Kyoto, 20. IX, 1929, K. TAKEUCHI. **Allotype** (♂): Sobo-san, 26. V, 1932, K. TAKEUCHI.

Habitat: Honshu (Kyoto); Kiushu (Sobo-san).

2. Genus *Orgilus* HALIDAY

Orgilus HALIDAY, Ent. Magaz., III, p. 123 (1835).

Ischius WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., X, p. 20 (1837).

Macropalpus RATZEBRUG, Ichneum. d. Forstinsect., I, p. 56 (1844).

Genotype—*Orgilus obscurator* (NEES)

This genus had been placed in the subfamily *Agathiinae* by former authors. In 1900, ASHMEAD, however, transferred it to his tribe *Orgilini* under his subfamily *Blacinae*, while in 1920, ENDERLEIN included it in his tribe *Mimagathidini* under the *Agathiinae*. On account of the structure of the maxillary palpi, the margined occiput and also the shape of the

radial cell of the fore wing, it may be placed in the subfamily *Microtypinae*. Only a single species occurs in Japan.

1. ***Orgilus longiceps*** MUESEBECK

Orgilus longiceps MUESEBECK, Proc. Ent. Soc. Washing., XXXV, p. 52, ♀ ♂ (1933).

The writer has not yet seen any representatives of this species.

Host—*Grapholitha molesta* BUSCK (after MUESEBECK, in Honshu).

Habitat: Honshu (Togo, Shizuoka-ken, and Mito, Ibaragi-ken, after MUESEBECK).

Gen. Distr.: Japan.

V. Subfamily **NEONEURINAE**

Neoneurinae BENGTTSSON, Lunds. Univ. Arsskr. N. F. Avd., 2, XIV, No. 32, p. 46 (1918).

In 1918 BENGTTSSON erected this subfamily for the reception of *Neoneurus* HALIDAY and *Elasmosoma* RUTHE, both of which had been included by former authors in the subfamily *Microgasterinae*: indeed, this family differs from the latter in the structure of the palpi and of the tarsi as well as in the venation of the wings. The species belonging to this subfamily seem to be internal parasites of the larvae of *Formicidae*.

Elasmosoma is represented in the present fauna by only one species, while no species of *Neoneurus*, which contains only two species, *N. acutus* (THOMSON)¹⁾ (= *N. halidayi* MARSHALL)²⁾ and *N. viennensis* (GIRAUD)³⁾, have yet been found in Japan.

Key to the Genera

- 1. Radial cell complete, the radius distinct to the wing-margin; antennae 16-jointed (♀ ♂), a little shorter than the body; 2nd and 3rd tergites quadrate, as long as broad *Neoneurus* HALIDAY
- Radial cell incomplete, the last abscissa of the radius mostly obsolete; antennae 13-jointed (♀), 14-jointed (♂), shorter than the head and thorax united; 2nd and 3rd tergites transverse, much shorter than breadth *Elasmosoma* RUTHE

I. Genus ***Elasmosoma*** RUTHE

Elasmosoma RUTHE, Berlin. Ent. Zeitschr., II, p. 7 (1858).

Genotype—*Elasmosoma berlinense* RUTHE

Five species have been recognized, one—*E. berlinense* RUTHE—being

1) Opusc. ent., p. 2276, ♀ ♂ (1895) (as *Elasmosoma acuta*).

2) Spec. Hymén. Europe, V, Supplement, p. 199, Pl. IX, fig. 3 (1897).

3) Ann. Soc. Ent. France, Sér. 5, I, p. 305, ♀ ♂ (1871) (as *Elasmosoma viennense*).

found in Europe and Japan, and the others—*E. schwarzi* ASHMEAD, *E. pergandei* ASHMEAD, *E. vigilans* COCKERELL, and *E. bakeri* ASHMEAD,—in North America.

1. *Elasmosoma berlinense* RUTHE

Elasmosoma beroïnense RUTHE, Berlin. Ent. Zeitschr., II, p. 8, ♀ ♂, Pl. III, fig. 2, ♀ (1858); GIRAUD, Ann. Soc. Ent. France, Sér. 4, X, p. LVII, ♀ ♂ (1870), Sér. 5, I, p. 299, ♀ ♂ (1871); MARSHALL, Spec. Hymén. Europe, IV, p. 552, ♀ ♂ (1890), THOMSON, Opusc. ent., p. 2276, ♂ (1895); DALLA TORRE, Cat. Hymén., IV, p. 146 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 103 (1904); WATANABE, Ins. Mats., IX, p. 93, ♀, fig. 2 (1935); FAHRINGER, Opusc. bracon., Bd. IV, p. 7, ♀ ♂ (1935).

Elasmosoma sp. KARIYA, Insect World, Gifu, XXXVI, pp. 298-301, fig. 1 (1932).

Hosts—*Formica rufa* LINNÉ, *Formica pratensis* DE GEER, *Camponotus* spp. and *Lasius niger* LINNÉ (after FAHRINGER, in Europe), *Formica rufa japonica* MOTSCHULSKY (after WATANABE, in Japan).

Habitat: Honshu (Gifu and Kyoto, after WATANABE).

Gen. Distr: Europe; Japan.

VI. Subfamily *MICROGASTERINAE*

Microgasteroidae FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 244 (1862).

Microgasteriides MARSHALL, Trans. Ent. Soc. London, p. 151 (1885).

Microgasteridae MARSHALL, Spec. Hymén. Europe, IV, p. 387 (1888).

Microgasterinae DALLA TORRE, Cat. Hymén., IV, p. 146 (1898).

This is one of the largest and economically most important groups of the *Braconidae*. The large majority of the species are parasitic on the larvae of *Lepidoptera*. Some species are solitary, while many others are gregarious parasites, in the latter case sometimes as many as one hundred or more individuals issuing from a single host. The fine, various, silk cocoons spun by the larvae of the parasites are well-known objects and often of great assistance in determining the species.

Three common genera, *Microgaster* LATREILLE, *Microplitis* FÖRSTER, and *Apanteles* FÖRSTER, have been represented in this country, while no species of the aberrant genera, *Mirax* HALIDAY, *Acoelius* HALIDAY, *Dirrhope* FÖRSTER, and *Myriola* SCHESTAKOW, have been discovered.

Key to the Genera

1. Second cubital cell not confluent with the 3rd; 2nd intercubitus present 2
- Second cubital cell confluent with the 3rd; 2nd intercubitus entirely wanting
- 3. *Apanteles* FÖRSTER
2. Hind tibial spurs as long as or longer than half the length of the hind metatarsus ...
- 1. *Microgaster* LATREILLE

- Hind tibial spurs shorter than half the length of the hind metatarsus
- 2. *Microplitis* FÖRSTER

I. Genus *Microgaster* LATREILLE

- Microgaster* LATREILLE, Hist. Nat. Crust. Ins., III, p. 189 (1802).
- Microgaster (Hygroplitis)* THOMSON, Opusc. ent., p. 2244 (1895).
- Hygroplitis* DALLA TORRE, Cat. Hymen., IV, p. 157 (1898).
- Hyponicrogaster* ASHMEAD, Proc. U. S. Nat. Mus., XXIII, p. 132 (1900).
- Diolcogaster* ASHMEAD, Proc. U. S. Nat. Mus., XXIII, p. 132 (1900).
- Protomicroplitis* ASHMEAD, Proc. U. S. Nat. Mus., XXIII, p. 132 (1900).

Genotype—*Microgaster deprimator* (FABRICIUS)

So far as the writer is aware, three species, *M. russata* HALIDAY, *M. keuchingensis* WILKINSON, and *M. formosanus* MATSUMURA¹⁾ have been recorded from this country, but examining the type of *M. formosanus* MATSUMURA the writer has become convinced that it should be omitted from there: since it does not belong to the *Braconidae*, but may be probably a certain species of *Formicidae*. On this occasion five more species are added to the present fauna, two of which are new to science.

Key to the Species

1. First tergite slightly longer than breadth at the apex 2
- First tergite narrowed towards the apex, 2.5 times as long as broad at the apex, minutely punctate; 2nd tergite smooth and shining, with two oblique impressed lines; propodeum smooth, with a median carina; legs with the coxae reddish yellow; hind tibiae apically and hind tarsi black; ovipositor sheath as long as the hind tibia. Length, 3.5-4 mm. I. *takeuchii* sp. nov.
2. First tergite without a median longitudinal excavation; 2nd tergite without crenulate converging sulci; antennae long, filiform 3
- First tergite with a median longitudinal excavation; 2nd tergite with two crenulate converging sulci; abdomen almost smooth and shining; 2nd suture crenulate; antennae of the female short, submoniliform; ovipositor very short. Length, 2.5 mm. 2. *tomentosae* WILKINSON
3. Two basal tergites reticulate-rugose; 2nd tergite a little shorter than the 3rd 4
- Three basal tergites yellowish red, reticulate-rugose; 2nd tergite 2 times as long as the 3rd; legs with the hind coxae reddish yellow; hind tibiae apically and hind tarsi fuscous; ovipositor as long as two basal joints of the hind tarsus united. Length, 4.5-5 mm. 3. *russata* HALIDAY
4. Hind coxae and abdomen black; 2nd suture not crenulate; ovipositor as long as the hind tibia 5
- Hind coxae reddish yellow; abdomen dark brown, the 1st tergite yellowish; 2nd suture crenulate; ovipositor as long as the shorter hind tibial spur. Length, 4 mm. 4. *coenorynphae* sp. nov.

1) Schäd. u. Nützl. Ins. Zucker. Pflanz. Formosas, p. 51 & 84, ♀, pl. XXX, fig. 10 (1910); id., Mém. Soc. Ent. Belg., XVIII, p. 149, ♀ (1911).

5. Hind femora black 6
 - Hind femora yellowish red; wings subhyaline. Length, 4 mm. ...5. *globata* (LINNÉ)
 6. Wings subhyaline; hind tibiae dark brown to black, without a white ring. Length,
 4 mm. 6. *tibialis* NEES
 - Wings bifasciate; hind tibiae with a broad white ring at the base. Length, 4 mm. ...
 7. *kuchingensis* WILKINSON

1. ***Microgaster takeuchii*** sp. nov. (Pl. III, Fig. 2)

♀. Black; antennae reddish brown; mandibles, palpi, and tegulae yellow; legs with the coxae, 1st tergite laterally, and belly reddish yellow; hind tibiae on each end and hind tarsi fuscous; wings hyaline, somewhat infuscate apically; stigma and veins dark brown; ovipositor reddish yellow; sheath black, the base yellowish. Length, 4 mm.

Head minutely punctate, pubescent; face weakly reticulate-rugose, with a fine median longitudinal carina; posterior ocelli nearer to each other than to the eyes; antennae stout, shorter than the body. Mesonotum minutely punctate, but the scutellum nearly smooth and shining, pubescent; mesopleurae punctate anteriorly, otherwise smooth and shining; mesopleural furrows short, punctiform; propodeum smooth and shining, with a median longitudinal carina which is crenulate down the sides. First abscissa of the radius rather longer than the breadth of the stigma, slightly curved outwardly; 2nd cubital cell triangular; 2nd intercubitus as long as the 2nd abscissa of the cubitus; nervulus postfurcal, inserting at the apical third of the 1st discoidal cell. Hind coxae smooth and shining; hind tibial spurs unequal, the longer spur about two-thirds and the shorter one about one-third the length of the hind metatarsus. Abdomen shorter than the head and thorax united; plate of the 1st tergite narrowed towards the apex, 2.5 times as long as broad at the apex, minutely punctate, the apex truncate; 2nd tergite a little shorter than the 3rd, with two oblique impressed lines; 2nd and following tergites smooth and shining; ovipositor curved downwardly, the sheath as long as the hind tibia.

♂. Closely resembles the female, but the antennae are longer than the body and the hind coxae are black. Length, 3.5 mm.

Holotype (♀), **Allotype** (♂): Mino, 17. X, 1930, K. TAKEUCHI.
Paratypes: 1 ♀, Ushio, 20. IX, 1924, K. TAKEUCHI; 1 ♀, Kôchi, 30. IX, 1934, H. OKAMOTO.

Habitat: Honshu (Mino); Kiushu (Ushio); Shikoku (Kôchi).

Remarks—This species stands nearest to *M. flavipes* HALIDAY¹⁾, but

1) Ent. Magaz., II, p. 241, ♀ (1834).

is easily distinguished from the latter by the smooth 2nd tergite with two oblique impressed lines.

2. **Microgaster tomentosae* WILKINSON

Microgaster tomentosae WILKINSON, Bull. Ent. Res., XXI, p. 282, ♀, fig. 2 (1930).

The present representatives differ somewhat from the original description in colour:—

Hind coxae dark brown to black; hind tibiae and tarsi unicolourous; abdomen entirely black.

Habitat: Formosa (Taihoku, 5 ♀ ♀, 4. XI, 1928, S. AKASAKA).

Gen. Distr.: India; Formosa.

3. *Microgaster russata* HALIDAY

Microgaster russatus HALIDAY, Ent. Magaz., II, p. 237, ♀ ♂ (1834); RUTHE, Berlin. Ent. Zeitschr., IV, p. 109, ♀ ♂ (1860); REINHARD, Deutsch. Ent. Zeitschr., XXIV, p. 355 (1880); MARSHALL, Trans. Ent. Soc. London, p. 249, ♀ ♂, Pl. VI, fig. 1 (1885); id., Spec. Hymén. Europe, IV, p. 530, ♀ ♂ (1890).

Microgaster dimidiatus WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., X, p. 28, ♂ (1837).

Microgaster basalis STEPHENS, Ill. Brit. Ent. Suppl., p. 3, Pl. XXXVII, fig. 1 (1846).

Microgaster (Hygroplitis) russatus THOMSON, Opusc. ent., p. 2245, ♀ ♂ (1895).

Hygroplitis russatus DALLA TORRE, Cat. Hymen., IV, p. 158 (1898); LYLE, Entomologist, LI, p. 130 (1918).

Microgaster russata SZÉPLIGETI, Gen. Insect., 22-24, p. 113 (1904); WATANABE, Trans. Sapporo Nat. Hist. Soc., XII, p. 67, ♀ ♂ (1932).

Microplitis aomoriensis MATSUMURA: in MUNAKATA, Extra Report Agr. Exp. Stat. Aomori, No. 2, p. 69, ♀ ♂, Pl. II, fig. 2, ♀ (1912); NAWA, Insect World, Gifu, XIX, p. 457 (1915); ISHII, Nip. Kon. Zukan, p. 378, fig. 736 (1932).

Hosts—*Orthotaelia sparganella* THUNBERG (after MARSHALL, in Europe); *Chilo simplex* BUTLER (after MUNAKATA and WATANABE, in Japan).

Habitat: Hokkaido (Sapporo, 1 ♂, 9. VII, 1910, H. OKAMOTO); Honshu (Aomori, Nagano, and Kurashiki, after WATANABE); Kiushu (Nagasaki, after WATANABE).

Gen. Distr.: Europe; Japan.

4. *Microgaster coenonymphae* sp. nov. (Pl. V, Fig. 4)

Head and thorax black; abdomen dark brown, the 1st tergite yellowish; antennae dark brown, the two basal joints yellowish; wings subhyaline; stigma and veins yellowish brown; palpi, tegulae, and legs reddish yellow; hind tibiae apically and hind tarsi somewhat fuscous; ovipositor-sheath brown. Length, 4 mm.

Head smooth and shining; face minutely punctate, with a fine median longitudinal carina; facial depressions nearer to the apex of the clypeus than to the eyes; antennae normal, as long as the body; posterior ocelli

nearer to each other than to the eyes. Mesonotum with indefinite minute punctures; mesopleurae punctate anteriorly as in the mesonotum, otherwise smooth and shining, with the discal furrows smooth; propodeum reticulate-rugose, with a weak median longitudinal carina. First abscissa of the radius slightly curved, shorter than the breadth of the stigma; 2nd abscissa of the radius about one-third the length of the 1st; 1st intercubitus as long as the 2nd abscissa of the cubitus; recurrent nervure and the apical portion of the 1st abscissa of the cubitus nearly equal in length; nervulus post-furcal by its own length. Hind coxae smooth and shining, with hair-punctures; hind tibial spurs unequal, the longer spur as long as two-thirds and the shorter one about one-third the length of the hind metatarsus. First tergite subquadrate, slightly narrowed towards the base; 2nd tergite transverse, a little shorter than the 3rd; 1st and 2nd tergites and the 3rd at the base reticulate-rugose, the rest smooth and shining; 2nd suture distinctly crenulate; ovipositor very short, the sheath as long as the longer hind tibial spur.

♂. Unknown.

Host—*Coenonympha oedippus* FABRICIUS (in Japan).

Eight females were bred from the larvae of *Coenonympha oedippus* by Dr. T. ISHII, in June, 1932, at Tokyo.

Holotype (♀) and **Paratypes** (7 ♀ ♀): Tokyo, VI, 1932, T. ISHII.

Habitat: Honshu (Tokyo).

Remarks—The species closely resembles *M. russata* HALIDAY, from which it is distinguished by the 2nd tergite which is a little shorter than the 3rd, and by the crenulate character of the 2nd suture.

5. **Microgaster globata* (LINNÉ)

Ichneumon globatus LINNÉ, Syst. nat., Ed. 10 a, I, p. 568 (1758).

Microgaster globatus LATREILLE, Hist. Nat. Crust. & Insect., XIII, p. 189 (1805); NEES, Hymen. Ichneum. affin. Monogr., I, p. 163, ♀ ♂ (1834); RUTHE, Berlin. Ent. Zeitschr., IV, p. 120 (1860); REINHARD, Deutsch. Ent. Zeitschr., XXIV, p. 355 & 356 (1880); MARSHALL, Trans. Ent. Soc. London, p. 254, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 540, ♀ ♂ (1890); LYLE, Entomologist, LI, p. 110 (1918); FAHRINGER, Ark. Zool., Bd. 21 A, No. 8, p. 10 (1929); GOIDANICH, Boll. Lab. Ent. Bologna, IV, p. 142, figs. XXI-XXVI (1931).

Microgaster globata DALLA TORRE, Cat. Hymen., IV, p. 151 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 112 (1904).

Hosts—*Tachyptilia populella* CLERCK, *Acalla hastiana* LINNÉ, *Conchylis smeathmaniana* FABRICIUS, *Euxanthlis amiantana* HÜBNER, *Polychrosis euphorbiana* FREYER, *Epiblema immundana* FABRICIUS, *Phlyctaenodes verticalis* LINNÉ, *Platyptilia isodactyla* ZELLER, *Tephroclystia lineariata* FABRICIUS, *Tephroclystia denotata* HÜBNER, and *Eilema lurideola* ZINCKEN (after MAR-

SHALL & GOIDANICH, in Europe); *Vanessa atalanta* LINNÉ (after LYLE, in Europe); *Pyrausta nubilalis* HÜBNER (after GOIDANICH, in Europe).

Cocoons—White, somewhat woolly; the loose outer cover is easily removed leaving a thin, smooth, and slightly glossy inner cocoon (after LYLE).

Habitat: Saghalien (Konuma, 1 ♂, 7. VII, 1930, C. WATANABE); Hokkaido (Nopporo, 1 ♀, 2. VII, 1929, C. WATANABE; Jōzankei, 2 ♂ ♂, 23. VII, 1930, C. WATANABE); Honshu (Obuse, Nagano-ken, 1 ♀, 17. VI, 1932, K. SATO; Hirao, Nagano-ken, 1 ♂, 14. V, 1932, K. SATO; Kyoto, 1 ♀, 1. VII, 1923, 1 ♀, 20. VII, 1924, K. TAKEUCHI; Minoo, 1 ♀, 17. XI, 1930, K. TAKEUCHI).

Gen. Distr.: Europe; Siberia; Saghalien; Japan.

6. **Microgaster tibialis* NEES

Microgaster tibialis NEES, Hymen. Ichneum. affin. Monogr., I, p. 168, ♀ ♂ (1834); RUTHE, Berlin. Ent. Zeitschr., IV, p. 122 (1860); REINHARD, Deutch. Ent. Zeitschr., XXIV, p. 355 & 357 (1880); MARSHALL, Trans. Ent. Soc. London, p. 256, ♀ ♂ (1885); id., Hymen. Spec. Europe, IV, p. 544, ♀ ♂ (1890); DALLA TORRE, Cat. Hymen., IV, p. 156 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 112 (1904); LYLE, Entomologist, LI, p. 110 (1918); FAHRINGER, Ark. Zool., Bd. 21 A, No. 8, p. 11 (1929); GOIDANICH, Boll. Lab. Ent. Bologna, IV, p. 154 (1931).

Hosts—*Larentia flavofasciata* THUNBERG, *Acalla shepherdana* STEPHEN, and *Tachyptilia populella* CLERCK (after MARSHALL, in Europe); *Pyrausta nubilalis* HÜBNER (after GOIDANICH, in Europe); *Vanessa urtica* LINNÉ (in Saghalien and Hokkaido); *Pyrameis indica* HERBST (in Hokkaido).

Some of the specimens were reared from the larvae of *Vanessa urtica* LINNÉ on June 26th, 1933, at Sapporo, and on July 22nd, 1934, at Konuma, Saghalien, and from the larvae of *Pyrameis indica* HERBST on July 17th, 1933, at Sapporo.

Cocoons—White, somewhat woolly.

Habitat: Saghalien (Konuma, 1 ♀, 4 ♂ ♂, 22. VII, 1934, K. SATO); Hokkaido (Sapporo, 1 ♀, 2 ♂ ♂, 26. VI, 1933, C. WATANABE; 1 ♂, 17. VII, 1933, H. KŌNO; 2 ♀ ♀, 21. VI, 1930, 3 ♂ ♂, 31. V, 1931, C. WATANABE; Jōzankei, 2 ♀ ♀, 23. VII, 1930, C. WATANABE; Teine, 1 ♀, 3. VI, 1928, C. WATANABE); Honshu (Kyoto, 1 ♀, 27. IV, 1930, K. TAKEUCHI); Shikoku (Kōchi, 1 ♂, 18. VII, 1933 Y. SUGIHARA; Kooda-san, 1 ♀, 12. VII, 1933, Y. SUGIHARA).

Gen. Distr.: Europe; Siberia; Saghalien; Japan.

Remarks—This species closely resembles *M. globata* (LINNÉ); there are no visible differences between them except the colour of the legs. It is a well-known fact that this species was introduced into Canada and the United

States of America as a natural enemy of *Pyrausta nubilalis* HÜBNER.

7. ***Microgaster kuchingensis*** WILKINSON

Microgaster kuchingensis WILKINSON, Bull. Ent. Res., XVIII, p. 176, ♀, fig. 3 (1927); id., Trans. Ent. Soc., London, p. 120, ♀ ♂ (1929); WATANABE, Ins. Mats., VIII, p. 198, ♀ ♂ (1934).

Host—*Pyrausta coclesalis* WALKER (after WILKINSON, in India).

Habitat: Formosa (Koshun, after WATANABE; Funkiko, 2 ♂ ♂, 26. VIII, 1927, J. SONAN; Numanohira, 1 ♂, 24. VIII, 1927, J. SONAN; 1 ♂, Kôtocho, 10. III, 1920, J. SONAN; Koshun, 1 ♂, 25. IV, 1922, K. TAKEUCHI).

Gen. Distr.: Borneo; India; Formosa.

2. Genus ***Microplitis*** FÖRSTER

Microplitis FÖRSTER, Verh. Nat. Ver. Preuss. Rheinl., XIX, p. 245 (1862).

Genotype—*Microplitis sordipes* (NEES)

This genus has a world-wide distribution; *M. atamiensis* ASHMEAD, *M. sapporoensis* ASHMEAD, and *M. cerurae* MATSUMURA have been represented in Japan. On this occasion six more species including one new species are added to the present fauna.

It is said that most of the species are parasitic on the larvae of *Lepidoptera*. The cocoons are smooth or wrinkled, always brown, gray, or greenish in colour, and naked without loose silk.

Key to the Species

1. Plate of the 1st tergite not more than 1.5 times as long as broad at the middle ... 2
- Plate of the 1st tergite more than 2 times as long as broad at the middle ... 6
2. First tergite rugosely punctate ... 3
- First tergite smooth and shining; parapsidal furrows slightly indicated; stigma uniformly dark brown; abdomen oblong, comparatively short; legs yellowish red, the coxae black; cocoons grayish brown, longitudinally wrinkled. Length, 3.5-4 mm. ...
- ... I. *ocellatae* (BOUCHÉ)
3. Second tergite smooth and shining, sometimes weakly rugose ... 4
- Second tergite strongly rugose as in the 1st; stigma uniformly dark brown; hind legs dark brown to black, the tibiae on the basal third reddish brown; cocoons grass-green. Length, 3-3.5 mm. ... 2. *spinolae* (NEES)
4. Hind femora yellowish red ... 5
- Hind femora black; stigma uniformly dark brown. Length, 2.5 mm. ...
- ... 3. *atamiensis* ASHMEAD
5. Stigma uniformly dark brown; hind coxae closely reticulate-rugose; mesonotum with a median longitudinal carina; abdomen oblong, comparatively short; cocoons brownish gray, smooth. Length, 4 mm. ... 4. *cerurae* MATSUMURA
- Stigma dark brown, the basal half yellow; hind coxae smooth and shining, with hair-punctures; mesonotum without a median longitudinal carina; abdomen slender, comparatively long; cocoons bluish white, smooth. Length, 3.5-4 mm. ...

- 5. *sapporoensis* ASHMEAD
6. Plate of the 1st tergite attenuated towards the apex; abdomen slender, comparatively long; hind legs reddish yellow 7
- Plate of the 1st tergite parallel-sided, not attenuated towards the apex, with a median longitudinal furrow; abdomen oblong, comparatively short; hind legs black; mesonotum strongly reticulate-rugose; parapsidal furrows well developed, broad, crenulate; stigma dark brown; cocoons dark brown, irregularly wrinkled. Length, 5 mm. 6. *theretrae* sp. nov.
7. Stigma dark brown, the basal half pale yellow; 2nd and 3rd tergites reddish yellow 8
- Stigma uniformly dark brown; two basal tergites laterally yellowish; cocoons ash-coloured, longitudinally wrinkled. Length, 3.5-4 mm. 7. *tuberculifer* (WESMAEL)
8. Antennae entirely black; cocoons greenish-white, irregularly wrinkled. Length, 3-3.5 mm. 8. *medianus* (RUTHE)
- Antennae not entirely black; 1st to 7th joints of the flagellum yellowish; cocoons reddish brown, longitudinally wrinkled. Length, 3-3.5 mm. 9. *mediator* (HALIDAY)

1. **Microplitis ocellatae* (BOUCHÉ)

Microgaster ocellatae BOUCHÉ, Naturg. d. Insect., p. 161 (1834); RATZBURG, Ichneum. d. Forstinsect., II, p. 48 (1848), III, p. 48 (1852); RUTHE, Berlin. Ent. Zeitschr., IV, p. 132 (1860).

Microgaster ingratus HALIDAY, Ent. Magaz., II, p. 236 (1834).

Microgaster canaliculatus WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., X, p. 41, ♀ (1837).

Microplitis ocellatae REINHARD, Deutsch. Ent. Zeitschr., XXIV, p. 358 & 359 (1880); MARSHALL, Trans. Ent. Soc. London, p. 229, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 499, ♀ ♂ (1890); DALLA TORRE, Cat. Hymen., IV, p. 160 (1898); SZÉPLIGETI, Gen. Insect., 21-24, p. 114 (1904); LYLE, Entomologist, LI, p. 131 (1918).

Microgaster (Microplitis) ocellatae THOMSON, Opusc. ent., p. 2248, ♀ (1895).

This is one of the commonest species, having the following distinct characters:—

(1) Head and mesonotum granulate; parapsidal furrows slightly indicated. (2) Propodeum slightly reticulate-rugose, with a weak longitudinal median carina. (3) Wings subhyaline, with a fuscous spot beneath the stigma. (4) Legs yellowish red, the coxae black and the hind tarsi fuscous. (5) Abdomen oblong, comparatively short, smooth and shining; 1st tergite subquadrate, rounded posteriorly, depressed and excavated anteriorly, somewhat rugose laterally. Length, 3.5 mm.

Hosts—*Smerinthus ocellata* LINNÉ and *Smerinthus populi* LINNÉ (after MARSHALL, in Europe), *Smerinthus planus* WALKER (in Hokkaido).

Cocoons—Grayish brown, rough, longitudinally and irregularly wrinkled, naked, strongly and closely cemented together, often found on the back of the host-larvae.

Habitat:—Hokkaido (Sapporo, 14 ♀ ♀, 12 ♂ ♂, 24. VI. 1934, C. WATANABE; Kotoni, 3 ♀ ♀, 26. VI, 1932, S. KUWAYAMA).

Gen. Distr.: Europe; Japan.

2. ****Microplitis spinolae* (NEES)**

Microgaster spinolae NEES, Hymen. Ichneum. affin. Monogr., I, p. 166, ♀ ♂ (1834); WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., X, p. 41, ♀ ♂ (1837); RUTHE, Berlin. Ent. Zeitschr., IV, p. 145, ♀ ♂ (1860).

Microplitis spinolae REINHARD, Deutsch. Ent. Zeitschr., XXIV, p. 358 (1880); MARSHALL, Trans. Ent. Soc. London, p. 227, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 497, ♀ ♂ (1890); DALLA TORRE, Cat. Hymen., IV, p. 161 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 114 (1904); FAHRINGER, Ark. Zool., Bd. 21 A, No. 8, p. 11 (1929).

Microgaster (Microplitis) spinolae THOMSON, Opusc. ent., p. 2247, ♀ ♂ (1895).

In a series of the present specimens from Saghalien, the hind and middle femora are entirely black, and the hind tibiae are fuscous at the base.

Hosts—*Polia oleraceae* LINNÉ, *Miselia oxyacanthae* LINNÉ, *Plusia gamma* LINNÉ, and *Abrostola tripartita* HÜBNER (after MARSHALL, in Europe).

Habitat: Saghalien (Todoroki-tôge, 1 ♂, 13. VII, 1930, C. WATANABE; Maoka, 2 ♀, 24. VII, 1934, C. WATANABE).

Gen. Distr.: Europe; Siberia; Saghalien.

3. ***Microplitis atamiensis* ASHMEAD**

Microplitis atamiensis ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 194, ♂ (1906); WILKINSON, Bull. Ent. Res., XXI, p. 25 (1930).

No representative of this species has yet been seen by the writer.

Habitat: Honshu (Atami, after ASHMEAD).

Gen. Distr.: Japan.

4. ***Microplitis ceruræ* MATSUMURA**

Microplitis ceruræ MATSUMURA: in OKAMOTO, Report Agr. Exp. Stat. Hokkaido, No. 12, p. 52, ♂, Pl. V, fig. 11 (1921).

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

♂. Black; palpi except the basal joint yellow; legs yellowish red; coxae and upper trochanters black; hind tarsi fuscous; wings subhyaline, with a fuscous cloud beneath the stigma; stigma and veins brown; tegulae black. Length, 4 mm.

Head transverse; face closely reticulate-rugose, with white pubescence; clypeus punctate, distinctly separated from the face; facial depressions rather nearer to the eyes than to the apex of the clypeus; frons shallowly excavated, striate-rugose; vertex and cheeks reticulate-rugose; antennae longer than the body. Mesonotum reticulate-rugose as in the head, the scutum with a weak longitudinal median carina; parapsidal furrows slightly indicated; mesopleurae rugose, with a large smooth area in the middle; mesopleural furrows crenulate; propodeum coarsely reticulate-rugose, with a median

longitudinal carina. First abscissa of the radius, apical portion of the 1st abscissa of the cubitus, and recurrent nervure nearly equal in length; 2nd intercubitus curved, as long as the 1st abscissa of the cubitus; 2nd intercubitus colourless, just longer than the 2nd abscissa of the radius; nervulus postfurcal, inserted at the basal third of the 1st discoidal cell. Hind coxae closely reticulate-rugose; hind tibial spurs subequal, about one-third the length of the hind metatarsus. Abdomen oblong, comparatively short; 1st tergite 1.5 times as long as broad at the apex, slightly narrowed towards the base, rounded posteriorly, depressed and excavated anteriorly, and weakly reticulate-rugose, with a smooth median knob at the apex; 2nd tergite just shorter than the 3rd, only at the base somewhat rugose; 3rd and following tergites smooth and shining.

♀. Differs from the male in that the antennae are shorter than those of the male, and the ovipositor is concealed, with the hypopygium much shorter than the apex of the abdomen. Length, 4 mm.

The holotype is in the Entomological Institute, Hokkaido Imperial University.

Hosts—*Dicranura vinula* LINNÉ (after OKAMOTO, in Hokkaido); *Cerura lanigera* BUTLER (in Hokkaido).

Three females and one male were bred from young larvae of *Cerura lanigera* BUTLER by K. SAKURAI, on June 23rd to 26th, 1934, at Sapporo.

Cocoons—Brownish gray, irregularly wrinkled, attached to the leaves of poplar-trees.

Habitat: Hokkaido (Sapporo, 1 ♂, **Holotype**, 29. VII, 1920, S. KUWAYAMA, 3 ♀ ♀, 1 ♂, 23-26. VII, 1934, K. SAKURAI).

Gen. Distr.: Japan.

Remarks—This species is closely related to *Microplitis vidus* (RUTHE)¹⁾, but is easily distinguished from the latter by the closely reticulate-rugose hind coxae and by the yellowish red hind femora without fuscous markings.

5. *Microplitis sapporoensis* ASHMEAD

Microplitis sapporoensis ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 194, ♀ (1906); WILKINSON, Bull. Ent. Res., XXI, p. 26 (1930).

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

♀. (1) Antennae dark brown, longer than the body. (2) Face closely punctate, with white pubescence; facial depressions rather nearer to the eyes than to the apex of the clypeus. (3) Mesonotum closely reticulate-

1) Berlin. Ent. Zeitschr., IV, p. 134, ♀ ♂ (1860) (as *Microgaster*).

rugose; parapsidal furrows slightly indicated; mesopleurae smooth and shining, somewhat rugose posteriorly, with a crenulate furrow. (4) Propodeum coarsely reticulate-rugose, with a weak median longitudinal carina. (5) First abscissa of the radius just shorter than the breadth of the stigma; 2nd cubital cell 4-sided; recurrent nervure distinctly longer than the apical portion of the 1st abscissa of the cubitus; nervulus postfurcal by its own length. (6) First tergite 1.5 times as long as broad at the apex, narrowed towards the apex, slightly punctate; 2nd tergite just shorter than the 3rd, somewhat rugose at the base, the rest smooth and shining; ovipositor subexserted; hypopygium as long as the abdomen. Length, 4 mm.

Described from one female labelled "No. 39, *Microplitis sapporoensis* ASHMEAD" and one other specimen.

♂. Unknown.

Cocoons—Bluish white, naked, somewhat irregularly wrinkled. 6 × 3 mm.

Habitat: Hokkaido (Sapporo, after ASHMEAD, 1 ♀, 21. VII, 1932, C. WATANABE).

Gen. Distr.: Japan.

6. *Microplitis theretrae* sp. nov. (Pl. III, Fig. 3)

♀. Black; palpi dark brown, the apex yellowish; fore legs except the coxae and trochanters reddish brown; two basal tergites laterally and belly at the base whitish yellow; wings infusate, the stigma and veins dark brown, the tegulae black. Length, 5 mm.

Head closely reticulate-rugose; frons shallowly excavated, striate-rugose; facial depressions rather nearer to the eyes than to the apex of the clypeus; clypeus smooth, with hair-punctures; posterior ocelli nearer to each other than to the eyes; antennae stout, just shorter than the body. Scutum of the mesonotum weakly reticulate-rugose, strongly rugose posteriorly, with a median carina; parapsidal furrows broad, crenulate; scutellum of the mesonotum coarsely reticulate-rugose; mesopleurae strongly reticulate-rugose anteriorly, with a smooth and shining area in the middle, and with a crenulate furrow at the anterior margin; mesopleural furrows distinctly developed, crenulate; propodeum coarsely reticulate-rugose, with a strong longitudinal median carina. First abscissa of the radius as long as the breadth of the stigma; 2nd cubital cell 4-sided; 2nd abscissa of the radius as long as the 2nd intercubitus; 1st intercubitus, 2nd abscissa of the cubitus, and apical portion of the 1st abscissa of the cubitus almost equal in length or shorter than the recurrent nervure; nervulus postfurcal, inserted at the basal

fourth of the 1st discoidal cell. Hind coxae comparatively small, smooth and shining, with white pubescence; hind tibial spurs subequal, about one-third the length of the hind metatarsus. Abdomen oblong, shorter than the head and thorax united; plate of the 1st tergite parallel-sided, 2.5 times as long as broad, rounded apically, with a median longitudinal excavation, and with a smooth median knob at the apex; 2nd and following tergites transverse, smooth and shining; 2nd tergite just shorter than the 3rd, which is the broadest; ovipositor very short, subexserted; hypopygium not surpassing the abdomen.

♂. Unknown.

Host—*Theretra nesus* DRURY (in Honshu).

The present representatives were bred from a larva of *Theretra nesus* by Dr. T. ISHII in the autumn of 1928, and remained as pupae in their cocoons till the following June.

Cocoons—Dark brown, naked, irregularly wrinkled. 7 × 4 mm.

Holotype (♀) and **Paratypes** (3 ♀ ♀): Tokyo, 25. VI, 1929, T. ISHII.

Habitat: Honshu (Tokyo).

Remarks—This species comes near to *Microplitis lugubris* (RUTHE)¹⁾, but is easily distinguished from the latter by the scutellum which is smooth and shining.

7. **Microplitis tuberculifer* (WESMAEL)

Microgaster tuberculifera WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., X, p. 43, ♀ ♂ (1837); RUTHE, Berlin. Ent. Zeitschr., IV, p. 128, ♀ ♂ (1860).

Microplitis tuberculifer REINHARD, Deutsch. Ent. Zeitschr., XXIV, p. 359 (1880); MARSHALL, Trans. Ent. Soc. London, p. 235, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 510, ♀ ♂ (1890); DALLA TORRE, Cat. Hymen., IV, p. 161 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 115 (1904); LYLE, Entomologist, LI, p. 135 (1918); FAHRINGER, Ark. Zool., Bd. 21 A, No. 8, p. 11 (1929).

Hosts—*Monima minosa* FABRICIUS, *Tepleroclystia castigata* HÜBNER, *Conistra vaccinii* LINNÉ, *Trigonophora meticulosa* LINNÉ, *Hadena basilinea* FABRICIUS, *Triphaena fimbria* LINNÉ, and *Agriopsis aprilina* LINNÉ (after MARSHALL, in Europe).

Habitat: Saghalien (Tarandomari, 1 ♂, 25-27. VII, 1934, C. WATANABE; Kaibatô, 1 ♂, 2. VIII, 1934, C. WATANABE; Konuma, 1 ♀, 7. VII, 1930, C. WATANABE); Hokkaido (Sapporo, 1 ♂, 14. VII, 1914, S. MATSUMURA, 2 ♂ ♂, 27. V, 1929, C. WATANABE).

Gen. Distr.: Europe; Siberia; Saghalien; Japan.

8. **Microplitis medianus* (RUTHE)

Microgaster medianus RUTHE, Berlin. Ent. Zeitschr., IV, p. 127 (1860).

1) Berlin. Ent. Zeitschr., IV, p. 130, ♀ ♂ (1860) (as *Microgaster*).

Microplitis mediana MARSHALL, Trans. Ent. Soc. London, p. 234, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 510, ♀ ♂ (1890); LYLE, Entomologist, LI, p. 135 (1918).

Microplitis medianus DALLA TORRE, Cat. Hymen., IV, p. 159 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 114 (1904); WILKINSON, Bull. Ent. Res., XXI, p. 23 (1930).

Hosts—*Cucullia verbasci* LINNÉ, *Antitype flavicincta* FABRICIUS, *Larentia galiata* HÜBNER, and *Monima stabilis* VIEW (after MARSHALL, in Europe); *Barathra brassicae* LINNÉ (in Saghalien); *Cocytodes caerulea* GUÉNÉE (in Honshu).

This species was bred from a larva of *Barathra brassicae* LINNÉ by M. HORI, on September 20th, 1931, at Kunuma, Saghalien, and from a larva of *Cocytodes caerulea* GUÉNÉE by M. YAGO, on September 21th, 1932, at Fuji-machi, Shizuoka-ken.

Cocoons—Greenish white, naked, weakly wrinkled. 5 × 2 mm.

Habitat: Saghalien (Toyohara, 1 ♀, 29. VII, 1914, S. ISSIKI; Konuma, 1 ♀, 20. IX, 1931, M. HORI); Honshu (Fuji-machi, Shizuoka-ken, 1 ♀, 21. IX, 1932, M. YAGO).

Gen. Distr.: Europe; Saghalien; Japan.

9. **Microplitis mediator* (HALIDAY)

Microgaster mediator HALIDAY, Ent. Magaz., II, p. 235, ♀ ♂ (1834); RUTHE, Berlin. Ent. Zeitschr., IV, p. 126, ♀ ♂ (1860).

Microgaster fulvicornis WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., X, p. 44, ♀ ♂ (1837).

Microplitis medianus REINHARD, Deutsch. Ent. Zeitschr., XXIV, p. 360 (1880).

Microplitis mediator MARSHALL, Trans. Ent. Soc. London, p. 233, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 508, ♀ ♂ (1890); DALLA TORRE, Cat. Hymen., IV, p. 159 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 114 (1904); LYLE, Entomologist, LI, p. 135, fig. 5 (1918).

Microgaster (Microplitis) mediator THOMSON, Opusc. ent., p. 2250, ♀ ♂ (1895).

♀. Scapus black; 1st to 7th joints of the flagellum reddish yellow; 1st to 3rd tergites and legs reddish yellow; plate of the 1st tergite and hind coxae at the basal two-thirds black; hind femora at the apex and all tarsi fuscous.

Hosts—*Hadenia unanims* TREITSCHKE, *Orthosia croceago* FABRICIUS, and *Tephroclystia subfulvata* HAWORTH (after MARSHALL, in Europe); *Triphaena fimbria* LINNÉ, (after LYLE, in Europe).

Cocoons—Reddish brown, with some longitudinal wrinkles (after MARSHALL).

Habitat: Kiushu (Ushio, 1 ♀, 27. X, 1924, K. TAKEUCHI).

Gen. Distr.: Europe; Japan.

3. Genus *Apanteles* FÖRSTER

Apanteles FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 245 (1862).

Cotesia CAMERON, Mem. Proc. Manch. Phil. Soc., IV, p. 185 (1891).

- Microgaster (Apanteles)* THOMSON, Opusc. ent., p. 2252 (1895).
Pseudapanteles ASHMEAD, Proc. Ent. Soc. Washing., IV, p. 166 (1897).
Protapanteles ASHMEAD, Proc. Ent. Soc. Washing., IV, p. 166 (1897).
Urogaster ASHMEAD, Proc. Ent. Soc. Washing., IV, p. 166 (1897).
Parapanteles ASHMEAD, Proc. U. S. Nat. Mus., XXIII, p. 131 (1900).
Glyptapanteles ASHMEAD, Proc. U. S. Nat. Mus., XXVIII, p. 147 (1904).
Cryptapanteles VIERECK, Proc. Ent. Soc. Washing., XI, p. 209 (1909).
Xestapanteles CAMERON, Zeitschr. f. Naturw., LXXXI, p. 448 (1910).
Apanteles (Do.ichogenidea) VIERECK, Proc. U. S. Nat. Mus., XI, p. 173 (1911).
Stenopleura VIERECK, Proc. U. S. Nat. Mus., XL, p. 187 (1911).

Genotype—*Apanteles obscura* (NEES)

The vast majority of *Apanteles* are internal parasites of the larvae of various *Lepidoptera*, while a few are said to attack the larvae of *Coleoptera*, *Diptera*, and *Hymenoptera*.

So far as the writer's previous revisions¹⁾ are concerned, 43 species of this genus have been represented in this country. On this occasion one more species may be added to the present fauna.

Key to the Species

1. Propodeum without an areola, often with a median longitudinal carina; 2nd tergite as long as or a little shorter than the 3rd; ovipositor short 2
- Propodeum with an areola, as a rule, which is often obscurely marked, occasionally obsolete; 2nd tergite short, transverse, much shorter than the 3rd; ovipositor noticeably exerted 29
2. First tergite at the apex as broad as at the base; lateral converging sulci of the 2nd tergite weakly indicated, sometimes obsolete 3
- First tergite gradually narrowed towards the apex or parallel-sided, converging suddenly at the apex; lateral converging sulci of the 2nd tergite strongly marked 23
3. Second tergite without parallel discal sulci 4
- Second tergite with well-marked, parallel, discal sulci, enclosing a smooth median area; occiput with a median longitudinal carina; propodeum smooth and shining, without a longitudinal median carina; cocoons pure white, cemented together. Length, 2 mm. I. *vallatae* WATANABE
4. Thorax not compressed dorso-ventrally; antennae of both sexes filiform 5
- Thorax compressed dorso-ventrally; antennae of the female submoniliform; propodeum without a median longitudinal carina; cocoons pure white, cemented indiscriminately together, surrounded with some loose silk. Length, 2.5 mm. ... 2. *flavipes* (CAMERON)
5. Hind coxae reticulate-rugose 6
- Hind coxae smooth and shining, at most with scattered punctures 8
6. Scutellum of the mesonotum smooth, with some scattered punctures; all coxae black 7
- Scutellum of the mesonotum strongly punctate; coxae reddish yellow, the hind pair fuscous at the base; cocoons yellowish white, cemented irregularly together, without an external woolly covering. Length, 2 mm. 3. *ruficrus* (HALIDAY)

1) Ins. Mats., VII, pp. 74-102, (1932), VIII, pp. 132-143 (1934), X, pp. 43-51 (1935).

7. Hind tibial spurs shorter than half the length of the hind metatarsus; 1st tergite as long as broad at the apex, narrowed towards the base; cocoons yellowish white, arranged regularly like the cells of honey-comb, enveloped within a yellowish cottony ball. Length, 2.5-3 mm. 4. *congestus* (NEES)
- Hind tibial spurs longer than half the length of the hind metatarsus; 1st tergite 1.5 times as long as broad at the apex, parallel-sided; cocoons white, cemented together in a long slender row, and surrounded with some loose silk. Length, 3.5-4 mm. 5. *ordinarius* (RATZEBURG)
8. Hind femora black... .. 9
- Hind femora reddish yellow, often tipped with fuscous 10
9. Hind tibial spurs shorter than half the length of the hind metatarsus; wings whitish hyaline, stigma dark brown; cocoons sulphur-yellow, cemented together, surrounded with some loose silk. Length, 3 mm. 6. *zygaenarum* MARSHALL
- Hind tibial spurs longer than half the length of the hind metatarsus; wings subhyaline, stigma dark brown; cocoons yellowish buff, not cemented together, surrounded with some loose silk. Length, 3 mm. 7. *insidens* (RATZEBURG)
10. Second tergite with lateral converging sulci 11
- Second tergite without lateral sulci 17
11. Trochanters not entirely reddish yellow—at least the upper ones black or fuscous... 12
- Trochanters entirely reddish yellow 13
12. Belly mostly black; hind femora fuscous on each end; 2nd to 6th tergites shallowly grooved longitudinally at the middle; cocoons white, tinged with flesh-colour, clustered together with some loose silk. Length, 2.5 mm. 8. *suzumai* WATANABE
- Belly broadly reddish yellow; hind femora with a small fuscous spot at the apex; tergites normal, not grooved as in the preceding species; cocoons white, arranged regularly like the cells of honey-comb, enveloped within a cottony ball. Length, 2.5 mm. 9. *tatehae* WATANABE
13. Propodeum and two basal tergites rugose 14
- Propodeum and two basal tergites nearly smooth and shining; cocoons pure white, cemented together, surrounded with loose silk. Length, 2.5 mm. 10. *neptisis* WATANABE
14. Propodeum with a longitudinal carina; hypopygium truncate 15
- Propodeum without a median longitudinal carina; hypopygium acute; cocoons unknown. Length, 2.5 mm. 11. *kamiyai* WATANABE
15. Propodeum with a weak median longitudinal carina; abdomen black, the lateral margins of the two basal tergites yellow 16
- Propodeum with a strong median longitudinal carina; abdomen yellowish red, with black markings on the basal three tergites; cocoons sulphur-yellow, cemented irregularly together, enveloped with some loose silk. Length, 3 mm. 12. *amphipyrae* WATANABE
16. Third tergite at the base rugose; lateral converging sulci of the 2nd tergite very weakly impressed; cocoons yellowish white, cemented together. Length, 2.5 mm. 13. *kawadae* WATANABE
- Third tergite smooth and shining; lateral converging sulci of the 2nd tergite very strongly impressed; cocoons sulphur-yellow, cemented together, enveloped with a thin web. Length, 3 mm. 14. *glomeratus* (LINNÉ)
17. Propodeum without transverse carinae 18
- Propodeum with some distinct transverse basal carinae; cocoons white, clustered together. Length, 2.5 mm. 15. *taprobanae* CAMERON
18. Propodeum with a complete longitudinal median carina from the base to the apex 19
- Propodeum with a short longitudinal median carina at the apex, sending out two oblique

- carinae on each side; coxae reddish yellow, with the hind pair fuscous at the base; cocoons pure white, clustered together, covered with some loose silk. Length, 2.5 mm. ...
 16. *planus* WATANABE
19. Abdomen yellowish red; 1st tergite and some apical ones fuscous 20
 - Abdomen black, the lateral margins of the three basal tergites yellow 21
20. First tergite at the apex apparently broader than at the base, rounded laterally; 3rd tergite rugose at the base; cocoons pure white, cemented irregularly together, enveloped within a large cottony mass. Length, 3-3.5 mm. 17. *miyoshii* WATANABE
 - First tergite at the apex a little broader than at the base, almost parallel-sided; 3rd tergite entirely smooth and shining; cocoons unknown. Length, 3 mm.
 18. *okamotoi* WATANABE
21. Scutum of the mesonotum strongly punctate throughout; four anterior coxae fuscous, not black 22
 Scutum of the mesonotum smooth and shining, with scattered weak punctures; all coxae black; 2nd tergite equal to two-thirds the length of the 3rd tergite; cocoons white, tinged with lemon-yellow, cemented irregularly together, surrounded with some loose silk. Length, 2.5 mm. 19. *affinis* (NEES)
22. Second tergite a little shorter than the 3rd; 3rd tergite reticulate-rugose only at the base; gregarious parasite; cocoons white, tinged with lemon-yellow, surrounded with loose silk. Length, 2.5-3 mm. 20. *gastropachae* (BOUCHÉ)
 - Second tergite longer than the 3rd; 3rd tergite reticulate-rugose entirely; solitary parasite; cocoon sulphur-yellow. Length, 3 mm. 21. *eguchii* WATANABE
23. Propodeum without an areola; 1st abscissa of the radius longer than the intercubitus 24
 - Propodeum with an indistinct areola; 1st abscissa of the radius distinctly shorter than the intercubitus. Length, 2.5 mm. 33. *kuwayamai* WATANABE
24. First tergite less than 3 times as long as broad at the middle 25
 - First tergite 3 times, or more, as long as broad at the middle 27
25. Hind femora and tibiae reddish yellow 26
 - Hind femora and tibiae black; 1st abscissa of the radius not forming an angle with the intercubitus; cocoons pure white, surrounded with some loose silk, found in the cocoons of the host. Length, 2.5 mm. 22. *femoratus* (ASHMEAD)
26. Ovipositor short, the sheath shorter than the hind tibial spurs; 2nd and 3rd tergites with a smooth longitudinal obtuse ridge in the middle; hypopygium bluntly acute; cocoons grayish brown, not woolly, cemented together. Length, 3 mm.
 23. *bistonis* WATANABE
 - Ovipositor long, the sheath as long as the hind femora; 2nd and 3rd tergites smooth, without a median ridge; hypopygium sharply acute; cocoons silvery white, irregularly cemented together. Length, 2.5-3 mm. 24. *bicolor* (NEES)
27. First tergite gradually narrowed from the base to the apex 28
 - First tergite parallel-sided, suddenly narrowed from the apical third to the apex; propodeum and two basal tergites weakly punctate; cocoons pure white, irregularly cemented together. Length, 3 mm. 25. *liparidis* (BOUCHÉ)
28. Propodeum and two basal tergites weakly striate-rugose; lateral converging sulci of the 2nd tergite straight; two basal tergites narrowly margined with yellow; cocoons pure white, not woolly, attached to the outside of the host-body. Length, 3 mm.
 26. *fulvipes* (HALIDAY)
 - Propodeum and two basal tergites finely striate-rugose; lateral converging sulci of the 2nd tergite rounded; two basal tergites broadly margined with reddish yellow; cocoons unknown.

- Length, 3 mm. 27. *lamborini* WILKINSON
29. Propodeum without an areola 30
 - Propodeum with an areola 34
30. First tergite slender, 2.5 times as long as broad at the middle, narrowed towards the apex; propodeum without a median longitudinal carina 31
 - First tergite at the apex as broad as at the base 32
31. Wings subhyaline; tegulae yellow; ovipositor-sheath a little shorter than the hind tibia and tarsus united; 1st tergite evidently narrowed towards the apex; cocoons unknown. Length, 3 mm. 28. *conofiae* WATANABE
 - Wings hyaline; tegulae black; ovipositor-sheath as long as the hind femur; 1st tergite slightly narrowed towards the apex; cocoons unknown. Length, 3 mm.
 29. *uchidai* WATANABE
32. Propodeum with a median longitudinal carina—at least at the apex; hind femora fuscous 33
 - Propodeum without a median longitudinal carina; hind femora brownish red, with a black line; ovipositor-sheath as long as the hind tibia; cocoons white, regularly cemented side by side, without an external covering. Length, 3.5-4 mm. ... 30. *fulcatus* (NEES)
33. Propodeum with a short median longitudinal carina at the apex; hind tibial spurs as long as or longer than half the length of the hind metatarsus; cocoons sulphur-yellow, not woolly. Length, 2.5 mm. 31. *ophae* WATANABE
 - Propodeum with a median longitudinal carina; hind tibial spurs about one-third the length of the hind metatarsus; cocoons white, enveloped within a white cottony ball. Length, 2.5 mm. 32. *sasakii* WATANABE
34. Propodeum without costulae, with the areola weakly defined 35
 - Propodeum with costulae, with the areola strongly defined 37
35. First tergite at the apex as broad as at the base; 2nd tergite much shorter than the 3rd; 1st abscissa of the radius not shorter than the intercubitus; ovipositor-sheath as long as the hind tarsus 36
 - First tergite narrowed towards the apex; 2nd tergite a little shorter than the 3rd, with two lateral converging sulci; 1st abscissa of the radius distinctly shorter than the intercubitus; ovipositor sheath as long as the hind metatarsus; solitary parasite; cocoon white, fixed to the leaf of host-plant, being drawn together on the sides by a few threads. Length, 2.5 mm. 33. *kuwayamai* WATANABE
36. Stigma brownish yellow, with a pale spot at the inner angle; hind coxae brown, fuscous at the base; belly and lateral margins of the three basal tergites reddish yellow; cocoons pure white, cemented together, covered with a thin web. Length, 2.5 mm.
 34. *sugae* WATANABE
 - Stigma brownish yellow, with a pale spot on each angle; hind coxae black; abdomen black, the belly at the base yellowish brown; cocoons silvery white, arranged irregularly together, without an external covering. Length, 2.5 mm. ... 35. *hamakii* WATANABE
37. Hind femora dark brown or black, sometimes tipped with yellowish brown 38
 - Hind femora reddish yellow, tipped with fuscous 40
38. Hind femora black; 2nd tergite rugose; areola at the apex V-shaped; ovipositor long, the sheath a little shorter than the hind tibia 39
 - Hind femora dark brown; 2nd tergite smooth and shining; areola at the apex U-shaped; ovipositor short, the sheath as long as the hind metatarsus. Length, 2.5 mm.
 36. *sonani* WATANABE
39. Stigma uniformly brown in both sexes; 1st tergite with a small, smooth, median knob at the apex; cocoons pure white, somewhat woolly, irregularly cemented together.

- Length, 2.5 mm. 37. *consersae* FISKE
 - Stigma hyaline, narrowly margined with pigmentation in the male, and in the female brown with a pale spot at the base; 1st tergite with a median fovea on the apical half; cocoons unknown. Length, 2.5 mm. 38. *molestae* MUESEBECK
 40. Hind coxae smooth and shining, with some scattered punctures; ovipositor short, the sheath shorter than the hind tarsus; hind tibial spurs a little shorter than half the length of the hind metatarsus 41
 - Hind coxae reticulate-rugose; ovipositor long, the sheath as long as the hind tarsus; hind tibial spurs a little longer than half the length of the hind metatarsus; cocoons unknown. Length, 2.5 mm. 39. *carpatus* (SAY)
 41. Abdomen entirely black; ovipositor-sheath a little shorter than the hind tarsus; cocoons unknown. Length, 2.5 mm. 40. *heterusiae* WILKINSON
 - Belly reddish yellow; basal three tergites edged with reddish yellow; ovipositor-sheath about half the length of the hind metatarsus; cocoons unknown. Length, 2.5 mm. 41. *asotae* WATANABE

1. ***Apanteles vallatae* WATANABE**

Apanteles vallatae WATANABE, Ins. Mats., VIII, p. 132, ♀ (1934); FAHRINGER, Opusc. bracon., Bd. IV, p. 226, ♀ (1935).

Host—*Hipparchus vallata* BUTLER (after WATANABE, in Honshu).

Habitat: Honshu (Tokyo, after WATANABE).

Gen. Distr.: Japan.

2. ***Apanteles flavipes* (CAMERON)**

Cotesia flavipes CAMERON, Mem. Proc. Manch. Phil. Soc., IV, p. 185, ♂ (1891).

Apanteles nonagriæ OLLIFF, Agr. Gaz. N. S. Wales, IV, p. 381 (1893); WILKINSON, Bull. Ent. Res., XIX, p. 136 (1928) (nec VIERECK).

Apanteles flavipes SZÉPLIGETI, Gen. Insect., 22-24, p. 109 (1904); WILKINSON, Bull. Ent. Res., XIX, p. 93, ♀ ♂, fig. 2 e (1928), XX, p. 108 (1929); WATANABE, Trans. Sapporo Nat. Hist. Soc., XII, p. 68 (1932); WILKINSON, Trans. Ent. Soc. London, p. 333 (1932); WATANABE, Ins. Mats., VII, p. 83 (1932); id., Insect World, Gifu, XXXVII, p. 190 (1933); FAHRINGER, Opusc. bracon., Bd. IV, p. 101, ♀ ♂ (1935).

Apanteles (Stenopleuræ) nonagriæ VIERECK, Proc. U. S. Nat. Mus., XLIV, p. 645, ♀ ♂ (1913).

Apanteles (Stenopleuræ) simpliciis VIERECK, Proc. U. S. Nat. Mus., XLIV, p. 645, ♀ ♂ (1913); NAWA, Insect World, Gifu, XIX, p. 456 (1915).

Apanteles flavatus ISHIDA, Kansho Meichu Chosa Hokoku, I, p. 97, ♀ ♂, II, Pl. XIV, figs. 1-8 (1915).

Hosts—*Phragmatiphila truncata* WALKER (after WILKINSON, in Australia); *Chilo simplex* BUTLER (after WILKINSON, in India; after WATANABE, in Formosa); *Chilo infuscatellus* SNELLEN, *Schoenobius incertellus* WALKER, *Sesamia inferens* WALKER, *Diatraea venosata* WALKER, and *Cirphis loreyi* DUPONCHEL (after VIERECK, ISHIDA, and WATANABE, in Formosa).

Habitat: Formosa (Taihoku, after VIERECK; Shinka, after ISHIDA and WATANABE).

Gen. Distr.: India; Australia; Formosa.

f. *chilonis* MATSUMURA

Apanteles chilonis MATSUMURA: in MUNAKATA, Extra Report Agr. Exp. Stat. Aomori, No. 2, p. 69, ♀, Pl. II, fig. 5, June (1912).

Apanteles (Stenopleura) chilocida VIERECK, Proc. U. S. Nat. Mus., XLIII, p. 582, ♀, December (1912); NAWA, Insect World, Gifu, XIX, p. 455 (1915).

Apanteles chilocida WILKINSON, Bull. Ent. Res., XIX, p. 94 (1928); id., Trans. Ent. Soc. London, p. 333 (1932).

Apanteles flavipes CAMERON f. *chilonis* WATANABE, Trans. Sapporo Nat. Hist. Soc., XII, p. 69 (1932); id., Ins. Mats., VII, p. 84 (1932); id., Insect World, Gifu, XXXVII, p. 191 (1933).

Host—*Chilo simplex* BUTLER (after MUNAKATA, VIERECK, and WATANABE, in Japan).

Habitat: Honshu (Aomori, after MUNAKATA; Gifu, after NAWA); Kiushu (Nagasaki, after WATANABE).

Gen. Distr.: Japan.

3. *Apanteles ruficrus* (HALIDAY)

Microgaster ruficrus HALIDAY, Ent. Magaz., II, p. 253, ♀ ♂ (1834).

Apanteles ruficrus REINHARD, Deutsch. Ent. Zeitschr., XXIV, p. 363 & 368, ♀ ♂ (1880); MARSHALL, Trans. Ent. Soc. London, p. 166, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 410, ♀ ♂ (1889), V, Suppl., p. 177 (1895); DALLA TORRE, Cat. Hymén., IV, p. 181 (1898); SZÉPLI-GETI, Gen. Insect., 22–24, p. 108 (1904); LYLE, Entomologist, XLIX, p. 161, ♀ ♂ (1916); GAHAN, Bull. Ent. Res., XIX, p. 256 (1928); WILKINSON, Bull. Ent. Res., XX, p. 108, ♀ ♂ (1929); WILKINSON, Trans. Ent. Soc. London, p. 309 & 333 (1932); WATANABE, Ins. Mats., VII, p. 78 (1932); id., Insect World, Gifu, XXXVII, p. 147 (1933); FAHRINGER, Opusc. bracon., Bd. IV, p. 133, ♀ ♂ (1935); WATANABE, Ins. Mats., X, p. 47 (1935).

Apanteles antipoda ASHMEAD, Proc. Linn. Soc. N. S. Wales, XXV, p. 355, ♀ ♂ (1900); WILKINSON, Bull. Ent. Res., XIX, p. 95, ♀ ♂ (1928).

Apanteles manilae ASHMEAD, Jour. N. Y. Ent. Soc., XII, p. 19 (1904) (nec *Glyptapanteles manilae* ASHMEAD, 1905).

Apanteles sydneyensis CAMERON, Proc. Linn. Soc. N. S. Wales, XXXVI, p. 342 (1911).

Apanteles (Protapanteles) narangae VIERECK, Proc. U. S. Nat. Mus., XLIV, p. 642, ♀ ♂ (1913).

This species is widely distributed in the Palaearctic, Ethiopian, and Indo-Australian regions.

Hosts—*Cirphis littoralis* CURTIS, *Leucania impura* HÜBNER, *Leucania pallens* LINNÉ, *Polia oleracea* LINNÉ, etc. (after FAHRINGER, in Europe); *Cirphis loreyi* DUPONCHEL (after WILKINSON, in Africa); *Sesamia cretica* LEDERER (after GAHAN, in Africa); *Hypsipyla robusta* MOORE and *Perigea capensis* GUENÉE (after WILKINSON, in India); *Spodoptera mauritia* BOISDUVAL (after WILKINSON, in Ceylon); *Naranga aenescens* MOORE (after VIERECK and WATANABE, in Japan and Formosa); *Cirphis unipuncta* HAWORTH (after WATANABE, in North China).

Habitat: Formosa (Taihoku, after VIERECK); Honshu (Gifu, Niigata, and Atsuki, after WATANABE); Kiushu (Nagasaki, after WATANABE).

Gen. Distr.: Europe; Africa; India; Ceylon; the Philippines; Australia; Formosa; Japan; North China.

4. *Apanteles congestus* (NEES)

Microgaster congestus NEES, Hymen. Ichneum. affin. Monogr., II, p. 405 (1834).

Microgaster globatus BOUCHÉ, Naturg. d. Insect., p. 155 (1834).

Microgaster intricatus HALIDAY, Ent. Magaz., II, p. 252 & 468 (1834).

Microgaster prespicuus WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., X, p. 45 (1837); RATZEBURG, Ichneum. d. Forstinsect., III, p. 55 (1852); GIRAUD, Bull. Soc. Zool. Acclin., VII, p. 367 (1870).

Apanteles congestus REINHARD, Deutsch. Ent. Zeitschr., XXIV, p. 363 & 369 (1880); MARSHALL, Trans. Ent. Soc. London, p. 169 (1885); id., Spec. Hymén. Europe, IV, p. 412, ♀ ♂ (1889); SZÉPLIGETI, Term. Füz., XIX, p. 304, ♀ ♂ (1896); DALLA TORRE, Cat. Hymen., IV, p. 166 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 106 (1904); LYLE, Entomologist, XLIX, p. 163, fig. 7 (1916); WATANABE, Ins. Mats., VII, p. 79, Pl. II, fig. 5 (1932); id., Insect World, Gifu, XXXVII, p. 148 (1933); FAHRINGER, Opusc. bracon., Bd. IV, p. 97, ♀ ♂ (1935).

Microgaster (Apanteles) graciiipes THOMSON, Opusc. ent., p. 2257 (1895).

Apanteles claustratus GAUTIER et BONNAMOUR, Bull. Soc. Ent. France, p. 235, ♀ ♂ (1923).

Hosts—*Pygaera anastomosis* LINNÉ, *Acrionicta rumicis* LINNÉ, *Catocala nupta* LINNÉ, *Cucullia argentea* HUFNAGEL, *Cucullia artemisiae* HUFNAGEL, *Cucullia asteris* SCHIFFERMÜLLER, *Monima incerta* HUFNAGEL, *Plusia chrysitis* LINNÉ, *Plusia gamma* LINNÉ, *Polia pisi* LINNÉ, *Rhyacia pronuba* LINNÉ, *Triphaena fimbria* LINNÉ, *Xylina exoleta* LINNÉ, etc. (after FAHRINGER, in Europe); *Barathra brassicae* LINNÉ, *Rhyacia c-nigrum* LINNÉ, and *Phytometra ornatissima* WALKER (after WATANABE, in Hokkaido).

Habitat: Hokkaido (Sapporo, after WATANABE).

Gen. Distr.: Europe; Japan.

5. *Apanteles ordinarius* (RATZEBURG)

Ichneumon (Microgaster) ordinarius RATZEBURG, Forstinsect., III, p. 25 (1844).

Microgaster ordinarius RATZEBURG, Ichneum. d. Forstinsect., I, p. 71, ♀ ♂ (1844), II, p. 52 (1848), III, p. 54 (1852).

Apanteles ordinarius REINHARD, Deutsch. Ent. Zeitschr., XXIV, p. 363 & 368, ♀ ♂ (1880); MARSHALL, Trans. Ent. Soc. London, p. 168, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 411, ♀ ♂ (1889); DALLA TORRE, Cat. Hymen., IV, p. 179 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 108 (1904); WATANABE, Ins. Mats., VII, p. 79, Pl. II, fig. 3 (1932); id., Insect World, Gifu, XXXVII, p. 149 (1933); FAHRINGER, Opusc. bracon., Bd. IV, p. 123, ♀ ♂ (1935).

Apanteles sp. TABATA, Karafuto Matsu-kemushi ni Kansuru Chosa Sho (Publication of Govern. Saghalien), p. 103, ♀ ♂, with figs. ♀ ♂ (1924).

Apanteles dendrolimi MATSUMURA, Ann. Mus. Zool. Acad. Sci. URSS., XXVI, p. 40, ♀ ♂ (1925).

Apanteles dendrolimusi MATSUMURA, Jour. Coll. Agr. Hok. Imp. Univ., XVIII, p. 32, ♀ ♂, Pl. IV, fig. 16 (1926).

Hosts—*Dendrolimus pini* LINNÉ and *Macrothylacia rubi* LINNÉ (after FAHRINGER, in Europe); *Dendrolimus albolineatus* MATSUMURA and *Dendro-*

limus spectabilis BUTLER (after WATANABE, in Saghalien, Kuriles, and Hokkaido).

Habitat: Saghalien; Kuriles; Hokkaido.

Gen. Distr.: Europe; Saghalien; Japan.

6. *Apanteles zygaenarum* MARSHALL

Apanteles zygaenarum MARSHALL, Trans. Ent. Soc. London, p. 181, ♀ (1885); id., Spec. Hymén. Europe, IV, p. 428, ♀ ♂ (1889); DALLA TORRE, Cat. Hymen., IV, p. 186 (1898); SZÉPLI-GETI, Gen. Insect., 22-24, p. 109 (1904); LYLE, Entomologist, XLIX, p. 231, fig. 3 (1916); WATANABE, Ins. Mats., VII, p. 80 (1932); FAHRINGER, Opusc. bracon., Bd. IV, p. 147, ♀ ♂ (1935).

Hosts—*Melitaea aurinia* ROTTEMBERG, *Lycaena icarus* ROTTEMBERG, *Zygaena filipendulae* LINNÉ, *Zygaena trifolii* ESPER, and *Zygaena lonicerae* SCHEVEN (after FAHRINGER, in Europe); *Colias hyale* LINNÉ (after WATANABE, in Hokkaido).

Habitat: Hokkaido (Sapporo, after WATANABE).

Gen. Distr.: Europe; Siberia; Japan.

7. **Apanteles insidens* (RATZEBURG)

Microgaster insidens RATZEBURG, Ichneum. d. Forstinsect., I, p. 72 (1848).

Apanteles juniperatae REINHARD, Deutsch. Ent. Zeitschr., XXIV, p. 364 (1880), XXV, p. 34, ♀ (1881); MARSHALL, Trans. Ent. Soc. London, p. 184, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 432, ♀ ♂ (1889); DALLA TORRE, Cat. Hymen., IV, p. 175 (1898) (nec BOUCHÉ).

Apanteles insidens LYLE, Entomologist, XLIX, p. 252, fig. 1 (1916); FAHRINGER, Opusc. bracon., Bd. IV, p. 110, ♀ ♂ (1935).

This is differentiated from such related species as *Apanteles difficilis* NEES and *Apanteles juniperatae* (BOUCHÉ) by the infuscate wings.

Hosts—*Biston stratiaria* HUFNAGEL, *Gonodontis bidentata* CLERCK, *Himera pennaria* LINNÉ, *Metrocampa margaritata* LINNÉ, *Phigalia pedaria* FABRICIUS, etc. (after FAHRINGER, in Europe); *Phigalia simosaria* LEECH (after WATANABE, in Hokkaido).

Six females and two males were bred from a larva of *Phigalia simosaria* by T. SAWAMOTO, on July 22nd, 1934, at Sapporo.

Cocoons—Yellowish buff, woolly, surrounded with a small amount of loose silk.

Habitat: Hokkaido (Sapporo, 6 ♀ ♀, 2 ♂ ♂, 22. VI, 1934, T. SAWAMOTO).

Gen. Distr.: Europe; Japan.

8. *Apanteles suzumei* WATANABE

Apanteles suzumei WATANABE, Ins. Mats., VII, p. 81, ♀, Pl. II, fig. 2 (1932); FAHRINGER, Opusc. bracon., Bd. IV, p. 141, ♀ (1935).

♂. Closely resembles the female in general structure and colour, from which it is distinguished by the long and slender antennae which are a little longer than the body, and by the middle and hind femora which are fuscous on each end. Length, 2.5-3 mm.

Host—*Smerinthus planus* WALKER (after WATANABE, in Hokkaido and Honshu).

The writer has received a brood bred from a larva of *Smerinthus planus* by Dr. T. ISHII, at Tokyo.

Habitat: Hokkaido (Sapporo, after WATANABE); Honshu (Tokyo, ♀ ♂, V, 1930, T. ISHII).

Gen. Distr.: Japan.

9. ***Apanteles tatehae*** WATANABE

Apanteles tatehae WATANABE, Ins. Mats., VII, p. 82, ♀ ♂, fig. 1 (1932); FAHRINGER, Opusc. bracon., IV, p. 142, ♀ ♂ (1935).

Hosts—*Pyrameis cardui* LINNÉ and *Vanessa canace* LINNÉ (after WATANABE, in Honshu).

Habitat: Honshu (Kurashiki and Shizuoka, after WATANABE; Tokyo, ♀ ♂, VI, 1932, T. ISHII; Kyoto, ♀ ♂, I. V, 1924, K. TAKEUCHI).

Gen. Distr.: Japan.

10. ***Apanteles neptisis*** WATANABE

Apanteles neptisis WATANABE, Ins. Mats., VIII, p. 133, ♀ ♂ (1934); FAHRINGER, Opusc. bracon., Bd. IV, p. 120, ♀ ♂ (1935).

Host—*Neptis coenobita* STOLL (after WATANABE, in Hokkaido).

Habitat: Hokkaido (Sapporo, after WATANABE).

Gen. Distr.: Japan.

11. ***Apanteles kamiyai*** WATANABE

Apanteles kamiyai WATANABE, Ins. Mats., VIII, p. 134, ♀ ♂ (1934); FAHRINGER, Opusc. bracon., Bd. IV, p. 114, ♀ ♂ (1935).

Host—*Diacrisia punctaria* STOLL (after WATANABE, in Honshu).

Habitat: Honshu (Tokyo, after WATANABE).

Gen. Distr.: Japan.

12. ***Apanteles amphipyrae*** WATANABE

Apanteles amphipyrae WATANABE, Ins. Mats., VIII, p. 135, ♀ ♂ (1934); FAHRINGER, Opusc. bracon., Bd. IV, p. 88, ♀ ♂ (1935).

Host—*Amphipyra pyramidea* LINNÉ (after WATANABE, in Honshu).

Habitat: Honshu (Tokyo, after WATANABE).

Gen. Distr.: Japan.

13. *Apanteles kawadai* WATANABE

Apanteles kawadai WATANABE, Ins. Mats., VIII, p. 136, ♀ (1934); FAHRINGER, Opusc. bracon., Bd. IV, p. 114, ♀ (1935).

Host—*Xylina fumosa* BUTLER (after WATANABE, in Honshu).

Habitat: Honshu (Tokyo, after WATANABE).

Gen. Distr.: Japan.

14. *Apanteles glomeratus* (LINNÉ)

Ichneumon glomeratus LINNÉ, Syst. nat., Ed. 10 a, I, p. 568 (1758).

Microgaster reconditus NEES, Hymen. Ichneum. affin. Monogr., I, p. 174, ♀ ♂ (1834), II, p. 400, ♀ ♂ (1834).

Microgaster crataegi RATZEBURG, Ichneum. d. Forstinsect., I, p. 72 (1844), II, p. 52 (1848), III, p. 54 (1852).

Apanteles glomeratus REINHARD, Deutsch. Ent. Zeitschr., XXIV, p. 364 (1880), XXV, p. 33, ♀ ♂ (1881); MARSHALL, Trans. Ent. Soc. London, p. 176, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 421, ♀ ♂ (1889); THOMSON, Opusc. ent., p. 2259, ♀ ♂ (1895); DALLA TORRE, Cat. Hymen., IV, p. 171 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 107 (1904); LYLE, Entomologist, XLIX, p. 228 (1916); MUESEBECK, Proc. U. S. Nat. Mus., LVIII, p. 562 (1920); WILKINSON, Bull. Ent. Res., XXI, p. 98 (1928); ISHII, Nip. Kon. Zukan, p. 377, fig. 734 (1932); WILKINSON, Trans. Ent. Soc. London, p. 334 (1932); WATANABE, Ins. Mats., VII, p. 80 (1932); id., Insect World, Gifu, XXXVII, p. 150 (1933); FAHRINGER, Opusc. bracon., Bd. IV, p. 104, ♀ ♂ (1935).

Apanteles aporiae MATSUMURA, Nip. Ekichu Mokuroku, p. 100 (1908); id., Konchu Bunrui Gaku, II, p. 270, Pl. V, fig. 3 (1915); OKAMOTO, Report Agr. Exp. Stat. Hokkaido, No. 12, p. 65, Pl. V, fig. 5 (1921); MATSUMURA, 6000 Ill. Insect. Japan-Empire, p. 73, fig. 398 (1931).

Hosts—*Aporia crataegi* LINNÉ, *Pieris brassicae* LINNÉ, *Pieris daphidice* LINNÉ, *Pieris rapae* LINNÉ, *Pieris napi* LINNÉ, etc. (after FAHRINGER, in Europe); *Aporia crataegi* LINNÉ and *Pieris rapae* LINNÉ (after WATANABE, in Japan).

Habitat: Japan Proper.

Gen. Distr.: Europe; Asia; North Africa; U. S. A.; Canada; India; Japan.

15. *Apanteles taprobanae* CAMERON

Apanteles taprobanae CAMERON, Mem. Proc. Manch. Phil. Soc., XLI, p. 38 (1897); SZÉPLIGETI, Gen. Insect., 22-24, p. 109 (1904); WILKINSON, Bull. Ent. Res., XIX, p. 100, ♀ ♂ (1928), XX, p. 109 (1929); id., Trans. Ent. Soc. London, p. 334 (1932); WATANABE, Ins. Mats., VII, p. 83 (1932).

Apanteles (Protapanteles) stauropi VIERECK, Proc. U. S. Nat. Mus., XLII, p. 146, ♀ (1912).

Apanteles (Protapanteles) formosae VIERECK, Proc. U. S. Nat. Mus., XLIV, p. 642, ♀ ♂ (1913).

Host—*Stauropus alternus* WALKER (after VIERECK, in India).

Habitat: Formosa (Taihoku, after VIERECK).

Gen. Distr.: Bangalore; Mysore; India; Java; Ceylon; Formosa.

16. *Apanteles planus* WATANABE

Apanteles planus WATANABE, Ins. Mats., VII, p. 84, ♀ ♂ (1932); FAHRINGER, Opusc. bracon., Bd. IV, p. 127, ♀ ♂ (1935).

Host—*Smerinthus planus* WALKER (after WATANABE, in Hokkaido).

Habitat: Hokkaido (Sapporo, after WATANABE).

Gen. Distr.: Japan.

17. *Apanteles miyoshii* WATANABE

Apanteles smerinthii MATSUMURA: in MIYOSHI, Insect World, Gifu, XXVII, p. 86, with fig. (1923) (nec RILEY, 1881).

Apanteles miyoshii WATANABE, Ins. Mats., VII, p. 85, ♀ ♂, fig. 2 a (1932); id., Insect World, Gifu, XXXVII, p. 192 (1933); FAHRINGER, Opusc. bracon., Bd. IV, p. 118, ♀ ♂ (1935).

Host—*Marumba gaschkewitschii* BREMER et GREY (after MIYOSHI and WATANABE, in Honshu).

Habitat: Honshu (Kurashiki, after WATANABE; Tokyo, ♀ ♂, VII, 1925, T. ISHII; Kyoto, ♀ ♂, 5. VIII, 1923, K. TAKEUCHI).

Gen. Distr.: Japan.

18. *Apanteles okamotoi* WATANABE

Apanteles smerinthii MATSUMURA: in OKAMOTO, Report Agr. Exp. Stat. Hokkaido, No. 12, p. 53, ♀ ♂, Pl. V, fig. 4 (1921) (nec RILEY, 1881).

Apanteles okamotoi WATANABE, Ins. Mats., VII, p. 86, ♀ ♂, fig. 2 b (1932); id., Insect World, Gifu, XXXVII, p. 192 (1933); FAHRINGER, Opusc. bracon., IV, p. 122, ♀ ♂ (1935).

Host—*Dicranura vinula* LINNÉ (after OKAMOTO, in Hokkaido).

Habitat: Hokkaido (Sapporo, after OKAMOTO and WATANABE).

Gen. Distr.: Japan.

19. *Apanteles affinis* (NEES)

Microgaster affinis NEES, Hymen. Ichneum. affin. Monogr., I, p. 176 (1834).

Microgaster vinulae BOUCHÉ, Naturg. d. Insect., I, p. 156 (1834); NEES, Hymen. Ichneum. affin. Monogr., II, p. 401 (1834); RATZBURG, Ichneum. d. Forstinsect., II, p. 72 (1848), III, p. 54 (1852).

Apanteles affinis REINHARD, Deutsch. Ent. Zeitschr., XXIV, p. 363 & 370 (1880); MARSHALL, Spec. Hymén. Europe, IV, p. 418, ♀ ♂ (1889); DALLA TORRE, Cat. Hymen., IV, p. 162 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 105 (1904); WATANABE, Ins. Mats., VII, p. 87 (1932); FAHRINGER Opusc. bracon., Bd. IV, p. 87, ♀ ♂ (1935).

Hosts—*Dicranura vinula* LINNÉ, *Cucullia artemisiae* HUFNAGEL, etc. (after FAHRINGER, in Europe); *Dicranura vinula* LINNÉ (after WATANABE, in Hokkaido).

Habitat: Hokkaido (Sapporo, after WATANABE).

Gen. Distr.: Europe; Siberia; Japan.

20. *Apanteles gastropachae* (BOUCHÉ)

Microgaster gastropachae BOUCHÉ, Naturg. d. Insect., I, p. 157, ♀ (1834); RATZBURG, Ichneum.

d. Forstinsect., I, p. 72 (1844).

Apanteles gastropachae WATANABE, Ins. Mats., VII, p. 87, ♀ ♂ (1932); FAHRINGER, Opusc. bracon., Bd. IV, p. 103, ♀ ♂ (1935).

Host—*Malacosoma neustria* LINNÉ (after FAHRINGER, in Europe, and after WATANABE, in Japan).

Habitat: Honshu (Kyoto, after WATANABE; Tokyo, ♀ ♂, 16. V, 1928, T. ISHII).

Gen. Distr.: Europe; Japan.

21. ***Apanteles eguchii*** WATANABE

Apanteles eguchii WATANABE, Ins. Mats., X, p. 49, ♀ (1935).

Host—*Earias cupreoviridis* WALKER (after WATANABE, in Korea and North China).

Habitat: Korea (Moppo, after WATANABE).

Gen. Distr.: Korea; North China.

22. ***Apanteles femoratus*** (ASHMEAD)

Glyptopanteles femoratus ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 192, ♂ (1906).

Apanteles femoratus WATANABE, Ins. Mats., VII, p. 88, ♀, fig. 3 a (1932); FAHRINGER, Opusc. bracon., Bd. IV, p. 216, ♀ ♂ (1935).

Host—*Prothesia similis* FUESSLY (after WATANABE, in Hokkaido).

Habitat: Honshu (Gifu, after ASHMEAD); Hokkaido (Sapporo, after WATANABE).

Gen. Distr.: Japan.

23. ***Apanteles bistonis*** WATANABE

Apanteles bistonis WATANABE, Ins. Mats., VIII, p. 137, ♀ ♂ (1934); FAHRINGER, Opusc. bracon., Bd. IV, p. 229, ♀ ♂ (1935).

Host—*Biston robustum* BUTLER (after WATANABE, in Honshu).

Habitat: Honshu (Tokyo, after WATANABE).

Gen. Distr.: Japan.

24. ***Apanteles bicolor*** (NEES)

Microgaster bicolor NEES, Hymen. Ichneum. affin. Monogr., I, p. 181, ♀ (1834); RATZBURG, Ichneum. d. Forstinsect., II, p. 50, ♀ ♂ (1848), III, p. 51 (1852).

Apanteles bicolor REINHARD, Deutsch. Ent. Zeitschr., XXIV, p. 366 (1880), XXV, p. 48, ♀ ♂ (1881); MARSHALL, Trans. Ent. Soc. London, p. 216, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 480, ♀ ♂ (1889); DALLA TORRE, Cat. Hymén., IV, p. 164 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 105 (1904); LYLE, Entomologist, L, p. 196 (1917); WATANABE, Ins. Mats., VII, p. 88 (1932); FAHRINGER, Opusc. bracon., Bd. IV, p. 228, ♀ ♂ (1935).

Hosts—*Polia persicariae* LINNÉ, *Gnophos obscuraria* HÜBNER, *Ephestia elutella* HÜBNER, *Semasia aemulana* SCHLÄGER, *Chelaria hübnarella* DONOVAN, *Chrysopora hermanella* FABRICIUS, *Gracilaria tringipennella* BOUCHÉ, *Lithocolletis cavella* ZELLER, *Lithocolletis junionella* ZELLER, *Lithocolletis lan-*

tanella SCHRANK, *Lithocolletis millierella* STAUDINGER, *Lithocolletis spinicolella* ZELLER, *Tischeria complanella* HÜBNER, *Plutella porrectella* LINNÉ, *Elachista taeniata* STANTON, etc. (after FAHRINGER, in Europe); *Orgyia thyellina* BUTLER and *Prothesia similis* FUSSLY (after WATANABE, in Hokkaido).

Habitat: Hokkaido (Sapporo, after WATANABE).

Gen. Distr.: Europe; Siberia; Japan.

25. *Apanteles liparidis* (BOUCHÉ)

Microgaster liparidis BOUCHÉ, Naturg. d. Insect., I, p. 152 (1834); NEES, Hymen. Ichneum. affn. Monogr., II, p. 493 (1834); RATZBURG, Ichneum. d. Forstinsect., I, p. 70 (1844), II, p. 50 (1848), III, p. 51 (1852).

Apanteles liparidis MARSHALL, Spec. Hymén. Europe, IV, p. 491 (1889); DALLA TORRE, Cat. Hymén., IV, p. 176 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 107 (1904); LYLE, Ent. Month. Magaz., LXI, p. 122, ♀ ♂ (1925); BURGESS et CROSSMAN, Tech. Bull. U. S. Dept. Agr. Washing., No. 86, p. 95, figs. 40-41 (1929); ISHII, Nip. Kon. Zukan, p. 377, fig. 735 (1932); WILKINSON, Trans. Ent. Soc. London, p. 331 (1932); WATANABE, Ins. Mats., VII, p. 89, ♀ ♂, fig. 3 c (1932); id., Insect World, Gifu, XXXVII, p. 192 (1933); id., Ins. Mats., VIII, p. 137 (1934); FAHRINGER, Opusc. bracon., Bd. IV, p. 239 (1935).

Glyptapanteles japonicus ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 193, ♀ ♂ (1906); OKAMOTO, Report Agr. Exp. Stat. Hokkaido, No. 12, p. 38, ♀ ♂, Pl. V, fig. 3 (1921); MATSUMURA, 6000 Ill. Insect. Japan-Empire, p. 74, fig. 494 (1931).

Apanteles fulvipes HOWARD et FISKE, U. S. Dept. Agr., Bur. Ent. Bull. No. 91, p. 193, figs. 31-33 (1911).

Apanteles posticae SONAN, Rep. Agr. Exp. Stat. Formosa, No. 29, p. 111, ♀ ♂, fig. 6 (1927).

Apanteles japonicus MATSUMURA, Ill. Com. Insect. Japan, IV, p. 31, Pl. VIII, fig. 8 (1932).

Hosts—*Lymantria dispar* LINNÉ, *Arctia villica* LINNÉ, and *Dendrolimus pini* LINNÉ (after FAHRINGER, in Europe); *Lymantria dispar* LINNÉ, *Dendrolimus albolineatus* MATSUMURA, *Dendrolimus spectabilis* BUTLER, *Dasychira pseudabietis* BUTLER, and *Malacosoma neustria* LINNÉ (after WATANABE, in Japan); *Orgyia postica* WALKER (after SONAN, in Formosa).

Habitat: Kuriles; Hokkaido; Honshu; Kiushu; Formosa.

Gen. Distr.: Europe; Siberia; Japan; Formosa.

26. *Apanteles fulvipes* (HALIDAY)

Microgaster fulvipes HALIDAY, Ent. Magaz., II, p. 249, ♀ ♂ (1834).

Microgaster nemorum RATZBURG, Ichneum. d. Forstinsect., I, p. 69 (1844), II, p. 50, Pl. VII, fig. 14 (1848), III, p. 51 (1852).

Apanteles fulvipes RUTHE, Stett. Ent. Zeit., XX, p. 319, ♀ ♂ (1859); REINHARD, Deutsch. Ent. Zeitschr., XXIV, p. 366 (1880), XXV, p. 51, ♀ ♂ (1881); MARSHALL, Trans. Ent. Soc. London, p. 223, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 486, ♀ ♂ (1889); DALLA TORRE, Cat. Hymén., IV, p. 170 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 106 (1904); LYLE, Entomologist, L, p. 200 (1917); WATANABE, Ins. Mats., VII, p. 91, fig. 3 b (1932); FAHRINGER, Opusc. bracon., Bd. IV, p. 234, ♀ ♂ (1935).

Microgaster (Apanteles) fulvipes THOMSON, Opusc. ent., p. 2273 (1895).

Hosts—*Pygaera pigra* HUFNAGEL, *Prothesia similis* FUESSLY, *Acronicta tridens* SCHIFFERMÜLLER, *Amphipyra pryamidea* LINNÉ, *Brachionycha sphinx* HUFNAGEL, *Lithophane ornitopus* ROTTEMBERG, *Miselia oxyacanthae* LINNÉ, *Dichonia areola* ESPER, *Rhyacia orbona* HUFNAGEL, *Rhyacia pronuba* LINNÉ, *Rhyacia strigula* THUNBERG, *Stilbia faillae* PÜNGELER, *Toxocampa craccae* FABRICIUS, etc. (after FAHRINGER, in Europe); *Cosmotriche potatoria* LINNÉ and *Pygaera anastomosis* LINNÉ (after WATANABE, in Hokkaido).

Habitat: Saghalien (Toyohara, after WATANABE); Hokkaido (Sapporo, after WATANABE).

Gen. Distr.: Europe; North and Central Asia; Saghalien; Japan.

27. ***Apanteles lamborini*** WILKINSON

Apanteles lamborini WILKINSON, Bull. Ent. Res., XIX, p. 90, ♀ ♂ (1928); id., Trans. Ent. Soc. London, p. 330 (1932); WATANABE, Ins. Mats., VII, p. 91 (1932).

Host—*Histia rhodope* CRAMER (after WATANABE, in Formosa).

Habitat: Formosa (Taihoku, after WATANABE).

Gen. Distr.: Federated Malay States; Formosa.

28. ***Apanteles conopiae*** WATANABE

Apanteles conopiae WATANABE, Ins. Mats., VIII, p. 139, ♀ ♂, fig. 1 a (1934); FAHRINGER, Opusc. bracon., Bd. IV, p. 160, ♀ ♂ (1935).

Host—*Conopia hector* BUTLER (after WATANABE, in Honshu).

Habitat: Honshu (Tokyo, after WATANABE).

Gen. Distr.: Japan.

29. ***Apanteles uchidai*** WATANABE

Apanteles uchidai WATANABE, Ins. Mats., VIII, p. 140, ♀, fig. 1 b (1934); FAHRINGER, Opusc. bracon., Bd. IV, p. 208, ♀ (1935).

Host—*Epinotia diniana* GUENÉE (after WATANABE, in Hokkaido).

Habitat: Hokkaido (Sapporo, after WATANABE).

Gen. Distr.: Japan.

30. ***Apanteles falcatus*** (NEES)

Microgaster falcatus NEES, Hymen. Ichneum. affn. Monogr., I, p. 175, ♀ ♂ (1834).

Microgaster equestris HALIDAY, Ent. Magaz., II, p. 242, ♀ ♂ (1834).

Apanteles falcatus REINHARD, Deutsch. Ent. Zeitschr., XXIV, p. 364 (1880), XXV, p. 37, ♀ ♂ (1881); MARSHALL, Trans. Ent. Soc. London, p. 192, ♀ ♂ (1885); id., Spec. Hymén. Europe, IV, p. 442, ♀ ♂ (1889); DALLA TORRE, Cat. Hymen., IV, p. 169 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 109 (1904); FAHRINGER, Ark. Zool., Bd. 21 A, No. 8, p. 11 (1929); WATANABE, Ins. Mats., VII, p. 92 (1932); FAHRINGER, Opusc. bracon., Bd. IV, p. 171, ♀ ♂ (1935).

Microgaster (Apanteles) falcatus THOMSON, Opusc. ent., p. 2272 (1895).

Host—*Hadena monoglypha* HUFNAGEL (after FAHRINGER, in Europe).

Habitat:—Saghalien (Shisuka, Tonnai, Otani, and Otomari, after WATANABE); Kuriles (Shana, after WATANABE).

Gen. Distr.: Europe; North Africa; West Asia; Siberia; Java; Saghalien; Japan.

31. ***Apanteles asotae*** WATANABE

Apanteles asotae WATANABE, Ins. Mats., VII, p. 98, ♀ ♂ (1932).

Host—*Asota complana* WALKER (after WATANABE, in Formosa).

Habitat: Formosa (Taihoku, after WATANABE).

Gen. Distr.: Formosa.

32. ***Apanteles sasakii*** WATANABE

Apanteles sasakii WATANABE, Ins. Mats., VII, p. 91, ♀ ♂, fig. 4 (1932); FAHRINGER, Opusc. bracon., Bd. IV, p. 200, ♀ ♂ (1935).

Host—*Acronicta rumicis* LINNÉ (after WATANABE, in Hokkaido).

Habitat: Hokkaido (Sapporo, after WATANABE).

Gen. Distr.: Japan.

33. ***Apanteles kuwayamai*** WATANABE

Apanteles kuwayamai WATANABE, Ins. Mats., VII, p. 93, ♀ ♂, fig. 5 (1932); FAHRINGER, Opusc. bracon., Bd. IV, p. 236, ♀ ♂ (1935).

Host—*Lithocolletis* sp. (after WATANABE, in Hokkaido).

Habitat: Hokkaido (Sapporo, after WATANABE).

Gen. Distr.: Japan.

34. ***Apanteles sugae*** WATANABE

Apanteles sugae WATANABE, Ins. Mats., VII, p. 94, ♀ ♂ (1932); FAHRINGER, Opusc. bracon., Bd. IV, p. 205 (1935).

Host—*Hyponomeuta evonymella* LINNÉ (after WATANABE, in Hokkaido).

Habitat: Hokkaido (Sapporo, after WATANABE).

Gen. Distr.: Japan.

35. ***Apanteles hamakii*** WATANABE

Apanteles hamakii WATANABE, Ins. Mats., VII, p. 95, ♀ (1932); FAHRINGER, Opusc. bracon., Bd. IV, p. 179, ♀ (1935).

Host—A certain species of *Tortricidae* feeding on the leaf of *Salix koriyanagi* KIMURA.

Habitat: Honshu (Nagano, after WATANABE).

Gen. Distr.: Japan.

36. ***Apanteles sonani*** WATANABE

Apanteles sonani WATANABE, Ins. Mats., VII, p. 96, ♀ (1932).

Host—*Chalcosia argentata* MOORE (after WATANABE, in Formosa).

Habitat: Formosa (Taihoku, after WATANABE).

Gen. Distr.: Formosa.

37. *Apanteles conspersae* FISKE

Apanteles conspersae FISKE: in HOWARD et FISKE, U. S. Dept. Agr., Bur. Ent. Bull. No. 91, p. 285 (1911); WATANABE, Ins. Mats., VIII, p. 141 (1934); FAHRINGER, Opusc. bracon., Bd. IV, p. 161 (1935).

Apanteles lacteicolor SONAN, Rep. Agr. Exp. Stat. Formosa, No. 29, p. 46, ♀ ♂, fig. 2 (1927); WATANABE, Ins. Mats., VII, p. 96 (1932); id., Insect World, Gifu, XXXVII, p. 195 (1933).

Hosts—*Euproctis pseudoconspersa* STRAND (after SONAN, in Formosa and Honshu); *Euproctis flava* BREMER (after WATANABE, in Honshu).

Habitat: Honshu (Yokkaichi, after SONAN; Tokyo, after WATANABE); Formosa (Shinten, after SONAN).

Gen. Distr.: Japan; Formosa.

38. *Apanteles molestae* MUESEBECK

Apanteles molestae MUESEBECK, Proc. Ent. Soc. Washing., XXXV, p. 51, ♀ ♂ (1933); WATANABE, Ins. Mats., VIII, p. 142 (1934); FAHRINGER, Opusc. bracon., Bd. IV, p. 193, ♀ ♂ (1935).

Host—*Grapholitha molesta* BUSCK (after MUESEBECK, in Japan and Korea).

Habitat: Honshu (Niigata and Okayama, after MUESEBECK); Shikoku (Ehime and Kagawa, after MUESEBECK); Korea (Suigen, after MUESEBECK).

Gen. Distr.: Japan; Korea.

39. *Apanteles carpatus* (SAY)

Microgaster carpatus SAY, Boston Jour. Nat. Hist., I, p. 263 (1836); LeCONTE, Wirt. Th. Say, Ent., II, p. 714 (1859).

Apanteles carpatus CHITTENDEN, U. S. Div. Ent. Bull., VIII, p. 42 (1897); VIERECK, Bull. Conn. State Geol. Nat. Hist. Survey, No. 22, p. 191 & 200 (1916); MUESEBECK, Proc. U. S. Nat. Mus., LVIII, p. 515 (1920); WILKINSON, Trans. Ent. Soc. London, p. 338 (1932); WATANABE, Ins. Mats., VIII, p. 142 (1934); FAHRINGER, Opusc. bracon., Bd. IV, p. 158 (1935).

Apanteles igae WATANABE, Ins. Mats., VII, p. 97, ♀, fig. 6 (1932).

Hosts—*Trichophaga tapetzella* LINNÉ and *Tinea pellionella* LINNÉ (after MUESEBECK, in U. S. A.); *Tinea pellionella* LINNÉ (after WATANABE, in Honshu).

Habitat: Honshu (Tokyo, after WATANABE).

Gen. Distr.: U. S. A.; Japan.

Remarks—It appears that *Apanteles fuscicornis* (CAMERON)¹⁾ from Africa is identical with the present species as WILKINSON²⁾ points out.

40. *Apanteles heterusiae* WILKINSON

Apanteles heterusiae WILKINSON, Bull. Ent. Res., XIX, p. 127, ♀ ♂ (1928); id., Trans. Ent.

1). Z. Naturw., LXXXI, p. 449 (1910) (as *Urogaster*).

2). Trans. Ent. Soc. London, p. 313 (1932).

Soc. London, p. 339 (1932); WATANABE, Ins. Mats., VII, p. 98 (1932).

Hosts—*Heterusia cingala* MOORE (after WILKINSON, in Ceylon); *Histia rhodope* CRAMER (after WATANABE, in Formosa).

Habitat: Formosa (Taihoku, after WATANABE).

Gen. Distr.: Ceylon; Formosa.

41. ***Apanteles aphae* WATANABE**

Apanteles aphae WATANABE, Ins. Mats., VIII, p. 138, ♀ (1934); FAHRINGER, Opusc. bracon., Bd. IV, p. 155, ♀ (1935).

Host—*Apha tychoona* BUTLER (after WATANABE, in Honshu).

Habitat: Honshu (Tokyo, after WATANABE).

Gen. Distr.: Japan.

Species of *Apanteles* not included in the key

42. ***Apanteles politus* (ASHMEAD) (nec RILEY, 1881)**

Glyptapanteles politus ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 192, ♀ ♂ (1906).

Apanteles politus WATANABE, Ins. Mats., VII, p. 99 (1932); FAHRINGER, Opusc. bracon., Bd. IV, p. 246, ♀ ♂ (1935).

Habitat: Honshu (Gifu, after ASHMEAD).

43. ***Apanteles minor* (ASHMEAD)**

Glyptapanteles minor ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 192, ♀ (1906).

Apanteles minor WATANABE, Ins. Mats., VII, p. 99 (1932); FAHRINGER, Opusc. bracon., Bd. IV, p. 241, ♀ (1935).

Habitat: Honshu (Gifu, after ASHMEAD).

44. ***Apanteles nawai* (ASHMEAD)**

Glyptapanteles nawai ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 193, ♀ ♂ (1906).

Apanteles nawai WATANABE, Ins. Mats., VII, p. 100 (1932); FAHRINGER, Opusc. bracon., Bd. IV, p. 222, ♀ ♂ (1932).

Habitat: Honshu (Gifu, after ASHMEAD).

VII. Subfamily ***HELCONINAE***

Polymorphini WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., IX, p. 15 (1835).

Helconinae HANDLIRSCH, Hand. d. Entomologie, Bd. III, p. 745 (1924).

This subfamily contains small tribes of very different structure and habits. The writer is by no means satisfied with it as a natural group, since it seems to include the tribes which do not enter into any of the other subfamilies. He is, however, inclined to adopt this subfamily until the tribes are more fully characterized. The following 10 tribes have been recognized in the present fauna.

Key to the Tribes

1. Abdomen petiolate 2
- Abdomen sessile or subsessile 3
2. Fore wing with two cubital cells; stigma large, oblong or subovate 1. *Euphorini*
- Fore wing with three cubital cells; stigma large, broad, triangular 2. *Meteorini*
3. Fore wing with two cubital cells 4
- Fore wing with three cubital cells 6
4. First brachial cell opened at the apex; anal cell without transverse nervures ... 5
- First brachial cell closed at the apex; anal cell with transverse nervures ... 3. *Calyptini*
5. Second abscissa of the radius straight, extending to the apex of the wing, and the 1st long, distinctly marked; ovipositor straight 4. *Blacini*
- Second abscissa of the radius curved, not extending to the apex of the wing, and the 1st very short, almost obsolete; ovipositor decurved 5. *Leiothronini*
6. Radial cell of the fore wing large, the radius, therefore, extending to the apex of the wing 7
- Radial cell of the fore wing very small, the radius, therefore, not extending to the apex of the wing 6. *Ichneutini*
7. Third abscissa of the radius nearly straight, not reclivate 8
- Third abscissa of the radius reclivate 7. *Cardiochilini*
8. Abdomen elongate, slender 9
- Abdomen ovate or oval; occiput not entirely margined 8. *Opiini*
9. Head quadrate or subquadrate; frons broad, sometimes strongly excavated; hind femora dilated; hind tibial spurs short and stout 9. *Melconini*
- Head transverse; frons narrow, flat; hind femora slender; tibial spurs long and slender 10. *Macrocentrini*

1. Tribe *Euphorini*

This group is confused with *Meteorini* by certain authors, but it is apparently differentiated from the latter by the venation of the wings and by the habits. Most species of this tribe are said to be parasitic on Coleopterous adults. Three genera including three species are represented at present in this country.

Key to the Genera

1. Antennae normal, the 1st joint not elongate; 1st cubital and 1st discoidal cells separated 2
- Antennae abnormal, the 1st joint elongate; 1st cubital and 1st discoidal cells confluent 1. *Streblocera* WESTWOOD
2. Propodeum vertically truncate and excavated posteriorly; ovipositor exerted 2. *Dinocampus* FÖRSTER
- Propodeum elongate, not vertically truncate; ovipositor concealed 3. *Euphorus* NEES

1. Genus *Streblocera* WESTWOOD

Streblocera WESTWOOD, Phil. Magaz., Ser. 3, III, p. 342 (1833).

Genotype—*Streblocera fulviceps* WESTWOOD1. ***Streblocera nigrithoracica*** sp. nov. (Pl. III, Fig. 5)

♀. Head reddish yellow; vertex broadly fuscous; antennae yellowish brown, the 1st joint yellowish. Thorax and propodeum black. Legs entirely reddish yellow. Wings hyaline, the stigma and veins yellow. Abdomen yellowish brown to dark brown. Length, 5 mm.

Head transverse, smooth and shining; frons transversely striate, with a median, longitudinal, short furrow just below the antennae. Antennae 29 or 30-jointed; 1st joint very long, longer than the following 8 joints united; 2nd joint obliquely inserted, forming a geniculation; 3rd to 9th joints filiform; 10th joint short, obliquely inserted before the apex of the preceding one, forming another angle; 11th to 29th (or 30th) joints moniliform. Thorax smooth and shining; parapsidal furrows deep, crenulate; middle lobe of the mesonotum rugose, with a fine median longitudinal carina; scutellum of the mesonotum anteriorly marked by two foveae which are separated by a carina; mesopleurae with a crenulate discal furrow. Propodeum reticulate-rugose, with a smooth area on both sides of the base. Legs long and slender. Radius inserted at the apical third of the stigma, the apex nearer to the apex of the wing than to the stigma; intercubitus curved, obliquely inserted at the base of the cubitus, forming an acute angle; nervulus just postfurcal; radial cell of the hind wing petiolate. Abdomen oblong, smooth and shining; 1st tergite petiolate, 3.5 times as long as broad at the base, with fine longitudinal striae on the apical half, the tubercles situated beyond the middle; ovipositor strongly acute at the apex, slightly curved inwardly, the sheath as long as the 2nd and 3rd joints of the hind tarsus united.

♂. Unknown.

Holotype (♀): Moiwa, near Sapporo, 12. VII, 1931, C. WATANABE.

Paratype: 1 ♀, Sôunkyo, 29. VII, 1930, S. KATO.

Habitat: Hokkaido (Moiwa and Sôunkyo).

Remarks—This is easily distinguished from the congeneric species in the structure of the antennae.

2. Genus ***Dinocampus*** FÖRSTER

Dinocampus FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 252 (1862).

Genotype—*Dinocampus terminatus* (NEES)

As the present genus is closely related to *Perilitus* NEES in general structure and habits, it has been confused with the latter by certain authors,

but the best distinction lies in the 1st cubital cell which is separated from the 1st discoidal cell in the former. Most species of this genus seem parasitic on the adults of *Coleoptera* just as the *Perilitus* species.

1. **Dinocamptus terminatus* (NEES)

Bracon terminatus NEES, Magaz. Ges. Naturf. Fr. Berlin, V, p. 26, ♀ (1811).

Perilitus terminatus NEES, Hymen. Ichneum. affin. Monogr., I, p. 30, ♀ ♂ (1834); MARSHALL, Spec. Hymén. Europe, V, p. 44, ♀ ♂ (1891); THOMSON, Opusc. ent., p. 1740 (1891); DALLA TORRE, Cat. Hymen., IV, p. 122 (1898).

Microctonus terminatus RATZBURG, Ichneum. d. Forstinsect., III, p. 61, ♀ (1852).

Dinocamptus terminatus FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 252 (1862); SZÉPLIGETI, Gen. Insect., 22-24, p. 175 (1904); LYLE, Entomologist, LX, p. 10 (1927).

♀. Head yellowish red; stemmaticum, occiput, and antennae black. Thorax and abdomen black; fore legs yellowish red; four posterior legs dark brown. Wings somewhat infuscate; stigma and veins dark brown. Length, 4 mm.

Head smooth, with white pubescence; antennae as long as the body, 22-jointed. Thorax reticulate-rugose, the lateral lobes of the mesonotum smooth and shining. Apex of the radius inserted nearer to the stigma than to the apex of the wing; recurrent nervure inserted in the 1st cubital cell; nervulus postfurcal; radial cell of the hind wing petiolate. First tergite reticulate-rugose; 2nd and following tergites smooth and shining; ovipositor exerted, straight, the sheath about half the length of the abdomen, covered uniformly with white hairs.

Hosts—*Coccinella 7-punctata* LINNÉ and *Coccinella 4-punctata* LINNÉ (after RATZBURG, in Europe); *Pychanatis axyridis* PALLAS (in Honshu).

The present specimen was bred from an adult of *Pychanatis axyridis* by S. YAGO, on June 10th, 1935, at Okitsu, Shizuoka-ken.

Habitat: Honshu (Okitsu, Shizuoka-ken, 1 ♀, 10. VI, 1935, S. YAGO).
Gen. Distr.: Europe; Japan.

3. Genus *Euphorus* NEES

Euphorus NEES, Hymen. Ichneum. affin. Monogr., II, p. 360 (1834).

Peristenus FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 251 (1862).

Genotype—*Euphorus pallidicornis* NEES

1. **Euphorus pallidipes* (CURTIS)

Leiothron pallipes CURTIS, Brit. Ent., X, p. 476 (1833).

Microtonus barbiger WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., IX, p. 69 (1835).

Euphorus pallipes BLANCHARD, H'st. Nat. Insect., III, p. 331 (1840); REINHARD, Berlin. Ent. Zeitschr., VI, p. 328 (1862); THOMSON, Opusc. ent., p. 1746, ♀ ♂ (1891).

Euphorus pallidipes MARSHALL, Trans. Ent. Soc. London, p. 56, ♀ ♂ (1887); id., Spec.

Hymén. Europe, V, p. 11, ♀ ♂ (1891); DALLA TORRE, Cat. Hymen., IV, p. 126 (1898); SZÉPLI-GETI, Gen. Insect., 22-24, p. 176 (1904); LYLE, Entomologist, LIX, p. 294 (1926); FAHRINGER, Ark. Zool., Bd. 21 A, No. 8, p. 10, ♀ (1929).

This species is differentiated from the congeneric species in the following characters:—

(1) Mesonotum weakly punctate, the parapsidal furrows distinctly punctate. (2) Second basal cell of the hind wing closed by a transverse nervure. (3) Tubercles of the 1st tergite inconspicuous.

In a series of the present specimens the body is entirely black, and the legs are reddish yellow with the hind coxae fuscous. The antennae are yellowish brown, 23-jointed in the female, and 25 or 26-jointed in the male.

Habitat: Saghalien (Konuma, 4 ♂ ♂, 7. VII, 1930, C. WATANABE; Todoroki-tôge, 2 ♀ ♀, 17. VII, 1930, C. WATANABE).

Gen. Distr.: Europe; Siberia; China; Saghalien.

2. Tribe *Meteorini*

Only the genus *Meteorus* HALIDAY occurs in Japan.

1. Genus *Meteorus* HALIDAY

Meteorus HALIDAY, Ent. Magaz., III, p. 24 (1835).

Protelus FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 253 (1862).

Zemiotes FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 253 (1862).

Genotype—*Meteorus filator* HALIDAY

This is a comparatively large group, but only three species have been described in this country: in this paper two more species are added to the fauna. Most of the species may be internal parasites of Lepidopterous larvae, but a few are said to attack the larvae of fungivorous beetles. It is a well-known fact that some of the species make interesting pensile cocoons.

Key to the Species

1. Radial cell of the hind wing not divided by a transverse nervure; 1st tergite without tracheal grooves; antennae less than 30-jointed 2
- Radial cell of the hind wing divided by a transverse nervure; 1st tergite with two deep tracheal grooves before the spiracles; antennae 43 to 46-jointed. Length, 7-8 mm. 1. *albiditarsus* (CURTIS)
2. First tergite on the basal third and 1st suture whitish yellow; 1st tergite longitudinally striate. Length, 4 mm. 2. *versicolor* (WESMAEL)
- Abdomen entirely black, sometimes with a yellowish spot at the middle; 1st tergite almost

smooth. Length, 4.5-5 mm. 3. *leviventris* (WESMAEL)

1. **Meteorus albiditarsus* (CURTIS)

Zele albiditarsus CURTIS, Brit. Ent., IX, p. 415, ♂ (1832).

Perilitus albitarsis NEES, Hymen. Ichneum. affin. Monogr., I, p. 34 (1834).

Zemiotus albitarsis FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 253 (1862).

Homolobus albiditarsis VOLLENHOVEN, Pinacogr., Pl. XXXIV, fig. 8, ♂ (1878).

Meteorus albitarsis VOLLENHOVEN, Pinacogr., p. 67, Pl. XLIV, figs. 1-2, ♀ ♂ (1878).

Meteorus albiditarsis MARSHALL, Trans. Ent. Soc. London, p. 93, ♀ ♂, Pl. V, fig. 8 (1887); id., Spec. Hymén. Europe, V, p. 64 (1891); MORLEY, Entomologist, XLI, p. 127 (1908); LYLE, Entomologist, XLVII, p. 75, Pl. I, figs. 1 & 7 (1914).

Meteorus albiditarsis DALLA TORRE, Cat. Hymen., IV, p. 104 (1898).

Meteorus (Zemiotus) albitarsis THOMSON, Opus. ent., p. 2149, ♀ ♂ (1897).

Zemiotus albiditarsus SZÉPLIGETI, Gen. Insect., 22-24, p. 177 (1904).

Hosts—*Monima miniosa* FABRICIUS, *Monima gracilis* FABRICIUS, *Monima stabilis* VIEW, and *Panolis griseovariegata* GOEZE (after LYLE, in Europe).

Habitat: Kurifés (Iririfushi, Etorofu Is., 1 ♀, 17. VIII, 1927, K. DOI); Honshu (Odaigahara, Nara-ken, 1 ♂, 4-6. VIII, 1932, C. TERANISHI).

Gen. Distr.: Europe; Japan.

2. **Meteorus versicolor* (WESMAEL)

Perilitus versicolor WESMAEL, Nouv. Mém. Acad. Sci. Brunel., IX, p. 43, ♀ ♂ (1835).

Meteorus versicolor RUTHE, Berlin. Ent. Zeitschr., IV, p. 45, ♀ ♂ (1862); VOLLENHOVEN, Pinacogr., p. 67, Pl. XLIV, fig. 6 (1880); MARSHALL, Trans. Ent. Soc. London, p. 119, ♀ ♂ (1887); id., Spec., Hymén. Europe, V, p. 116, ♀ ♂ (1891); DALLA TORRE, Cat. Hymen., IV, p. 115 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 180 (1904); MORLEY, Entomologist, XLI, p. 149 (1908); Lyle, Entomologist, XLVII, p. 122 (1914); MUESEBECK, Jour. Agr. Res., XIV, pp. 201-205 (1918); id., Proc. U. S. Nat. Mus., LXIII, p. 36 (1923).

♀. Reddish yellow; propodeum and most part of the dorsum of the abdomen fuscous; 1st tergite at the basal third and 1st suture pale yellow; 2nd tergite laterally somewhat yellowish; wings hyaline, the stigma and veins yellowish. Antennae 28 to 30-jointed; propodeum coarsely reticulate-rugose; recurrent nervure interstitial; nervulus postfurcal; 1st tergite longitudinally striate, the tracheal grooves obsolete; ovipositor as long as half the length of the abdomen. Length, 4 mm.

Hosts—*Euproctis chrysorrhoea* LINNÉ and *Orgyia antiqua* LINNÉ (after MUESEBECK); *Stilpnotia salicis* LINNÉ and *Orgyia thyellina* BUTLER (in Hokkaido).

This species is a solitary parasite; two females were bred from larvae of *Stilpnotia salicis* and one female from a larva of *Orgyia thyellina* by K. SAKURAI at Sapporo.

Cocoons—Pensile, yellowish brown, shining, and transparent.

Habitat: Hokkaido (Sapporo, 2 ♀ ♀, 14-18. VI, 1934, 1 ♀, 31. VIII,

1934, K. SAKURAI).

Gen. Distr.: Europe; U. S. A.; Japan.

Remarks—This species was artificially introduced into the United States of America from Europe in order to control the Brown-tail moth, *Euproctis chrysorrhoea* LINNÉ, and has become well colonized in the new country.

3. *Meteorus leiventris* (WESMAEL)

Perilitus leiventris WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., IX, p. 46, ♀ (1835).

Meteorus laeiventris RUTHE, Berlin. Ent. Zeitschr., VI, p. 52, ♀ (1862); MARSHALL, Spec. Hymén. Europe, V, p. 126, ♀ ♂ (1891); MORLEY, Entomologist, XLI, p. 150 (1908).

Meteorus leiventris MARSHALL, Trans. Ent. Soc. London, p. 126, ♀ ♂ (1887); DALLA TORRE, Cat. Hymen., IV, p. 109 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 178 (1904); LYLE, Entomologist, XLVII, p. 125, Pl. I, fig. 9 (1914); HORI, Report Saghalien Cent. Exp. Stat., Ser. I, No. 3, p. 66, Pl. I, fig. 11, ♂ (1935).

♀ ♂. Dark brown to black; head reddish yellow; stemmaticum and occiput fuscous; mesothorax with yellowish markings; abdomen sometimes with a yellowish spot at the middle; legs reddish yellow; wings hyaline, the stigma and veins yellowish. Length, 4.5-5 mm.

Antennae 27-jointed in the female, and 29 or 30-jointed in the male; propodeum reticulate-rugose, with a fine median longitudinal carina which is more weakly indicated in the male; 2nd cubital cell narrowed towards the radius; recurrent nervure always interstitial; 1st tergite slightly striate or almost smooth, the tracheal grooves obsolete; ovipositor as long as half the length of the abdomen.

Hosts—*Rhyacia pronuba* LINNÉ (after LYLE, in Europe); *Barathra brassicae* LINNÉ (after HORI, in Saghalien).

This is a gregarious parasite; according to HORI as many as thirty individuals of the parasite are reared from a single larva of *Barathra brassicae*.

Cocoons—Cylindrical, dirty white, covered with woolly substance, irregularly cemented together, and found underground.

Habitat: Saghalien (Konuma, after HORI, and 8 ♀ ♀, 2 ♂ ♂, 20. IX, 1932, M. HORI).

Gen. Distr.: Europe; Saghalien.

Species of *Meteorus* not included in the Key

4. *Meteorus japonicus* ASHMEAD

Meteorus japonicus ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 190, ♀ (1906).

According to American entomologists¹⁾ this species is a parasite of

1) HOWARD and FISKE, U. S. Dept. Agr., Bur. Ent. Bull. No. 91, p. 191 (1911); BURGESS and CROSSMAN, Tech. Bull. U. S. Dept. Agr. Washing., No. 86, p. 103 (1929).

Lymantria dispar LINNÉ in Japan. The original description is too incomplete to include it in the present key.

Habitat: Honshu (Gifu, after ASHMEAD).

5. ***Meteorus nipponensis*** VIERECK

Meteorus nipponensis VIERECK, Proc. U. S. Nat. Mus., XLII, p. 624, ♀ (1912).

No representatives of this species have been seen yet by the writer.

Habitat: Japan (after VIERECK).

3. Tribe ***Calyptini***

This tribe is represented by two genera, *Calyptus* HALIDAY and *Eubadizon* NEES.

Key to the Genera

1. Abdomen showing eight segments above, the 1st tergite much longer than broad at the apex. Parasites of *Lepidoptera* 1. *Eubadizon* NEES
- Abdomen showing three or four segments above, the rest, if visible, very short in the form of a narrow ring. Parasites of *Coleoptera* 2. *Calyptus* HALIDAY

I. Genus ***Eubadizon*** NEES

Eubadizon NEES, Hymen. Ichneum. affin. Monogr., I, p. 233 (1834).

Genotype—*Eubadizon pallidipes* NEES

This genus resembles *Macrocentrus* CURTIS in structure and habits rather than *Calyptus* NEES.

I. ****Eubadizon extensor*** (LINNÉ)

Ichneumon extensor LINNÉ, Syst. nat., Ed. 10 a, I, p. 564 (1758); FABRICIUS, Syst. ent., p. 337 (1775).

Eubadizon pectoralis NEES, Hymen. Ichneum. affin. Monogr., I, p. 236, ♀ (1834); RATZEBURG, Ichneum. d. Forstinsect., II, p. 60, Pl. II, fig. 30 (1848), III, p. 64 (1852); THOMSON, Opusc. ent., p. 223 (1895).

Eubadizon extensor MARSHALL, Trans. Ent. Soc. London, p. 151, ♀ ♂ (1889); id., Spec. Hymén. Europe, V, p. 137, ♀ ♂ (1893); DALLA TORRE, Cat. Hymen., IV, p. 101 (1898); SZÉPLI-GETI, Gen. Insect., 22-24, p. 135 (1904); LYLE, Entomologist, LXII, p. 124 (1929).

This is one of the commonest species in Europe, easily distinguished from the congeneric ones by having long antennae which are more than 40-jointed.

♀. Black; palpi yellow; legs with the coxae reddish yellow; thorax possessing some yellowish markings. Wings hyaline; stigma and veins yellow. Length, 7-9 mm.

Head and thorax smooth and shining; antennae 42 to 45-jointed;

parapsipal furrows distinct; propodeum shining with a median oblong punctate fovea. Abdomen longer than the head and thorax united; 1st tergite longitudinally striate, with prominent tubercles near the base, the other tergites smooth and shining; ovipositor-sheath as long as or longer than the body.

Hosts—According to MARSHALL and LYLE this species is parasitic on certain species of *Tortricidae*.

Habitat: Hokkaido (Jôzankei, 1 ♀, 19. VIII, 1925, T. UCHIDA; Oshoro, 1 ♀, 24. VII, 1932, C. WATANABE); Honshu (Hina, Shizuoka-ken, 2 ♀ ♀, 23. VII, 1928, C. WATANABE).

Gen. Distr.: Europe; Japan.

2. Genus *Calyptus* HALIDAY

Calyptus HALIDAY, Ent. Magaz., III, p. 123 (1835).

Brachistes WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., IX, p. 109 (1835).

Genotype—*Calyptus tibialis* (HALIDAY)

1. *Calyptus byctisci* WATANABE

Calyptus byctisci WATANABE, Ins. Mats., VII, p. 181, ♀ (1933).

This species is characterized by the following points:—

♀. (1) Black; legs with the coxae reddish yellow. (2) Antennae a little shorter than the body, 32-jointed; hind margin of the cheeks with a tooth at the apex. (3) Recurrent nervure inserted in the 1st cubital cell; apical portion of the 1st abscissa of the cubitus as long as the recurrent nervure; nervulus postfurcal; anal cell with two transverse nervures. (4) Propodeum reticulate-rugose, areolate, the median area pentagonal. (5) First tergite longitudinally striate, with two oblique basal carinae; 2nd and 3rd tergites equal in length, smooth and shining, the following ones visible above in the form of a narrow ring; ovipositor straight, as long as the body. Length, 5.5 mm.

Host—*Byctiscus venustus* PASCOE (after WATANABE, in Hokkaido).

Habitat: Hokkaido (Sapporo, after WATANABE).

Gen. Distr.: Japan.

4. Tribe *Blacini*

This tribe is distinguished from its related ones by the straight 2nd abscissa of the radius. According to LYLE¹⁾ the insects belonging to this tribe appear to prey upon Coleopterous larvae or adults.

1) Entomologist, LVIII, p. 34 (1925).

Key to the Genera

1. First discoidal cell petiolate; antennae more than 27-jointed; hind tarsi distinctly shorter than the tibiae 1. *Pygostolus* HALIDAY
 - First discoidal cell sessile; antennae less than 27-jointed; hind tarsi not distinctly shorter than the tibiae 2. *Blacus* NEES

1. Genus *Pygostolus* HALIDAY

Pygostolus HALIDAY, Ent. Magaz., I, p. 263 (1833).

Genotype—*Pygostolus sticticus* (FABRICIUS)

1. *Pygostolus septentrionalis* sp. nov. (Pl. V, Fig. 5)

♀. Reddish yellow, with various fuscous markings; stemmaticum, occiput, some portions of the mesothorax, propodeum, and 1st tergite fuscous; two basal joints of the antennae and legs with the coxae reddish yellow; flagellum dark brown. Wings subhyaline; stigma and veins brown. Length, 6 mm.

Head transverse, smooth and shining; antennae longer than the body, 32-jointed. Mesonotum almost smooth and shining, with scattered hair-punctures; parapsidal furrows deep, crenulate; mesopleurae also smooth, somewhat punctate below the tegulae, with a rugose discal furrow. Propodeum closely reticulate-rugose, without a median carina. Second abscissa of the radius straight; recurrent nervure inserted in the 1st cubital cell near the apex; nervulus postfurcal; 1st discoidal cell petiolate. Hind tarsi much shorter than the tibiae. Abdomen oblong, as long as the head and thorax united; 1st tergite 1.5 times as long as broad at the apex, weakly reticulate-rugose, with a median fovea at the apical fourth, and with a prominent tubercle placed on both sides near the base, thence to the apex the lateral sides straight, parallel; 2nd and following tergites smooth and shining; ovipositor falcate, not straight, the sheath pilose beneath, a little shorter than the hind tarsus.

♂. Differs from the female in the following points:—

Body darker than that of the female; thorax, propodeum, and 1st tergite entirely black; antennae 34-jointed; recurrent nervure interstitial; abdomen truncate at the apex, with two anal appendages. Length, 5.5 mm.

Holotype (♀): Sapporo, 24. VI, 1930, C. WATANABE. **Allotype** (♂): Shikaribetsu-ko, 20-24. VII, 1931, C. WATANABE. **Paratypes**: 1 ♀, Kaibatô, 30. VII, 1934, C. WATANABE & T. INOUE; 1 ♀, Shikaribetsu-ko, 20-24. VII, 1931, C. WATANABE.

Habitat: Saghalien (Kaibatô); Hokkaido (Sapporo and Shikaribetsu-ko).

Remarks—This species comes near to *Pygostolus falcatus* (NEES)¹⁾, but is distinguished from the latter by the antennae being 32-jointed in the female and 34-jointed in the male, and by the 1st tergite with a median fovea near the apex.

2. Genus *Blacus* NEES

Blacus NEES, Nov. Acta Acad. Nat. Curios, IX, p. 306 (1818).

Ganychorus HALIDAY, Ent. Magaz., III, pp. 39-40 (1835).

Goniocormus FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 254 (1862).

Genotype—*Blacus humilis* (NEES)

1. **Blacus trivialis* HALIDAY

Blacus trivialis HALIDAY, Ent. Magaz., III, p. 122, ♀ ♂ (1835); MARSHALL, Trans. Ent. Soc. London, p. 173, ♀ ♂ (1889); THOMSON, Opusc. ent., p. 1733, ♀ ♂ (1892); MARSHALL, Spec. Hymén. Europe, V, p. 191, ♀ ♂ (1893); DALLA TORRE, Cat. Hymén., IV, p. 95 (1898); SZÉPLI-GÉTI, Gen. Insect., 22-24, p. 140 (1904); LYLE, Entomologist, LVIII, p. 78, ♀ ♂ (1925).

On account of the following characters the present specimens may be identified with this species:—

♀ ♂. (1) Black; mouth-parts and legs reddish yellow; hind coxae and the apical half of the four posterior tarsi somewhat fuscous. (2) Antennae 17-jointed in the female, and 19-jointed in the male, the 3rd joint a little longer than the 4th. In the female the antennae stout, incrassated towards the apex, moniliform, and a little longer than the head and thorax united; in the male the antennae slender, filiform, and a little shorter than the body, the apical several joints globose, and the last joint oval. (3) Wings subhyaline; 2nd abscissa of the radius slightly curved, not extending to the apex of the wing; 1st discoidal cell sessile. (4) Propodeum reticulate-rugose, more or less obtusely denticulate at the posterior angle, with a short median carina at the base, and with a smooth area on each side of the carina. (5) First tergite twice as long as broad at the apex, slightly narrowed towards the apex, being as rugose as the propodeum; 2nd and following tergites smooth and shining. Ovipositor a little shorter than half the length of the abdomen. Length, 2.5-3 mm.

Habitat: Saghalien (Suzuya-dake, 1 ♀, 11. VII, 1930, C. WATANABE); Hokkaido (Sapporo, 10 ♂ ♂, 24. VI, 1930, C. WATANABE; Sounkyô, 1 ♀, 16. VII, 1930, C. WATANABE).

Gen. Distr.: Europe; Saghalien; Japan.

1) Hymén. Ichneum. affín. Monogr., I, p. 44, ♀ (1834) (as *Leiophron*).

5. Tribe *Leiophronini*

This tribe is apparently distinguished from its related ones by having a curved radius and a 2nd discoidal cell which is opened at the apex. Some species of this group are parasites of Coleopterous adults, mostly belonging to *Curculionidae*. Three genera, *Leiophron* NEES, *Centistes* HALIDAY, and *Syrrhizus* FÖRSTER, have been placed in this tribe, the first two being found in this country.

Key to the Genera

- | | | |
|----|------------------------------------------------------------------------------------|-----------------------------|
| 1. | Parapsidal furrows obsolete | 2 |
| - | Parapsidal furrows indicated; 1st cubital and 1st discoidal cells separated | |
|  | ... .. | 1. <i>Leiophron</i> NEES |
| 2. | First cubital and 1st discoidal cells separated | 2. <i>Centistes</i> HALIDAY |
| - | First cubital and 1st discoidal cells confluent | <i>Syrrhizus</i> FÖRSTER |

1. Genus *Leiophron* NEES

Leiophron NEES, Nov. Acta Acad. Nat. Curios, IX, p. 303 (1818).

Allurus FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 254 (1862).

Ancylocentrus FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 254 (1862).

Genotype—*Leiophron ater* NEES

Key to the Species

♀ ♀

- | | | |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 1. | First tergites subquadrate; antennae 39-jointed; propodeum without a median area; ovipositor short, the sheath squamiform. Length, 7 mm. | 1. <i>antennalis</i> sp. nov. |
| - | First tergite longer than broad, narrowed towards the base; antennae 30-jointed; propodeum with a median area near the base; ovipositor long, the sheath elongate. Length, 6 mm. | 2. <i>aino</i> sp. nov. |

1. *Leiophron antennalis* sp. nov. (Pl. V, Fig. 7)

♀. Black; mandibles, palpi, and legs reddish yellow; hind coxae at the base and hind tibiae on the apical half fuscous; antennae dark brown; wings hyaline, with the stigma and veins dark brown. Length, 7 mm.

Head smooth and shining, covered with pubescence; antennae as long as the body, 39-jointed. Mesonotum shining, with hair-punctures; parapsidal furrows distinctly indicated; mesopleurae closely punctate, with a smooth median area; scutellum of the mesonotum anteriorly foveate, the fovea crossed by several longitudinal carinae. Propodeum weakly reticulate-rugose, with a fine transverse carina at the middle. Recurrent nervure inserted in the 1st cubital cell; apical portion of the 1st abscissa of the cubitus shorter than the 1st abscissa of the radius; nervulus slightly post-

furcal, oblique. Hind coxae punctate, shallowly foveate on the upper surface; hind tibial spurs subequal, about half the length of the metatarsus, which is as long as the following two joints united. First tergite subquadrate, parallel-sided, longitudinally striate-rugose, except the apical fifth which is smooth and shining, and the following tergites smooth and shining; ventral segments not denticulate; ovipositor yellowish, curved, as long as the hind tibial spur, with the sheath dark brown, pilose, and squamiform.

♂. Unknown.

Holotype (♀): Kôchi, 19. IV, 1931, Y. SUGIHARA.

Habitat: Shikoku (Kôchi).

Remarks—This is easily distinguished from the congeneric species by having 39-jointed antennae.

2. ***Leiophron aino*** sp. nov. (Pl. III, Fig. 1)

♀. Black; mandibles, palpi, and legs reddish yellow; four posterior coxae and hind tibiae except the basal fourth fuscous; antennae dark brown, with the two basal joints black; wings hyaline, the stigma and veins dark brown. Length, 6 mm.

Head smooth and shining; antennae as long as the body, 30-jointed. Mesonotum smooth and shining with hair-punctures; parapsidal furrows deep; mesopleurae smooth with a punctate discal furrow; scutellum of the mesonotum bifoveate anteriorly; propodeum reticulate-rugose, with a small rhomboidal median area at the base, the median transverse carina strongly indicated, crossed by several longitudinal carinae. Recurrent nervure interstitial; nervulus just postfurcal. Hind coxae smooth and shining; hind tibial spurs subequal, about half the length of the hind metatarsus. First tergite gradually narrowed towards the base, 1.5 times as long as broad at the base, longitudinally striate-rugose on the basal two-thirds, with a longitudinal carina on the lateral sides, the apical third and the following tergites smooth and shining; ventral segments not denticulate; ovipositor as long as the two basal joints of the hind tarsus, the sheath elongate, pilose.

♂. Unknown.

Holotype (♀): Sapporo, 25. VII, 1933, C. WATANABE.

Habitat: Hokkaido (Sapporo).

Remarks—This species approaches nearest to *Leiophron ater* NEES¹⁾, from which it is distinguished by the number of the antennal joints, by the structure of the propodeum, and by the shape of the 1st tergite.

1) Hymen. Ichneum. affin. Monogr. I, p. 45, ♀ ♂ (1834)

2. Genus *Centistes* HALIDAY

Ancylus HALIDAY, Ent. Magaz., I, p. 261 (1833) (nec MÜLLER, 1776).

Centistes HALIDAY, Ent. Magaz., II, p. 462 (1835).

Genotype—*Centistes lucidator* (NEES)

1. **Centistes lucidator* (NEES)

Leiothron (Ancylus) cuspidatus HALIDAY, Ent. Magaz., I, p. 261 (1833) (non descr.)

Bracon lucidator NEES, Hymen. Ichneum. affin. Monogr., I, p. 50, ♂ (1834).

Leiothron (Centistes) cuspidatus HALIDAY, Ent. Magaz., II, p. 460, ♀ ♂ (1835).

Centistes lucidator REINHARD, Berlin. Ent. Zeitschr., VI, p. 336 (1862); MARSHALL, Trans. Ent. Soc. London, p. 181, ♀ ♂ (1889); id., Spec. Hymén. Europe, V, p. 207, ♀ ♂, Pl. VI, fig. 2, ♂ (1893); DALLA TORRE, Cat. Hymen., IV, p. 89 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 137 (1904); LYLE, Entomologist, LIX, p. 104 (1926).

Leiothron (Leiothron) lucidator THOMSON, Opusc. ent., p. 2222, ♀ ♂ (1895).

This is one of the commonest species in Europe, being found among fungi (after MARSHALL).

Habitat: Saghalien (Konuma, 1 ♂, 23. VII, 1934, C. WATANABE & T. INOUE).

Gen. Distr.: Europe; Saghalien.

6. Tribe *Ichneutini*

This tribe, a small isolated group, is represented by three genera, *Proterops* WESMAEL, *Ichneutes* NEES, and *Ichneutidae* ASHMEAD, the first two being found in Japan.

This group, as a whole, seems exclusively to attack the larvae of sawflies (*Tenthredinidae*).

Key to the Genera

1. First abscissa of the radius much shorter than the 2nd, which is much longer than the 1st intercubitus; radius of the hind wing obsolete; ocelli normal, the anterior one remote from the base of the antennae 1. *Ichneutes* NEES
- First abscissa of the radius as long as the 2nd, which is a little shorter than the 1st intercubitus; radius of the hind wing present; ocelli abnormal, the anterior one placed between the antennae 2. *Proterops* WESMAEL

1. Genus *Ichneutes* NEES

Ichneutes NEES, Magaz. Ges. Naturf. Fr. Berlin, VII, p. 275 (1813).

Genotype—*Ichneutes reunitor* NEES

1. **Ichneutes reunitor* NEES

Ichneutes reunitor NEES, Magaz. Ges. Naturf. Fr. Berlin, VII, p. 276, Pl. VII, fig. 5 (1813); id., Hymen. Ichneum. affin. Monogr., I, p. 158, ♀ ♂ (1834); RATZBURG, Ichneum. d. Forstinsect.,

III, p. 69 (1852); MARSHALL, Trans. Ent. Soc. London, p. 183, ♀ ♂ (1889); id., Spec. Hymén. Europe, V, p. 211, ♀ ♂ (1893); THOMSON, Opusc. ent., p. 2214, ♀ ♂ (1895); DALLA TORRE, Cat. Hymen., IV, p. 88 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 142 (1904); FAHRINGER, Ark. Zool., Bd. 21 A, No. 8, p. 8 (1929).

♀. Black; palpi pale; legs reddish yellow; coxae black; trochanters and tarsi somewhat fuscous; wings subhyaline; stigma and veins dark brown. Length, 4-5 mm.

Head closely punctate-rugose; face with an indistinct short median ridge; antennae as long as the body, 32 to 34-jointed. Mesonotum smooth and shining, with hair-punctures; parapsidal furrows crenulate; mesopleurae punctate-rugose; propodeum reticulate-rugose, with an oblong median area weakly indicated. Radius inserted at the basal fourth of the stigma; 3rd abscissa of the radius incurved; basal nervure strongly curved at the base; recurrent nervure received in the 1st cubital cell; nervulus just interstitial; anal cell with a transverse nervure; radius of the hind wing obsolete. First tergite as long as broad at the apex, narrowed towards the apex, closely reticulate-rugose, with two converging carinae at the base, the area enclosed by the carinae being slightly raised; 2nd tergite subquadrate, entirely reticulate-rugose, and the following ones transverse, smooth and shining, with hair-punctures; ovipositor short, not projecting beyond the apex of the abdomen; hypopygium acute at the apex.

♂. Differs from the female in the following points:—

(1) Antennae slender, 34 or 35-jointed. (2) Median area of the propodeum more distinctly indicated. (3) Abdomen rounded at the apex; 6th tergite concave, longer than the 5th. Length, 4-5 mm.

Hosts—*Pontania viminalis* LINNÉ, *Croesus septentrionalis* LINNÉ, and *Pteronidea salicis* LINNÉ (after MARSHALL, in Europe); *Lygaeonematus politivaginat* TAKEUCHI (in Hokkaido).

Many cocoons of *Lygaeonematus politivaginat* were received from S. ITO of Tomakomai, in October, 1934, the larvae feeding on the larch (*Larix leptolepis*). From the cocoons were bred 7 females and 6 males of this parasite, on May 7th to 25th, 1935.

Habitat: Hokkaido (Tomakomai).

Gen. Distr.: Europe; West Asia; Siberia; Japan.

2. Genus *Proterops* WESMAEL

Proterops WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., IX, p. 201 (1835).

Genotype—*Proterops nigripennis* WESMAEL

1. **Proterops nigripennis* WESMAEL

Proterops nigripennis WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., IX, p. 202, ♀ ♂, Pl. II, fig. 20 (1835); MARSHALL, Trans. Ent. Soc. London, p. 184, ♀ ♂ (1889); id., Spec. Hymén. Europe, V, p. 213, ♀ ♂, Pl. VI, fig. 4, ♂ (1893); THOMSON, Opusc. ent., p. 2216, ♀ ♂ (1895); DALLA TORRE, Cat. Hymen., IV, p. 88 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 141 (1904).

In a series of the present specimens the legs and the abdomen are variable in colour.

♀. Black; abdomen reddish yellow, rarely fuscous; legs normally black, sometimes reddish yellow; hind tibiae on the apical half and their tarsi fuscous; wings infusate, the stigma and veins dark brown. Length, 5-6 mm.

Head and thorax smooth and shining, pubescent; face with a deep fovea on both sides of the clypeus; antennae longer than the body, slightly incrassated towards the apex, 36-jointed; propodeum smooth, more closely pubescent than the mesonotum. First abscissa of the radius a little longer than the 2nd; recurrent nervure inserted in the 1st cubital cell; nervulus interstitial; hind spurs subequal, about two-fifths the length of the hind metatarsus. Abdomen smooth and shining, with yellowish pubescence; 1st tergite with a longitudinal furrow on the lateral sides; ovipositor concealed.

♂. Differs from the female in the following points:—

Abdomen brown to dark brown; legs normally black, sometimes all coxae and trochanters, and hind femora reddish yellow; antennae 34-36-jointed. Length, 5-6 mm.

Hosts—*Arge enodis* LINNÉ and *Arge atrata* FÖRSTER (after MARSHALL, in Europe); *Arge simillima* SMITH (in Honshu).

The writer has received two females bred from the larvae of *Arge simillima* by N. II at Tokyo.

Habitat: Honshu (Tokyo, 2 ♀ ♀, 21. VII, 1935, N. II; Takasago, 2 ♀ ♀, 1 ♂, non deta, S. MATSUMURA; Kibune, 1 ♂, 13. VI, 1930, K. TAKEUCHI; Kyoto, 1 ♀, 15. IX, 1930, 1 ♂, 21. V, 1930, K. TAKEUCHI; Mt. Hakuba, 1 ♂, 1. VIII, 1930, K. TAKEUCHI); Shikoku (Kôchi, 1 ♂, 28. IV, 1933, Y. SUGIHARA; Hongawa, 1 ♀, VI, 1932, H. WADA; Susaki, 1 ♂, 10. VI, 1935, K. OIKE); Korea (Suigen, 1 ♀, 14. VI, 1924, K. SATO).

Gen. Distr.: Europe; Siberia; Korea; Japan.

Appendix

Proterops (?) basalis WALKER

Proterops basalis WALKER, Cist. Ent., I, p. 308 (1874); MORLEY, Entomologist, XLVI, p. 135 (1913).

MORLEY suggests, "the type appears to belong to the genus *Cardiochiles* NEES, on account of its distinct cubital areolet and deeply impressed notauli of the black mesonotum. One female specimen." The original description is, however, too incomplete to allow the determination of the systematic position of this species. Further, WALKER gives no more definite habitat than Japan.

7. Tribe *Cardiochilini*

According to SZÉPLIGETI *Cardiochiles* NEES, *Toxoneuron* SAY, and *Psilophthalmus* SZÉPLIGETI are placed in this tribe; only the first one is found in this country.

1. Genus *Cardiochiles* NEES

Cardiochiles NEES, Nov. Acta Nat. Curios, IX, p. 307 (1818); id., Hymen. Ichneum. affn. Monogr., I, p. 221 (1834).

Dithereus CAMERON, Jour. Bomb. Nat. Hist. Soc., XIV, p. 434 (1902).

Genotype—*Cardiochiles saltator* (FABRICIUS)

This genus was placed by such authors as FÖRSTER, MARSHALL, DALLA TORRE, etc., in the subfamily *Microgasterinae*.

So far as the writer is aware, three species have been recorded from Formosa. On this occasion two more species are added to the present fauna, one of which is new to science.

Key to the Species

1. Face smooth and shining; parapsidal furrows smooth 2
- Face punctate; parapsidal furrows crenulate 4
2. Ground colour black; wings apically infusate 3
- Ground colour reddish yellow; antennae and ovipositor-sheath black; hind tarsi fuscous; stigma brown, with a yellow spot at the basal angle; ovipositor as long as the two basal joints of the hind tarsus united. Length, 5 mm. 1. *szépligetii* ENDERLEIN
3. Hind wing entirely subhyaline; frontal depression with a longitudinal median carina; ovipositor as long as the two basal joints of the hind tarsus united. Length, 5 mm. 2. *saltator* (FABRICIUS)
- Hind wing medially hyaline; frontal depression without a median carina; ovipositor as long as the 1st joint of the hind tarsus. Length, 6 mm. 3. *laevifossa* ENDERLEIN
4. Head partly rugose; thorax and two basal tergites smooth and shining; hind tibiae with a narrow white ring at the base; ovipositor shorter than the 2nd joint of the hind tarsus. Length, 7-7.5 mm. 4. *albipilosus* SZÉPLIGETI
- Head strongly rugose; thorax strongly reticulate-rugose; two basal tergites with scattered fine punctures; hind tibiae on the basal half whitish yellow; ovipositor as long as the two basal joints of the hind tarsus united. Length, 9 mm.... .. 4. *japonicus* sp. nov.

1. ***Cardiochiles szépligetii*** ENDERLEIN

Cardiochiles testaceus SZÉPLIGETI, Term. Füz., XXV, p. 77, ♂ (1902); id., Gen. Insect., 22-24, p. 143 (1904) (nec KRIECHBAUMER, 1894).

Cardiochiles szépligetii ENDERLEIN, Stett. Ent. Zeit., LXVII, p. 252 (1906); SZÉPLIGETI, Notes Leyden Mus., XXIX, p. 230, ♀ (1908); ENDERLEIN, Ent. Mitt., I, p. 262, ♂ (1912); WATANABE, Ins. Mats., VIII, p. 205 (1934).

Habitat: Formosa (Takao, after ENDERLEIN; Koshun, after WATANABE).

Gen. Distr.: Singapore; Malacca; Ceylon; Java; Formosa.

2. ****Cardiochiles saltator*** (FABRICIUS)

Ichneumon saltator FABRICIUS, Spec. Insect., I, p. 433 (1781).

Cardiochiles saltator NEES, Hymen. Ichneum. affin. Monogr., I, p. 224 (1834); MARSHALL, Spec. Hymén. Europe, IV, p. 391, ♀ ♂ (1889); KOKUJEW, Horae Soc. Ent. Ross., XXIX, p. 366, ♀ ♂ (1894); SZÉPLIGETI, Term. Füz., XIX, p. 179, ♂ (1896); DALLA TORRE, Cat. Hymen., IV, p. 188 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 143 (1904).

Habitat: Korea (Suigen, 1 ♀, 26. VI, 1924, K. SATO).

f. ***branchialis*** RONDANI

Cardiochiles branchialis RANDANI, Bull. Soc. Ent. Ital., VI, p. 132, ♀ ♂ (1874); MARSHALL, Spec. Hymén. Europe, IV, p. 391, ♀ (1889).

Cardiochiles saltator var. *branchialis* SZÉPLIGETI, Term. Füz., XIX, p. 179 (1896); DALLA TORRE, Cat. Hymen., IV, p. 188 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 143 (1904).

Differs from the typical form in that the thorax is entirely black.

Habitat:—Korea (Suigen, 1 ♂, 14. VI, 1924, 1 ♂, 1925, 1 ♀, 27. VI, 1929, K. SATO).

Gen. Distr.: Europe; Siberia; Korea.

3. ***Cardiochiles laevifossa*** ENDERLEIN

Cardiochiles laevifossa ENDERLEIN, Stett. Ent. Zeit., LXVII, p. 248, ♂ (1906); id., Ent. Mitt., I, p. 262, ♀ (1912); WATANABE, Ins. Mats., VIII, p. 204 (1934).

Habitat: Formosa (Takao, after ENDERLEIN; Takao, Koshun, Akan, Kagi, and Taihorin, after WATANABE).

Gen. Distr.: West Java; Formosa.

4. ***Cardiochiles albopilosus*** SZÉPLIGETI

Cardiochiles albopilosus SZÉPLIGETI, Term. Füz., XXV, p. 78, ♂ (1902); id., Gen. Insect., 22-24, p. 143 (1904); ENDERLEIN, Stett. Ent. Zeit., LXVII, p. 248, ♀ ♂ (1906); id., Ent. Mitt., I, p. 262, ♀ (1912); WATANABE, Ins. Mats., VIII, p. 204 (1934).

Habitat: Formosa (Takao, after ENDERLEIN; Kosempo, after WATANABE).

Gen. Distr.: Singapore; Sumatra; Formosa.

5. ***Cardiochiles japonicus*** sp. nov. (Pl. III, Fig. 6)

♀. Black; hind femora at the apex, fore tibiae and tarsi, middle

tibiae on the basal fourth, and hind tibiae on the basal half yellow; wings subhyaline, the apical half of the fore wing infusate, and the hind wing slightly infusate at the apex; stigma and veins dark brown. Length, 9 mm.

Head transverse, rugose, and pubescent; frons shallowly depressed at the middle, transversely striate, with a median longitudinal carina; face reticulate-rugose, with a weak median ridge; antennae stout, a little shorter than the head and thorax together, about 40-jointed. Thorax strongly reticulate-rugose; parapsidal furrows broad, crenulate; mesopleurae with a discal crenulate furrow; scutellum of the mesonotum anteriorly foveate, the foveae separated by seven short carinae; propodeum strongly reticulate-rugose, declivous on the posterior face, with a rhomboidal area at the middle. Radius inserted at the basal third of the stigma; 1st abscissa of the radius about one-fourth the length of the 2nd, and the 3rd curved inwardly; 2nd cubital cell trapezoidal; recurrent nervure inserted at the apical third of the 1st abscissa of the cubitus; nervulus postfurcal by its own length; radius of the hind wing curved inwardly. Legs stout, the hind coxae closely punctate. Abdomen as long as the head and thorax united; 1st tergite gradually broadened towards the apex, 1.5 times as long as broad at the apex, strongly grooved laterally, with a triangular basal raised area which is slightly punctate; 2nd tergite transverse, shorter than the 3rd, the lateral sulci slightly punctate; 3rd and following tergites smooth, pubescent; ovipositor as long as the 1st joint of the hind tarsus, the sheath dilated.

♀. Closely resembles the female in general structure and colour, but the antennae are slender and the wings are more fuscous than in the female. Length, 9 mm.

Holotype (♀) and **Allotype** (♂): Hamanaka, Wakayama-ken, VIII, 1928, F. WADA. **Paratypes**: 1 ♀, Hamanaka, Wakayama-ken, 1927, F. WADA; 1 ♀, Kôchi, 4. VIII, 1935, H. OKAMOTO.

Habitat: Honshu (Hamanaka, Wakayama-ken); Shikoku (Kôchi).

Remarks—This species comes near to the preceding species, *Cardiochiles albopilosus* SZÉPLIGETI, from which it is easily distinguished by the sculpture of the thorax and abdomen.

8. Tribe *Opiini*

This group is composed of a great number of minute species, parasitic on phytophagous *Diptera*, belonging to the *Agromyzidae*, *Trypetidae*, *Antho-*

myiidae and their related families. Only a single genus, *Opius* WESMAEL, occurs in this country.

I. Genus *Opius* WESMAEL

Opius WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., IX, p. 115 (1835).

Biosteres & *Diachasma* FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 259 (1862).

Genotype—*Opius pygmaeator* (NEES)

This is one of the largest and commonest genera in this tribe. As far as the writer is aware only four species have been recognized in Formosa, and a key to the species has been given by SONAN¹⁾.

1. *Opius arisanus* SONAN

Diachasma sp. MAKI, Mikan komibae ni kansuru Chosa, p. 244, ♀, Pl. XII, fig. 1, ♀ (1921).

Opius arisanus, SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 67, ♀ ♂ (1932).

No representatives of this species have been seen by the writer.

Host—Bred from the pupae of *Chaetodacus ferrugineus* var. *dorsalis*

HENDEL (after MAKI and SONAN, in Formosa).

Habitat: Formosa (Funkiko, after SONAN).

Gen. Distr.: Formosa.

2. *Opius formosanus* (FULLAWAY)

Biosteres formosanus FULLAWAY, Proc. Haw. Ent. Soc., VI, p. 283 (1926).

Opius formosanus SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 66 (1932).

The writer has not yet seen any representatives of this species.

Hosts—*Zeugodacus synnephes* HENDEL, *Chaetodacus ferrugineus* FABRICIUS, *Chaetodacus ferrugineus* var. *dorsalis* HENDEL (after MIKI and SONAN).

Habitat: Formosa (Kagi, Kuraru, Hokuto, and Kôtoshô, after SONAN).

Gen. Distr.: Formosa.

3. *Opius maculipennis* ENDERLEIN

Opius maculipennis ENDERLEIN, Ent. Mitt., I, p. 262, ♂ (1912); SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 67, ♀ ♂ (1932); WATANABE, Ins. Mats., VIII, p. 205 (1934).

Habitat: Formosa (Anping, after ENDERLEIN; Karenko, Taito, Arisan, Taiheizan, and Numanohira, after SONAN; Taihorin, after WATANABE; Urai, 1 ♂, 3. IV, 1921, J. SONAN).

Gen. Distr.: Formosa.

1) Trans. Nat. Hist. Soc. Formosa, XXII, p. 66 (1932).

4. *Opius makii* SONAN

Diachasma sp. MAKI, Mikan-komibae ni kansuru Chosa, p. 245, ♀, Pl. XII, fig. 2 (1921).

Opius makii SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 68, ♂ (1932).

Host—Bred from the pupae of *Chaetodacus ferrugineus* var. *dorsalis* HENDEL (after MAKI and SONAN, in Formosa).

Gen. Distr.: Formosa.

Appendix

Opius fletcheri SILVESTRI

Opius fletcheri SILVESTRI, Boll. Lab. Portici, XXII, p. 163 (1916); SONAN, Trans. Nat. Hist. Soc. Formosa, XXII, p. 67 (1932).

This species was artificially introduced from the Hawaiian Islands into Formosa by S. ISSIKI and T. OKUNI in 1922, as a natural enemy of *Chaetodacus cucurbitae* COQUILLET. Its establishment, however, has not yet been recognized in Formosa. Further, the type-locality of this species is India.

9. Tribe *Helconini*

The tribe is composed of a number of comparatively large species, being widely distributed in the world. It appears that most of the species are parasitic on wood-boring *Coleoptera*, mostly belonging to *Cerambycidae*. The following two genera have been recognized in the present fauna.

Key to the Genera

- 1. Recurrent nervure received in the 2nd cubital cell; ground colour reddish yellow, with some black markings 1. *Brulléia* SZÉPLIGETI
- Recurrent nervure received in the 1st cubital cell; ground colour black 2. *Helcon* NEES

1. Genus *Brulléia* SZÉPLIGETI

Brulléia SZÉPLIGETI, Gen. Insect., 22-24, p. 150 (1904); WATANABE, Ins. Mats., VI, p. 22 (1931).

Genotype—*Brulléia melanocephara* SZÉPLIGETI

So far as the writer is aware, this genus is represented by three species, two of which are found in this country.

Key to the Species

♀ ♀

- 1. Head yellowish red 2
- Head black; ovipositor longer than the body, 15 mm. Length, 13 mm. New Guinea ...

- *melanocephara* SzÉPLIGETI¹⁾
2. Third (except the basal margin) and following tergites black; propodeum coarsely reticulate-rugose, with a strong longitudinal carina on the lateral margins, the median area surrounded with irregular carinae, shallowly excavated, and the lateral areas finely punctate; ovipositor much longer than the body, 23-27 mm. Length, 19-24 mm. Japan and China
 *I. shibuensis* (MATSUMURA)
- Abdomen entirely yellowish red; propodeum closely reticulate-rugose, without carinae and areas; ovipositor longer than the body, 18-31 mm. Length, 14-20 mm. Indo-China and Japan
 *2. euphemia* TURNER

1. ***Brulléia shibuensis*** (MATSUMURA) (Pl. V, Fig. 6)

Doryctes shibuensis MATSUMURA, Thous. Ins. Jap., Suppl. IV, p. 151, ♀, Pl. LII, fig. 1, ♀ (1912); id., Konchu Bunruigaku, II, p. 269, ♀ (1915).

Brulléia shibuensis MATSUMURA, Ill. Thous. Ins. Jap., II, p. 141, ♀, Pl. XV, fig. 1 (1930); id., 6000 Ill. Insect. Japan-Empire, p. 73, fig. 399, ♀ (1931); WATANABE, Ins. Mats., VI, p. 22, ♀ ♂ (1931); MATSUMURA, Ill. Com. Ins. Jap., IV, p. 36, ♀ ♂, Pl. IX, fig. 14, ♂ (1932); CHU, 1934 Year Book, Bur. Ent. Hangchow, p. 21 (1935).

Brulléia chinensis TURNER, Ann. Mag. Nat. Hist., II, p. 171, ♂ (1918) (syn. nov.)

Habitat: Honshu (Shibu, Nagano-ken and Tokyo, after WATANABE); Shikoku (Kôchi, Kôchi-ken, 1 ♂, 17. VI, 1934, H. WADA).

Gen. Distr.: Japan; China.

2. ****Brulléia euphemia*** TURNER

Brulléia euphemia TURNER, Ann. Mag. Nat. Hist., IV, p. 387, ♀ (1919).

♀. Yellowish red; tips of the mandibles and ovipositor-sheath black; antennae dark brown, the 1st and 2nd joints yellowish red, and the 10th to 15th (to 18th in the original description) joints whitish; wings brownish, subhyaline, the stigma fuscous and the veins brown.

Head transverse; frons slightly excavated, transversely striate-rugose; vertex and occiput closely punctate; face closely reticulate-rugose; antennae shorter than the body, 40-jointed (42-jointed in the original description). Scutum of the mesonotum finely punctate, broadly depressed in the middle, with a median longitudinal carina, and with some transverse striae; parapsidal furrows deep, crenulate; scutellum of the mesonotum finely punctate, bifoveate anteriorly, the foveae separated by a sharp median carina; mesopleurae finely punctate, with a broad discal furrow; metapleurae coarsely reticulate-rugose. First abscissa of the radius a little shorter than the 2nd; 2nd intercubitus oblique, bent outwardly near the lower end. Abdomen a little longer than the head and thorax united; 1st tergite 3 times as long as broad at the apex, reticulate-rugose, with a longitudinal carina on the lateral margins; 2nd tergite as long as broad, dull, and punctate; the other

1) Gen. Insect., 22-24, p. 150, ♀, Pl. III, fig. 32, ♀ (1904).

tergites shining, with fine scattered punctures; hypopygium short, rounded at the apical margin, with short hairs; ovipositor longer than the body, 18 mm. (31 mm.), the sheath covered uniformly with hairs. Length, 14 mm. (20 mm. in the original description).

Described from an unique specimen in the collection of the Umeno Entomological Laboratory, Kurume, Kiushu.

♂. Unknown.

Habitat: Kiushu (Yakushima, 1 ♀, 28. VII, 1931, A. UMEMO).

Gen. Distr.: Indo-China (Tonkin, after TURNER); Japan.

2. Genus *Helcon* NEES

Helcon NEES, Magaz. Ges. Nat. Fr. Berlin, VI, p. 216 (1812).

Aspidocolpus WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., XI, p. 155 (1838).

Gymnoscelus FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 255 (1862).

Helconidea VIERECK, Bull. U. S. Nat. Mus. Washing., 83, p. 67 (1914).

Genotype—*Helcon* (*Helcon*) *ruspator* (LINNÉ)

So far as the writer's revision is concerned, nine species have been recognized in this country. In the present study one more species is added to this fauna.

Key to the Subgenera

1. Frons deeply excavated; 1st discoidal cell petiolate; clypeus straight at the apical margin 1. *Helcon* s. str.
- Frons shallowly excavated; 1st discoidal cell sessile; clypeus rounded at the apical margin 2. *Aspidocolpus* WESMAEL

1. Subgenus *Helcon* s. str.

Key to the Species

♀ ♀

1. Hind femora armed beneath with a strong tooth 2
- Hind femora simple beneath, unarmed 5
2. Antennae without a white ring 3
- Antennae with a white ring before the middle; legs reddish yellow; tarsi yellowish white; hind coxae, hind femora at the apex, and their tibiae on the apical half tinged with fuscous; ovipositor a little shorter than the body. Length, 9-10 mm. 1. *spinator* LEPELETIER
(= *annulicornis* NEES)
(= *cornutus* CAMERON)
3. Hind femora stout; 1st tergite rugose, the longitudinal carinae distinctly indicated; ovipositor a little shorter than the body 4
- Hind femora stout; 1st tergite rugose, the longitudinal carinae scarcely indicated; ovi-

- positor longer than the body. Length, 10-12 mm. 2. *dentator* (FABRICIUS)
(= *aequator* NEES)
4. Tarsi black; longitudinal carinae of the 1st tergite extending nearly to the apex. Length, 10-11 mm. 3. *ruspator* (LINNÉ)
- Tarsi white; longitudinal carinae of the 1st tergite extending beyond the middle. Length, 9-15 mm. 4. *uchūtai* WATANABE
5. Antennae without a white ring 6
- Antennae with a white ring before the middle; 1st tergite with two longitudinal carinae; legs dark brown to black; 2nd to 4th joints of the tarsi whitish yellow; ovipositor as long as the propodeum and abdomen united. Length, 9-11 mm. 5. *tricolor* WATANABE
6. Longitudinal carinae of the 1st tergite slightly indicated; hind femora black; ovipositor as long as the thorax and abdomen united. Length, 9-10 mm. 6. *redactor* (THUNBERG)
(= *yezonicum* WATANABE)
- Longitudinal carinae of the 1st tergite strongly indicated; hind femora reddish yellow; ovipositor as long as the body. Length, 10-14 mm. 7. *tardator* NEES

♂♂

1. Hind femora armed beneath with a strong tooth 2
- Hind femora simple beneath, unarmed 4
2. Four posterior tarsi dark brown to black 3
- Four posterior tarsi whitish yellow, the rest of the legs reddish yellow, with some fuscous markings; 1st tergite distinctly carinate. Length, 9-10 mm. 1. *spinator* LEPELETIER
3. Hind femora slender; 1st tergite rugose, the longitudinal carinae slightly indicated. Length, 9-11 mm. 2. *dentator* (FABRICIUS)
- Hind femora stout; 1st tergite rugose, the longitudinal carinae distinctly indicated. Length, 10-12 mm. 3. *ruspator* (LINNÉ)
4. Longitudinal carinae of the 1st tergite slightly indicated; hind femora black. Length, 8-9 mm. 6. *redactor* (THUNBERG)
- Longitudinal carinae of the 1st tergite distinctly indicated; hind femora reddish yellow. Length, 8-12 mm. 7. *tardator* NEES

1. *Helcon (Helcon) spinator* LEPELETIER

Helcon spinator LEPELETIER, Encycl. Méthod. Insect., X, p. 41, ♀♂ (1825); DALLA TORRE, Cat. Hymen., IV, p. 85 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 151 (1904).

Helcon annulicornis NEES, Hymen. Ichneum. affin. Monogr., I, p. 231 (1834); MARSHALL, Trans. Ent. Soc. London, p. 186, ♀♂ (1889); THOMSON, Opusc. ent., p. 1723, ♀♂ (1891); MARSHALL, Spec. Hymén. Europe, V, p. 217, ♀♂, Pl. VI, figs. 5-6 (1893); DALLA TORRE, Cat. Hymen., IV, p. 83 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 151 (1904).

Helcon annularis SZÉPLIGETI, Ann. Mus. Nat. Hung., IV, p. 425 (1908).

Helcon cornutus CAMERON, Proc. & Trans. Nat. Hist. Soc. Glasgow, I, p. 270, ♀ (1885-1886); DALLA TORRE, Cat. Hymen., IV, p. 84 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 151 (1904) (syn. nov.)

Helcon (Helcon) cornutus WATANABE, Ins. Mats., VI, p. 24 (1931).

Helcon (Helcon) spinator FAHRINGER, Zeitschr. Angewand. Ent., XX, p. 319, ♀♂ (1933).

Habitat: Hokkaido (Sapporo, 1 ♀, 18. VI, 1904, M. ISHIDA, 1 ♂,

VII, 1909, S. MATSUMURA, 1 ♂, 5. IV, 1923, T. UCHIDA; Jōzankei, 1 ♂, 8. VII, 1907, S. MATSUMURA); Honshu (Fukui, after CAMERON).

Gen. Distr.: Europe; Japan.

2. ***Helcon (Helcon) dentator*** (FABRICIUS)

Pimpla dentator FABRICIUS, Syst. Piez., p. 114 (1804); THUNBERG, Bull. Acad. Sci. St. Pétersbourg, VIII, p. 273 (1822); id., Mém. Acad. Sci. St. Pétersbourg, IX, p. 342 (1824).

Helcon aequator NEES, Magaz. Ges. Nat. Fr. Berlin, VI, p. 219 (1812); id., Hymen. Ichneum. affin. Monogr., I, p. 229 (1834); RATZEBURG, Ichneum. d. Forstinsect., II, p. 67, ♀ ♂, Pl. II, fig. 32 (1848); THOMSON, Opusc. ent., p. 1723, ♀ ♂ (1891); MARSHALL, Spec. Hymén. Europe, V, p. 218, ♀ ♂ (1893); DALLA TORRE, Cat. Hymen., IV, p. 83 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 151 (1904); id., Ann. Mus. Nat. Hung., IV, p. 426 (1908).

Helcon dentator ROMAN, Zool. Bidrag Fr. Uppsala, I, p. 282 (1912).

Helcon (Helcon) aequator WATANABE, Ins. Mats., VI, p. 24 (1931).

Helcon (Helcon) dentator FAHRINGER, Zeitschr. Angewand. Ent., XX, p. 315 (1933).

Hosts—*Tetropium castaneum* LINNÉ, *Tetropium fuscum* FABRICIUS, *Tetropium gabrieli* WEISE, and *Callidium violaceum* LINNÉ (after FAHRINGER, in Europe).

Habitat: Saghalien (Pubuni, North Saghalien, after WATANABE; Ichinosawa, 1 ♀, 10. VII, 1924, S. TAKANO; Kashiho, 1 ♀; 10. VII, 1933, T. UCHIDA).

Gen. Distr.: Europe; West Asia; Saghalien.

3. ***Helcon (Helcon) usinator*** (LINNÉ)

Ichneumon ruspator LINNÉ, Syst. nat., Ed. 10 a, I, p. 565 (1758).

Helcon ruspator NEES, Hymen. Ichneum. affin. Monogr., I, p. 230 (1834); RATZEBURG, Ichneum. d. Forstinsect., II, p. 67 (1848); KAWALL, Bull. Soc. Nat. Moscou, XXVIII, p. 31 (1865); THOMSON, Opusc. ent., p. 1724 (1891); MARSHALL, Spec. Hymén. Europe, V, p. 219, ♀ ♂ (1893); DALLA TORRE, Cat. Hymen., IV, p. 85 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 151 (1904); id., Ann. Mus. Nat. Hung., VI, p. 426 (1908).

Helcon (Helcon) ruspator WATANABE, Ins. Mats., VI, p. 24 (1931); FAHRINGER, Zeitschr. Angewand. Ent., XX, p. 318, ♀ ♂ (1933).

In a series of the present specimens the 2nd tergite is entirely smooth and shining as in the following tergites, and the legs are tinged with black.

Hosts—*Leptura (Stangalia) quadrifasciata* LINNÉ and *Acanthocinus aedilis* LINNÉ (after FAHRINGER, in Europe).

Habitat: Saghalien (Kashiho, 1 ♂, 1. VIII, 1932, H. KŌNO); Hokkaido (Sapporo and Jōzankei, after WATANABE); Honshu (Mt. Koma, Nagano-ken, 1 ♀, 15. VIII, 1924, K. TAKEUCHI); Korea (Keijō, 1 ♀, 6. VII, 1928, J. MURAYAMA).

Gen. Distr.: Europe; West Asia; Saghalien; Japan; Korea.

4. ***Helcon (Helcon) uchidai*** WATANABE (Pl. XI, Fig. 3)

Helcon (Helcon) uchidai WATANABE, Ins. Mats., VI, p. 25, ♀ (1931).

In a series of the present specimens from Saghalien the antennae are 31 or 32-jointed, and the 2nd tergite is almost entirely punctate-rugose. Length, 9 mm.

Habitat: Saghalien (Konuma, 2 ♀ ♀, 23. VII, 1934, C. WATANABE & T. INOUE); Hokkaido (Kamimotoineppu and Zenibako, after WATANABE).

Gen. Distr.: Japan; Saghalien.

5. ***Helcon (Helcon) tricolor*** WATANABE

Helcon (Helcon) tricolor WATANABE, Ins. Mats., VI, p. 26, ♀, fig. 1 (1931).

Habitat: Hokkaido (Sapporo and Sôunkyo, after WATANABE); Honshu (Kurobe, Nagano-ken, 1 ♀, 31. VI, 1931, K. TAKEUCHI).

Gen. Distr.: Japan.

6. ***Helcon (Helcon) redactor*** (THUNBERG)

Ichneumon redactor THUNBERG, Bull. Acad. Sci. St. Pétersbourg, VIII, p. 273 (1822); id., Mém. Acad. Sci. St. Pétersbourg, IX, p. 343 (1824).

Helcon femoralis THOMSON, Opusc. ent., p. 1725, ♀ ♂ (1891); MARSHALL, Spec. Hymén. Europe, V, p. 227, ♀ ♂ (1893); DALLA TORRE, Cat. Hymer., IV, p. 84 (1898).

Gymnoscelus femoralis SZÉPLIGETI, Gen. Insect., 22-24, p. 151 (1904).

Helcon redactor ROMAN, Zool. Bidrag Fr. Uppsala, I, p. 276 (1912).

Helcon cylindricus WESMAEL var. *femoralis* ROMAN, Ark. Zool., Bd. 17 A, No. 4, p. 33 (1925).

Helcon (Helcon) yezonicum WATANABE, Ins. Mats., VI, p. 26, ♀ (1931) (syn. nov.)

Helcon (Gymnoscelus) redactor FAHRINGER, Zeitschr. Angewand. Ent., XX, p. 317, ♀ ♂ (1933).

In the course of the present studies the writer has become convinced that *yezonicum* should be considered identical with *redactor*.

Habitat: Saghalien (Keton, 1 ♀, 1. VIII, 1932, H. KÔNO; Hokkyo, 1 ♀, 18. VII, 1933, T. UCHIDA); Hokkaido (Jôzankei and Sapporo, after WATANABE).

Gen. Distr.: North Europe; Siberia; Saghalien; Japan.

7. ****Helcon (Helcon) tardator*** NEES

Helcon tardator NEES, Magaz. Ges. Nat. Fr. Berlin, VI, p. 218 (1812); id., Hymen. Ichneum. affin. Monogr., I, p. 228 (1834); RATZEBURG, Ichneum. d. Forstinsect., II, p. 68 (1848); THOMSON, Opusc. ent., p. 1725, ♀ ♂ (1891); MARSHALL, Spec. Hymén. Europe, V, p. 225, ♂ ♀ (1893); DALLA TORRE, Cat. Hymen., IV, p. 85 (1898).

Helcon angustator NEES, Magaz. Ges. Nat. Fr. Berlin, VI, p. 219 (1812); id., Hymen. Ichneum. affin. Monogr., I, p. 228 (1834).

Helcon cylindricus WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., IX, p. 183 (1835).

Gymnoscelus tardator SZÉPLIGETI, Gen. Insect., 22-24, p. 151 (1904); id., Ann. Mus. Nat. Hung., VI, p. 426 (1908).

Helcon (Gymnoscelus) tardator FAHRINGER, Zeitschr. Angewand. Ent., XX, p. 321, ♀ ♂ (1933).

In a series of the present specimens from Korea the antennae are 38-jointed, with the basal third tinged with reddish yellow; the propodeum is coarsely reticulate-rugose, with a median area; and the 2nd tergite is entirely smooth and shining. Length, 8 mm.

Host—*Callidium violaceum* LINNÉ (after FAHRINGER, in Europe).

Habitat: Korea (Chuju-san, 2 ♂ ♂, 5. VII, 1935, H. K. KIM).

Gen. Distr.: Europe; West and North Asia; Africa; Korea.

2. Subgenus ***Aspidocolpus*** WESMAEL

Aspidocolpus WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., XI, p. 155 (1838).

Subgenotype—*Helcon (Aspidocolpus) carinator* NEES

Key to the Species

♀ ♀

- 1. Second abscissa of the radius as long as or longer than the 2nd abscissa of the cubitus; radial cell of the hind wing petiolate; 1st tergite rugose, longitudinally carinate at the base
 2
- Second abscissa of the radius shorter than the 2nd abscissa of the cubitus; radial cell of the hind wing sessile; antennae brownish red on the basal third; 1st and 2nd tergites rugose, the longitudinal carinae of the 1st tergite slightly indicated; ovipositor a little shorter than the thorax and abdomen united. Length, 11 mm.
 8. *jozanum* WATANABE
- 2. Antennae black, without a white ring at the middle; ovipositor as long as the propodeum and abdomen united, the sheath entirely black. Length, 8 mm.
 9. *aino* WATANABE
- Antennae black, with a white ring at the middle; ovipositor longer than the body, the sheath with a white ring at the apex. Length, 10 mm. 10. *albiterebra* WATANABE

♂ ♂

- 1. Second abscissa of the radius shorter than the 2nd abscissa of the cubitus; radial cell of the hind wing sessile; antennae brownish red on the basal third; 1st and 2nd tergites rugose, the longitudinal carinae of the 1st tergite slightly indicated. Length, 10 mm.
 8. *jozanum* WATANABE
- Second abscissa of the radius as long as or longer than the 2nd abscissa of the cubitus; radial cell of the hind wing petiolate; antennae entirely black; 1st tergite rugose, with two longitudinal carinae at the base. Length, 8 mm. 9. *aino* WATANABE

8. ***Helcon (Aspidocolpus) jozanum*** WATANABE

Helcon (Aspidocolpus) jozanum WATANABE, Ins. Mats., VI, p. 28, ♀ ♂, fig. 2 (1931).

Habitat: Hokkaido (Jōzankei, after WATANABE).

Gen. Distr.: Japan.

9. *Helcon (Aspidocolpus) aino* WATANABE

Helcon (Aspidocolpus) aino WATANABE, Ins. Mats., VI, p. 29, ♀, fig. 3 (1931).

♂. Closely resembles the female in general structure and colour, but differs from the latter in the following points:—

Antennae longer and slenderer than in the female, 35 to 39-jointed; abdomen slender, the 2nd tergite rugose basally; anal appendages smaller than those of *jozanum*. Length, 8 mm.

Habitat: Hokkaido (Sôunkyo, after WATANABE); Honshu (Kyoto, 1 ♀, 2. VIII, 1930, K. TAKEUCHI; Kamogawa, 1 ♀, 13. IV, 1929, M. YAMANAKA); Shikoku (Kôchi, 9 ♂ ♂, 22. IV, 1933, Y. SUGIHARA; Hirooka, 1 ♂, 28. IV, 1934, H. OKAMOTO; Kajigamori, 1 ♀, 14. VI, 1931, Y. SUGIHARA).

Gen. Distr.: Japan.

10. *Helcon (Aspidocolpus) albiterebra* WATANABE

Helcon (Aspidocolpus) albiterebra WATANABE, Ins. Mats., VI, p. 30, ♀ (1931).

Habitat: Honshu (Wakayama, after WATANABE).

Gen. Distr.: Japan.

10. Tribe *Macrocentrini*

The following three genera have been recognized in the present fauna:—

Key to the Genera

1. Occiput margined; spurs of the hind tibiae longer than half the length of the hind metatarsus; 1st tergite much longer than the 2nd; ovipositor flacate, much shorter than the abdomen 2
- Occiput not margined; spurs of the hind tibiae shorter than half the length of the hind metatarsus; 1st tergite scarcely longer than the 2nd; ovipositor straight, elongate—at least longer than the abdomen 1. *Macrocentrus* CURTIS
2. Occiput margined only on both sides; 2nd cubital cell large, trapezoidal; 2nd abscissa of the cubitus 3 times as long as the 2nd intercubitus; 1st discoidal cell petiolate; spiracles of the 1st tergite situated at one-third the distance from the base 2. *Xiphozele* CAMERON
- Occiput entirely margined; 2nd cubital cell small, slightly narrowed towards the apex; 2nd abscissa of the radius somewhat longer than the 2nd intercubitus; 1st discoidal cell sessile; spiracles of the 1st tergite situated close to the base 3. *ZeZe* CURTIS

1. Genus *Macrocentrus* CURTIS

Macrocentrus CURTIS, Ent. Magaz., I, p. 187 (1833).

Amicroplus FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 256 (1862).

Phogra CAMERON, Trans. Proc. New Zealand Inst., XXXIII, p. 104 (1901).

Metapleurodon ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 213 (1920).

Genotype—*Macrocentrus thoracicus* NEES

Dolichozele VIERECK¹⁾ and *Paniscozele* ENDERLEIN²⁾ synonymized by MUESEBECK³⁾ under *Macrocentrus* may be rather placed near *Xiphozele*.

It appears that most species of this genus are parasitic on Lepidopterous borers and leaf-rollers. The polyembryonic development occurs in some species.

Key to the Species

1. Antennae more than 40-jointed; maxillary palpi elongate, the 3rd joint as long as the 1st joint of the flagellum 2
- Antennae less than 40-jointed; maxillary palpi short, the 3rd joint shorter than the 1st joint of the flagellum; 2nd abscissa of the radius as long as the 1st intercubitus; ground colour dark brown, the legs pale yellow; ovipositor as long as the body. Length, 3-4.5 mm. 1. *infirmus* (NEES)
2. Radial cell of the hind wing petiolate 3
- Radial cell of the hind wing sessile 6
3. Third tergite entirely striate-rugose; small species 4
- Third tergite striate-rugose except at the apex; large species 5
4. Second cubital cell not narrowed towards the apex; 2nd abscissa of the radius as long as the 1st intercubitus, or 1.5 times as long as the 1st abscissa of the radius; head always dark brown to black, the rest reddish yellow, sometimes with some fuscous markings; ovipositor somewhat longer than the body. Length, 4.5 mm. 2. *gifuensis* ASHMEAD
- Second cubital cell narrowed towards the apex; 2nd abscissa of the radius 2 times as long as the 1st intercubitus, or three times as long as the 1st abscissa of the radius; ground colour reddish yellow; ovipositor a little longer than the body. Length, 4.5-5 mm. 3. *abdominalis* (FABRICIUS)
- Ground colour dark brown to black, the legs pale yellow
- *abdominalis* f. *pallidipes* (NEES)
5. Abdomen entirely black, the 1st tergite longitudinally striate-rugose; 1st abscissa of the cubitus straight; ovipositor a little longer than the body. Length, 6-7 mm. 4. *marginator* (CURTIS)
- Abdomen yellow with some black markings; 1st tergite transversely striate-rugose; 1st abscissa of the cubitus bent at the middle; ovipositor as long as the body. Length, 8-12 mm. 5. *japonicus* WATANABE
6. Head and thorax yellowish red; legs pale yellow, the hind coxae black; abdomen black, the belly pale yellow; nervulus postfurcal; ovipositor a little longer than the body. Length, 14 mm. 6. *gigas* sp. nov.
- Ground colour reddish yellow; nervulus slightly postfurcal; ovipositor longer than the body. Length, 12 mm. 7. *jacobseni* SZÉPLIGETI

1. *Macrocentrus infirmus* (NEES)

Rogas infirmus NEES, Hymen. Ichneum. affin. Monogr., I, p. 203, ♀ (1834).

- 1) Proc. U. S. Nat. Mus., XL, p. 182 (1911).
- 2) Arch. Naturgesch., 84 A, Heft 11, p. 214 (1920).
- 3) Proc. U. S. Nat. Mus., LXXX, p. 2 (1932).

Macrocentrus infirmus MARSHALL, Trans. Ent. Soc. London, p. 196, ♀ ♂ (1889); id., Spec. Hymén. Europe, V, p. 237, ♀ ♂ (1893); THOMSON, Opusc. ent., p. 2213, ♀ ♂ (1895); DALLA TORRE, Cat. Hymen., IV, p. 80 (1898); MORLEY, Entomologist, XL, p. 253, ♀ ♂ (1907); LYLE, Entomologist, XLVII, p. 261 (1914); WATANABE, Ins. Mats., VI, p. 132 (1932).

Amicroplus infirmus SZÉPLIGETI, Gen. Insect., 22-24, p. 148 (1904); id., Ann. Mus. Nat. Hung., IV, p. 425 (1908).

Habitat: Saghalien (Konuma, Suzuyadake, and Todoroki-tôge, after WATANABE).

Gen. Distr.: Europe; Saghalien.

2. *Macrocentrus gifuensis* ASHMEAD

Macrocentrus gifuensis ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 191, ♀ (1906); NAKAYAMA, Bull. Agr. Exp. Stat. Govern.-Gen. Chosen, IV, p. 173, ♀ ♂, figs. 4-5 (1929); PARKER, Tech. Bull. U. S. Dept. Agr. Washing., No. 230, p. 8, fig. 1, ♀ (1931); GOIDANICHTI, Boll. Lab. Ent. Bologna, IV, p. 157 (1931); MUESEBECK, Proc. U. S. Nat. Mus., LXXX, p. 20, ♀ ♂ (1932); CHU, 1934 Year Book, Bur. Ent. Hangchow, p. 18 (1935).

Macrocentrus abdominalis FABRICIUS f. *gifuensis* WATANABE, Ins. Mats., VI, p. 131 (1932).

This species may be apparently differentiated from *M. abdominalis* in the shape of the 2nd cubital cell as indicated in the present key. The head of this species is always dark brown to black.

Host—*Pyrausta nubilalis* HÜBNER

Habitat: Honshu (Gifu, after ASHMEAD; Niigata and Nagano, after WATANABE); Korea (Suigen, after NAKAYAMA).

Gen. Distr.: Japan; Korea; China; Europe.

Remarks—This parasite has been introduced into the United States of America and Canada from Europe and Japan as a natural enemy of the European Corn Borer, *Pyrausta nubilalis* HÜBNER, with success.

3. *Macrocentrus abdominalis* (FABRICIUS)

Ichneumon abdominalis FABRICIUS, Ent. syst., II, p. 183 (1793).

Rogas linearis NEES, Hymen. Ichneum. affn. Monogr., I, p. 200 (1834); RATZEBURG, Ichneum. d. Forstinsect., II, p. 64, Pl. II, fig. 33 (1848), III, p. 67 (1852).

Macrocentrus linearis HALIDAY, Ent. Magaz., I, p. 262 (1833); VOLLENHOVEN, Pinacogr., p. 53, Pl. XXXIV, fig. 4, ♀ (1878); THOMSON, Opusc. ent., p. 2212 (1895).

Macrocentrus abdominalis MARSHALL, Trans. Ent. Soc. London, p. 193, ♀ ♂ (1889); id., Spec. Hymén. Europe, p. 235, ♀ ♂ (1893); DALLA TORRE, Cat. Hymen., IV, p. 79 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 147 (1904); MORLEY, Entomologist, XL, p. 253 (1907); SZÉPLIGETI, Ann. Mus. Nat. Hung., IV, p. 425 (1908); LYLE, Entomologist, XLVII, p. 258 (1914); WATANABE, Ins. Mats., VI, p. 131 (1932).

Hosts—*Pandemis ribeana* HÜBNER, *Tortrix viridana* LINNÉ, *Depressaria alstroemeriana* CLERCK, *Gracilaria elongella* LINNÉ, *Cerostoma xylostella* LINNÉ, *Pionea crocealis* HÜBNER, and *Phlyotaenodes verticalis* LINNÉ (after LYLE, in Europe).

Habitat: Honshu (Shizuoka and Wakayama, after WATANABE).

Gen. Distr.: Europe; Japan.

f. ***pallidipes*** (NEES)

Bracon pallipes NEES, Magaz. Ges. Nat. Fr. Berlin, V, p. 14, ♀ (1811).

Rogas pallipes NEES, Hymen. Ichneum. affin. Monogr., I, p. 203, ♀ (1834).

Macrocentrus pallipes VOLLENHOVEN, Pinacogr., p. 53, Pl. XXXIV, fig. 5, ♀ (1878).

Macrocentrus abdominalis var. *pallidipes* MARSHALL, Trans. Ent. Soc. London, p. 193 (1889); id., Spec. Hymén. Europe, V, p. 235 (1893); DALLA TORRE, Cat. Hymen., IV, p. 79 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 147 (1904); LYLE, Entomologist, XLVII, p. 259 (1914).

Macrocentrus pallidipes FAHRINGER, Ark. Zool., Bd. 21 A, No. 8, p. 7 (1929).

Macrocentrus abdominalis f. *pallidipes* WATANABE, Ins. Mats., VI, p. 132 (1932).

Hosts—*Depressaria nanatella* STAINTON and *Epithecis mouffestella* SCHIFFERMÜLLER (after LYLE, in Europe); *Cacoecia longicellana* WALSINGHAM and *Pandemis heparana* SCHIFFERMÜLLER (after WATANABE, in Hokkaido).

Habitat: Hokkaido (Sapporo, after WATANABE).

Gen. Distr.: Europe; Siberia; Japan.

4. ***Macrocentrus marginator*** (NEES)

Bracon marginator NEES, Magaz. Ges. Nat. Fr. Berlin, V, p. 14, ♀ (1811).

Rogas marginator NEES, Hymen. Ichneum. affin. Monogr., I, p. 205 (1834); RATZEBURG, Ichneum. d. Forstinsect., II, p. 65 (1848), III, p. 67 (1852).

Macrocentrus marginator VOLLENHOVEN, Pinacogr., p. 53, ♀ ♂, Pl. XXXIV, fig. 1, ♀ (1878); MARSHALL, Trans. Ent. Soc. London, p. 194, ♀ ♂ (1889); id., Spec. Hymén. Europe, V, p. 233, ♀ ♂ (1893); THOMSON, Opusc. ent., p. 2210, ♀ ♂ (1895); DALLA TORRE, Cat. Hymen., IV, p. 81 (1899); SZÉPLIGETI, Gen. Insect., 22-24, p. 147 (1904); MORLEY, Entomologist, XL, p. 252 (1907); SZÉPLIGETI, Ann. Mus. Nat. Hung., IV, p. 425 (1908); LYLE, Entomologist, XLVII, p. 259, Pl. VI, figs. 1 & 8 (1914); FAHRINGER, Ark. Zool., Bd. 21 A, No. 8, p. 7 (1929); WATANABE, Ins. Mats., VI, p. 131 (1932).

Hosts—*Aegeria culiciformis* LINNÉ, *Aegeria formicaeformis* ESPER, *Aegeria tipuliformis* CLERCK, and *Aegeria vespiformis* LINNÉ (after LYLE, in Europe).

Habitat: Saghalien (Ikusagawa and Kawakami, after WATANABE; Konuma, 1 ♀, 10. VIII, 1927, K. TAMANUKI); Kuriles (Etorofu Is., after WATANABE); Hokkaido (Sapporo, Teshio, Mt. Daisetsu, and Jôzankei, after WATANABE; Shari, 1 ♀, 12. VII, 1933, C. WATANABE; Uryu, 1 ♀, VI, 1934, I. OKADA); Honshu (Shizuoka, after WATANABE; Kumanodaira, 3 ♀ ♀, 5. VII, 1924, H. KÔNO; Shimauchi, 1 ♀, 28. VII, 1924, H. KÔNO; Saitama, 1 ♀, 5. VIII, 1931, T. UCHIDA; Nikko, 1 ♀, 29. VII, 1921, S. MATSUMURA; Kyoto, 1 ♀, 16. IX, 1921, M. SUZUKI); Korea (Sambo, after WATANABE); Formosa (Kyuhabon, 1 ♀, 18. VIII, 1928, K. KIKUCHI).

Gen. Distr.: Europe; Siberia; Saghalien; Japan; Korea; Formosa.

5. ***Macrocentrus japonicus*** WATANABE

Macrocentrus japonicus WATANABE, Ins. Mats., VI, p. 133, ♀ ♂ (1932); id., Kontyû, VII, p. 247, ♀ ♂ (1933); id., Ins. Mats., VIII, p. 205 (1934); CHU, 1934 Year Book, Bur. Ent. Hangchow, p. 19 (1935).

Host—*Margaronia pyloalis* WALKER (after WATANABE, in Japan and Formosa).

Habitat: Honshu (Shizuoka and Tokyo, after WATANABE; Wakayama, 3 ♀ ♀, 1 ♂, 1932, F. WADA); Shikoku (Matsuyama and Kōchi, after WATANABE; Koodasan, 1 ♀, 12. VII, 1933, Y. SUGIHARA); Formosa (Horisha, Ranrun, and Taihoku, after WATANABE).

Gen. Distr.: Japan; Formosa; China.

6. *Macrocentrus gigas* sp. nov. (Pl. V, Fig. 8)

♀. Head, thorax, and propodeum yellowish red; tips of the mandibles black; antennae dark brown, becoming pale towards the apex, the basal two joints brownish red; legs pale yellow, the coxae and femora of the hind legs black; wings subhyaline, the stigma and veins fuscous; abdomen black; belly on the basal two-thirds pale yellow; ovipositor reddish brown, the sheath black. Length, 14 mm.

Head smooth and shining; face and clypeus finely punctate, pubescent; palpi long and slender; antennae more than 43-jointed (the apex broken off), the scapus cylindrical, truncate obliquely at the apical surface, the 1st joint of the flagellum a little shorter than the following two joints united. Mesonotum with the scutellum finely punctate; parapsidal furrows deep, strongly crenulate; meso- and metapleurae punctate, the punctures closer and stronger than those of the mesonotum; propodeum strongly reticulate-rugose, the spiracles small, circular; radius inserted just before the middle of the stigma; 1st abscissa of the radius a little shorter than the 2nd; 2nd cubital cell narrowed towards the apex; 1st intercubitus oblique, longer than the 2nd intercubitus or the apical portion of the 1st abscissa of the radius; 1st discoidal cell sessile; nervulus postfurcal; 1st abscissa of the medial nervure with a stump of vein at the apical third; radial cell of the hind wing sessile, coarctate owing to a sinus of the radius. Legs long and slender; hind tibial spurs subequal, one-fourth the length of the hind metatarsus. Abdomen slender, longer than the head and thorax taken together; 1st tergite 4 times as long as broad at the base; 2nd and 3rd tergites 2 times as long as broad at the base, and each of them shorter than the 1st tergite; 4th and following tergites transverse; 1st and 2nd tergites and the 3rd on the basal half longitudinally striate, and the rest smooth and shining with pubescence; ovipositor longer than the body, 17 mm.

Holotype (♀): Horisha, 5. V, 1922, K. TAKEUCHI. **Paratype**: 1 ♀, Baibara, 25. VIII, 1925, K. KIKUCHI.

Habitat: Formosa (Horisha and Baibara).

7. **Macrocentrus jacobsoni** SZÉPLIGETI

Macrocentrus jacobsoni SZÉPLIGETI, Notes Leyden Mus., XXIX, p. 230, ♀ (1908); WATANABE, Ins. Mats., IX, p. 10, ♀ ♂ (1934).

Hosts—*Chilo infuscatellus* SNELLEN, *Diatraea venosata* WALKER, and *Scirpophaga nivella* FABRICIUS (after WATANABE, in Formosa).

Habitat: Formosa (Shinka, after WATANABE).

Gen. Distr.: Java; Formosa.

2. Genus **Xiphozele** CAMERON

Xiphozele CAMERON, Entomologist, XXXIX, p. 204 (1906).

Cerotopia ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 219 (1920).

Genotype—*Xiphozele compressiventris* CAMERON

(= *Cerotopia corneimacula* ENDERLEIN)

Cerotopia ENDERLEIN was already synonymized by MUESEBECK in 1931 under *Xiphozele* CAMERON. This genus is represented by a single species.

1. **Xiphozele compressiventris** CAMERON (Pl. V, Fig. 9)

Xiphozele compressiventris CAMERON, Entomologist, XXXIX, p. 205, ♀ (1906); MUESEBECK, Proc. U. S. Nat. Mus., LXXIX, p. 13 (1931).

Cerotopia corneimacula ENDERLEIN, Arch. Naturgesch., 84 A, Heft 11, p. 220, ♀, fig. 11 (1920); MATSUMURA, 6000 Ill. Insect. Japan-Empire, p. 73, ♀, fig. 401 (1931); WATANABE, Ins. Mats., VI, p. 134, ♀, fig. 1 (1932).

Habitat: Honshu (Wakayama and Miye, after WATANABE; Kôyasan, 1 ♀, 1932, F. WADA; Minoo, 1 ♀, 25. VII, 1921, K. TAKEUCHI; Tajima, 1 ♀, 5. VIII, 1930, I. OKADA); Kiushu (Wakasugiyama, after WATANABE); Korea (Shâkoji, after WATANABE); Formosa (Baibara, after WATANABE).

Gen. Distr.: India; Sumatra; Japan; Korea; Formosa.

3. Genus **Zele** CURTIS

Zele CURTIS, Brit. Ent., IX, p. 415 (1832).

Homolobus FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 256 (1862).

Phylax WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., IX, p. 159 (1835).

Phylacter THOMSON, Opusc. ent., p. 2207 (1895).

Genotype—*Zele testaceator* CURTIS

Key to the Species

- 1. Radial cell of the hind wing not geminated by a transverse nervure; ground colour reddish yellow 2
- Radial cell of the hind wing geminated by a transverse nervure; ground colour black. Length, 7-9 mm. *Z. discolor* (WESMAEL)

2. Radial cell of the hind wing sessile, coarctate owing to a sinus of the radius. Length, 7-11 mm. 2. *testaceator* CURTIS
 - Radial cell of the hind wing petiolate, widened towards the apex. Length, 10 mm. 3. *simplex* WATANABE

1. *Zelex discolor* (WESMAEL)

Phylax discolor WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., IX, p. 162 (1835).

Homolobus discolor FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 256 (1862); VOLLENHOVEN, Pinacogr., p. 53, Pl. XXXIV, fig. 7, ♀ (1878); SZÉPLIGETI, Gen. Insect., 22-24, p. 148 (1904).

Zelex discolor MARSHALL, Trans. Ent. Soc. London, p. 200, ♀ (1889); id., Spec. Hymén. Europe, V, p. 246, ♀ (1894); DALLA TORRE, Cat. Hymen., IV, p. 77 (1898); MORLEY, Entomologist, XL, p. 254 (1907); LYLE, Entomologist, XLVII, p. 290, ♀, Pl. VI, figs. 3 & 10, ♀ (1914); WATANABE, Ins. Mats., VI, p. 136 (1932).

Phylacter discolor THOMSON, Opusc. ent., p. 2209, ♀ (1895).

Hosts—*Deilinia pusaria* LINNÉ and *Eumomos alniaria* LINNÉ (after MARSHALL, in Europe); *Boarmia repandata* LINNÉ (after LYLE, in Europe).

Habitat: Honshu (Chuzenji and Hirasan, after WATANABE; Taisen, 1 ♀, 18. VIII, 1932, I. OKADA; Hamasaka, 1 ♀, 18. VIII, 1930, I. OKADA); Shikoku (Kôchi, 1 ♀, 8. XI, 1933, Y. SUGIHARA).

Gen. Distr.: Europe; Japan.

2. *Zelex testaceator* CURTIS

Zelex testaceator CURTIS, Brit. Ent., IX, p. 415 (1831); MARSHALL, Trans. Ent. Soc. London, p. 199, ♀ ♂ (1889); id., Spec. Hymén. Europe, p. 224, ♀ ♂ (1894); DALLA TORRE, Cat. Hymen., IV, p. 78 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 149 (1904); MORLEY, Entomologist, XL, p. 254 (1907); LYLE, Entomologist, XLVII, p. 287, Pl. VI, fig. 4 (1914); MATSUMURA, 6000 Ill. Insect. Japan-Empire, p. 75, fig. 411, ♀ (1931); WATANABE, Ins. Mats., VI, p. 135 (1932).

Rogas annulicornis NEES, Hymen. Ichneum. affin. Monogr., I, p. 201 (1834).

Zelex annulicornis KAWALL, Bull. Soc. Nat. Moscou, XXXVIII, p. 361, ♀ (1865); VOLLENHOVEN, Binacogr., p. 53, Pl. XXXIV, fig. 9, ♀ (1878).

Phylacter annulicornis THOMSON, Opusc. ent., p. 2208 (1895).

Zelex testaceator f. *japonica* WATANABE, Ins. Mats., VI, p. 135, ♀ ♂ (1932).

It appears that f. *japonica* WATANABE is a seasonal form appearing in autumn.

Hosts—*Calymnia trapezina* LINNÉ (after MORLEY, in Europe); *Leucania obsoleta* HÜBNER (after MARSHALL, in Europe); *Monima populeti* TREITSCHKE (after LYLE, in Europe).

Habitat: Hokkaido (Sapporo, Jôzankei, Obihiro, and Mt. Daisetsu, after WATANABE; Shikotsu-ko, 1 ♀, 16. IX, 1934, I. OKADA; Nopporo, 2 ♀ ♀, 5 ♂ ♂, 15. IX, 1932, C. WATANABE); Honshu (Chuzenji, Chiba, and Takao, after WATANABE; Kyoto, 1 ♀, 10. V, 1924, 1 ♂, 29. XI, 1924, 1 ♀, 30. IV, 1925, K. TAKEUCHI; Akakura, 1 ♂, 15. VII, 1927, K. TAKEUCHI; Taisen, 2 ♀ ♀, 5 ♂ ♂, 18. VIII, 1932, I. OKADA).

Gen. Distr.: Europe; Japan.

3. ***Zelex simplex*** WATANABE

Zelex simplex WATANABE, Ins. Mats., VI, p. 135, ♀, fig. 2 (1932).

Habitat: Hokkaido (Jōzankei, after WATANABE).

Gen. Distr.: Japan.

VIII. Subfamily **CENOCEOELIINAE**

Cenocoelionidae SZÉPLIGETI, Term. Füz., XXIV, p. 353 (1901).

Cenocoeliinae SZÉPLIGETI, Gen. Insect., 22-24, p. 6 (1904).

Cenocoeliinae HANDLIRSCH, Hand. d. Entomologie, Bd. III, p. 747 (1924).

The *Cenocoeliinae*, a small isolated group, is readily distinguished from the other subfamilies by the attachment of the abdomen. Some species falling in this subfamily are parasites of *Coleoptera*. Only a single genus, *Cenocoelius* WESTWOOD, has been represented in this country.

I. Genus ***Cenocoelius*** WESTWOOD

Cenocoelius WESTWOOD, Intr. Mod. Class. Ins., II, Synops., p. 62 (1847).

Capitonius BRULLÉ, Hist. Nat. Ins. Hymén., IV, p. 544 (1846).

Laccophrys FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 257 (1862).

Genotype—*Cenocoelius agricolator* (LINNÉ)

Key to the Species

- 1. Antennae reddish yellow, 26 to 30-jointed, the scapus as long as the two basal joints of the flagellum united; wings slightly infuscated; recurrent nervure interstitial or just received in the 1st cubital cell; ovipositor as long as the abdomen, the sheath entirely black. Length, 3-4.5 mm. I. *eous* WILKINSON
- Antennae brown, 28 to 30-jointed, the scapus a little longer than the 1st joint of the flagellum; wings subhyaline; recurrent nervure received in the apical fifth of the 1st cubital cell; ovipositor as long as the thorax and abdomen united, the sheath black, with a white ring at the apex. Length, 5-7 mm. 2. *koshunensis* WATANABE

1. ***Cenocoelius eous*** WILKINSON

Cenocoelius eous WILKINSON, Stylops, I, p. 86, ♀ ♂ (1932); WATANABE, Ins. Mats., VIII, p. 203 (1934).

Habitat: Formosa (Fusho, after WATANABE).

Gen. Distr.: India; Formosa.

2. ***Cenocoelius koshunensis*** WATANABE

Cenocoelius koshunensis WATANABE, Ins. Mats., VIII, p. 203, ♀ ♂ (1934).

Habitat: Formosa (Koshun, after WATANABE).

Gen. Distr.: Formosa.

IX. Subfamily **ALYSIINAE**

Exodontes WESMAEL, Nouv. Mém. Acad. Sci. Bruxel., IX, p. 11 (1835).

Alysiinae HANDLIRSCH, Hand. d. Entomologie, Bd. III, p. 750 (1924).

This subfamily is easily distinguished from the others by the structure of the mandibles. Most of the species seem parasitic on the larvae of *Diptera*. It is divided into two tribes, *Alysiini* and *Dacnusiini*, but no species of the latter have yet been found in Japan.

Key to the Tribes

1. Fore wing with three cubital cells *Alysiini*
 - Fore wing with two cubital cells *Dacnusiini*

I. Tribe **Alysiini**

As many as forty genera of this tribe have been described in the world, but only a single genus occurs in the present fauna.

I. Genus **Phaenocarpa** FÖRSTER

Phaenocarpa FÖRSTER, Verh. Naturh. Ver. Preuss. Rheinl., XIX, p. 267 (1862).

Kahia ASHMEAD, Proc. U. S. Nat. Mus., XXIII, p. 107 (1900).

Genotype—*Phaenocarpa picinervis* (HALIDAY)

This genus is distinguished from the congeneric species by the combination of the following characters:—

- (1) First cubital cell separated from the 1st discoidal cell. (2) Second abscissa of the radius distinctly longer than the 1st intercubitus. (3) Second joint of the flagellum longer than the 1st joint. (4) Nervus parallelus almost interstitial. (5) Second basal cell of the hind wing not longer than half the length of the 1st basal cell.

Key to the Species

1. Parapsidal furrows obsolete; antennae more than 36-jointed; ovipositor shorter than the abdomen 2
 - Parapsidal furrows distinct; antennae 33 to 35-jointed (♀), 41-jointed (♂); ovipositor as long as the antennae, 2 times as long as the body. Length, 3 mm.
 1. *pratellae* (CURTIS)
 1. First tergite parallel-sided, 3 times as long as broad at the apex; antennae 67 to 74-jointed; ovipositor as long as the 1st joint of the hind tarsus. Length, 4.5-5.5 mm. 2. *secunda* (ASHMEAD)
 - First tergite gradually narrowed towards the base, 2 times as long as broad at the apex; antennae 66 to 70-jointed; ovipositor as long as the hind tibia. Length, 5.5-6 mm. 3. *jezoensis* sp. nov.

1. ***Phaenocarpa pratellae** (CURTIS)

Alysia pratellae CURTIS, Brit. Ent., III, p. 141 (1826); HALIDAY, Ent. Magaz., V, p. 235 (1838).

Phaenocarpa pratellae MARSHALL, Trans. Ent. Soc. London, p. 531, ♀ ♂, Pl. XII, fig. 6, ♀ (1894); id., Spec. Hymén. Europe, V, p. 415, ♀ ♂ (1895); DALLA TORRE, Cat. Hymen., IV, p. 40 (1898); SZÉPLIGETI, Gen. Insect., 22-24, p. 211 (1904); FAHRINGER, Ark. Zool., Bd. 21 A, No. 8, p. 4 (1929).

Alysia (Phaenocarpa) pratellae THOMSON, Opusc. ent., p. 2282, ♀ ♂ (1895).

Habitat: Saghalien (Suzuya-dake, 1 ♂, II. VII, 1930, C. WATANABE).

Gen. Distr.: Europe; Siberia; Saghalien.

2. **Phaenocarpa secunda** (ASHMEAD)

Kahlia secunda ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 187, ♀ (?) (1906).

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

♀ ♂. Black; mandibles yellowish red with black teeth; palpi and tegulae whitish yellow; legs reddish yellow, the tips of the hind femora, the apical third of the hind tibiae, and the basal two joints of the hind tarsi except at the apex fuscous or dark brown; wings hyaline, the stigma and veins brown. Length, 4.5-5.5 mm.

Head smooth and shining; frons shallowly excavated, with a median longitudinal carina; antennae 2 times as long as the body, 67 to 74-jointed, the 2nd joint of the flagellum 1.5 times as long as the 1st. Thorax smooth and shining; parapsidal furrows obsolete; mesopleurae with a crenulate discal furrow; propodeum striate-rugose on the apical half, the basal areas surrounded with carinae, smooth and shining. Radius extending to the apex of the wing, inserted at the apical third of the stigma; 1st abscissa of the radius very short, and the 2nd 1.5 times as long as the 1st intercubitus; 2nd cubital cell gradually narrowed towards the apex; recurrent nervure just interstitial; nervulus postfurcal; 1st brachial cell closed at the apex; nervus parallelus interstitial; radial cell of the hind wing slightly petiolate; nervulus inserted at the basal third of the 1st basal cell. Abdomen depressed; 1st tergite parallel-sided, 3 times as long as broad, longitudinally striate-rugose, with two converging carinae at the base, and with a tubercle situated at the basal third of the lateral margins; 2nd and following tergites smooth and shining; ovipositor as long as the 1st joint of the hind tarsus, the sheath covered uniformly with hairs.

Habitat: Hokkaido (Sapporo, after ASHMEAD; Shikaribetsu-ko, 3 ♀ ♀, 1 ♂, 28. VII, 1933, C. WATANABE; Sounkyô, 1 ♀, 16. VII, 1930, C. WATANABE; Uryu, 1 ♀, 9-13. VII, 1932, K. SATO; Sapporo, 1 ♂, 18. VI, 1918, S. MATSUMURA, 1 ♀, 3 ♂ ♂, 5. VII, 1932, K. SATO, 1 ♀, 4 ♂ ♂,

17. VI, 1933, C. WATANABE, 2 ♂ ♂, 12. VI, 1934, Y. SUGIHARA).
Gen. Distr.: Japan.

3. ***Phaenocarpa jezoensis*** sp. nov. (Pl. V, Fig. 10)

♀ ♂. Black; mandibles, two basal joints of the antennae, tegulae, and legs reddish yellow; palpi pale yellow; apical half of the hind femora, apical third of the hind tibiae, and hind tarsi fuscous; wings hyaline; stigma and veins brown; ovipositor reddish yellow, the sheath black, with a broad yellow ring at the apex. Length, 5.5-6 mm.

Head smooth and shining; frons shallowly excavated, with a median longitudinal carina; antennae 2 times as long as the body, 66 to 70-jointed, the 2nd joint of the flagellum 1.5 times as long as the 1st. Thorax smooth and shining; parapsidal furrows only indicated at the apex; mesonotum with a longitudinal median furrow near the base; mesopleurae with a crenulate discal furrow; propodeum striate-rugose on the apical half, the basal areas surrounded with carinae, smooth and shining. Venation of the wings resembles that of the preceding species, *P. secunda* (ASHMEAD), but the recurrent nervure is inserted in the 2nd cubital cell. First tergite narrowed towards the base, 2 times as long as broad at the apex, longitudinally striate-rugose, with two converging carinae at the base, the tubercles situated at the basal third; 2nd and following tergites smooth and shining; ovipositor as long as the hind tibia, the sheath covered uniformly with black hairs.

Holotype (♀): Sapporo, 4. VI, 1933, C. WATANABE. **Allotype** (♂): Sapporo, 10. V, 1924, C. WATANABE. **Paratypes**: 1 ♀, Sapporo, 12. V, 1916, S. MATSUMURA; 1 ♀, Sapporo, 19. VI, 1930, K. SATO; 1 ♀, Sapporo, 10. VI, 1931, M. TAKIZAWA; 1 ♀, Kombu, 16. VI, 1928, C. WATANABE; 1 ♀, Shikaribetsu-ko, 9-10. VII, 1931, S. KUWAYAMA; 1 ♀, Otaru, 11. VI, 1924, T. UCHIDA.

Habitat: Hokkaido (Sapporo, Kombu, Shikaribetsu-ko, and Otaru).

Species of *Phaenocarpa* not included in the key

4. ***Phaenocarpa formosae*** ASHMEAD

Phaenocarpa formosae ASHMEAD, Proc. U. S. Nat. Mus., XXX, p. 186, ♂ (1906).

The writer has not seen any representatives of this species.

Habitat: Formosa (after ASHMEAD).

Gen. Distr.: Formosa.

* * *

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EXPLANATION OF PLATES

Plate I.

Fig. 1. Heads of Braconids (after MARSHALL).

- A. Head of a species of *Bracon* (Typical form of Subfamily *Braconinae*).
- B. Head of a species of *Chelonus* (Typical form of Subfamilies *Cheloninae*, *Agathiinae*, *Microgasterinae*, *Helconinae*, etc.)
- C. Head of a species of *Phaenocarpa* (Typical form of Subfamily *Alyciinae*).

- | | |
|-----------------|-----------------------|
| S. Stemmaticum. | C. Clypeus. |
| O. Ocellus. | Op. Clypeal opening. |
| Ft. Frons. | M. Mandible. |
| E. Eye. | Mp. Maxillary palpus. |
| F. Face. | Lp. Labial palpus. |

Fig. 2. Thorax of a Braconid (after FAHRINGER).

- A. Lateral side.
- B. Dorsal side.

1. Pronotum.	II. Mesosternum.
2. Scutum	12. Metapleura.
3. Scutellum } Mesonotum.	F. Parapsidal furrow.
4. Scutum	T. Tegula.
5. Scutellum } Metanotum.	S. Spiracle.
6. Propodeum.	A. Abdomen.
7. Prosternum.	C ₁ . Fore coxa.
8. Propleura.	C ₂ . Middle coxa.
9. Epimeron } Mesopleura.	C ₃ . Hind coxa.
10. Episternum }	

Fig. 3. Wings of a Braconid (after MARSHALL).

- A. Fore wing.

1. 1st basal cell.	11. Anal cell.
2. 2nd basal cell.	12. Axillary cell.
3. 1st cubital cell.	a - b. Costa.
4. 2nd cubital cell.	b - c. Parastigma.
5. 3rd cubital cell.	c - d. Stigma.
6. 1st discoidal cell.	d - e. Metacarp.
7. 2nd discoidal cell.	f - i. Radius.
8. 1st brachial cell.	f - g. 1st
9. 2nd brachial cell.	g - h. 2nd
10. Radial cell.	h - i. 3rd
- } abscissa of the radius.

- | | |
|---------------------------------|----------------------------------------|
| k - o. Cubitus. | a - q - r. Medial nervure. |
| k - m. 1st | a - p. 1st |
| m - n. 2nd | p - q. 2nd |
| n - o. 3rd | q - r. 3rd |
| } abscissa of
} the cubitus. | } abscissa of the
} medial nervure. |
| g - m. 1st intercubitus. | u - s. Nervus parallelus. |
| h - n. 2nd intercubitus. | p - t. Nervulus. |
| j - p. Basal nervure. | a - v. Anal nervure. |
| l - q. Recurrent nervure. | w. Axillary nervure. |
- B. Hind wing.
- | | |
|--------------------|------------------------|
| 1. 1st basal cell. | a - b - c. Subcosta. |
| 2. 2nd basal cell. | b - d. Radius. |
| 3. Cubital cell. | a - e. Medial nervure. |
| 4. Discoidal cell. | b - e. Basal nervure. |
| 5. Anal cell. | e - f. Cubitus. |
| 6. Radial cell. | g - h. Nervulus. |
| a - e. Costa. | |
- Fig. 4. Abdomen of a Braconid.
- | | |
|-------------------------------------------------------------|------------------------|
| M. Median raised area. | O. Ovipositor. |
| S. Suture between the 2nd and
3rd tergites (2nd suture). | Sh. Ovipositor-sheath. |

Plate II.

- Fig. 1. *Rhogas lymantriae* sp. nov. (♀)
1. Relative length.
- Fig. 2. *Rhogas oyeyamensis* sp. nov. (♀)
- Fig. 3. *Bracon nipponensis* sp. nov. (♀)
- Fig. 4. *Rhogas sapporensis* sp. nov. (♀)
- Fig. 5. *Rhogas drymoniae* sp. nov. (♀)
- Fig. 6. *Chelonus tosenis* sp. nov. (♀)
6a. Apical fissure of the abdomen (♂)

Plate III.

- Fig. 1. *Leiophron aino* sp. nov. (♀)
- Fig. 2. *Microgaster takeuchii* sp. nov. (♀)
- Fig. 3. *Microplitis thevetrae* sp. nov. (♀)
- Fig. 4. *Braunsia matsumurai* sp. nov. (♀)
- Fig. 5. *Streblocera nigrithoracica* sp. nov. (♀)
- Fig. 6. *Cardiophiles japonicus* sp. nov. (♀)

Plate IV.

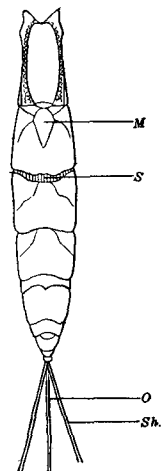
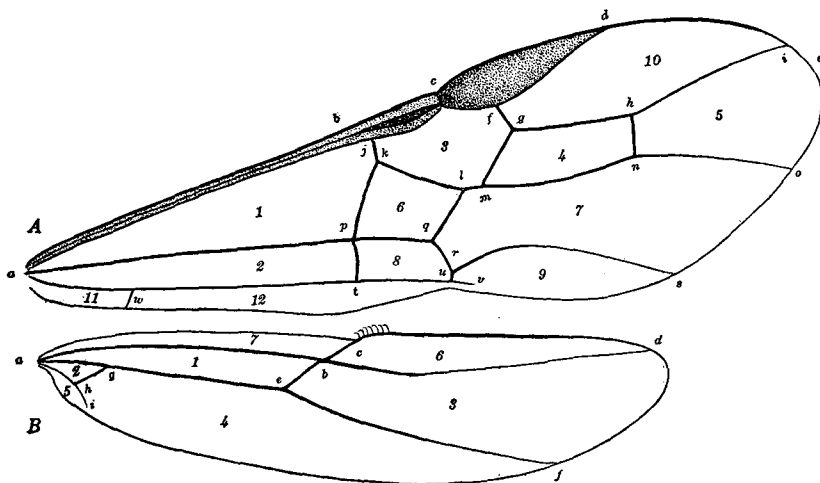
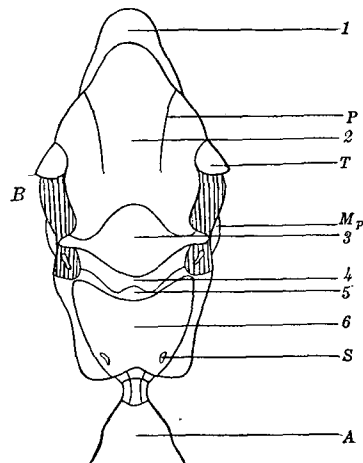
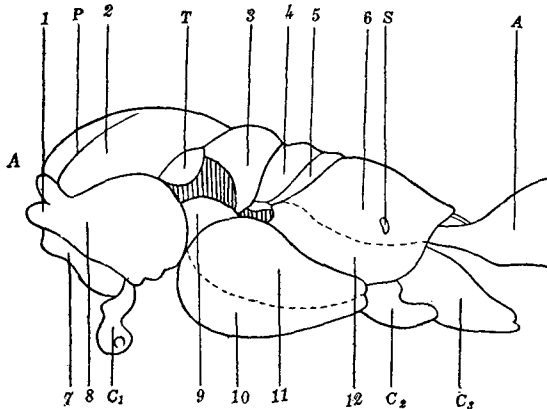
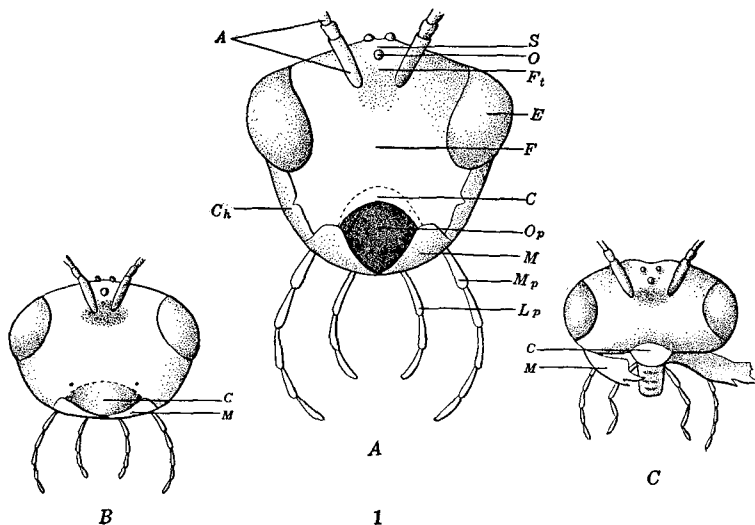
- Fig. 1. *Spathius japonicus* sp. nov. (♀)
 1a. Propodeum.
 Fig. 2. Fore wing of *Curriea tibialis* (ASHMEAD) (♀)
 Fig. 3. Fore wing of *Bracon yakui* sp. nov. (♀)
 Fig. 4. Fore wing of *Shirakia jokohamensis* (CAMERON) (♀)
 Fig. 5. Fore wing of *Microtypus takeuchii* sp. nov. (♀)
 Fig. 6. Wings of *Macrostomion sumatranum* (ENDERLEIN) (♀)
 Fig. 7. Wings of *Rhogas dendrolimi* (MATSUMURA) (♀)
 Fig. 8. Wings of *Rhogas daisetsuzanus* sp. nov. (♀)
 Fig. 9. Wings of *Rhogas wadai* sp. nov. (♀)

Plate V.

- Fig. 1. Fore wing of *Earinus jezoensis* sp. nov. (♀)
 Fig. 2. Fore wing of *Braunsia antefurcalis* sp. nov. (♀)
 Fig. 3. Fore wing of *Microdus aino* sp. nov. (♀)
 Fig. 4. Fore wing of *Microgaster coenonymphae* sp. nov. (♀)
 Fig. 5. Fore wing of *Pygostolus septentrionalis* sp. nov. (♀)
 Fig. 6. Fore wing of *Brullèia shibuensis* (MATSUMURA) (♀)
 Fig. 7. Fore wing of *Leiophron antennalis* sp. nov. (♀)
 Fig. 8. Fore wing of *Macrocentrus gigas* sp. nov. (♀)
 Fig. 9. Fore wing of *Xiphozele compressiventris* CAMERON (♀)
 Fig. 10. Fore wing of *Phaenocarpa jezoensis* sp. nov. (♀)
 Fig. 11. Abdomen of *Chelonus nigricoxatus* (SONAN) (Dorsal view) (♀)
 Fig. 12. Abdomen of *Chelonus moriokensis* sp. nov. (Dorsal view) (♀)
 Fig. 13. Abdomen of *Phanerotoma producta* sp. nov. (Dorsal view) (♂)
 Fig. 14. Abdomen of *Chelonus tabonus* (SONAN) (Ventral view) (♀)
 Fig. 15. Abdomen of *Ascogaster epinotiae* sp. nov. (Ventral view) (♀)

ERRATA

- P. 21, line 17 from bottom, for "OLIVAR" read "OLIVIER"
 P. 43, line 4 from bottom, for "*japonicus*" read "*japonicus*"
 P. 60, line 8 from top, for "SCHIFFERMILLER" read "SCHIFFERMÜLLER"
 P. 72, line 12 from top, for "*schistaceona*" read "*schistaceana*"
 P. 73, line 3 from top, for "SCHÄGFFER" read "SCHLÄGER"
 P. 76, line 5 from bottom, for "*diriana*" read "*diniana*"
 P. 77, line 16 from bottom, for "*laplasterina*" read "*leplasterina*"
 P. 77, line 15 from bottom, for "*gryphipennella*" read "*gryphipennella*"
 P. 78, line 7 from top, for "*Blasodacna*" read "*Blastodacna*"
 P. 79, line 1 from top, for "SCHIFFERMILLER" read "SCHIFFERMÜLLER"
 P. 80, line 16 from top, for "*terebella*" read "*terebrella*"
 P. 101, line 15 from bottom, for "*sparganella*" read "*sparganiella*"
 P. 106, line 14 from top, for "*tripartia*" read "*tripartita*"
 P. 109, line 11 from bottom, for "*minosa*" read "*miniosa*"
 P. 118, line 14 from bottom, for "*stratiaria*" read "*strataria*"
 P. 122, line 19 from top, for "*Prothesia*" read "*Porthesia*"
 P. 122, line 2 from bottom, for "*hermanella*" read "*hermannella*"
 P. 122, line 2 from bottom, for "BOUCHÉ" read "ZELLER"
 P. 122, line 1 from bottom, for "*junionella*" read "*junoniella*"
 P. 123, line 4 from top, for "*Prothesia*" read "*Porthesia*"
 P. 124, line 1 from top, for "*Prothesia*" read "*Porthesia*"
 P. 130, line 16 from top, for "*4-punctata*" read "*5-punctata*"
 P. 157, line 11 from bottom, for "*mouffestella*" read "*mouffetella*"



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4

