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A REVISION OF THE SPECIES OF THE MONODONTOMERINAE OCCURRING IN JAPAN

(HYMENOPTERA: CHALCIDOIDEA)

[TAXONOMIC STUDIES ON THE TORYMIDAE OF JAPAN, II]¹⁾

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Introduction

In Japan only 4 species of the subfamily Monodontomerinae have been described by Ashmead (1904), Matsumura (1926) and Masi (1937). In the course of this study I have recognized a total of 7 species occurring in Japan, of which 3 are new to science. The types of the new species are deposited in the Entomological Institute, Hokkaido University, Sapporo.

I wish to express my sincere appreciation to Prof. Emeritus T. Uchida and Prof. C. Watanabe for their kind guidance in the course of this work. Thanks are also due to Dr. J. R. Steffan, Muséum National d'Histoire Naturelle, Paris, for his helpful suggestions and to Dr. M. N. Nikolskaja, Zoological Institute of Academy of Science, Leningrad, USSR, for her kindness in sending some type-specimens. Acknowledgement of loans of materials is made to the following gentlemen: Prof. K. Yasumatsu, Prof. Y. Hirashima, Mr. K. Sato, Mr. S. Kimura, Mr. Y. Hirose and Dr. T. Kumata.

Classification

Subfamily Monodontomerinae

The subfamily Monodontomerinae of world-wide distribution consists of about 32 genera. The members of this subfamily are much diverse and have a great range in host preference, attacking Hymenoptera, Lepidoptera, Diptera, Coleoptera and rarely seeds of conifers. They are mainly primary parasites and sometimes become secondary parasites.

The Japanese 7 species belong to 4 genera, which are distinguishable by the following key:—

Key to the Japanese genera

1. Antennae with two anelli. 2.
- Antennae with one anellus. 3.
2. Marginal vein much shorter than submarginal; ventral margins of hind femora smooth.
. *Ameromicrus* Nikolskaja.

1) I: Insecta Matsumurana 25: 18-40, 1962.

[Insecta Matsumurana, Vol. 26, No. 2, December, 1963]

- Marginal vein nearly as long as submarginal; ventral margins of hind femora excised at apex. *Dimeromicrus* Crawford.
- 3. Scutellum with frenal furrow distinct; hind femora with a tooth on ventral margin; fore wing with speculum present and with costal cell partly bare; tergites not punctate, usually reticulately sculptured. *Monodontomerus* Westwood.
- Scutellum with frenal furrow indistinct; hind femora finely serrate on ventral margin; fore wing with speculum entirely reduced and with costal cell hairy throughout; tergites punctate. *Glyphomerus* Förster.

Genus *Ameromicrus* Nikolskaja

Ameromicrus Nikolskaja, 1954, Trud. zool. Inst. Akad. Nauk SSSR 16: 411.

Type-species: *Ameromicrus violaceus* Nikolskaja.

1. *Ameromicrus piceae*, sp. nov.

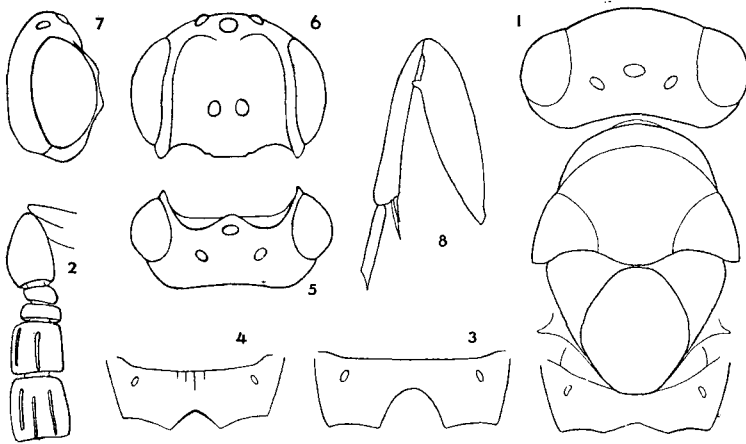
Female. Length 1.8-2.8 mm. Head seen from above 2.2 times as wide as long, slightly wider than thorax, with face weakly gibbous between eyes; occiput margined, moderately emarginate (fig. 1). Diameter of lateral ocellus a little shorter than ocellular line, which is less than half of the postocellar line. Eyes practically bare, separated by about 1.2 times their own length; inner orbits distinctly divergent below. Malar space slightly shorter than half length of eye; genal sulcus distinct. Head 1.2 times as wide as high in front view; genae rather strongly narrowed towards mouth; anterior margin of clypeus obviously produced, truncate. Mandibles with three teeth. Vertex finely granulate-reticulate; face covered with short pale hairs. Antennal scrobe shallow; antennae inserted at about middle of face; scape reaching median ocellus, as long or slightly longer than first three funicle segments combined; pedicel distinctly longer than first funicle segment. Flagellum nearly as long as width of head, gradually increasing in width distally; first anellus thicker but much narrower than second (fig. 2); first funicle segment subquadrate, sixth slightly shorter than first, obviously wider than long; club nearly equal to combined length of three preceding segments, apices of first and second segments not oblique, and band of micropilosity extending to base of the second. Sensillae long, disposed in one row upon each funicle segment.

Thorax robust, 1.5 times as long as wide; pronotum and propodeum strongly declivous towards apex. Mesonotum finely granulate dorsally, sparsely clothed with short hairs. Pronotum short, 2.2 times as wide as long, about half as long as mesoscutum. Notaulices complete, meeting hind margin of mesoscutum far apart from lateral scutellar sutures (fig. 1). Scutellum about as long as mesoscutum, a little longer than wide, flattened dorsally, roundly truncate on anterior margin. Propodeum irregularly and longitudinally reticulate at sides, weakly so medially, without a median carina; its hind margin extremely emarginate medially, the median length about half of the lateral length (fig. 3). Spiracles oval, separated by their own length from posterior margin of metanotum; spiracular sulci absent. Hind legs: femur slender, its ventral margin smooth; tibia with two spurs at apex, with inner spur shorter than widest part of the tibia; basitarsus slightly longer than following two segments combined. Fore wing: basal cell with hairs anteriorly and distally, entirely closed below by a row of

hairs on cubital vein; upper surface of costal cell with a row of hairs basally and in anterior half; speculum well developed, broadly open below; relative length of $sm:m:p:s$ as 44:27:8.5:5.

Gaster much longer than thorax, subcompressed, weakly reticulate. Hind margin of first tergite truncate, hardly incised medially, of the second slightly incised, of the third and fourth deeply so. Ovipositor sheath 1.2 to 1.5 times as long as body.

Dark green with a strong purplish tinge; head green with brassy reflections; scape brownish yellow; pedicel and flagellum dark brown; coxae blackish with a greenish or purplish tinge; femora blackish, usually with metallic reflections; tibiae dark brown; tarsi lighter; tergites with broad, blackish band on posterior margin or entirely blackish. Wings hyaline.



Figs. 1-4. *Ameromicrus piceae*, sp. nov. 1, dorsal view of head and thorax of female; 2, antenna of female; 3, propodeum of female; 4, propodeum of male.

Figs. 5-7. Head of *Monodontomerus osmtae*, sp. nov., male. 5, dorsal view; 6, front view; 7, lateral view.

Fig. 8. Hind leg of *Monodontomerus calcaratus*, sp. nov., female.

Male. Length 1.3-2.5 mm. Scape equal to combined length of first, second and half of third funicle segments; pedicel as long as first funicle segment. Thorax 1.7 times as long as wide. Propodeum less deeply emarginate, its median length two-thirds of lateral length; weak median carina usually present in basal two-thirds (fig. 4). Basal cell of fore wing more hairy; relative length of $sm:m:p:s$ as 36:25:8:5. Gaster much shorter than thorax; hind margins of tergites not incised medially. Dark green with bronzy reflections especially on face: scape blackish with metallic reflections; coxae and hind femora concolorous with thorax; gaster blackish with a purplish tinge.

Holotype (♀): Toikambetsu, Teshio Prov., Hokkaido, em. 16. V. 1956, ex seed of *Picea Glehnii*, K. Kamijo. Paratypes (47♀♀, 38♂♂): 19♀♀, 17♂♂, the same as holotype; 4♀♀, 6♂♂, Toikambetsu, Hokkaido, em. 18.-23. V. 1956, ex seeds of *P. jezoensis*, K. Kamijo;

2♂♂, Toikambetsu, em. 1. IV. 1957, ex seeds of *P. Glehnii*, K. Kamijo; 4♀♀, 1♂, Ashoro, Hokkaido, em. 21. V. 1956, ex seeds of *P. Glehnii*, K. Kamijo; 19♀♀, 12♂♂, Nagano Pref., em. V. 1952, ex seeds of *P. polita*, K. Sato; 1♀, Fuji-Yoshida, Yamanashi Pref., undated, ex seed of *P. polita*.

Hosts: reared from seeds of *Picea Glehnii* Masters, *P. jezoensis* Carrière and *P. polita* Carrière.

Distribution: Japan (Hokkaido; Honshu).

Having examined a female paratype of *A. violaceus* Nikolskaja, which was kindly sent me by Dr. Nikolskaja, I have found that the new species is readily distinguished from *A. violaceus* by the less deeply emarginate occiput, by the deeply emarginate propodeum, by the sculpture of the dorsum of the mesonotum, by the longer ovipositor sheath, by the non-maculate fore wing and by the basal cell which is entirely closed below by a row of hairs on the cubital vein (in *violaceus* the basal cell is bare, entirely open below).

It has not been ascertained whether this species is strictly phytophagous or entomophagous. It should be noted that some of the larvae remain in the seed cavities of *Picea* until the following spring as in seed-infesting *Megastigmus*. The adults of this species emerge synchronously with those of *Megastigmus ezomatsuanus* Hussey et Kamijo from the same series of the seeds and emergence proportion of this species to *M. ezomatsuanus*, at Teshio, Hokkaido in 1956, is about 2:5; while, according to K. Sato, this species emerged alone abundantly from the seeds of *P. polita* in Nagano Pref., Honshu in 1952.

Genus *Dimeromicrus* Crawford

Dimeromicrus Crawford, 1910, Proc. U. S. Nat. Mus. 38: 127.

Type-species: *Dimeromicrus ashmeadi* Crawford.

2. *Dimeromicrus gifuensis* (Ashmead)

Torymus gifuensis Ashmead, 1904, Jour. New York Ent. Soc. 12: 83.

Dimeromicrus gifuensis, Huber, 1927, Proc. U. S. Nat. Mus. 70: 108.

This species was originally described from 1 male and 2 female specimens collected by Y. Nawa, but I have not examined the type and any other representatives of this species. (Type No. 7146, U.S.N.M.).

Hosts: unknown.

Distribution: Japan (Honshu).

Genus *Monodontomerus* Westwood

Monodontomerus Westwood, 1833, London, Edinb. and Dublin Phil. Mag. and Jour. Sci. (3)2: 443.

Paroligosthenus Cameron, 1913 (1912), Indian Forest Rec. 4: 94 [Type-species: *Paroligosthenus trichioptthalmus* Cameron].

Type-species: *Monodontomerus obscurus* Westwood.

Key to the Japanese species

♀♀ and ♂♂

1. Median carina on propodeum not divided at base; flagellum, especially in male, shorter than width of head; frenum weakly sculptured laterally, practically smooth medially; face of female with a

- longitudinal depression between antennal socket and inner orbit; face of male extremely concaved (figs. 5-7); ovipositor sheath nearly as long as gaster; thoracic dorsum before frenal furrow dark blue with a strong violet tinge. *osmiae*, sp. nov.
- Median carina on propodeum divided at base; flagellum longer than width of head; frenum perfectly smooth; face of female without a longitudinal depression between antennal socket and inner orbit; face of male not concaved, normal. 2.
2. Tooth on hind femora about its own length before apex of femora; ovipositor sheath not over half as long as gaster; dorsum of first tergite perfectly smooth; third and fourth tergites sculptured throughout; median depression on propodeum sharply triangular; mesoscutum and frequently scutellum strongly purplish or violaceous. *japonicus* Ashmead.
- Tooth on hind femora about twice its own length before apex of femora; ovipositor sheath at least two-thirds as long as gaster. 3.
3. Dorsum of first tergite smooth anteriorly, sculptured posteriorly; third and fourth tergites sculptured with posterior margins smooth dorsally; tooth on hind femora triangular; inner spur of hind tibia two-thirds as long as basitarsus in dorsal aspect. *calcaratus*, sp. nov.
- First tergite perfectly smooth on dorsum; third and fourth smooth on posterior half of dorsum; tooth on hind femora slender; inner spur of hind tibia half as long as basitarsus in dorsal aspect. *minor* (Ratzeburg).

3. *Monodontomerus osmiae*, sp. nov.

Monodontomerus obscurus var. *japonicus* Masi, 1937, Mushi 10: 101 (nec *Monodontomerus japonicus* Ashmead, 1904).

Female. Length 2.8-4.2 mm. Head wider than thorax. Postocellar line twice as long as ocellocular line, which is about as long as diameter of lateral ocellus. Eyes pubescent, separated by 1.1 times their own length. Malar space about one-fourth length of eye. Face with a longitudinal, shallow depression between antennal socket and inner orbit. Scape not reaching median ocellus, nearly as long as first four funicle segments combined; pedicel a little longer than first funicle segment; flagellum shorter than width of head (52:57); anellus slightly less than twice as wide as long, about half as long as first funicle segment, which is slightly wider than long, the seventh distinctly transverse; club longer than two preceding segments combined.

Thorax slender, nearly twice as long as wide. Pronotum with sides subparallel in posterior half. Mesoscutum 1.2 times as wide as long, shagreened, with notaulices strongly convergent, parallel posteriorly. Scutellum 1.3 to 1.4 times as long as wide; frenum longitudinally and weakly aciculate laterally, more weakly so or smooth medially, with costate marginal groove not interrupted at middle. Propodeum shorter than half length of scutellum (16:38); median depression not acute posteriorly; median carina not divided at base; area between spiracle and median depression weakly reticulate. Mesepimeron with arched depression. Tooth on hind femur triangular, located at apical one-sixth to one-fifth of femur; hind tibia with inner spur nearly as long as widest part of the tibia. Fore wing: relative length of sm:m:p:s as 70:35:14:7; stigmal vein surrounded by faint cloud.

Gaster slightly longer than thorax, weakly compressed; first tergite occupying one-fourth to one-third of gaster, practically smooth dorsally; third and fourth tergites weakly sculptured basally, smooth apically. Ovipositor sheath nearly as long as gaster.

Dark blue: scape and pedicel yellowish brown; flagellum brownish black; vertex and dorsum of thorax before frenal furrow with a violet tinge; tergites posteriorly blackish with faint bronzy reflections. Legs variable in colour: in lighter specimens fore and middle coxae yellowish brown with metallic reflections; hind coxae and femora concolorous with thorax, both tips of the femora yellowish brown; fore and middle femora and hind tibiae dark brown with faint metallic reflections; rest brownish yellow; in darker specimens coxae and femora concolorous with thorax; hind tibiae mainly dark brown with metallic reflections; fore and middle tibiae yellowish brown with basal and apical tips lighter; tarsi brownish yellow.

Male. Length 2.4-3.3 mm. Face extremely concaved (figs. 5-7). Scape as long as first five funicle segments combined; flagellum much shorter than width of head (40:54); first funicle segment slightly wider than long; second and following funicle segments shorter than first, about half as long as wide; club nearly as long as three preceding segments combined.

Holotype (♀): Kashii, Kyushu, 2. VI. 1931, T. Esaki and K. Yasumatsu. Paratypes (40♀♀, 6♂♂): 23♀♀, 2♂♂, Sasayama, Hyogo Pref., em. 17. V. 1959, ex *Osmia taurus*, Y. Hirashima; 9♀♀, 3♂♂, the same as holotype; 8♀♀, 1♂, Fukuoka, Kyushu, em. 16. X. 1953, ex *O. excavata*, Y. Hirashima.

Masi described *Monodontomerus obscurus* var. *japonicus* from two females, which are deposited in the Entomological Laboratory, Kyushu University, Japan. I have examined these specimens through the kindness of Prof. Yasumatsu.

Hosts: *Osmia excavata* Alfken; *O. taurus* Smith.

Distribution: Japan (Honshu; Kyushu).

Masi treated *Monodontomerus nitidus* Newport 1852, which is a synonym of *M. obsoletus* (Fabricius 1798), as a variety of *obscurus* Westwood 1833. He described the Japanese form as another new variety of *obscurus*, adding the following statement:— if we retain the two European *Monodontomerus* as specifically distinct, the Japanese form should be also a distinct species.

I have sent some specimens of the Japanese form to Dr. Steffan of Muséum National d'Histoire Naturelle, Paris, informing him that this form may very possibly be a distinct species, which is characterized by the extremely concaved head of the male. He has so kindly examined my specimens and come to a complete agreement with me.

The female of the new species may be distinguishable from that of *M. obscurus* by the colour of the body, the longitudinal depression along inner orbit, the practically smooth frenum and the less compressed gaster. The male of this species is readily distinguished from those of all other representatives of the genus by the extremely concaved head.

4. *Monodontomerus japonicus* Ashmead

Monodontomerus japonicus Ashmead, 1904, Jour. New York Ent. Soc. 12: 83; Gahan, 1941, Proc. U.S. Nat. Mus. 90: 480.

The original description is brief and inadequate, but Gahan has given a good redescription of this species. According to him, this species also occurs in China. (Type No. 7147, U. S. National Museum).

Hosts: *Diprion nipponicum* Rohwer (after Gahan, 1941).

Distribution: Japan (Honshu); China.

5. *Monodontomerus calcaratus*, sp. nov.

Female. Length 2.5–3.8 mm. Eyes pubescent, separated by slightly less than their own length. Malar space about one-third length of eye. Postocellar line 2.5 times as long as ocellular line, which is as long as the diameter of the lateral ocellus. Scape not reaching median ocellus, about as long as first two funicle segments and a half of third segment combined; pedicel usually shorter than first funicle segment. Flagellum slender, longer than width of head; funicle segments quadrate, or longer than wide; club slightly shorter than scape, longer than two preceding segments combined.

Thorax 1.7 times as long as wide. Mesoscutum irregularly reticulate (the network is formed by engraved lines), without distinct punctures. Scutellum 1.2 times as long as wide; frenum perfectly smooth, its flange large, with costate groove slightly interrupted at middle. Propodeum with median depression sharply triangular, acute posteriorly; median carina distinctly divided basally like that of *M. minor*; area between median depression and spiracle weakly and reticulately sculptured. Hind femora moderately swollen, with tooth triangular, about twice its own length before apex of femur. Inner spur of hind tibia 1.5 times as long as maximum width of the tibia, two-thirds as long as the basitarsus, which is nearly as long as the following three segments combined (fig. 8). Fore wing: relative length of sm:m:p:s as 61:36:18:12; stigmal vein surrounded by faint cloud.

Gaster slightly longer than thorax. Dorsum of first tergite smooth in anterior half, feebly and finely reticulate in posterior half; third and fourth tergites finely reticulate with posterior margin smooth dorsally. Ovipositor sheath a little shorter than gaster.

Head dark green; scape dark green with basal part brownish; pedicel dark green; flagellum blackish. Thorax blackish blue: mid lobe of mesoscutum darker, sometimes with a bronzy tinge; coxae and femora concolorous with thorax; tibiae dark brown, usually with metallic reflections; tarsi yellowish brown. Gaster blackish somewhat with a violet tinge.

Male. Length 1.9–3.0 mm. Gaster nearly as long as thorax; second tergite completely concealed beneath the first. Face dark green with coppery reflections; scape entirely dark green.

Holotype (♀): Misawa, Iwate Pref., 14. VIII. 1961, ex *Dendrolimus spectabilis*, S. Kimura. Paratypes (15♀♀, 6♂♂): 1♀, 2♂♂, Bibai, Hokkaido, em. 14. VII. 1962, ex cocoon of Ichneumonidae sp., K. Kamijo; 4♀♀, 2♂♂, Bibai, em. 24. VII. 1962, ex *Ptycholomoides aeriferana*, K. Kamijo; 4♀♀, 1♂, Nopporo, Hokkaido, em. 24. VII. 1962, ex *Ariola pulchra*, H. Yamaguchi; 1♀, Sapporo, Hokkaido, 15. VIII. 1952, T. Tomioka; 3♀♀, Ina, Nagano Pref., em. 10. VIII. 1963, ex *Neodiprion sertifer*, O. Eichhorn; 1♀, 1♂, Komaba, Honshu, em. 3. V. 1899, ex Diprionidae sp., S. Matsumura; 1♀, the same as holotype.

Hosts: *Ptycholomoides aeriferana* Herrich-Schäffer; *Ariola pulchra* Butler; *Dendrolimus spectabilis* Butler; *Neodiprion sertifer* Geoffroy; Ichneumonidae sp.

Distribution: Japan (Hokkaido; Honshu).

This species seems to resemble *M. viciellae* Förster, from which it may be distinguished

by the less swollen hind femora, the sculpture of the gaster, the longer inner spur of the hind tibiae and the distinctly divided median carina of the propodeum. It is also related to *M. minor* (Ratz.), from which it is distinguishable by the characters given in the preceding key.

6. ***Monodontomerus minor*** (Ratzeburg)

Torymus minor Ratzeburg, 1848, Ichneum. d. Forstinsect. 2: 178.

Monodontomerus dentipes, Mayr, 1874 (nec Dalman, 1820) Verh. zool.-bot. Ges. Wien 14: 71; Ishii, 1938, Kontyu 12: 97; Kamiya, 1939, Jour. Tokyo Agr. Univ. 6: 13.

Monodontomerus spectabilis Matsumura, 1926, Jour. Coll. Agr. Hokkaido Imp. Univ. 28: 33.

Specimens examined: 4♀♀, 2♂♂, Sapporo, Hokkaido, em. 21.-23. V. 1958, ex *Lymantria dispar*, S. Uéda; 4♀♀, 1♂, Sapporo, em. 1. IX. 1958, ex *Pieris rapae*, T. Namba; 5♂♂, Sapporo, em. 20. VIII. 1959, ex *Apanteles liparidis*, T. Nambu; 1♀, Sapporo, 9. VIII. 1959, T. Nambu; 13♀♀, 5♂♂, Bibai, Hokkaido, em. 20. VII.-5. VIII. 1962, ex *Rhythmonotus takagii*, K. Kamijo; 4♀♀, 3♂♂, Tokyo, em. VI. 1957, ex *Dendrolimus spectabilis*, T. Okazaki; 3♀♀, Kyoto, 1930, ex *D. spectabilis*; 2♀♀, 1♂, Fukuoka, Kyushu, em. 26. V. 1960, 3♀♀, 1♂, em. 7. VI. 1963, ex *Cryptothelea formosicola*, Y. Hirose; 4♀♀, Fukuoka, VII. 1934, ex *C. formosicola*, Hayashi; 3♀♀ (types of *M. spectabilis* Mats.), Soul, Korea, em. 20. VI. 1925, ex *D. spectabilis*, G. Takagi; 1♀, 4♂♂, Soul, ex *D. spectabilis*.

Hosts: *Malacosoma neustria* Linné (after Kamiya, 1939); *Dendrolimus spectabilis* Butler; *Lymantria dispar* Linné; *Cryptothelea formosicola* Strand; *Pieris rapae* Linné; *Rhythmonotus takagii* Matsumura; *Apanteles liparidis* (Bouché).

Distribution: Japan (Hokkaido; Honshu; Kyushu); Korea; Europe; North America.

On Dr. Steffan's suggestion, I have come to the conclusion that the Japanese form should be identified with *M. minor*. The Japanese form only differs from the European one by the colour of the body.

Genus ***Glyphomerus*** Förster

Glyphomerus Förster, 1856, Hym. Stud. 2: 43, 44, 145.

Oligosthenus Förster, 1856, Hym. Stud. 2: 145.

Type-species: *Ichneumon stigma* Fabricius.

7. ***Glyphomerus stigma*** (Fabricius)

Ichneumon stigma Fabricius, 1793, Ent. System. 2: 188.

Oligosthenus stigma, Mayr, 1874, Verh. zool. bot. Ges. Wien 24: 81.

Glyphomerus stigma, Hoffmeyer, 1930, Ent. Meddel. 17: 259.

This species is new to Japan. In the Japanese form, the ovipositor sheath is as long as the gaster, the median carina on the propodeum is strong, the eyes are prominent and the flagellum is shorter than the width of the head.

Specimens examined: 29♀♀, 58♂♂, Esashi, Hiyama Prov., Hokkaido, em. 9.-25. VI. 1958, ex *Rhodites fukudae*, T. Kumata; 2♀♀, 2♂♂, Esashi, 9. VII. 1958, K. Kamijo; 1♀, Konuma, Saghalien, 23. VII. 1934, C. Watanabe; 2♀♀, Belgorod, USSR, em. 10. VI. 1936, Y. Belizin; 1♂, Poltava, USSR, em. 16. V. 1914.

Hosts: *Rhodites fukudae* Shinji.

Distribution: Japan (Hokkaido); Saghalien; Europe; North America.

By the courtesy of Dr. Nikolskaja I have had the opportunity to examine a female paratype of *Glyphomerus carinatus* Nikolskaja and some authentic specimens of *G. stigma*, both of which are closely related but may be distinguishable by the following key.

♀♀

- 1. Pronotum in dorsal view with sides somewhat produced laterally at apex, where the pronotum is the widest, areas just below the projections strongly concave. First three tergites closely and coarsely punctate dorsally. Ovipositor sheath usually shorter than gaster. Antennal scape brownish yellow. *carinatus* Nikolskaja.
- Pronotum normal, not concave in lateral areas. First three tergites sparsely and finely punctate dorsally. Ovipositor sheath as long as or longer than gaster. Antennal scape black. *stigma* (Fabricius).

Host List

I. Entomophagous species

Host	Parasite
Lepidoptera	
<i>Ariola pulchra</i> Butler	<i>Monodontomerus calcaratus</i> , sp. nov.
<i>Cryptothelea formosicola</i> Strand	<i>Monodontomerus minor</i> (Ratzeburg)
<i>Dendrolinus spectabilis</i> Butler	<i>Monodontomerus calcaratus</i> , sp. nov. <i>Monodontomerus minor</i> (Ratzeburg)
<i>Lymantria dispar</i> Linné	<i>Monodontomerus minor</i> (Ratzeburg)
<i>Malacosoma neustria</i> Linné	<i>Monodontomerus minor</i> (Ratzeburg)
<i>Pieris rapae</i> Linné	<i>Monodontomerus minor</i> (Ratzeburg)
<i>Ptycholomoides aeriferana</i> Herrich-Schäffer	<i>Monodontomerus calcaratus</i> , sp. nov.
Hymenoptera	
<i>Apanteles liparidis</i> (Bouché)	<i>Monodontomerus minor</i> (Ratzeburg)
<i>Diprion nipponicum</i> Rohwer	<i>Monodontomerus japonicus</i> Ashmead
Ichneumonidae sp.	<i>Monodontomerus calcaratus</i> , sp. nov.
<i>Neodiprion sertifer</i> Geoffroy	<i>Monodontomerus calcaratus</i> , sp. nov.
<i>Osmia excavata</i> Alfken	<i>Monodontomerus osmiae</i> , sp. nov.
<i>Osmia taurus</i> Smith	<i>Monodontomerus osmiae</i> , sp. nov.
<i>Rhodites fukudae</i> Shinji	<i>Glyphomerus stigma</i> (Fabricius)
<i>Rhythmonotus takagii</i> Matsumura	<i>Monodontomerus minor</i> (Ratzeburg)

II. Phytophagous species

<i>Picea Glehnii</i> Masters	<i>Ameromicrus piceae</i> , sp. nov.
<i>Picea jezoensis</i> Carrière	<i>Ameromicrus piceae</i> , sp. nov.
<i>Picea polita</i> Carrière	<i>Ameromicrus piceae</i> , sp. nov.

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POSSIBILITY OF OCCURRENCE OF GYNOGENESIS IN SCELIONIDAE (Hymenoptera).

Scelio muraii Watanabe and *Scelio tsuruokensis* Watanabe, egg-parasites of the rice grasshoppers *Oxya velox* Fabricius and *Oxya japonica* Willemse, have been known to occur sympatrically in Japan, living in similar ecological situations, sometimes together in one and the same rice field. S. Murai (1962, Jour. Yamagata Agr. & Forest. Soc. No. 20: 1-31) has first discovered the scelionids and has been engaging in biological research. According to him the parasites are considered to be arrhenotokous as in the majority species of parasitic Hymenoptera, fertilized eggs giving rise to females and unfertilized eggs to males. Results of his experiments of interspecific crossing, however, remind us that one of the most interesting features of development by parthenogenesis, viz. *gynogenesis*, appears to occur between these species. When females mate with males of the other species the progeny reared from an egg-pod of *Oxya* are usually composed of females and males, all of which are "impaternate" or "uniparential", being phenotypically identical with maternal aspects without any indication of introgression of characteristics of the father. It seems, therefore, quite possible that this development occurs not only in interspecific crossing but also in intraspecific and that gynogenesis of this kind constitutes the normal mode of reproduction in these species. But, of course, until further biological, cytological and genetic investigations are available the exact feature must remain in some doubt.

Assuming that the above is true, this peculiarly specialized type of natural parthenogenesis can not be exclusively involved in any of three categories, *thelytoky*, *deuterotoky* and *arrhenotoky*, in the sense of Doutt (1955, Ann. Rev. Ent. 4: 172) among the parasitic Hymenoptera. Although any cases of this kind have not yet been reported, we may discover such examples among parasitic Hymenoptera which have

(Continued on page 114)

Errata

Vol. 26, No. 2, 1963, p. 98, line 6 from top, for "Pine-caterpillar"
read "Pine-caterpillar."

Vol. 26, No. 2, 1963, p. 108, line 15, from top for "specis" read
"species."

Vol. 26, No. 2, 1963, p. 112, line 12, from top, for "with a paired
projections" read "with paired projections."

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