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Studies on the Japanese gall midges I, with special reference to the tribe Micromyini from Kyushu Island (Diptera: Cecidomyiidae)*

Junichi YUKAWA

Shinji (1939, 1944), Monzen (1955), Inouye (1961, 1964) and some others have been studying the gall making group of the family Cecidomyiidae, but non-gall making group of the family have been studied very little in Japan. The author, in this paper, records nine new species and two known species of the tribe Micromyini from the fauna of Kyushu Island. These species belong to one new and six described genera which are common in North America and Europe.

The midges considered in this report were collected by net sweeping between 1963 and 1965 on Kyushu Island. The collected midges are preserved in 75% alcohol. The color in each case was recorded before the alcohol had caused fading. After 4 to 8 weeks the midges which were to be mounted were placed into 75% Lacti-phenol solution to clear the body contents. They were left in this solution for 5 to 10 days. Then, each specimen was placed into one or two drops of mounting media, Neo-Shigaral, on a slide glass. The head, wings and male genitalia are dissected from the body with fine needls before mounting.

The type specimens will be kept in the collection of the Entomological Laboratory of Kyushu University, Fukuoka.

The author wishes to express his hearty thanks to Prof. Keizo Yasumatsu and Prof. Yoshihiro Hirashima, Entomological Laboratory, Kyushu University, for their constant guidance. His thanks are also due to Mr. Toyohei Saigusa, Biological Laboratory, General Education Department, Kyushu University, for his kind suggestions.

Tribe Micromyini Rondani

Micromyna Rondani, Dipt. Ital. Prod., 1 : 198, 1856.

* Contribution Ser. 2, No. 246. Entomological Laboratory, Kyushu University.

Campylomyzides Kieffer, Bull. Soc. Hist. Nat. Metz, (Ser. 2) 8 : 48, 1898.

Campylomyzariae Kieffer, Ann. Soc. Ent. France, 69 : 451, 1900 ; Felt, Bull. N. Y. St. Mus., 124 : 311, 1908 ; Felt, Jour. N. Y. Ent. Soc., 19 : 32, 1911 ; Felt, Bull. N. Y. St. Mus., 165 : 153, 1913 ; Kieffer, Gen. Insect., 152 : 287, 1913 ; Felt, Philip. Jour. Sci., 13 (Ser. D) : 297, 1918 ; Felt, Bull. N. Y. St. Mus., 257 : 136, 1925 ; Felt, Lingnan Sci. Jour., 7 : 425, 1929 ; Mani, Rec. Ind. Mus., 36 : 383, 1934 ; Mani, Ind. Jour. Ent., 7 : 189, 1946.

Campylomyzini Enderlein, Arch. Naturg., 77 (Bd. 1, Suppl. 3) : 195, 1911 ; Enderlein, Zool. Anz., 40 : 263, 1912 ; Edwards, Proc. Roy. Ent. Soc. Lond., 7 (Ser. B) : 173, 1938.

Campylomyzinae Enderlein, Zool. Anz., 40 : 262, 1912 ; Enderlein, Tierw. Mitteleur., 6 (Lief 2, Teil 3) : 61, 1936.

Campylomyzidae Enderlein, Tierw. Mitteleur., 6 (Lief 2, Teil 3) : 60, 1936.

Termitomastidae Silvestri, Boll. Mus. Zool. Anat. Comp. Univ. Torino, 16 (395) : 1, 1901 ; Silvestri, Redia, 1 : 183, 1903.

Termitomastinae Silvestri, Speiser, Zool. Anz., 30 : 716, 1906 ; Brues & Melander, Classif. Insects, pp. 274, 348, 1932 ; Mani, Ind. Jour. Ent., 7 : 190, 1946.

Micromyini Pritchard, Ent. Amer., 27 (2) : 10, 1947 ; Mamajev, Rev. Ent. USSR, 42 (2) : 437, 1963.

The tribe Micromyini is included in the subfamily Lestremiinae which is distinguished from other subfamilies by having the first tarsi longer than the succeeding segments and the wing venation not strongly reduced. Micromyini differs from the other tribes of the subfamily and characterized by the wing venation: M_{1+2} simple, Cu forming a fork, CuP fused with Cu. One or two spermathecae are present, and three ocelli also present.

Genus *Peromyia* Kieffer

Joannisia Kieffer, (not Monterosato, 1884, Mollusca), Bull. Soc. Ent. France, 1894 : clxxv, 1894 ; Kieffer, Wien. Ent. Ztg., 13 : 205, 1894 ; Kieffer, Misc. Ent., 3 : 62, 1895 ; Kieffer, Bull. Soc. Hist. Nat. Metz, (Ser. 2) : 48, 1898 ; Coquillett, Proc. U. S. Nat. Mus., 37 : 556, 1910 ; Felt, Jour. N. Y. Ent. Soc., 19 : 32, 1911 ; Enderlein, Arch. Naturg., 77 (Bd. 1, Suppl. 3) : 196, 1911 ; Felt, Bull. N. Y. St. Mus., 165 : 156, 1913 ; Kieffer, Gen. Insect., 152 : 292, 1913 ; Edwards, Proc. Roy. Ent. Soc. Lond., 7 (Ser. B) : 256, 1938.

Peromyia Kieffer, Bull. Soc. Ent. France, 1894 : clxxv, 1894 ; Kieffer, Wien. Ent. Ztg., 13 : 205, 1894 ; Kieffer, Misc. Ent., 3 : 76, 1895 ; Kieffer, Bull. Soc. Hist. Nat. Metz, (Ser. 2) 8 : 48, 1898 ; Felt, Jour. N. Y. Ent. Soc., 19 : 32, 1911 ; Felt, Bull. N. Y. St. Mus., 165 : 160, 1913 ; Enderlein, Arch. Naturg., 77 (Bd. 1, Suppl. 3) : 196, 1911 ; Kieffer, Gen. Insect., 152 : 292, 1913 ; Mani, Rec. Ind. Mus., 36 (1934): 383, 1935 ; Edwards, Proc. Roy. Ent. Soc. Lond., 7 (Ser. B) : 264, 1938 ; Pritchard, Ent. Amer., 27 (2) : 74, 1947 ; Mamajev, Rev. Ent. USSR, 42 (2) : 437, 1963.

Camptoza Enderlein, Tierw. Mitteleur., 6 (Lief 2, Teil 3) : 62, 1936.

The genus ***Peromyia*** distinctive by having Costa reaching at or little beyond tip of R_5 and not reaching well beyond tip of R_5; sensory pore

on R_5 and none on r-m. Eye bridge two to four facets wide. Palpi of three to four segments. Antennae with 2+12 segments in the male, 2+8 to 2+10 segments in the female, flagellar segment of both sexes with subglobular basal enlargement and smooth, elongate stem, each basal enlargement of male without crenurate whorls and that of female with two to four sensorial spines, which are sometimes digitate, empodia nearly as long as claws. Male genitalia: ninth tergite very narrow and usually interrupted in middle, forming a pair of crescent-shaped stripes, basiclaspers broadly united below or sometimes divided ventrally by deep incision, tegmen slipper-shaped, genital rod usually absent. Spermathecae of female (when present) two, sometimes one is larger than the others, or apparently absent.

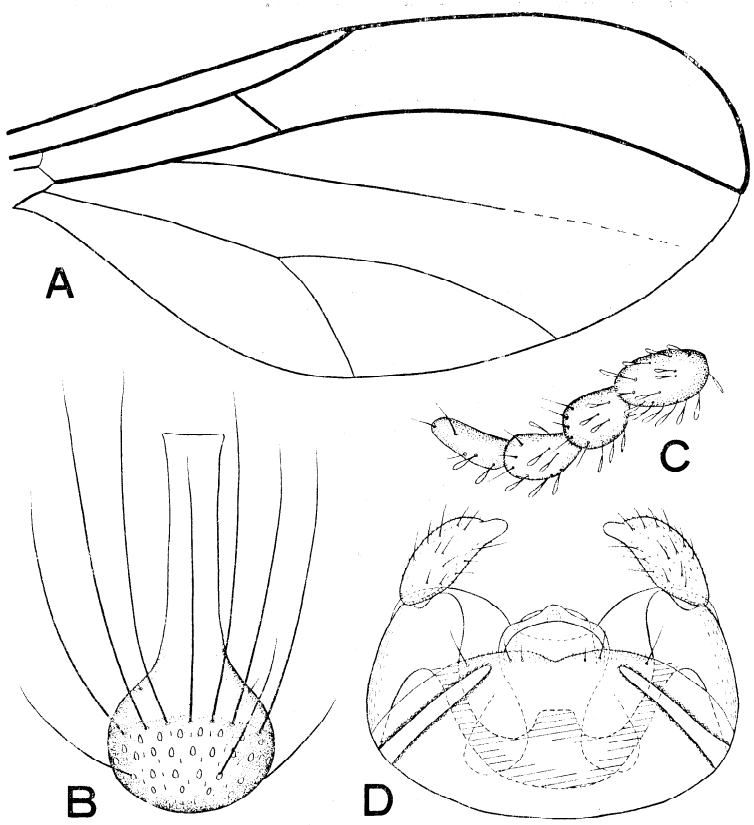

Fig. 1. *Peromyia prominens* Yukawa, sp. n.
(A) wing, ♂. (B) flagellar segment, ♂. (C) palp, ♂. (D) male genitalia.

Peromyia prominens sp. n. Fig. 1(A-D)

Male : Small species. Eye bridge two to three facets wide. Palpi of four segments clothed with rather long scales, first subglobular, fourth a little longer than second or third. Antennae greyish brown, with 2+12 segments, scape and pedicel subglobular, scape larger than pedicel, flagellar segment with a smooth cylindric stem and a subglobular basal enlargement of which basal half darker than distal half, basal enlargement ornamented with only long bristles, stem about 1.4 times as long as basal enlargement. Thorax dark brown on dorsum, brown on sides. Legs greyish brown, tibiae with long scales, tarsi with rather short broad scales distally, fifth segment 1.5 times as long as fourth, claws bent at right angle, empodia long, about four-fifth as long as claws. Wings : length 1.0 mm, about 2.2 times as long as wide, Costa reaching slightly beyond tip of R_5, Sc rather distinct but not reaching costal margin, R_1 2.5 times as long as Rs, M_{1+2} obsolete distally. Abdomen greyish brown. Genitalia : ninth tergite very narrow, interrupted in middle, forming a pair of crescent-shaped stripes, tenth tergite and cerci well developed, disticlaspers rather small with a distal projection which rounded apically, basiclaspers broadly united below, tegmen slipper-shaped, genital rod visible only on its tip, anus invisible.

Female unknown.

Holotype : ♂ (on slide), Fukuoka-shi, Kyushu, Japan, 2. V. 1965, leg. J. Yukawa. Cecid. No. 92-1.

This species is characterized and distinguished from the other members of the genus by having the disticlasper with a distal projection which is rounded apically and the genital rod also visible only on its tip.

Peromyia photophila (Felt, 1907) Fig. 2(A)

Campylomyza photophila Felt, Bull. N. Y. St. Mus., 110 : 99, 1907.

Joannisia photophila (Felt), Felt, Bull. N. Y. St. Mus., 124 : 313, 1908 ; Felt, Bull. N. Y. St. Mus., 165 : 158, 1913.

Peromyia photophila (Felt), Pritchard, Ent. Amer., 27 (2) : 76, 1947.

Campylomyza carolinae Felt, Bull. N. Y. St. Mus., 110 : 100, 1907.

Joannisia carolinae (Felt), Felt, Bull. N. Y. St. Mus., 124 : 313, 1908 ; Felt, Bull. N. Y. St. Mus., 165 : 158, 1913.

Joannisia flavoscuta Felt, Bull. N. Y. St. Mus., 124 : 313, 1908 ; Felt, Bull. N. Y. St. Mus., 165 : 159, 1913.

Joannisia flavopedalis Felt, Bull. N. Y. St. Mus., 124 : 313, 1908 ; Felt, Bull. N. Y. St. Mus., 165 : 157, 1913.

Joannisia pennsylvanica Felt, Jour. Econ. Ent., 4 : 476, 1911 ; Felt, Bull. N. Y. St. Mus., 165 : 159, 1913.

Joannisia nodosa Edwards, Proc. Roy. Ent. Soc. Lond., 7 (Ser. B) : 263, 1938.

Male : Small species. Eye bridge two to three facets wide. Palpi of four segments, clothed with rather long scales, first segment subglobular, second and third oval, fourth rather narrow, these four segments subequal in length. Antennae greyish brown, with 2+12 segments, flagellar segment with a subglobular basal enlargement of which basal half not so darkened and a smooth cylindric stem, basal enlargement with long bristles, stem about 1.3 times as long as basal enlargement. Thorax dark

brown on dorsum, brown on sides. Legs brown, tibiae with long scales, tarsi with rather short scales, fifth tarsal segment about 1.5 times as long as fourth, claws bent at right angle, empodia rather long, about four-fifth as long as claws. Wings : length about 1.0 mm, 2.1 times as long as wide, Costa reaching slightly beyond tip of R_5, Sc rudimentary, R_1 about 2.4 times as long as Rs, M_{1+2} obsolete distally. Genitalia : ninth tergite narrow, interrupted in middle, forming a pair of rather broad crescent-shaped stripes, cerci well developed, disticlaspers attenuated distally with bare, beak-like spine apically, basiclaspers rather broadly united below, tegmen of slipper-shape, genital rod absent.

Female unrecorded from Japan.

Specimen examined : 1 ♂ (on slide), Inunaki-yama, Fukuoka, Kyushu, Japan, 3. VI.

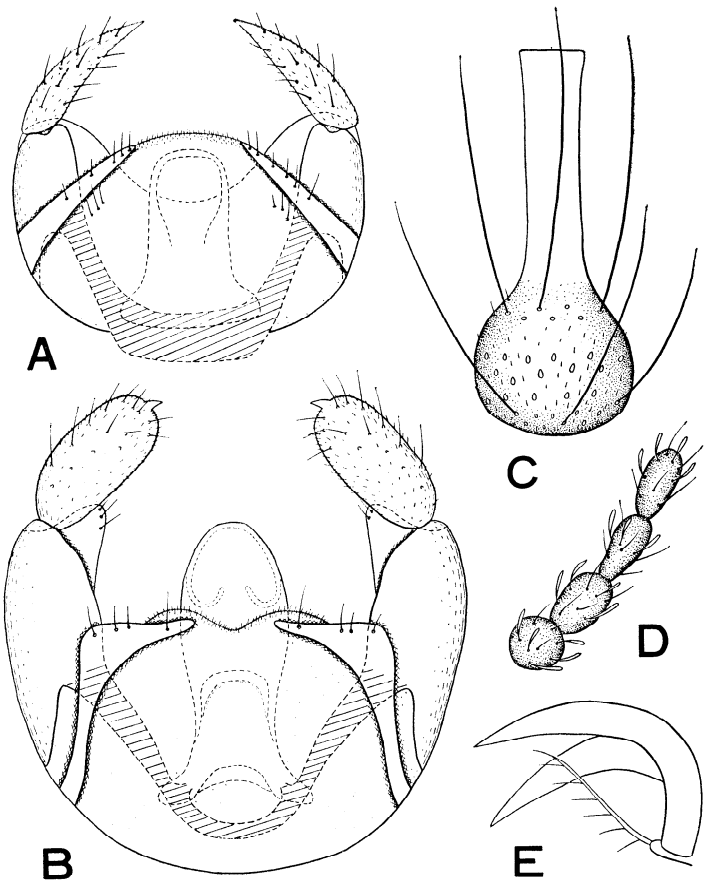

Fig. 2. *Peromyia photophila* (Felt) (A) male genitalia; *Peromyia brevispina* Yukawa, sp. n. (B) male genitalia. (C) flagellar segment, ♂. (D) palp, ♂. (E) claw and empodium, ♂.

1965, leg. J. Yukawa. Cecid. No. 137-1.

This species has been recorded from North America and England. This report is the first record of the species from Japan.

Peromyia brevispina sp. n. Fig. 2(B-E)

Male : Very small species. Eye bridge two to three facets wide. Palpi of four segments, clothed with scales, first segment subglobular, second and third oval, fourth rather narrow, nearly as long as second or third. Antennae greyish brown, with 2+12 segments, scape and pedicel subglobular, scape larger than pedicel, each flagellar segment with a subglobular basal enlargement, basal enlargement ornamented with only long bristles, each flagellar segment, except terminal one, with also a smooth cylindric stem which is about 1.3 times as long as basal enlargement. Thorax brownish black on dorsum, greyish brown on sides. Legs brown, tibiae with long, narrow scales, tarsi with rather narrow, short scales densely, fifth tarsi nearly as long as fourth, claws bent at right angle, empodia long, rather narrow, about four-fifth as long as claws. Wings: length about 0.8 mm, 2.2 times as long as wide, Costa ending at tip of R_5, R_1 about two times as long as Rs. Abdomen brown. Genitalia : ninth tergite with modified crescent-shaped stripes, its outer margin bent at right angle, ninth tergite also interrupted in middle, cerci moderately bilobed, disticlaspers of oval-shape, with a small distal spine, basiclaspers with an apical projection ventrally, tegmen slipper-shaped, genital rod absent.

Female unknown.

Holotype : ♂ (on slide), Hiko-san, Fukuoka, Kyushu, Japan, 24. V. 1965, leg. J. Yukawa. Cecid. No. 104-4. Paratype : 1♂, same data as Holotype, Cecid. No. 103-2.

This species closely resembles ***P. fungicola*** (Kieffer, 1901), however, ***P. brevispina*** is much smaller than ***P. fungicola*** and apical spine of disticlaspers shorter, fourth palpal segment also shorter than that of ***fungicola***, basiclaspers with a longer apical projection ventrally.

Genus *Cordylomyia* Felt

Cordylomyia Felt, Jour. N. Y. Ent. Soc., 19 : 35, 1911 ; Felt, Bull. N. Y. St. Mus., 165 : 194, 1913 ; Kieffer, Gen. Insect., 152 : 295, 1913 ; Edwards, Proc. Roy. Ent. Soc. Lond., 7 (Ser. B) : 199, 1938 ; Pritchard, Ent. Amer., 27 (1) : 29, 1947 ; Mamajev, Rev. Ent. USSR, 42 (2) : 452, 1963.

Prosaprionus Kieffer, Marcellia, 12 : 54, 1913 ; Kieffer, Gen. Insect., 152 : 300, 1913.

The genera ***Cordylomyia*** and ***Campylomyza*** differ from the others of the tribe by R_1 with length at least three times as long as Rs ; one sensory pore on R_5, none on r-m, tarsi without scales. The genus ***Cordylomyia*** is separated from ***Campylomyza*** by having the eye bridge which is sometimes present, Cubital fork forming more acute angle, flagellar segment each with one complete crenulate whorl and one or two incomplete ones. Male genitalia with ninth tergite broader, basiclaspers more broadly united ventrally ; Female flagellar segment each with bristles only, spermathecae two, well developed.

Cordylomyia excavata sp. n. Fig. 3 (A–E)

Male : Moderate size midge. Eye bridge with two facets wide. Palpi of four segments, first segment subglobular, fourth about 1.5 times as long as second or third. Antennae greyish brown, with 2+12 segments, scape larger than pedicel, pedicel subglobular, first flagellar segment elongate, about 1.7 times as long as second, terminal

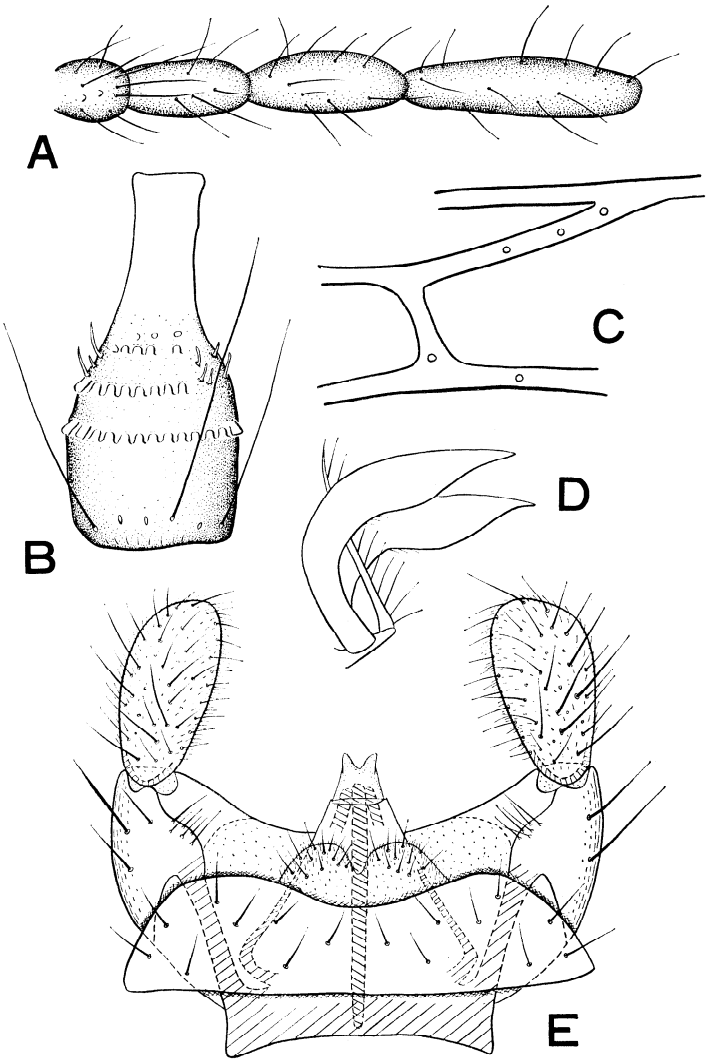

Fig. 3. *Cordylomyia excavata* Yukawa, sp. n.
(A) palp, ♂. (B) flagellar segment, ♂. (C) sensory pores on R vein, ♂. (D) claw and empodium, ♂. (E) male genitalia.

one conical, fifth flagellar segment with stem about three-fourth as long as basal enlargement, basal part two times as long as wide, with long bristles basally and short curved ones distally, each flagellar segment with one complete crenulate whorl medially, two incomplete ones on upper half of basal part. Thorax dark brown on dorsum, brown on sides. Legs yellowish brown, femora as long as tibiae, tarsi without scales, claws bent at right angle, with two to three minute spines around middle, empodia about three-fourth as long as claws. Wings : length about 1.5 mm, two times as long as wide, Costa extending nearly at tip of M_{1+2}, Sc very faint, R_1 three times as long as Rs, sensory pores three on R_1, one on R_5, one on junction of Rs and r-m, Cubital fork forming an acute angle. Abdomen yellowish brown. Genitalia : ninth tergite broad, moderately concave at middle of distal margin, cerci well developed, disticlaspers length about two times as long as wide, distally broader, rounded at tip and without apical spine, basiclaspers broadly united ventrally tegmen, with a pair of angulations distally, genital rod long, with a pair of short ducts on the both sides, anus obvious.

Female unknown.

Holotype : ♂ (on slide) Kora-san, Kurume, Kyushu, Japan, 16. V. 1965, leg. J. Yukawa. Cecid. No. 89-1. Paratypes : 1 ♂, same data as holotype, Cecid. No. 89-2. 1♂, Hiko-san, Fukuoka, Kyushu, Japan, 24. V. 1965, leg. J. Yukawa. Cecid. No. 104-3.

This species is characterized and differs from *C. rudis* Winnertz, 1870 and *C. xylophila* Edwards, 1938 by having the tegmen with a pair of angulations distally; size much smaller than these two species, ninth tergite more deeply concave at distal margin.

Genus *Micromyia* Rondani

Micromya Rondani, Sopra Alc. Gen. Inset. Ditt., Mem. Sec. Serv. Ditt. Ital., p. 21, 1840 ; Rondani, Nouv. Ann. Sci. Nat. Bologna, (Ser. 2) 6 : 373, 1846 ; Rondani, Dipt. Ital. Prod., 1 : 198, 1856.

Micromyia Rondani, (emendation for *Micromya*) : review of Rondani's 1840 paper, Isis von Oken, 1844 : 451, 1844 ; Winnertz, Verh. zool.-bot. Ges. Wien, 20 : 26, 1870 ; van der Wulp, Dipt. Neerl., p. 78, 1877 ; Kieffer, Misc. Ent., 3 : 112, 1895 ; Kieffer, Bull. Soc. Hist. Nat. Metz, (Ser. 2) 8 : 50, 1898 ; Kieffer, Ann. Soc. Ent. France, 69 : 441, 1900 ; Felt, Jour. N. Y. Ent. Soc., 19 : 34, 1911 ; Enderlein, Arch. Naturg., 77 (Bd. 1, Suppl. 3) : 196, 1911 ; Kieffer, Gen. Insect., 152 : 294, 1913 ; Felt, Bull. N. Y. St. Mus., 165 : 163, 1913 ; Edwards, Proc. Roy. Ent. Soc. Lond., 7 (Ser. B) : 254, 1938 ; Pritchard, Ent. Amer., 27 (2) : 60, 1947 ; Mamajev, Rev. Ent. USSR, 42 (2) : 445, 1963.

The members of this genus are characterized as follows; eye bridge one to two facets wide. Palpi of three segments. Antennae short, with 2+7 to 2+9 segments, pedicel globular, enlarged and flagellar segment rather slender without stem in the male, flagellum of the female sessile with sensorial collar. Tarsi with small scales, empodia narrow, but nearly as long as claws. Male genitalia : ninth tergite narrow, disticlaspers without apical spine, tegmen slipper-shaped, genital rod absent. Spermatheca one.

Micromyia kyushuensis sp. n. Fig. 4 (A-E)

Male : Small species. Eye bridge two to three facets wide. Palpi of three segments, first subglobular, with rather long, narrow scales sparsely, second and third segments narrow, subequal in length. Antennae greyish brown, with 2+8 segments, pedicel subglobular, enlarged, about two times as large as scape, first flagellar segment a little elongate, second rather broad, fifth about 2.5 times as long as basal wide, last four segments much more slender than basal three, terminal segment elongate, compound of two short segments, with constriction in middle, each flagellar segment with two or more weakly curved sensorial spines distally and also with scattered, rather long bristles. Thorax dark brown on dorsum, greyish brown on sides. Legs pale greyish brown, femora a little longer than tibiae, tarsi with rather short, broad scales,

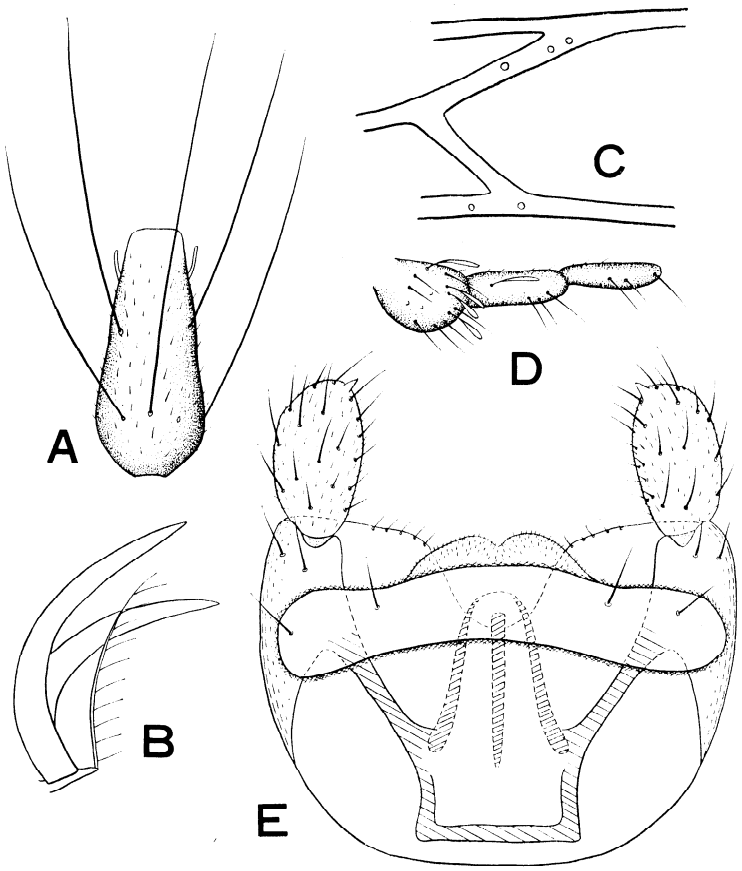

Fig. 4. *Micromyia kyushuensis* Yukawa, sp. n.
(A) flagellar segment, ♂. (B) claw and empodium, ♂. (C) sensory pores on R vein, ♂. (D) palp, ♂. (E) male genitalia.

fifth segment 1.2 times as long as fourth, claws bent at right angle, empodia long, about four-fifth as long as claws. Wings : rather broad, length 0.9-1.1 mm, 1.5 times as long as wide, Sc rudimentary, R_1 as long as Rs, three sensory pores on R_1, one or sometimes two on r-m, one on junction of Rs and r-m, Cubital fork forming nearly a right angle. Abdomen greyish brown. Genitalia : ninth tergite moderately rectangular, cerci well developed, disticlaspers oval, with an apical small spine, basiclaspers broadly united below, tegmen shield-shaped, genital rod long, anus invisible.

Female unknown.

Holotype : ♂ (on slide), Oodomari, Kagoshima, Kyushu, Japan, 24. IV. 1965, leg. J. Yukawa. Cecid. No. 30-1. Paratypes : 2 ♂♂, same data as holotype. Cecid. No. 30-2, 30-3.

This species is distinguished from *M. lucorm* Rondani, 1840 and *M. orientalis* Grover, 1962 by having eight flagellar segments, terminal one composed of two short segments fused together. This species also differs from *M. mana* Pritchard, 1947, *M. indica* Mani, 1937 and *M. championi* Grover, 1962 by having second palpal segment as long as third.

Genus *Aprionus* Kieffer

Apriona Kieffer, Bull. Soc. Ent. France, 1894 : clxxvi, 1894.

Aprionus Kieffer, Wien. Ent. Ztg., 13 : 205, 1894 ; Kieffer, Misc. Ent., 3 : 93, 1895 ; Kieffer, Bull. Soc. Hist. Nat. Metz, (Ser. 2) 8 : 49, 1898 ; Felt, Jour. N. Y. Ent. Soc., 19 : 34, 1911 ; Enderlein, Arch. Nat., 77 (Bd. 1, Suppl. 3) : 196, 1911 ; Felt, Bull. N. Y. St. Mus., 165 : 182, 1913 ; Kieffer, Gen. Insect., 152 : 300, 1913 ; Edwards, Proc. Roy. Ent. Soc. Lond., 7 (Ser. B) : 229, 1938 ; Pritchard, Ent. Amer., 27 (2) : 71, 1947 ; Mamajev, Rev. Ent. USSR, 42 (2) : 446, 1963.

This genus is characterized by having the tegmen laterally bearing opposing pairs of spines which are directed inwardly. Ninth tergite rather broad, disticlaspers usually with beak-like spine apically, basiclaspers very long, with the proximal ends narrowly united or sometimes interrupted ventrally, genital rod absent. Spermatheca one, not very large. Eye bridge with two to four facets wide. Four or more sensoria on flagellar segments of female. Empodia rudimentary or short.

Aprionus interruptus sp. n. Fig. 5 (A-E)

Male : Moderate size midge. Eye bridge with four facets wide. Palpi of four segments, first subglobular, third and fourth about two times as long as second, sometimes third and fourth fused together. Antennae greyish brown, with 2+12 segments, scape and pedicel subglobular, first flagellar segment elongate, 1.7 times as long as second, stem of flagellar segment as long as basal enlargement, basal enlargement about 1.5 times as long as wide and with long bristles basally and short ones distally, each flagellar segment with one complete crenulate whorl medially, three incomplete and one or two irregular ones on upper half of basal enlargement. Thorax dark brown on dorsum, yellowish brown on sides. Legs yellowish brown, femora as long as tibiae, tarsi clothed with scales, first tarsi three times as long as fifth, claws bent at

right angle, with two or three minute spines around middle, empodia rudimentary represented by only hairs. Wings : length about 1.5 mm, 1.7 times as long as wide, Costa reaching at nearly tip of M_{1+2}, R_1 two times as long as Rs, sensory pores three on R_1, one on r-m, one on junction of Rs and r-m, Rs rudimentary, not reaching costal margin, Cubital fork forming an acute angle. Abdomen yellowish brown. Genitalia : ninth tergite moderate rectangular, with setae dorsally, distal margin of ninth tergite shallowly concave on the middle, cerci weakly developed, disticlaspers rather long, two times as long as wide, with a long beak-like projection distally,

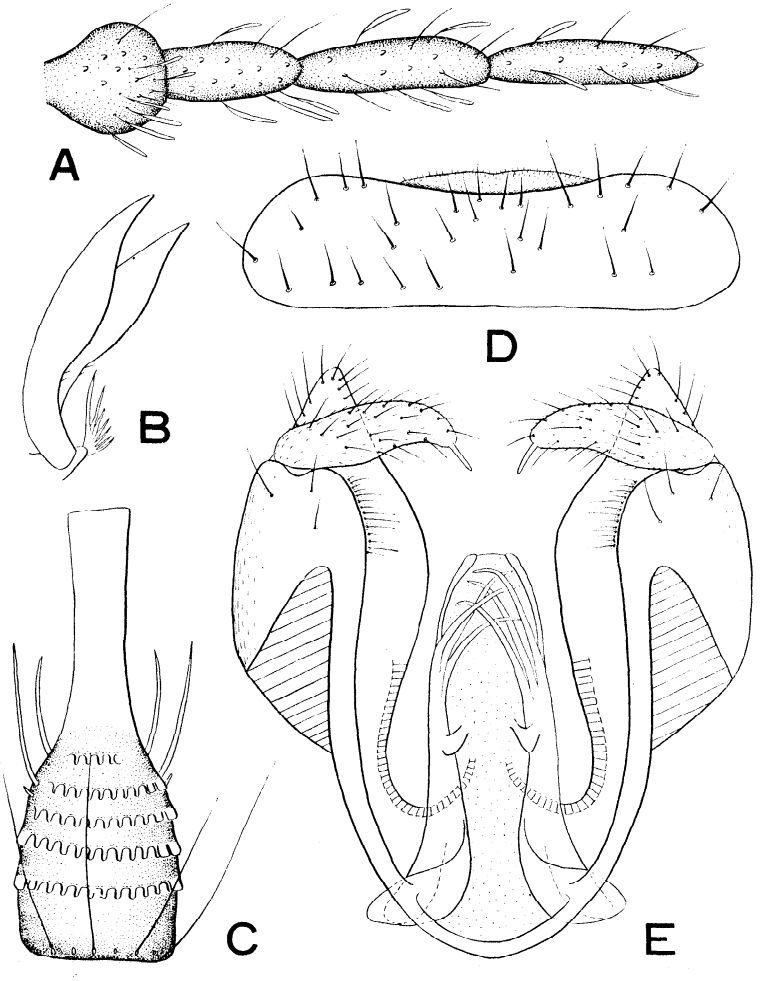

Fig. 5. *Aprionus interruptus* Yukawa, sp. n.
(A) palp, ♂. (B) claw and empodium, ♂. (C) flageller segment, ♂. (D) ninth tergite and cerci, ♂. (E) male genitalia.

basiclaspers produced ventro-distally into a sharp triangular point, narrow ribbon-like loop interrupted ventro-medially and interrupted portion recurved upward, tegmen with three opposing pairs of long spines which directed inwardly from both sides, genital rod absent, anus invisible.

Female inknown.

Holotype : ♂ (on slide), Fukuoka-shi, Kyushu, Japan, 15. V. 1965, leg. J. Yukawa. Cecid. No. 118-1. Paratypes : 3 ♂♂, same date as holotype, Cecid. No. 117-1, 117-2, 118-2, 1 ♂, Inunaki-yama, Fukuoka, Kyushu, Japan, 3. VI. 1965, leg. J. Yukawa. Cecid. No. 138-1, 1♂, Hiko-san, Fukuoka, Kyushu, Japan, 25. VI. 1965, leg. J. Yukawa. Cecid. No. 370-1.

This species is distinguished from the other members of the genus by interruption of ribbon-like ventral loop, disticlaspers with long apical projection, tegmen with three opposing pairs of long spines.

Aprionus subanalis sp. n. Fig. 6 (A-E)

Male : Eyes black, bridge with three facets wide. Palpi of four segments, fourth segment about 1.2 times as long as third. Antennae with 2+12 segments, each flagellar segment with one complete crenulate whorl and three incomplete ones, stem of flagellar segment rather short about one-third as long as basal enlargement, terminal segment conical. Thorax brownish black on dorsum, dark greyish brown on sides. Legs greyish brown, tarsi clothed with narrow scales, claws bent at right angle, with two to three minute spines around middle, empodia very short about one-third as long as claws. Wings : length about 1.1 mm, two times as long as wide, Costa extending beyond half the distance from R_5 to M_{1+2}, R_1 two times as long as Rs, sensory pores three on R_1, one on r-m, one on junction of Rs and r-m, Sc rudimentary, not reaching wing margin, Cubital fork forming an acute angle. Genitalia : ninth tergite rather narrow, arched shape, cerci hardly developed, tenth sternite present, of which anterior margin is folded inwardly and lamellate, disticlaspers rather small and with a broadly truncate projection distally, basiclaspers long, united ventrally by a long narrow loop, tegmen elongate, distal margin sclerotized arch-shaped, tegmen also laterally with nine opposing pairs of rather short stout spines which is directed inwardly, genital rod absent, anus rudimentary.

Female unknown.

Holotype : ♂ (on slide), Kora-san, Kurume, Kyushu, Japan, 16. V. 1965, leg. J. Yukawa. Cecid. No. 85-3. Paratype : 1 ♂, same data as holotype. Cecid. No. 87.

This species resembles *A. similis* Mamajev, 1963, but is distinguished from it by having nine pairs of tegminal spines and from the other members of the genus by the presence of the tenth sternite.

Anodontoceras gen. n.

Type-species : ***Anodontoceras saigusai***

This genus is distinguished from the other members of the tribe Micromyini by having the characteristics mentioned below.

Male : Palpi of three segments. Antennae : each flagellar segment, except terminal one, with subglobular basal enlargement and smooth, long stem as in ***Peromyia***, but

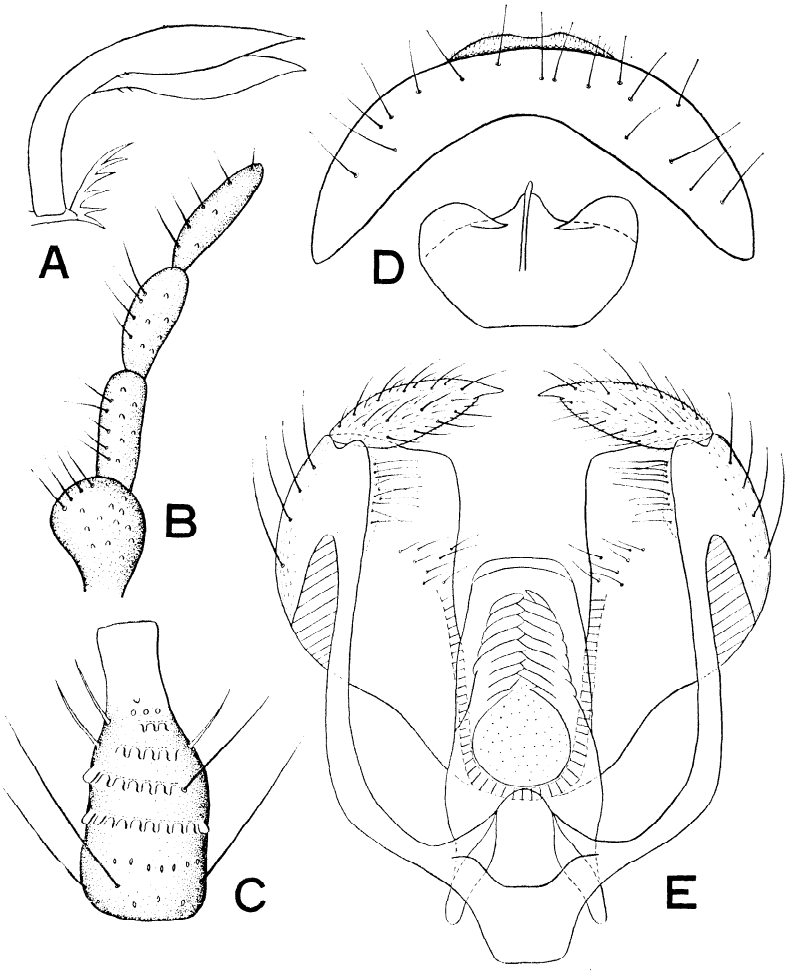

Fig. 6. *Aprionus subanalis* Yukawa, sp. n.
(A) claw and empodium, ♂. (B) palp, ♂. (C) flagellar segment, ♂.
(D) ninth tergite, cerci and tenth sternite, ♂. (E) male genitalia.

stem inserted in the basal part of the next segment as in most other genera, each basal enlargement, except terminal one, with four, long sensorial spines which is recurved abruptly at near its base and also with long bristles basally. Empodia shorter than claws. Wings : Costa extending well beyond tip of R_5 and reaching nearly at tip of M_{1+2}, Sc rudimentary, R_1 not over two times the length of Rs, sensory pores three on R_5, one on r-m, one on junction of Rs and r-m, none on R_5, Cubital fork forming acute angle. Genitalia : ninth tergite rather narrow, cerci well developed, disticlaspers providing many tuberculate bases distally, from which a short spine is arising, basiclaspers very small, tegmen of shield-shape, genital rod long.

Female unknown.

Anodontoceras saigusai sp. n. Fig. 7 (A-G)

Male : Rather small species. Eye bridge three facets wide. Palpi of three segments, first segment subglobular, with moderate size scales, third narrow and longer than second, about 1.3 times as long as second. Antennae greyish brown, with 2+12 segments, pedicel subglobular, a little smaller than scape, each flagellar segment, except

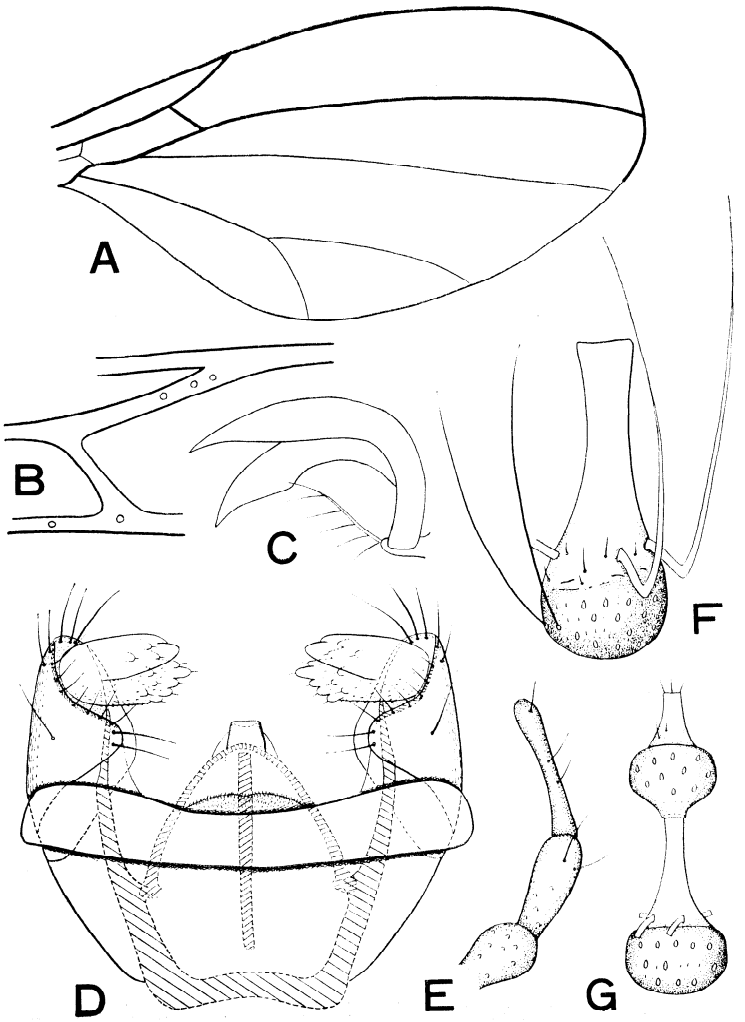

Fig. 7. *Anodontoceras saigusai* Yukawa, gen. et sp. n.
(A) wing, ♂. (B) sensory pores on R vein, ♂. (C) claw and empodium, ♂. (D) male genitalia. (E) palp, ♂. (F) flagellar segment, ♂. (G) terminal two flagellar segments, ♂.

terminal one, with a smooth long stem and subglobular basal enlargement of which basal half is darker than distal half, basal enlargement with irregular whorls of long bristles basally and four long bristles which are curved abruptly at near its basal part, stem of first to fourth flagellar segments nearly as long as basal enlargement, that of fifth to tenth about 1.1 to 1.3 times as long as basal part, stem of eleventh shorter and narrower than the others, terminal flagellar segment with rather small basal enlargement and also a tapering stem which is provided three minute spines apically. Thorax dark brown on dorsum, yellowish brown on sides. Legs pale brown, with scales densely, femora as long as tibiae, fifth tarsi a little longer than fourth, claws bent at right angle, empodia short, about one-third as long as claws. Wings: length 1.0-1.2 mm, about two times as long as wide, R_1 about 1.5 times as long as Rs, sensory pores three on R_1, one on r-m, one on junction of Rs and r-m. Abdomen dark greyish brown on dorsum, greyish brown on sides. Genitalia : ninth tergite narrow rectangular, cerci well developed, disticlaspers not smoothly rounded, having many tuberculate bases distally from which a short spine is arising respectively, basiclaspers broadly separated, without ventral plate, tegmen shield-shaped, genital rod long.

Female unknown.

Holotype : ♂ (on slide), Inunaki-yama, Fukuoka, Kyushu, Japan, 5. X. 1965, leg. J. Yukawa et T. Saigusa, Cecid. No. 174-1. Paratypes : 2 ♂♂, same data as holotype, Cecid. No. 174-3, 174-5.

Genus *Trichopteromyia* Williston

Trichopteromyia Williston, Trans. Ent. Soc. Lond., 1896 : 255, 1896 ; Kieffer, Bull. Soc. Hist. Nat. Metz, (Ser. 2) 9 : 16, 1901 ; Felt, Jour. N. Y. Ent. Soc., 19 : 33, 1911 ; Felt, Bull. N. Y. St. Mus., 165 : 161, 1913 ; Kieffer, Gen. Insect., 152 : 317, 1913 ; Edwards, Proc. Roy. Ent. Soc. Lond., 7 (Ser. B) : 235, 1938 ; Pritchard, Ent. Amer., 27 (2) : 58, 1947 ; Mamajev, Rev. Ent. USSR, 42 (2) : 444, 1963.

Projoannisia Kieffer, Neue Gallm.-Gatt., p. 2, 1912 (reprinted in Marcellia, 11 : xi, 1913) ; Kieffer, Gen. Insect., 152 : 294, 1913.

Trichopteromyia is closely related to *Monardia*, but eye bridge of *Trichopteromyia* is very broad, about six facets wide. Palpi usually with three segments, empodia rudimentary or short and narrow, ninth tergite rather narrow, disticlaspers with apical spine, tegmen shield-shaped, genital rod present, two spermathecae rather small, retort-shaped, flagellum of female with four lanceolate sensoria, each sensoria with a long attenuated distal extension.

Trichopteromyia japonica sp. n. Fig. 8 (A-C)

Male : Moderate size midge. Eyes black, bridge very broad, about six facets wide. Palpi of three segments, first subglobular with scattered scales, third long, two times as long as second, both with scattered, narrow long scales. Antennae brown, with 2+12 segments, scape and pedicel subglobular, scape a little larger than pedicel, first flagellar segment elongate, length about 1.4 times as long as second, terminal segment with a short narrow stem which is trifid apically, each flagellar segment with one complete crenulate whorl, two incomplete ones, each flagellar segment, except

terminal one, also with two or more short stout or long curved sensorial spines in addition to one lanceolate sensoria. Thorax greyish brown on dorsum, yellowish brown on sides. Legs pale brown, femora as long as tibiae, tarsi with rather broad scales, fifth segment about 1.7 times as long as second, claws bent at right angle, empodia rudimentary, with only hairs. Wings: length about 1.3 mm, rather broad, 1.8 times as long as wide, Costa extending nearly at tip of M_{1+2}, Sc rudimentary, not reaching wing margin, R_1 two times as long as Rs, sensory pores three on R_1, one on r-m, one on junction of Rs and r-m. Abdomen yellowish brown. Genitalia : ninth tergite rather narrow, proximal margin arched, cerci moderately developed, disticlaspers rather broad, length about 1.5 times as long as wide, with a small spine apically, basiclaspers united broadly below, tegmen of shield-shape, genital rod long, anus invisible.

Female unknown.

Holotype : ♂ (on slide), Inunaki yama, Fukuoka, Kyushu, Japan, 3. X. 1965, leg. J. Yukawa. Cecid. No. 171-1. Paratype : 1 ♂, same data as holotype. Cecid. No. 171-2.

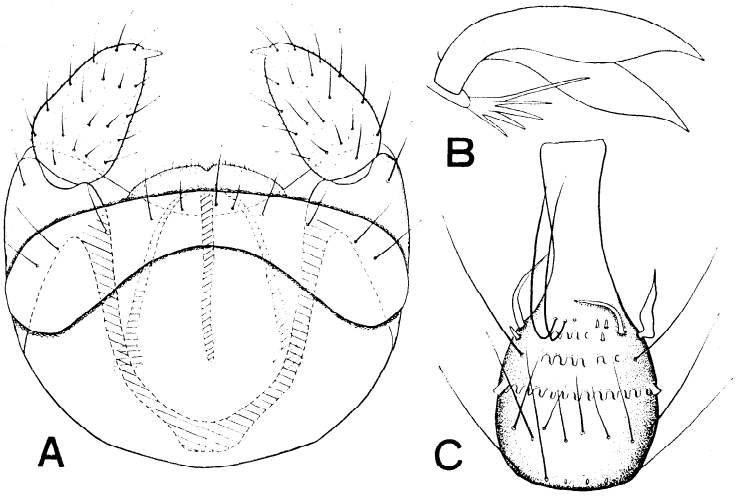

Fig. 8. *Trichopteromyia japonica* Yukawa, sp. n.
(A) male genitalia. (B) claw and empodium, ♂. (C) flagellar segment, ♂.

This species is characteristic in having a broader ninth tergite and disticlaspers than *T. modesta* Williston, 1896, basiclaspers more broadly united ventrally and not concave deeply as in *T. magnifica* Mamajev, 1963.

Genus *Monardia* Kieffer

Monardia Kieffer, Misc. Ent., 3 : 111, 1895 ; Kieffer, Bull. Soc. Hist. Nat. Metz, (Ser. 2) 8 : 50, 1898 ; Felt, Jour. N. Y. Ent. Soc., 19 : 35, 1911 ; Enderlein, Arch. Naturg., 77 (Bd. 1, Suppl. 3) : 196, 1911 ; Felt, Bull. N. Y. St. Mus., 165 : 183, 1913 ;

Kieffer, Gen. Insect., 152 : 289, 1913 ; Edwards, Proc. Roy. Ent. Soc. Lond., 7 (Ser. B) : 236, 1938 ; Pritchard, Ent. Amer., 27 (2) : 52, 1947 ; Mamajev, Rev. Ent. USSR, 42 (2) : 441, 1963.

Pezomyia Kieffer, Bull. Soc. Hist. Nat. Afr. Nord, 4 (Ann. 5) : 92, 1913 ; Kieffer, Gen. Insect., 152 : 301, 1913 ; Edwards, Proc. Roy. Ent. Soc. Lond., 7 (Ser. B) : 243, 1938.

Monardia having 2+12 antennal segment in the male, that of female varying in number, each flagellar segment of the female with four or more disk-like sensoria which are arising from single large pore, or with plate-like sensoria arising from several small pores. Eye bridge two to three facets wide, empodia rudimentary. Genitalia: ninth tergite moderate or narrow, disticlaspers usually with an apical spine, tegmen shield-shaped, genital rod present. Spermathecae two.

Monardia antennata (Winnertz, 1870) Fig. 9 (A)

Campylomyza antennata Winnertz, Verh. zool.-bot. Ges. Wien, 20 : 23, 1870.

Xylopriona antennata (Winnertz), Kieffer, Gen. Insect., 152 : 291, 1913.

Monardia antennata (Winnertz), Edwards, Proc. Roy. Ent. Soc. Lond., 7 (Ser. B) : 237, 1938 ; Pritchard, Ent. Amer., 27 (2) : 58, 1947.

Female : Very large species. Eyes black, bridge with three to four facets wide. Antennae dark brown, great many in number of flagellar segment, 2+ over 35, scape, pedicel and first flagellar segment subglobular, subequal in size and with rather long, narrow scales, each flagellar segment, except first one, flattened flask-shaped, stem about one-half as long as basal enlargement, basal enlargement very broad, with four sensoria in the form of broad plate arising from several small pores. Thorax dark brown on dorsum, brown on sides. Legs yellowish brown, tarsi clothed with scales densely, fifth tarsi nearly as long as fourth, claws bent at right angle and with two minute spines in inner side on middle, empodia rudimentary. Wings: length 2.4-2.6 mm, about 1.8 times as long as wide, Costa extending nearly at tip of M_{1+2}, Sc rudimentary, R_1 about 2.2 times as long as Rs, sensory pores three on R_1, one on r-m, one on junction of Rs and r-m. Abdomen yellowish brown, spermathecae two, disk-like.

Male unrecorded from Japan.

Specimen examined : ♀ (on slide), Inunaki-yama, Fukuoka, Kyushu, Japan, 3. X. 1965, leg. J. Yukawa. Cecid. No. 173-2.

This species is distributed in Europe and North America and this is the first record of the species from Japan. Flagellar segment of the female varied in number, 22 to 35 in European specimens but Japanese one with over 35 segments. The female is distinguished from the other members of the genus by having the flagellar segment with four plate-like sensoria which are arising from several small pores.

Monardia yasumatsui sp. n. Fig. 9 (B-F)

Male : Rather large species. Eye bridge two to three facets wide. Palpi of four

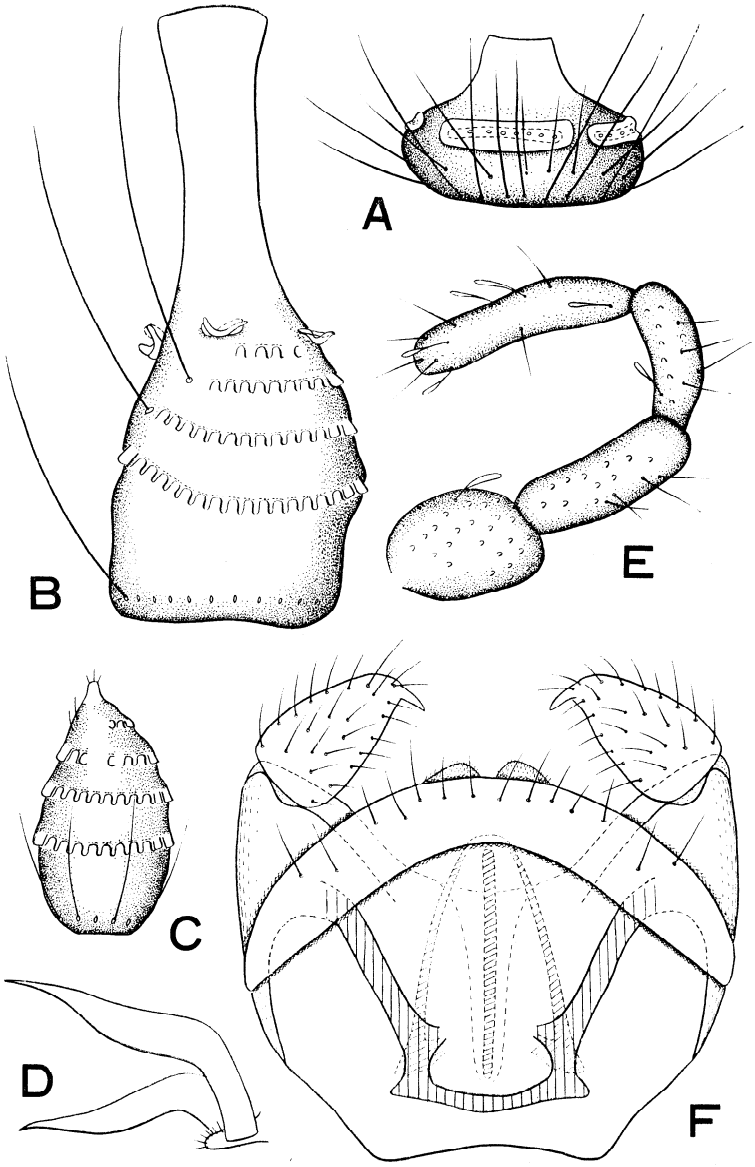

Fig. 9. ***Monardia antennata*** (Winnertz) (A) flagellar segment, ♀; ***Monardia yasumatsui*** Yukawa, sp. n. (B) flagellar segment, ♂. (C) terminal flagellar segment. ♂. (D) claw and empodium, ♂. (E) palp, ♂. (F) male genitalia.

segments, with rather, long, narrow scales, first segment subglobular, second nearly as long as third, fourth about 1.2 times as long as third. Antennae with 2+12 segments, pedicel subglobular, smaller than scape, first flagellar segment elongate, 1.4 times as long as second, second to eleventh segments flask-shaped with long stem, stem about nearly as long as basal enlargement, terminal segment tapering, with three minute spines apically, each flagellar segment, except terminal one, with one complete crenulate whorl, three incomplete ones and three disk-like sensoria which is arising from a single large pore. Thorax dark brown on dorsum, light brown on sides. Legs brown, femora as long as tibiae, tarsi with scales densely, fifth tarsi nearly as long as fourth, claws bent at right angle, empodia rudimentary. Wings: about 2.0 mm, 1.8 times as long as wide, Costa reaching nearly at tip of M_{1+2}, Sc rather distinct, not reaching costal margin, R_1 two times as long as Rs, sensory pores three on R_1, one on r-m, one on junction of Rs and r-m, furthermore, two on distal part of R_5, Cubital fork forming an acute angle. Abdomen light brown. Genitalia : ninth tergite rather narrow, weakly arched, cerci well developed, disticlaspers with a beak-like strong spine apically, basiclaspers deeply incised ventrally, tegmen shield-shaped, genital rod long.

Female unknown.

Holotype : ♂ (on slide), Inunaki-yama, Fukuoka, Kyushu, Japan, 3. VI. 1965, leg. J. Yukawa. Cecid. No. 140-3.

This species resembles *M. ulmaria* Edwards, 1938, but differs from it and is characterized by having basiclaspers sharply incised below, disticlaspers with a strong beak-like apical spine, each flagellar segment, except terminal one, with three small disk-like sensoria. Two extra sensorial pores on R_5.

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