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A REVISION OF THE CHALCID-FLIES OF THE GENUS
MONODONTOMERUS IN THE UNITED STATES NATIONAL
MUSEUM

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THE chalcid genus *Monodontomerus* Westwood is recorded from all the faunal regions except the Ethiopian and Australian. Representatives of the genus are in the United States National Museum from France, Germany, Russia, China, Japan, Mexico, Cuba, the United States, and Canada.

Only those species of which actual specimens are at hand have been included in this revision, since it is impracticable to place the others by their descriptions. The species thus omitted from the key are *nitidus* Newport, *punctatus* Thomson, *rugulosus* Thomson, *strobili* Mayr, *usticensis* Riggio and Destefani, *virens* Thomson, *laricis* Mayr, *argentinus* Brethes, *cupreus* (Spinola), *inclusus* Kieffer and Jorgenson, *phormio* Walker, *schrottkyi* Brethes, *trichiophthalmus* (Cameron), *vianai* Blanchard, and *nubecula* Rondani.

GENERIC CHARACTERS OF MONODONTOMERUS

The following combination of characters will distinguish *Monodontomerus* from all other genera placed in the subfamily Monodontomerinae: Antennae 13-jointed (scape, pedicel, one ring joint, seven funicular joints, and three club joints); flagellum cylindrical, not or only slightly thickened toward apex; occiput margined; scutellum with a distinct transverse furrow; postscutellum usually with a median carina; propodeum with a triangular or subtriangular depression

medially, the depression broadest anteriorly, bisected by a median longitudinal carina, the two sections of the depression more or less foveolated; posterior coxa large, with a more or less prominent protuberance near apex on the inner dorsal margin; posterior femur rather broad, with a single tooth on ventral margin beyond the middle; posterior tibia with two moderately long, unequal spurs located at the apex; fore wing extending beyond apex of abdomen; marginal vein usually about half as long as submarginal; postmarginal vein shorter than marginal; stigmal vein at least a little shorter than postmarginal; abdomen sessile, never strongly compressed or depressed, and approximately as long as head and thorax; posterior margins of tergites (except sometimes the third tergite) not emarginate; ovipositor always prominently exerted.

KEY TO THE SPECIES OF MONODONTOMERUS IN THE UNITED STATES NATIONAL MUSEUM

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|---|--------------------------------------|
| 1. Scutellum, behind cross furrow, smooth and polished except for a few weak lines laterally..... | 12 |
| Scutellum, behind cross furrow, distinctly sculptured, sculpture usually weaker medially than laterally and occasionally with a median area quite smooth..... | 2 |
| 2. Malar furrow absent or impressed for only a very short distance adjacent to eye margin; face convexly swollen below antennae..... | 11 |
| Malar furrow present and complete; face flat or nearly so, at least not markedly swollen..... | 3 |
| 3. Ovipositor obviously shorter than abdomen..... | 4 |
| Ovipositor at least very nearly as long as abdomen, usually as long as abdomen or longer..... | 9 |
| 4. First tergite with very shallow but rather distinct reticulation over its dorsal surface..... | 1. <i>dianthidii</i> , new species |
| First tergite dorsally without sculpture..... | 5 |
| 5. Fore wing without a stigmal cloud; propodeum basally on each side of median carina with a broadly rounded and rather deep depression behind which is a less well defined and much smaller depression; funicle joints, except first, broader than long; ovipositor about half as long as abdomen..... | 2. <i>aereus</i> Walker |
| Fore wing with a distinct cloud at stigmal vein; propodeum with median depression elongate and narrower; funicle joints rarely broader than long; ovipositor usually but not always more than half as long as abdomen..... | 6 |
| 6. Middle and fore legs, except their coxae, entirely reddish yellow; ovipositor less than half as long as abdomen..... | <i>cubensis</i> , new species |
| Middle and fore femora always metallic or black; ovipositor about two-thirds as long as abdomen..... | 7 |
| 7. Scape metallic green; posterior tibia, except at base and apex, metallic green and middle and anterior tibiae more or less tinged with metallic..... | 4. <i>viridiscapus</i> , new species |
| Scape testaceous, sometimes washed with metallic toward apex; all tibiae reddish testaceous..... | 8 |

8. Dorsum of thorax uniformly coppery green----- 5. *mexicanus*, new species
 Dorsum of thorax dark green with only a very slight brassy tint----- 6. *indiscretus*, new species
9. Propodeum laterad of median depression very weakly sculptured, practically smooth; fore wing with a distinct stigmal cloud; eyes conspicuously pilose----- 7. *obscurus* Westwood
 Propodeum laterad of median depression distinctly sculptured; stigmal cloud very faint or absent; eyes with very short, sparse, inconspicuous pile----- 10
10. Mandibles tridentate, ventral tooth not or only slightly extending beyond apex of middle tooth, and inner tooth only slightly basad of other two; all three teeth short--8. *montivagus* Ashmead
 Mandibles bidentate, ventral tooth elongate and acute, inner tooth small and located far basad of apex of ventral one
 9. *mandibularis*, new species
11. Posterior margin of third tergite not emarginate; malar space equal to more than half height of eye; ocellocular line equal to nearly twice diameter of a lateral ocellus; pronotum and prescutum with strong purplish reflections----- 10. *bakeri*, new species
 Posterior margin of third tergite deeply triangularly emarginate at middle; malar space less than half as long as eye; ocellocular line only slightly longer than diameter of a lateral ocellus; pronotum very slightly tinged with purplish, prescutum without purple reflections----- 11. *emarginatus*, new species
12. Tooth on posterior femur about its own length before apex of femur; punctate groove setting off marginal frenum on scutellum continued uninterruptedly around apex of scutellum; median depression on propodeum sharply triangular----- 13
 Tooth on posterior femur at least twice its own length before apex of femur; punctate groove setting off marginal frenum more or less interrupted at apex of scutellum; median depression on propodeum sometimes about as broad posteriorly as anteriorly----- 14
13. First tergite dorsally distinctly reticulately sculptured on apical half; ovipositor half to two-thirds as long as abdomen; mesoscutum blackish, scutellum dark green; scape of female usually metallic green; scape and face of male metallic green
 12. *dentipes* (Dalman)
 First tergite not sculptured dorsally; ovipositor not over half as long as abdomen; mesoscutum and frequently scutellum strongly purplish or violaceous; scape of female testaceous, sometimes slightly metallic toward apex; scape and face of male brassy green----- 13. *japonicus* Ashmead
14. Median depression on propodeum acute posteriorly or at least subacute; sculpture on propodeum laterad of the median depression consisting of obliquely transverse rugae; tooth on posterior femur slender----- 14. *subobsoletus*, new species
 Median depression on propodeum about as broad posteriorly as anteriorly; sculpture laterad of median depression more reticulate; tooth on posterior femur broader at base and somewhat less slender----- 15. *obsoletus* (Fabricius)

1. MONODONTOMERUS DIANTHIDII, new species

May be distinguished, from all other species having the apex of scutellum sculptured, by the distinct though very shallow sculpturing of the dorsum of the first tergite.

Female.—Length 3.25 mm.; ovipositor 1 mm. General color aenescent blackish; head dark metallic green, the face tinged with cupreous; antennal scape mostly testaceous but darker and more or less tinged with metallic toward apex; flagellum brownish black; propodeum tinged with greenish; all coxae and femora dark brownish with metallic reflections; all tibiae and tarsi testaceous; wings hyaline with only very faint indication of infuscation at stigmal vein; abdomen bronzy black; ovipositor sheaths black with a paler stripe on ventral margin extending from base to near apical one-fourth.

Head uniformly shagreened, temples nearly transverse to the longitudinal axis of body; eyes with very sparse, short pile; ocellular line about equal to diameter of ocellus; malar space equal to approximately one-third the eye height; malar groove complete and distinct; face nearly flat; clypeus protruding very slightly beyond anterior margin of head; mandibles with the two ventral teeth short and subequal. Antennae inserted above lower extremities of eyes; scape not reaching to anterior ocellus; pedicel barely longer than broad; ring joint strongly transverse; first funicular joint about as long as broad, following joints of funicle all a little broader than long; club not thicker than funicle and about as long as two preceding joints combined.

Thorax approximately twice as long as broad, rugulose sculptured on the dorsum, without obvious pits or punctures, the rugulae forming irregularly shaped areas; scutellum longer than broad, distinctly sculptured behind as well as before the transverse furrow and with the punctate marginal groove continuous around apex; apex of scutellum more strongly produced over postscutellum than usual; postscutellum smooth, with a delicate median carina; median depression on propodeum triangular, the surface between this depression and spiracular groove distinctly reticulately sculptured. Tooth on posterior femur not slender, located at approximately the apical one-fifth of femur. Anterior wing extending nearly to apex of ovipositor; submarginal, marginal, postmarginal, and stigmal veins in approximately the proportions of 25, 10, 9, and 4, respectively.

Abdomen about as long as thorax, slightly compressed, reticulately sculptured; first tergite dorsally about as distinctly acieulately sculptured as the other tergites and comprising a little more than one-third length of abdomen; second tergite about one-fourth as long as first; third nearly twice as long as second; fourth shorter than third but longer than second; fifth and sixth very short, the sixth with the spiracles sunk in unusually deep pits and bare except for four or five

erect hairs just dorsad of each spiracle; posterior margin of none of the tergites emarginate medially; ovipositor not so long as abdomen.

Male.—Length 2.6 mm. Scape not swollen, slightly curved, and wholly metallic; ocellocular line a little shorter than diameter of ocellus; malar space about one-fourth length of eye; eyes rather distinctly pilose; abdomen not quite so long as thorax, not compressed; first tergite comprising a little more than one-third length of abdomen; second and third subequal and together a little shorter than first; fourth and fifth subequal and each about as long as third; sixth shorter, nearly perpendicular, and with the spiracles in shallow depressions. Otherwise like the female.

Type locality.—Boulevard, Calif.

Type.—U.S.N.M. No. 54260,

Described from 3 females (1 holotype) and 10 males reared by L. H. Weld, March 2, 1922, from a cell of *Dianthidium* on oak.

2. MONODONTOMERUS AEREUS Walker

Monodontomerus aereus WALKER, Ent. Mag., vol. 2, p. 158, 1834.

Monodontomerus aereus is rather easily recognized because of its unusually short ovipositor, this rarely being more than half as long as the abdomen. The antennae are a little shorter and thicker than usual, with all funicle joints, except the first, distinctly broader than long, the flagellum black, the scape usually more or less testaceous basally beneath. The eyes are inconspicuously pilose, the pile very short. The scutellum is about as broad as long, its apex behind the cross furrow uniformly strongly sculptured with longitudinal rugae, and with the marginal groove uninterrupted medially. The post-scutellum is smooth, distinctly broader than long, and has a distinct median carina. The propodeum at base on each side of the median carina has a large, more or less rounded, and rather deep depression and behind this a much smaller one, the surface of propodeum between the median depression and the spiracular sulcus strongly sculptured. The fore wings extend beyond the apex of the abdomen nearly to the apex of the ovipositor and are hyaline and without a fuscous cloud at the stigmal vein. The tooth on the hind femur is prominent and rather broad. The abdomen is about as long as the thorax, the first tergite dorsally perfectly smooth and comprising approximately one-third of the length of the abdomen, the following tergites more or less distinctly sculptured. The head and thorax have the usual type of sculpture for the genus and are nearly uniformly greenish black with a brassy tint. The coxae and femora are concolorous with the thorax and the tibiae and tarsi are reddish brown to dark brown. The first tergite is bluish green and the following tergites blackish with a metallic sheen. The length of the body ranges from 2.3 to 3.5 mm.

This species has been recorded from a long list of lepidopterous, hymenopterous, and dipterous hosts and is known to develop as both a primary and a secondary parasite. It was originally described from Europe, where it is widely distributed, and has also been reported from Japan. Voluntarily introduced into America to combat the gipsy and browntail moths, it is said now to be distributed over the entire region infested by these pests. A detailed account of the life history, distribution, and hosts of *aereus* is given by Muesebeck¹ and may be consulted for more complete information.

3. MONODONTOMERUS CUBENSIS, new species

The apex of the scutellum in this species is less strongly sculptured and more shining than in any of the other species placed in the key under the group having it sculptured. In some specimens this sculpture is, in fact, so weak that it may easily be overlooked unless a fairly high magnification is used. The shorter ovipositor, together with the bright testaceous color of the anterior and middle legs, exclusive of their coxae, distinguishes the species from *mexicanus*, which it most closely resembles.

Female.—Length 3.3 mm.; ovipositor 0.8 mm. Head and dorsum of thorax nearly uniformly dull brassy green; propodeum, pleura, coxae, and all femora blackish green, less strongly tinged with brassy than the dorsum; anterior and middle legs, except their coxae, posterior trochanters, extreme apices of posterior femora, posterior tibiae and tarsi, and the antennal scape bright testaceous; all tarsi a little paler than tibiae; antennal pedicel brownish testaceous; flagellum black; wings hyaline, with a spot embracing the stigmal vein and extending approximately one-third of the way across the wing very dark fuscous; tegulae fuscotestaceous; abdomen blackish with metallic reflections.

Head uniformly shagreened and rather densely hairy; eyes with sparse, short pile; ocellular line equal to or very slightly shorter than diameter of a lateral ocellus; temples nearly transverse to longitudinal axis of body; malar space equal to about one-third the eye height; malar furrow complete and strong; anterior margin of face nearly straight, the clypeal margin very slightly protruded. Antennal scape cylindrical, not quite attaining front ocellus; pedicel very nearly as broad as long; ring joint strongly transverse; funicle thicker than pedicel and of the same thickness throughout its length; first funicle joint a little longer than broad, all the others quadrate or nearly so; club ovate, slightly broader than funicle, and a little longer than two preceding joints combined. Mandible with three very short, subequal teeth.

¹ Journ. Agr. Res., vol. 45, No. 5, pp. 445-460, 1931.

Thorax dorsally strongly shagreened and densely clothed with rather long whitish hairs; scutellum about as broad as long, only very slightly overlapping postscutellum, weakly sculptured and shining behind the transverse furrow, the punctate marginal groove complete; postscutellum practically smooth and with only a very weak suggestion of a median carina; mesepisternum strongly sculptured; mesepimeron not entirely smooth; propodeum about half as long as scutellum, with a moderately deep triangular median depression and with the surfaces between this depression and the spiracular sulci strongly rugulose; all coxae strongly sculptured; hind femur reticulately aciculated, not especially broad, the ventral tooth acutely triangular and located approximately at apical one-sixth of femur.

Anterior wing extending a little beyond apex of abdomen; submarginal, marginal, postmarginal, and stigmal veins in approximately the proportions of 30, 13, 6, and 5, respectively; hind wing not quite attaining end of abdomen.

Abdomen moderately compressed, rather finely and evenly reticulately aciculate on sides; first tergite dorsally perfectly smooth and comprising about one-third length of abdomen; second tergite short, sometimes entirely hidden dorsally beneath the first; third and fourth tergites dorsally subequal and together a little longer than first; fifth and sixth tergites subequal on dorsal line and together about equal in length to the fourth, the sixth with numerous suberect hairs laterally and with spiracles in rather shallow pits; ovipositor about one-third as long as abdomen.

Type locality.—Santiago de las Vegas, Cuba.

Type.—U.S.N.M. No. 54261.

Seven females (one, holotype) said to have been reared from *Euproctis argentiflua* Hübner by A. R. Otero, September 27, 1930.

4. *MONODONTOMERUS VIRIDISCAPUS*, new species

Female.—Length 3.5 mm.; ovipositor 1.25 mm. Agreeing with the description of *mexicanus* except in the following particulars: Head green, with scarcely any brassy tinge; scape entirely green and strongly sculptured; posterior tibia dark brownish with a metallic green tinge, its extreme base narrowly and approximately the apical one-third reddish testaceous; anterior and middle tibiae more or less tinged with metallic; first tergite dorsally distinctly bluish green; ocellular line obviously a little longer than diameter of lateral ocellus; length of eye about three times length of malar space; anterior margin of face not straight but distinctly a little concave; postscutellum perfectly smooth and polished, with a very weak median carina; second segment of abdomen dorsally very short; third tergite not longer than fourth.

Male.—Length 2.6 mm. Similar to the female but with the first tergite comprising about two-fifths of length of abdomen, the second tergite dorsally completely concealed beneath the first. Antennae mostly missing from the one specimen available.

Type locality.—Orizaba, Mexico.

Type.—U.S.N.M. No. 54262.

Described from 4 females (one holotype) and one male bearing only the label "Orizaba." The collector and date of collection not known.

5. *MONODONTOMERUS MEXICANUS*, new species

Similar to *montivagus* Ashmead but distinguishable at once by the conspicuous fuscous cloud embracing the stigmal vein, by the proportionally shorter ovipositor, and by the conspicuously hairy eyes.

Female.—Length exclusive of ovipositor 2.75 to 4 mm., ovipositor 0.8 to 1.38 mm. Head dull metallic green, often more or less tinged with brassy; thoracic dorsum dull coppery green; propodeum, pleura, all coxae, and all femora dark green; mesepimera brassy; tibiae and tarsi reddish testaceous; antennal scape testaceous, sometimes washed with metallic green toward apex; pedicel dark metallic; flagellum black; mandibles testaceous; wings hyaline except for a conspicuous fuscous cloud embracing the stigmal vein and extending approximately one-third of the way across the wing; tegulae metallic green; abdomen greenish black; ovipositor sheath black with the extreme apex and a narrow longitudinal stripe extending from base two-thirds of the distance to apex testaceous.

Head nearly uniformly heavily shagreened and rather densely clothed with conspicuous whitish hairs; eyes densely and conspicuously pilose; ocelli in a low triangle; ocellular line equal to or very slightly exceeding diameter of lateral ocellus; temples nearly transverse; length of eye about three and one-half times length of malar space; malar furrow complete; anterior margin of face nearly straight, the clypeal margin very slightly protruded but straight. Antennal scape subcylindrical, not quite reaching anterior ocellus; pedicel approximately one and one-half times as long as broad; ring joint transverse; funicle thicker than pedicel and of the same thickness throughout; first funicular joint slightly longer than broad, the following joints subquadrate; club not thicker than funicle, conic ovate, and about equal in length to the two preceding funicular joints combined.

Pronotum, mesoscutum, scutellum, and axillae strongly shagreened and conspicuously hairy; scutellum about as broad as long, with a distinct but shallow transverse furrow behind the middle, and carinately margined at apex, the groove setting off the apical carina not interrupted medially; surface of scutellum behind transverse furrow

distinctly sculptured, a little more weakly so medially than laterally; postscutellum distinctly finely sculptured; pleuron, except mesepimeron, strongly punctate; mesepimeron mostly smooth. Propodeum about half as long as scutellum, densely clothed with long white hairs laterad of spiracular sulci, bare medially; spiracular sulci broad and foveated; propodeum medially with a deep, triangular depression divided in the middle by a longitudinal carina, this depression broadest anteriorly, extending from base nearly to apex of propodeum and often more or less weakly foveated; surface of propodeum between median depression and spiracular sulci distinctly reticulated. All coxae and femora strongly sculptured; posterior femur with ventral tooth a little longer and slenderer than usual.

Anterior wing a little more than two and one-half times as long as broad, reaching nearly to apex of ovipositor; submarginal, marginal, postmarginal, and stigmal veins approximately in the proportions of 70, 36, 16, and 10, respectively; basal cell completely outlined by distinct rows of hairs and with several additional hairs within the cell; cilia on disk of wing moderately dense; marginal cilia very short. Posterior wing reaching to apex of abdomen.

Abdomen about as long as thorax, distinctly shagreened on sides and beneath; first segment dorsally perfectly smooth and constituting approximately one-third total length of abdomen; second segment dorsally very faintly transversely aciculated and about one-fifth as long as first; third and fourth segments dorsally distinctly transversely aciculated, the third three or four times as long as the second, the fourth slightly shorter than third; fifth, sixth, and seventh segments short, together about equal in length to the fourth. Ovipositor exerted about two-thirds length of abdomen.

Male.—Length 2.8 mm. Differs from female only in the usual sexual characters and in its smaller size.

Type locality.—Jacala, Hidalgo, Mexico.

Type.—U.S.N.M. No. 54263.

Described from 20 females (1 holotype) and 7 males reared May 25 to 28, 1939, from cocoons of *Trypoxylon mexicanum* Saussure collected at Jacala, Hidalgo, Mexico, by Phil Rau and bearing his note numbers 1477 and 1506.

6. MONODONTOMERUS INDISCRETUS, new species

Female.—Length 3.3 mm.; ovipositor 1.1 mm. This species apparently can be distinguished from *mexicanus* only by the fact that the dorsum of the thorax is blackish green with only very slight brassy reflections, the thorax appears to be slightly more slender and a little less conspicuously hairy, and the hind femur is apparently not quite so broad.

All these characters are relative, and were it not for the widely different type localities and the totally different hosts I would hesitate to consider *indiscretus* a different species from *mexicanus*, but believe it advisable to do so under the circumstances.

Type locality.—Bar Harbor, Maine.

Type.—U.S.N.M. No. 54264.

Described from four females received from A. E. Brower. Two of these (one, holotype) are labeled "Pars. of *Phyllotoma nemorata* Fallen, bred June 9, 1936." The other two were bred on the same date from birch leaves containing the same *Phyllotoma*.

7. MONODONTOMERUS OBSCURUS Westwood

Monodontomerus obscurus WESTWOOD, Philos. Mag., ser. 3, vol. 2, p. 443, 1833.

Monodontomerus sp. RAU, Ann. Ent. Soc. Amer., vol. 30, p. 338, 1937.

This species apparently has not previously been recognized from America. In Europe it is variously recorded from hymenopterous, dipterous, and lepidopterous hosts. Among the hymenopterous hosts are at least three species of the genus *Osmia*. O. W. Richards² recorded it as a parasite of *Osmia emarginata* Lepiney in the Pyrenees Mountains, and Maréchal³ reared numerous specimens from nests of *O. cornuta* (Latreille) and *O. rufa* (Linnaeus) collected at Liège, Belgium.

Three specimens of a *Monodontomerus* said to have emerged from a cocoon of *Osmia lignaria* Say taken at Nesco, Crawford County, Mo., were recently received from Phil Rau of St. Louis. The *Osmia* had utilized an empty mud cell of *Sceliphron cementarium* (Drury) as a pupation chamber. Five other specimens of the same *Monodontomerus* reared from *Osmia cordata* Robertson had previously been sent in by Mr. Rau. These formed the basis for the note on *Monodontomerus* sp. by Rau cited above in synonymy. Other specimens in the United States National Museum indistinguishable from the above are as follows: Two said to have emerged from cells of *O. lignaria* collected at Nyack, N. Y., in 1885, by J. L. Zabriskie; one taken at Mount Pleasant, Iowa, June 7, 1933, by H. E. Jacques; and four collected at Washington, D. C., without further data.

These specimens have been compared with two specimens from Europe identified by F. Ruschka as *Monodontomerus obscurus* and also with Westwood's original description of that species, and they seem to agree so completely that I am convinced they are Westwood's species.

M. obscurus differs from other known species found in America by having the surface of the propodeum lying between the median

² Ent. Monthly Mag., vol. 66, p. 91, 1930.

³ Soc. Ent. France Livre Centenaire, p. 509, 1932.

depression and the spiracular sulci nearly smooth and polished except for some weak reticulation near the spiracles and occasionally some subobsolete lines on the disk. The median depression on the propodeum is unusually shallow and mostly confined to the anterior half of the propodeum, the posterior half of that sclerite having only a very narrow crease or groove on each side of the median carina.

Female.—Length 4.2 mm.; ovipositor 1.8 mm. Head dull bluish green; thorax blackish, tinted more or less strongly with bluish green on posterior margin of pronotum, posterior half of prescutum, scapulae, and scutellum in front of cross furrow; scutellum behind cross furrow black; axillae strongly tinted with coppery; propodeum bluish green; pleura black varied with green on mesepisternum; all coxae and femora blackish, tinted with green; tibiae and tarsi reddish testaceous; antennal scape testaceous, darker toward apex; pedicel brownish; flagellum black; mandibles dark reddish; wings hyaline, with a weak though obvious infuscation around the stigmal vein; tegulae dark brown; abdomen black, the base beneath often more or less testaceous and the first tergite dorsally slightly greenish; ovipositor sheaths black, with a pale stripe beneath extending from base two-thirds of distance to apex.

Head nearly uniformly heavily shagreened and moderately clothed with whitish hairs. Eyes distinctly pilose; ocelli rather large, in a low triangle; ocellular line equal to longest diameter of a lateral ocellus; malar space equal to approximately one-third height of eye; malar groove present; anterior margin of face nearly straight. Antennal scape subcylindrical, nearly reaching to lower margin of anterior ocellus; pedicel a little less than twice as long as broad; ring joint about two-thirds as broad as long; first funicular joint subequal in length to pedicel but distinctly thicker, a little longer than broad; other joints of funicle subquadrate and no thicker than first; club the same thickness as funicle and about as long as two preceding funicular joints combined.

Thorax strongly shagreened and moderately hairy; parapsidal grooves sharply impressed; scutellum distinctly longer than broad, with a distinct transverse furrow at apical one-third and carinately margined at apex, the groove setting off the apical carina foveolated and not interrupted at middle; surface of scutellum behind cross furrow distinctly reticulated, a little more weakly so medially than laterally; mesepimeron smooth and bare, remainder of pleuron distinctly sculptured and hairy; propodeum hairy laterally, bare medially; spiracular sulci strongly foveated; all coxae and femora distinctly sculptured, the median pair less strongly so than the others; tooth on hind femur short, blunt, and located a little more than one-fifth the length of femur before its apex.

Anterior wing more than two and one-half times as long as broad; submarginal, marginal, postmarginal, and stigmal veins about in the proportions of 57, 27, 13, and 8, respectively; basal cell completely outlined by distinct rows of strong hairs and with a few hairs within the cell; ciliation on disk of wing moderately dense; marginal cilia very dense.

Abdomen about as long as thorax, distinctly sculptured on the sides, the first tergite dorsally smooth and the following tergites dorsally very weakly lineolately sculptured; first tergite constituting a little less than one-third length of abdomen, a little more than twice as long as second; third tergite one and one-half times as long as second; fourth about equal in length to second; fifth a little shorter than fourth; sixth and seventh together about equal to fourth; ovipositor sheaths about as long as abdomen.

Male.—Length 3.2 to 3.9 mm. Similar to the female, except that the scape is dark, the first funicular joint is no longer than broad, the other funicular joints are all slightly broader than long, and the second abdominal tergite is very short, sometimes almost completely covered by the first tergite.

8. MONODONTOMERUS MONTIVAGUS Ashmead

Monodontomerus montivagus ASHMEAD, Colorado Biol. Assoc. Bull. 1, p. 25, 1890.
Monodontomerus americanus GIRAULT, Descriptions stellarum novarum, p. 11, 1917. (New synonymy.)

The types of *montivagus* and *americanus* have been compared, and they do not differ in any dependable character. The holotype of *americanus* is a teneral specimen as shown by other specimens collected at the same time and place, and this fact accounts for the slight differences in color mentioned by Girault as distinguishing it from *montivagus*.

Female.—Length 3 to 5.1 mm.; ovipositor 1.6 to 2.8 mm. General color distinctly and nearly uniformly metallic green with brassy reflections of variable intensity on head and thorax; femora metallic green; all tibiae, all tarsi, antennal scape, and mandibles reddish testaceous, the scape sometimes fuscous apically; flagellum black; wings hyaline, usually with a very light infuscation at stigmal vein; abdomen shining dark green; ovipositor blackish with the lower margin more or less pale. Vestiture pale grayish.

Eyes weakly pilose, the pile short and inconspicuous; malar space equal to approximately one-third the length of eye but variable in length; malar groove distinct; anterior margin of head straight; mandibles with three short teeth, the ventral tooth not or very little longer than the middle one; ocellular line barely longer than diameter of lateral ocellus; antennae inserted a little above lower margins of

eyes, the face distinctly more than half as long as distance from antennal fossae to anterior ocellus; funicular joints quadrate to a little longer than broad; ring joint about twice as broad as long. Thorax appearing a little narrower in proportion to its length than in some of the other species, and with sculpture of mesonotum and scutellum made up of distinct punctures intermingled with very fine reticulations or wrinkles; scutellum behind transverse groove finely aciculated, the aciculation weaker medially, the marginal groove uninterrupted; postscutellum smooth, with a weak median carina; propodeum with median depression rather shallow and triangular; surface of propodeum between median depression and spiracular sulci distinctly aciculatedly sculptured; mesepimeron polished; mesosternum and mesepisternum with very shallow reticulation, the mesepisternum more strongly sculptured along its posterior margin; posterior coxae strongly sculptured outwardly, anterior and middle coxae less strongly so; posterior femur not much thickened and with tooth on ventral margin not especially long or slender and located at about apical one-fourth of femur; wings extending beyond apex of abdomen; submarginal, marginal, postmarginal, and stigmal veins in approximately the proportions of 40, 16, 8, and 5, respectively; abdomen about as long as head and thorax together; first tergite comprising about one-third length of abdomen, perfectly smooth dorsally; second, third, and fourth tergites dorsally with weak transverse aciculations, smoother toward apex; fifth tergite smooth dorsally; ovipositor sheaths equal to or a little longer than abdomen.

Male.—Length 3.2 to 4.2 mm. Similar to the female except that the antennal scape is much thickened, strongly curved dorsally, and deeply and broadly excavated or notched ventrally; the funicular joints all quadrate or nearly so.

Redescribed from the following specimens: One female (type of *montivagus*), West Cliff, Colo.; one female, Boulder, Colo., collected August 1 at nest of *Anthophora occidentalis* by T. D. A. Cockerell; three females, Boulder, Colo., July 31, 1908, Cockerell collector; one male, Custis County, Colo., Cockerell collector; one male, Colorado Springs, Colo., July 14, 1895, Cockerell No. 3569; one male, on *Populus*, Boulder, Colo., May 8, 1895, Cockerell No. 2945; two females, Santa Fe, N. Mex., July 29, 1895, Cockerell No. 3918; two females, Helena, Mont., July 1892, H. G. Hubbard collector, in galleries of *Melissodes*; four females (one the type of *americanus*) and one male, Los Angeles, Calif., Coquillett collector; two females, Los Angeles, Calif., from cell of *Anthophora*, A. Davidson collector; one female, Beaver Valley, Utah; four females, Algonquin, Ill., C. F. Baker, collector; and one female, Newark, Del., June 6, 1932, L. A. Stearns collector.

The above-mentioned female taken by Cockerell at the nest of *Anthophora occidentalis* at Boulder, Colo., has the apex of the mandibles broadly rounded with only very slight indications of apical teeth. Otherwise it does not differ materially from other specimens of the species and it is believed that the mandibles are simply worn.

9. *MONODONTOMERUS MANDIBULARIS*, new species

Monodontomerus montivagus RAU (not Ashmead), Trans. Acad. Sci. St. Louis, vol. 24, p. 35, 1922.

Monodontomerus sp. FRISON, Trans. Amer. Ent. Soc., vol. 48, p. 154, 1922.

Monodontomerus sp. RAU, Trans. Acad. Sci. St. Louis, vol. 25, p. 222, 1926.

This species is difficult to distinguish from *montivagus* except by the mandibles, which in *mandibularis* are bidentate with the ventral tooth long and acute, the inner tooth small and located far basad of the apex of the ventral tooth so that its apex is approximately at the basal two-thirds of the mandible. The antennae are inserted only very slightly above a line connecting the lower extremities of the eyes and the distance from the base of the antennae to the anterior margin of the clypeus is only slightly more than half the distance from the lower margin of the antennal fossae to the lower margin of the anterior ocellus. The ocellocular line is distinctly a little longer than the diameter of a lateral ocellus.

The above characters hold for both sexes and are apparently the only ones by which *mandibularis* can be separated from *montivagus*. The size, color, and length of ovipositor are well within the range of variation stated in the foregoing description of *montivagus*. The scapes of the males are alike for the two species.

Type locality.—St. Louis, Mo.

Type.—U.S.N.M. No. 54265.

Described from the following specimens: 4 females (including the holotype) and 4 males (including the allotype), reared by P. Rau from *Anthophora abrupta* Say, May 13, 1910, at St. Louis, Mo.; 1 female and 3 males, St. Louis, Mo., P. Rau, No. 4181, host and date of collection unknown; 4 females reared from *Anthophora abrupta*, Oakwood, Ill., June 9, 1919, T. H. Frison, Exp. D; 1 female and 1 male, reared from *A. abrupta*, Henry County, Ohio, 1931, W. E. Dunham; 46 females and 10 males, under Bur. Ent. No. 862P⁰⁸, reared from *Anthophora abrupta* Say in the vicinity of Washington, D. C., and bearing the respective dates November 17, 1877, May, July, and November 1878; 5 females from Bayou Sara, La., E. A. Schwarz collector, January 23, 1879, also under Bur. Ent. No. 862P⁰⁸ (specimens badly broken); 10 females and 1 male reared from *Melitoma taurea* (Say) at Washington, D. C., March 10, 1879, under Bur. Ent. No. 50X; 5 females reared from *Anthophora bomboides* Kirby at Ithaca, N. Y., April 8, 1912, and April 12, 1921, R. C. Shannon; and 1 female from

Algonquin, Ill., collected by C. F. Baker and bearing his note No. 3845.

As will be seen from the cited synonymy, the species has been confused in literature, at least in one instance, with *montivagus*. It is possible that other published records may also refer to this species.

10. MONODONTOMERUS BAKERI, new species

Most closely resembles *emarginatus* but may be distinguished at once by the nonemarginate third tergite as well as by other characters pointed out in the remarks following the description of *emarginatus*. Also resembles *montivagus* but differs by having a longer malar space, by the absence of a malar groove, by the more convex face, by the longer ocellocular line, and in the purplish color of the pronotum and prescutum.

Female.—Length 4.7 mm.; ovipositor 2.4 mm. Head bluish green, tinged with purplish on vertex; thorax bluish green, pronotum and prescutum strongly tinged with purple and with some purplish tints on pleura; coxae concolorous with thorax, with some purplish tints; posterior femora metallic bluish, slightly diluted with testaceous, median and anterior femora brownish testaceous; all tibiae and tarsi testaceous; wings hyaline with a weak infuscation at stigmal vein; antennal scape and pedicel dark brownish tinged with metallic, the extreme base of scape testaceous; flagellum brownish black; mandibles testaceous; abdomen brownish black, with weak metallic and violaceous reflections.

Head appearing rather thick anteroposteriorly, the temples less strongly receding than usual; eyes practically bare; ocellocular line nearly twice as long as diameter of a lateral ocellus; malar space equal to a little more than half height of eye; malar groove entirely absent; face below antennae distinctly swollen, especially convex medially; mandible with the two ventral teeth subequal; clypeus not protruding; antennae inserted a little below a line connecting lower extremities of eyes; scape not quite attaining level of anterior ocellus; pedicel about one and one-half times as long as broad; ring joint large, about twice as broad as long; first funicular joint subquadrate, following joints of funicle all a little broader than long; club not thicker than funicle and a little longer than two preceding joints combined. Integument of head rather strongly and nearly uniformly shagreened but with a smooth area along posterior orbit at lower extremity of eye.

Thorax inclusive of propodeum about twice as long as broad, strongly shagreened, the rugulae on mesoscutum and scutellum intermingled with numerous shallow pits or punctures; scutellum longer than broad, reticulately sculptured behind transverse groove, the punctate marginal groove continuous around apex; postscutellum faintly sculptured and with a delicate carina in middle; propodeum

with median depression triangular, area between this depression and spiracular sulcus strongly sculptured. Tooth on posterior femur short and blunt and located at approximately apical one-fifth of femur. Anterior wing extending well beyond apex of abdomen; submarginal, marginal, postmarginal, and stigmal veins approximately in the proportions of 40, 17, 9, and 6, respectively.

Abdomen a little longer than head and thorax, compressed, weakly reticulated on the sides; first tergite dorsally perfectly smooth, and comprising a little less than one-third length of abdomen, second to fifth tergites dorsally weakly transversely aciculated, the second about half as long as the first, third and fourth each a little longer than the second, fifth about as long as the second, sixth tergite finely reticulately sculptured and clothed with suberect hairs, ovipositor as long as abdomen.

Male unknown.

Type locality.—"Amile Hill," Colo.

Type.—U.S.N.M. No. 54266.

One female collected by C. F. Baker and bearing his field notebook No. 1330. The note under this number states that the specimen was collected in July at Amile Hill in northern Colorado. The locality is presumed to be in the neighborhood of Fort Collins, and the time of collection was probably July 1894.

11. MONODONTOMERUS EMARGINATUS, new species

The deep and broad emargination of the third tergite distinguishes this species at once from all other species in the collection.

Female.—Length 4.2 mm.; ovipositor 2.1 mm. Head bluish green; dorsum of the thorax greenish black; pronotum, propodeum, mesepisternum, and coxae weakly tinged with purple; mesepimeron polished greenish black; all femora metallic bluish; all tibiae and tarsi testaceous; abdomen black, tinged with metallic; antennal scape metallic, flagellum black; wings hyaline with a distinct fuscous cloud at stigmal vein.

Head moderately thick anteroposteriorly; ocellular line very slightly longer than diameter of lateral ocellus; eyes practically bare; malar space very nearly equal to half length of eye; malar furrow effaced except for a short distance at eye margin; mandibles with the two lower teeth subequal; anterior margin of head straight, clypeal margin not protruding; face slightly swollen, especially prominent just below antennae; antennae inserted on a line connecting lower extremities of eyes; scape not quite attaining level of anterior ocellus, distinctly sculptured; pedicel a little longer than broad; ring joint large, about two-third as long as broad; first joint of funicle quadrate, second to seventh funicular joints all somewhat transverse, the seventh

about twice as broad as long; club 3-jointed, ovate, not broader than funicle and a little longer than two preceding joints combined. Surface of head nearly uniformly shagreened but with a smooth area along posterior orbit at lower extremity of eye.

Thorax about twice as long as broad, sculptured about like the head; scutellum longer than broad, its surface behind transverse furrow nearly smooth medially but distinctly though weakly aciculate sculptured laterally; punctate groove setting off marginal frenum on scutellum not interrupted; postscutellum with a weak median carina; median depression on propodeum triangular, area between median depression and spiracular sulcus distinctly though not strongly reticulated. Tooth on posterior femur short, broad at base, and located at approximately apical one-fifth of femur. Anterior wing extending beyond apex of abdomen; submarginal, marginal, postmarginal, and stigmal veins in approximately the proportions of 35, 16, 8, and 5, respectively.

Abdomen about as long as head and thorax, rather strongly compressed; distinctly reticulated on sides, more weakly sculptured dorsally; first tergite perfectly smooth dorsally, comprising approximately one-third length of abdomen; second dorsally about half as long as first and weakly aciculated; third deeply triangularly emarginate at middle, sculptured about like second; fourth sculptured like second, not emarginate medially, and about as long as second; fifth tergite shorter and practically smooth dorsally; sixth as long as fifth, distinctly sculptured and completely clothed with suberect hairs; ovipositor about as long as abdomen.

Male unknown.

Type locality.—Radium, Colo.

Type.—U.S.N.M. No. 54267.

Described from one female said to have been reared from the nest of a leaf-cutter bee (?*Megachile*) collected in an aspen log in 1922 by E. Bethel.

The type is a slightly broken but apparently normal specimen greatly resembling the new species *bakeri* described in this paper. Besides having the third tergite emarginate, it differs from *bakeri* by having the malar space somewhat shorter, the ocelli less distant from the eye margin, the cloud in the fore wing at the stigma larger and darker, and the dorsum of the thorax not purplish except to a slight extent on the pronotum.

12. MONODONTOMERUS DENTIPES (Dalman)

Torymus dentipes DALMAN, Svenska Vet.-Akad. Handl., vol. 41, pp. 173, 178, pl. 7, figs. 23-25, 1820.—BOHEMAN, Svenska Vet.-Akad. Handl., vol. 44, p. 335, 1833.

Monodontomerus dentipes (Dalman) WALKER, Ann. Mag. Nat. Hist., vol. 19, p. 227, 1847.

This species differs from others having the apex of the scutellum smooth by having the dorsum of the first tergite distinctly though not strongly sculptured.

Female.—Length 3.5 mm.; ovipositor 1 mm. Head metallic green; eyes and ocelli usually reddish; mandibles testaceous; scape and pedicel usually dark metallic, scape sometimes testaceous on basal half; flagellum black; thorax mostly dark greenish with median lobe of mesoscutum black; coxae and femora dark greenish; tibiae and tarsi reddish testaceous; abdomen black with a faint greenish tint especially on dorsum of first tergite and on apices of following tergites; wings hyaline with a weakly fuscous spot embracing stigmal vein; tegulae metallic. Vestiture on dorsum of thorax brownish, elsewhere apparently paler.

Eyes conspicuously pilose; ocellular line barely longer than diameter of lateral ocellus; temples nearly transverse to body axis; malar space equal to about one-fourth of eye height, malar furrow complete; mandibles tridentate, teeth short and subequal; face nearly flat, margin of clypeus very slightly protruding beyond anterior margin of face. Antennae inserted distinctly above lower margins of eyes; first funicular joint obviously a little longer than broad, distinctly thicker than pedicel; second to sixth joints of funicle very slightly longer than broad; seventh subquadrate; club not thicker than funicle and about as long as two preceding joints combined; scape not quite attaining anterior ocellus; scutellum about as broad as long, not overlapping postscutellum, perfectly smooth behind transverse furrow, foveolate groove setting off marginal frenum on scutellum uninterrupted medially; postscutellum with a strong median carina; propodeum distinctly sculptured, with a moderately deep and sharply triangular median depression extending from base nearly to apex and bisected by a longitudinal carina; tooth on posterior femur closer to apex of femur than usual and not so slender as in some other species; submarginal, marginal, postmarginal, and stigmal veins in approximately the proportions of 30, 17, 9, and 6, respectively; stigmal vein very little thickened and slightly longer than usual; dorsum of first tergite distinctly though not strongly sculptured on its posterior half; second to fifth tergites a little more strongly sculptured dorsally than usual; ovipositor sheaths about two-thirds as long as abdomen.

Male.—Length 2.75 mm. Similar to the female except in the usual sexual characters.

The identification of this species is based upon two specimens from Germany determined as *dentipes* by an unidentified entomologist, possibly Arnold Förster. Two other European specimens without locality labels, one of which is said to have parasitized *Diprion pini* (Linnaeus), are in the collection; also four specimens collected by

C. R. Kellogg at Foochow, China, in 1928. Besides this Old World material the collection contains several large series, comprising over 300 specimens, mostly reared from *Diprion simile* (Hartig) in Maine, Connecticut, New York, New Jersey, Pennsylvania, Michigan, Ohio, and Ontario, Canada.

Monodontomerus dentipes was originally proposed in the genus *Torymus* by Dalman accompanied by a very short description, which, so far as it goes, fits the present species. Dalman's specimens were subsequently more fully described by Boheman, and the species has most frequently been credited to that author but should be credited to Dalman.

In European literature *Monodontomerus dentipes* has been recorded as parasitizing several different species of sawflies and a number of species of Lepidoptera and in other instances as secondarily parasitic through species of Braconidae, Ichneumonidae, Chalcididae, and Tachinidae. It is probable, however, that not all these records refer to the true *dentipes*. Dalla Torre⁴ has listed *dentipes* as identified by Mayr as a synonym of *virens* Thomson, and Hoffmyer⁵ has indicated the same synonymy.

In the United States National Museum is one female specimen identified as *dentipes* by Mayr and another identified by Ruschka. These two specimens differ from *dentipes* as here treated by having the groove setting off the marginal carina or frenum on the scutellum distinctly interrupted at the apex of the scutellum, by having the first tergite perfectly smooth and sculptureless, by the tooth on hind femur being distinctly longer, slenderer, and farther from the apex of the femur, and by having the ovipositer very nearly as long as the abdomen. They disagree with the description of *virens* by having a strong median carina on the postscutellum and in having the marginal groove on the scutellum interrupted. A third specimen of what is evidently the same form is in the collection. This was taken in Hungary by C. Sajo and bears the name label *Monodontomerus obsoletus* (Fabricius). It is apparently not *obsoletus*, however, since the median depression on the propodeum is narrower and more acute posteriorly. The funicle joints are all a little longer than broad, the tooth on the posterior femur is longer and more slender, and the general color is slightly more greenish than in that species. It is impossible at the present time to identify this form positively and it is discussed here merely to show the probable confusion existing regarding some of the European species.

⁴ *Catalogus hymenopterorum*, vol. 5, p. 290, 1898.

⁵ *Ent. Med.*, vol. 17, p. 258, 1930.

13. *MONODONTOMERUS JAPONICUS* Ashmead

Monodontomerus japonicus ASHMEAD, Journ. New York Ent. Soc., vol. 13, p. 83, 1904.

Very similar to *dentipes* and agreeing with the foregoing description of that species except in the following particulars:

Female.—Length 3 to 3.5 mm.; ovipositor 0.8 mm. Dorsum of first tergite perfectly smooth and polished; ovipositor a little less than half as long as abdomen; ocellocular line not longer than diameter of a lateral ocellus. Scape testaceous, sometimes washed with metallic toward apex; pronotum bluish green; mesoscutum and frequently the scutellum purplish; propodeum, pleura, all coxae, and all femora bluish green, the posterior coxae outwardly often tinted with purplish and the middle and anterior femora sometimes blackish with only a faint metallic tinge; tibiae brownish testaceous to very dark brown; tarsi testaceous; dorsum of first tergite bright bluish green, rest of abdomen blackish with a slight bluish tinge.

The male differs from the male of *dentipes* by having the first tergite smooth, the ocellocular line not longer than the diameter of an ocellus, the face brassy green, the mesoscutum purplish, and the posterior tibiae usually somewhat darker.

The type of this species is from Nikko, Japan, collected by Albert Koebele. Two other specimens in the United States National Museum collection are labeled cotypes but these were collected by Koebele in China and were not mentioned by Ashmead in his description. Besides the type material the collection also contains 3 females and 7 males reared February 4 to March 5, 1937, at Nagawa-Mura, Nagano-Ken, Japan, by R. W. Burrill from *Diprion nipponicum* Rohwer.

The species is recorded by K. Iida⁶ as a parasite of *Osmia taurus* Smith.

14. *MONODONTOMERUS SUBOBSOLETUS*, new species

This species is extremely similar to *obsoletus* Fabricius. It differs from the few specimens of *obsoletus* in the collection, however, by having the median depression on the propodeum more distinctly triangular, more nearly acute posteriorly, by having the sculpture laterad of this depression composed of distinct oblique rugae instead of irregular reticulation resembling shallow punctation, by having the tooth on the hind femur somewhat more slender, and by having the propodeum metallic green instead of bluish black and the general color of the thorax more metallic.

Female.—Length 2.75 to 3.4 mm.; ovipositor 0.85 to 1.2 mm. Head metallic green; eyes and ocelli red; mandibles reddish testaceous;

⁶ Kansai Ent. Soc. Trans. Japan, No. 3, p. 69, 1932.

scape and pedicel metallic; flagellum black; mesoscutum and scutellum blackish with brassy reflections; pronotum, pleura, all coxae, posterior femora, and propodeum dark green; anterior and median femora brownish black with a greenish metallic lustre; apices of median and anterior femora, all tibiae, and all tarsi reddish testaceous; abdomen, especially on dorsum, black with more or less metallic reflections; ovipositor black; wings hyaline with a weak infuscation at stigmal vein.

Head shagreened; temples nearly transverse to longitudinal axis of body; eyes conspicuously pilose; ocellular line about equal to diameter of lateral ocellus; malar space a little less than one-third the eye height; malar furrow distinct and complete; face nearly flat; anterior margin of clypeus very slightly protruded beyond anterior margin of head; mandible with three short, subequal teeth. Antennae inserted distinctly above lower extremities of eyes; scape subcylindrical, not reaching anterior ocellus; pedicel a little longer than broad; ring joint about two and one-half times as broad as long; first funicular joint slightly longer than broad and distinctly thicker than pedicel; following joints of funicle subquadrate; club very slightly thicker than funicle and a little longer than two preceding joints combined.

Thorax a little less strongly sculptured than head, the sculpture of dorsum consisting of irregular reticulations without obvious pits or punctures; scutellum about as broad as long, perfectly smooth behind the transverse groove, the punctate marginal groove distinctly interrupted medially; postscutellum not or only slightly overlapped by apex of scutellum, smooth and shining and with a strong median carina; median depression on propodeum rather deep, distinctly triangular, subacute posteriorly; median carina distinctly divided or forked at base; surface of propodeum laterad of median depression with distinct obliquely transverse rugulae which form narrow elongated areas. Posterior femur moderately broad with tooth on ventral margin rather long, very little broader at base than near apex, and located at approximately the apical one-fourth of femur. Anterior wing extending beyond apex of abdomen; submarginal, marginal, postmarginal, and stigmal veins in approximately the proportions of 29, 15, 9, and 5, respectively.

Abdomen about as long as thorax, very slightly compressed, reticulately shagreened on the sides; first and second tergites perfectly smooth dorsally; third and fourth on apical halves and most of fifth also smooth dorsally, the third and fourth weakly reticulated basally; sixth weakly sculptured and with five or six erect hairs dorsad of spiracle. First tergite constituting a little more than one-third length of abdomen; second very short; third and fourth subequal and together a little longer than first; fifth a little over half length of fourth; sixth very short, with the spiracles usually concealed. Posterior margin of none

of the tergites emarginate medially. Ovipositor approximately two-thirds as long as abdomen.

Male.—Length 3.1 mm. First tergite comprising more than one-third length of abdomen; second dorsally completely concealed beneath the first; third and fourth subequal and together about equal to first; fifth and sixth subequal and each more than half as long as fourth; seventh short. Otherwise agreeing with the female except that the anterior and median femora are brownish testaceous above, metallic blackish beneath.

Type locality.—Newark, Del.

Type.—U.S.N.M. No. 54268.

The holotype female and three paratype females were reared from *Malacosoma americana* (Fabricius) at Newark, Del., June 6, 1933, by Donald MacCreary. Four males including the allotype and ten females were sent to me by O. P. Breland with the information that they had been reared by him from cocoons of *Samia cecropia* (Linnaeus) collected in Brooklyn, N. Y., by J. H. Cohen in February 1937 and March 1938. Mr. Breland stated that in each instance the *Monodontomerus* had parasitized *Spilocryptus extrematis* (Cresson) within the *cecropia* cocoons. Two females and one male were reared from *Grapholitha molesta* (Busck) material in 1935 at the Oriental Fruit Moth Laboratory, Moorestown, N. J., under Lab. No. 2335.

15. MONODONTOMERUS OBSOLETUS (Fabricius)

Ichneumon obsoletus FABRICIUS, Supplementum entomologiae systematicae, p. 230, 1798.

Monodontomerus obsoletus (Fabricius) SPINOLA, in Gay's Historia fisica y politica de Chile . . ., vol. 6, p. 465, 1851.

As interpreted by Mayr and other European authors this species is said to have the median depression on the propodeum broad and not acute posteriorly, the scutellum polished at apex with the marginal groove interrupted medially, the funicle joints somewhat shorter than long, the scape metallic, the tibia brown, and the fore wing with a distinct stigmal cloud.

Four European specimens without definite locality labels are in the collection identified as this species. One of these was named by Ruschka and the other three by Ashmead. All agree with the above characters as well as others given by Mayr.

This species is not known to occur in America. In Europe it is said to be widely distributed and to parasitize several species of Lepidoptera and Tenthredinoidea and also to have been reared as a secondary parasite through species of Ichneumonidae and Tachinidae.