DESCRIPTIONS OF NEW REARED PARASITIC HYMENOPTERA AND SOME NOTES OF SYNONYMY

By C. F. W. Muesebeck
Of the Bureau of Entomology, United States Department of Agriculture

In addition to the descriptions of 14 new species of Hymenoptera belonging to the family Braconidae, this paper contains synonymical notes involving certain of Provancher's species of the braconid subfamily Microgasterinae. All of the new species are described from reared material, and all but three from specimens reared at the gipsy moth laboratory of the Bureau of Entomology at Melrose Highlands, Mass. The notes on synonymy are the result of a recent examination of the types of Provancher's species of Microgasterinae, which are in the Museum of Public Instruction, in the Parliament Building, at Quebec, Canada.

Superfamily ICHNEUMONOIDEA

Family BRACONIDAE

Subfamily Vipiinae

MICROBRACON HELIANTHI, new species

Most similar to *pini* Muesebeck, but at once separated by the blackish wings, the mostly red thorax, the entirely red abdomen, the absence of a distinct stub of a median longitudinal carina toward apex of propodeum, and the slightly longer ovipositor sheaths.

Female.—Length, 3 mm. Head long antero-posteriorly, polished; frons completely smooth and shining; diameter of opening between clypeus and mandibles about twice as long as the malar space; antennae 34-segmented, all the flagellar segments longer than broad, but not even the first twice as long as broad; thorax robust; mesoscutum smooth and polished, the lobes not at all prominent, the parapsidal grooves not distinctly impressed; furrow in front of scutellum fine, straight, finely foveolate; scutellum large, polished; propodeum entirely smooth and polished, without a distinct stub of a median

carina posteriorly; mesopleura smooth and polished; anterior wing with the second abscissa of radius more than twice as long as the first and almost as long as the third, which goes nearly to extreme apex of wing; second segment of posterior tarsi longer than the fourth; abdomen rather broad, mostly polished; first and second tergites weakly roughened; ovipositor sheaths just about as long as the abdomen. Ferruginous; head, including face, black with narrow rufous inner orbital lines; thorax ferruginous except the propectus and mesopectus, which are black; wings blackish; fore and middle legs entirely, and the posterior legs, except their femora on the basal half or two-thirds and the basal half of their tibiae, which parts are yellowish, black; abdomen entirely ferruginous.

Male.—Exactly as in the female except that antennæ are 35-segmented and the posterior femora are black only at apex.

Type.—Cat. No. 28071, U.S.N.M.

Type-locality.—San Angelo, Tex.

Allotype-locality.—Liberty, Tex.

Host.—*Isophrictis*, species.

Described from 1 female and 1 male reared by L. J. Bottimer, from larvae of the above host, the type being obtained May 27, 1924, from a larva in the flower of *Helianthus* and the allotype May 13, 1924, from a larva in the flower-head of *Rudbeckia hirta.*

Subfamily METEORINAE

METEORUS TETRALOPHAE, new species

Very similar in general appearance and in many details to *indagator* (Riley), but differs from that species particularly in having the ventral margins of the first tergite joined from almost the extreme base of the segment to a point near its middle, and in lacking the large conspicuous dorsal fossae on the petiole.

Female.—Length, 4 mm. Head transverse; temples rather flat, strongly sloping; eyes exceptionally large, converging below, hairy; malar space so short as to be practically wanting; face exceedingly narrow, apparently even slightly narrower than in *indagator*, the distance from the antennal foramina to clypeus being about one and one-half times as long as the width of face at base of clypeus; face and clypeus weakly rugulose; ocell-ocular line slightly greater than the diameter of an ocellus; antennae of type broken, but a female paratype has the antennae 30-segmented; mesoscutum mostly smooth and shining, but with a largely strongly rugulose area behind the middle lobe; scutellum short, broad, moderately convex; propodeum only slightly hollowed out behind, and completely strongly rugulose; propleura finely rugulose and opaque; mesopleura rugulose below and in the upper anterior angles; entire thorax cov-

ered with short, fine, whitish pubescence; radius arising considerably beyond the middle of stigma; first abscissa of radius short, but nearly as long as second, which is scarcely half as long as the first intercubitus; radius ending much before tip of wing; recurrent vein interstitial with first intercubitus or entering the first cubital cell just before first intercubitus; nervellus slightly longer than lower abscissa of basella; posterior coxae finely roughened and subopaque; first abdominal tergite with the ventral margins of the petiole closely joined from very near the base to about the end of the petiole itself; postpetiole above finely striate or ruguloso-striate; only a slight suggestion of dorsal fossae on the petiole; second and following segments smooth and polished; ovipositor sheaths projecting about three-fourths the length of the abdomen; exserted ovipositor as long as the abdomen. Ferruginous to testaceous; antennae brownish, scape pale beneath; thoracic sutures and the propodeum blackish; wings hyaline; stigma with a large brown cloud behind, pale along the wing margin; legs, including coxae, yellow, the hind femora at apex, the hind tibiae narrowly near base and at apex, and the hind tarsi, slightly dusky; first abdominal tergite entirely black; third and following tergites usually more or less brownish.

Type.—Cat. No. 37975, U.S.N.M.

Type-locality.—Lynbrook, Long Island, N. Y.

Host.—*Tetralopha robustella* Zeller.

Described from three females (type and two paratypes) reared by C. H. Zimmer.

METEORUS CINGILIAE, new species

Falls between *hyphantriae* Riley and *datanae* Muesebeck, being most similar to the latter, sometimes separable only with difficulty. It appears, however, to be a good species. It can usually be distinguished from *datanae* by the somewhat coarser reticulation of the propodeum, the finer punctation of the narrower median lobe of mesoscutum, the more polished, impunctate scutellum, and the much paler stigma. The posterior tibiae are entirely yellow while in *datanae* there is a distinct blackish annulus near base; and the apical fifth is black.

Female.—Length, 4.5 mm. Face about as broad at base of clypeus as long, smooth except for some weak transverse striae, shining; clypeus strongly convex; malar space about as long as basal width of mandible; ocell-ocular line a little longer than greatest diameter of a lateral ocellus; frons and vertex smooth and shining; antennae slender, 35-segmented; the middle lobe of mesoscutum distinctly shallowly punctate and shining, the quadrate area behind it, and the parapsidal grooves rugulose; lateral mesonotal lobes impunctate shining; scutellum rather small, strongly elevated, entirely im-

punctate and polished; propodeum coarsely reticulately rugose; propleura only weakly sculptured, largely smooth and shining; mesopleura mostly smooth and shining, with the longitudinal impression narrowly weakly rugulose, distinctly less strongly and less extensively so than in *datanae;* fore wing with radius arising considerably beyond middle of stigma, its first abscissa much shorter than the second but usually more than half as long; recurrent vein practically interstitial with first intercubitus; posterior coxae finely granular; abdomen strongly petiolate; the petiole smooth and polished; the postpetiole finely striate; remainder of dorsum of abdomen smooth and highly polished; ovipositor sheaths a little more than half the length of the abdomen. Ferrugino-testaceous; antennae brownish yellow; propodeum sometimes a little infuscated basally; wings hyaline; stigma pale yellow; all legs entirely yellow, the posterior tibiae not at all marked with black; postpetiole sometimes more or less blackish, but usually yellow like remainder of abdomen.

Male.—Like the female, except that there are often pronounced fuscous markings on the mesonotal lobes, and the propodeum and postpetiole are usually darker; sometimes apex of abdomen is more or less brownish.

Type.—Cat. No. 28053, U.S.N.M.

Type-locality.—Sherborn, Mass.

Host.—*Cingilia catenaria* Drury. The *Meteorus* is a solitary parasite of the larva of this geometrid, only one developing upon a host.

Described from 6 females and 6 males reared in August, 1923, from the above-named host, by J. V. Schaffner, jr., under Gipsy Moth Laboratory No. 12418 J 3–*a*. Several other series of specimens, not included in the type material, have been reared from the same host, from Westerly, R. I., and Sherborn, Brewster, and Sudbury, Mass., under Gipsy Moth Laboratories Nos. 12418 E 1, 12418 G 1, 12418 H 1–*a*, 12418 H 3, 12418 J 2, 12418 J 3 and 12418 K 1.

Subfamily MICROGASTERINAE

APANTELES FEMUR-NIGRUM (Provancher)

Microgaster femur-nigrum PROVANCHER, Addit. faun. Canad. Hymen., 1886, pp. 139, 142.

Apanteles femur-nigrum PROVANCHER, Addit. faun. Canad. Hymen., 1888, p. 388.

Apanteles trachynotus VIERECK, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 616.

Apanteles trachynotus MUESEBECK, Proc. U. S. Nat. Mus., vol. 58, 1920, p. 518.

Apanteles femur-nigrum MUESEBECK, Proc. U. S. Nat. Mus., vol. 58, 1920, p. 522.

A study of the types shows conclusively that *trachynotus* and *femur-nigrum* are identical. The species is known only from the male sex, but appears to be common throughout northeastern United States and southeastern Canada. The female may have been described under another name, but if so, it must differ considerably from the male.

APANTELES CARPATUS (Say)

Microgaster carpata SAY, Boston Journ. Nat. Hist., vol. 1, 1836, p. 263.
Microgaster clavatus PROVANCHER, Natural. Canad., vol. 12, 1881, p. 196.
Apanteles clavatus PROVANCHER, Addit. faun. Canad. Hymen., 1888, p. 388.
Apanteles carpatus MUESEBECK, Proc. U. S. Nat. Mus., vol. 58, 1920, p. 515.
Apanteles clavatus MUESEBECK, Proc. U. S. Nat. Mus., vol. 58, 1920, p. 517.

The type of *clavatus* is in poor condition, but, in my opinion, is *carpatus* (Say). The name *clavatus* then must fall as a synonym of *carpatus*, rather than replace *polychrosidis* as I previously (1920) suggested.

APANTELES LATERALIS (Provancher)

Microgaster lateralis PROVANCHER, Addit. faun. Canad. Hymen., 1886, p. 141.
Apanteles consimilis VIERECK, Proc. U. S. Nat Mus., vol. 40, 1911, p. 177.
Apanteles consimilis MUESEBECK, Proc. U. S. Nat. Mus., vol. 58, 1920, p. 523.
Microgaster lateralis MUESEBECK, Proc. U. S. Nat. Mus., vol. 61, 1922, p. 42.

Although the abdomen and antennae of the type of *lateralis* are missing, the unusual nature of the sculpturing on the propodeum and the minute characteristics of the venation of the anterior wing in the vicinity of the second cubital cell are strikingly in agreement with those characters in *consimilis;* furthermore, Provancher's description of the abdomen agrees with abdomen of *consimilis.* I am convinced that the latter name must fall as a synonym of *lateralis.*

APANTELES LONGICORNIS (Provancher)

Microgaster longicornis PROVANCHER, Addit. faun. Canad. Hymen., 1886, pp. 139, 143.
Apanteles longicornis PROVANCHER, Addit. faun. Canad. Hymen., 1888, p. 388.
Apanteles radiatus ASHMEAD, Proc. Ent. Soc. Wash., vol. 4, 1897, p. 162.
Apanteles longicornis MUESEBECK, Proc. U. S. Nat. Mus., vol. 58, 1920, p. 528.
Apanteles radiatus MUESEBECK, Proc. U. S. Nat. Mus., vol. 58, 1920, p. 528.

After an examination of the type of *longicornis* I believe it to be conspecific with *radiatus;* accordingly, the latter name is here suppressed.

APANTELES NEPHOPTERICIS (Packard)

Microgaster nephoptericis PACKARD, Proc. Essex Inst., vol. 4, 1864, p. 122.
Apanteles ephestiae BAKER, Ent. News, vol. 6, 1895, p. 201.
Apanteles ephestiae MUESEBECK, Proc. U. S. Nat. Mus., vol. 58, 1920, p. 516.
Apanteles nephoptericis MUESEBECK, Proc. U. S. Nat. Mus., vol. 58, 1920, p. 570.

Apparently all that remains of Packard's type series of two specimens is a fore wing mounted on a tag in the Museum of Comparative Zoology, at Cambridge, Mass. Recently, however, Dr. T. H. Frison, of the University of Illinois, sent me some specimens of an Apanteles which he had reared at Champaign, Ill., from *Vitula edmansii*, the same host from which Packard's cotypes were obtained. He suggested that his specimens might be Packard's *nephoptericis*, and a comparison with the characteristic type wing and with the original description leaves no doubt that this is the case. The identity of this species is thus established. Furthermore, Doctor Frison's material, in my opinion, is identical with the cotypes of *Apanteles ephestiae* Baker, making it necessary to suppress that name. The hosts of the types of both *nephoptericis* and *ephestiae* were found feeding on honeycomb; consequently it is not surprising that the should belong to the same species.

APANTELES PTEROPHORI, new species

A very distinct species, although somewhat resembling *fumiferanae* Viereck. From the latter it differs strikingly in the absence of the propodeal areola, in the much smoother second abdominal tergite and the much shorter ovipsitor.

Female.—Length 2.7 mm. Head strongly transverse; face a little broader at base of clypeus than long and finely punctate; frons mostly polished; vertex, temples, and cheeks finely punctate and opaque; postocellar line slightly longer than ocell-ocular line; antennae a little shorter than the body, the three penultimate segments subquadrate, only a little longer than broad; mesoscutum rather flat above, and very evenly finely punctate, subopaque; scutellum flat, very weakly sparsely punctate, shining; propodeum finely rugulose, except along basal margin, without a median areola, and also without a median longitudinal carina; mesopleura punctate and opaque anteriorly, polished posteriorly; stigma large, about as long as metacarpus and more than twice as long as broad; radius arising from middle of stigma and only very slightly longer than intercubitus; posterior coxae scarcely extending to the middle of the abdomen, mostly smooth and shining; spurs of hind tibiae of equal length and less than half as long as the metatarsus; abdomen rather broad, depressed, nearly as long as the thorax; chitinized plate of first tergite large, broadening slightly from base of apex, finely closely rugulose except medially at base; plate of second tergite short, transverse, more than three times as broad as long and slightly longer medially than at the sides, defined laterally by longitudinal grooves which are scarcely oblique; this tergite is only indistinctly sculptured, being largely smooth and polished; third tergite at least three times as long as broad, and with the following tergites, polished;

ovipositor sheaths protruding a little less than half the length of the abdomen. Black; antennae entirely black, also the tegulae and wind-bases; wings hyaline, stigma, and veins dark brown; all coxae wholly black; remainder of legs yellow; the posterior femora weakly at exterme apex, the apex of posterior tibiae and the posterior tarsi dusky; abdomen entirely black, above and below.

Male.—Essentially as in the female; however, the wings are whitish-hyaline; the first tergite does not broaden apically; the antennae are longer; and the legs are considerably darker, all coxae and trochanters, the bases of the anterior and middle femora, the hind femora mostly, the greater part of the middle and posterior tibiae, and the posterior tarsi, being black.

Cocoons.—Solitary, white, with very little loose silk.

Type.—Cat. No. 28045, U.S.N.M.

Type-locality.—Melrose Highlands, Mass.

Host.—*Pterophorus homodactylus* Walker.

Described from 3 females and 1 male reared in June, 1923, from the above host, by J. V. Schaffner, jr., under Gipsy Moth Laboratory No. 12436 J 1. The type, allotype, and one paratype are in the United States National Museum. The remaining paratype is at the gipsy moth laboratory.

APANTELES NOCTUIDIPHAGUS, new species

Quite similar to *parastichtidis* Muesebeck, but a decidedly more robust species; the abdomen is broader and much less strongly compressed; and the scutellum is more distinctly punctate.

Female.—Length, 2.7 mm. Face much broader at base of clypeus than long, shallowly punctuate and subopaque; frons, vertex, and temples very shallowly punctate and subopaque; temples bulging slightly; postocellar line apparently equal to ocell-ocular line; antennae short, much shorter than the body, the six apical segments scarcely as long as broad; mesoscutum rather flat above, very evenly punctate, opaque; scutellum large, somewhat convex, distinctly, closely, though shallowly punctate; propodeum finely rugulose and provided with a distinct medium longitudinal carina; mesopleura closely punctate anteriorly and below, polished above the impression; stigma broad, not distinctly more than twice as long as its greatest width; radius arising from about the middle of stigma, perpendicular to anterior margin of wing and distinctly longer than intercubitus, with which it is rather sharply angled; posterior coxae hardly half as long as the abdomen, weakly punctate, shining; spurs of posterior tibiae of equal length and not quite half as long as the metatarsus; abdomen at least as long as the thorax, more than three times as long as its greatest breadth, very gradually broadening to the third segment, and then gradually narrowing to the apex, only slightly

compressed; first abdominal tergite broadening a little posteriorly, finely closely rugulose, its lateral membranous margins exceedingly narrow, apparent only at apex; second tergite rectangular, two and one-half times as broad as long, finely closely rugulose, its posterior margin straight; third tergite not distinctly twice as broad as long, and, together with the following segments, entirely smooth and highly polished; hypopygidium not surpassing apex of last dorsal segment; ovipositor sheaths only slightly projecting. Black; scape of antenna black, the flagellum brownish beneath toward base, darker above and toward apex; all coxae black; remainder of legs entirely testaceous; tegulae deep black; wings hyaline; stigma and veins dark brown; abdomen black above and below, the venter slightly brownish laterally at base.

Male.—The antennae are longer than in the female, but hardly longer than the body; the extreme apex of posterior femora above, apex of posterior tibiae and the posterior tarsi are slightly infuscated; otherwise as in the female.

Cocoons.—White, gregarious, not embedded in a mass of silk.

Type.—Cat. No. 28047, U.S.N.M.

Type-locality.—Stonington, Conn.

Host—Undetermined noctuid larva on white oak.

Described from nine females and three males reared by J. V. Schaffner, jr., under Gipsy Moth Laboratory No. 12164 H 157. The type, allotype, and 8 paratypes are in the United States National Museum; the other two paratypes are at the gipsy moth laboratory.

APANTELES AMMALONIS, new species

Quite similar to *diacrisiae* Gahan, but at once distinguished from that species by the tegulae and all coxae being black and by the smooth third tergite. It also resembles somewhat *depressus* Viereck and *pyralidis* Muesebeck, but is more elongate, with a narrower, more parallel-sided first tergite, and with a less transverse second tergite. From *euchaetis* Ashmead, which it resembles in habit, and in its cocoons, it differs especially in the distinctly shorter posterior tibial spurs, the more parallel-sided first tergite and the less polished scutellum.

Female.—Length, 2.3 mm. Head transverse, the temples not broad, but bulging slightly; face much broader than long, and, together with the clypeus, very finely closely punctate and shining; frons laterally, vertex and temples, closely minutely punctate and subopaque; antennae nearly as long as the body, the apical segments shortened but distinctly longer than broad; mesoscutum thickly punctate and opaque; scutellum with shallower, more scattered punctures and shining; propodeum finely rugulose except narrowly along basal margin where it is smooth and shining, and provided

with a distinct median longitudinal carina; mesopleura punctate and opaque anteriorly, polished posteriorly; stigma rather broad; radius arising from about the middle of stigma and slightly longer than the transverse cubitus with which it makes a rather strong obtuse angle; posterior coxae smooth and shining; inner spur of posterior tibiae not distinctly longer than the outer and not quite half as long as the metatarsus; abdomen as long as the thorax, a little compressed on apical half; chitinized plate of first tergite parallel-sided, base and apex apparently of equal breadth, finely closely rugulose, more weakly so toward base; plate of second tergite trapezoidal, much wider at apex than at base and defined laterally by oblique grooved lines, entirely finely rugulose; third and following tergites smooth and polished, ovipositor sheaths very slightly exserted. Black; antennae entirely black; all coxae black; remainder of the legs yellowish except the posterior femora apically especially on the dorsal margin, the apical third of posterior tibiae and the posterior tarsi, which parts are blackish; tegulae and wing-bases black; wings hyaline, stigma and veins brown; abdomen black, with the lateral membranous margins of the first tergite and the venter at base yellowish.

Male.—Essentially like the female. As usual, the antennae are longer; and the sculptured part of the second tergite is somewhat narrower at base, leaving the lateral unsculptured margins broader.

Cocoons.—Gregarious, with only a little loose silk, and usually formed inside the host cocoon, as in the case of *Apanteles euchaetis*, the host larva being killed shortly after forming its cocoon.

Type.—Cat. No. 28044, U.S.N.M.

Type-locality.—Sommerville, N. J.

Host.—*Ammalo tenera* Huebner.

Described from 12 females and one male reared from a larva of the above host by J. V. Schaffner, jr., under Gipsy Moth Laboratory No. 12164 J 125. The cocoons were formed August 20, 1923, but the adults did not emerge until July 7, 1924. Several other small series of this species, under Gipsy Moth Laboratory Nos. 11779 H 4, 11779 H 7, and 11779 J 1, reared from larvae of the same host species, which were taken at Somerville, N. J., and Harriman, N. Y., are at the gipsy moth laboratory.

APANTELES GORDII, new species

Falls near *hydriae* Muesebeck, which it closely resembles. It can readily be distinguished from that species, however, by the much more strongly punctate mesoscutum and scutellum and by the more slender female antennae. From *smerinthi* Riley, which it also somewhat resembles, it differs in the more pronounced punctation of the mesonotum and in the black tegulae and darker posterior legs.

Female.—Length, 2 mm. Face only slightly broader at base of clypeus than long, weakly punctate, shining; frons and vertex smooth and shining; ocell-ocular line apparently equal to postocellar line; antennae very nearly, or quite, as long as the body, tapering strongly to the tip, the apical segments slender and all much longer than broad; thorax short and robust; mesoscutum with its entire surface covered with sharp, closely-set punctures, which are a little deeper and larger on the posterior part of the scutum than anteriorly; scutellum rather large, convex, distinctly punctate, shining; propodeum finely rugulose, with a more or less distinct median longitudinal carina; mesopleurae polished except anteriorly where they are closely, sharply, punctate and opaque; stigma large, not more than twice as long as broad; radius arising from middle of stigma, the outer side of the latter being fully as long as the inner; radius practically perpendicular to anterior wing margin, and a little longer than intercubitus which it joins in a rather pronounced angle; posterior coxae extending to the middle of abdomen or a little beyond, smooth and shining, with only a few small punctures on the outer face; spurs of posterior tibiae of apparently equal length and about half as long as the metatarsus; abdomen short but about as long as the thorax; chitinized plate of first tergite broadening gradually posteriorly, its apical lateral angles rather abrupt, not evenly rounded off, mostly smooth and polished, weakly punctate only on the apical third; lateral membranous margins of this tergite distinct along the apical two-thirds; second tergite transverse, more than three times as broad as long, the sculptured part narrower at base than at apex and defined laterally by curved grooved lines, setting off broad smooth lateral margins; the sculptured area of this tergite is only very weakly, almost indistinctly, roughened, shining; third and following tergites smooth and polished, the third twice as broad as long, the others much shorter; hypopygium hardly reaching apex of last dorsal segment; ovipositor sheaths subexserted. Black; antennae entirely black; tegulae deep black; all coxae wholly black, remainder of legs yellow except extreme apex of posterior femora, the apex of posterior tibiae, and the hind tarsi entirely, which are blackish; the posterior tarsi are unusually dark; sides of the venter at base yellowish.

Cocoons.—Small, dirty white, gregarious, not surrounded by a mass of loose silk.

Type.—Cat. No. 28050, U.S.N.M.

Type-locality.—Bangor, Me.

Host.—*Sphinx gordius* Stoll.

Described from four female specimens reared from a larvae of the above host by J. V. Schaffner, jr., under Gipsy Moth Laboratory No. 12184 J 2. The cocoons were formed September 14, 1923, and the adults emerged June 23, 1924.

APANTELES PYROPHILAE, new species

Most similar to *smerinthi* Riley, but differs especially in the more closely sculptured first and second tergites, in the narrower stigma, in the slightly longer posterior tibial spurs, and in the abdomen being more conspicuously compressed on its apical half.

Female.—Length 2.5 mm. Head transverse, not full behind the eyes; face broader than long, smooth and shining; frons, vertex and temples polished; vertex high; ocell-ocular line longer than postocellar line; antennae about as long as the body, slender, even the three or four apical segments being twice as long as broad; mesoscutum very weakly punctate and strongly shining; scutellum rather large, convex, with only a few indistinct punctures, shining; propodeum finely rugulose, without a distinct median longitudinal carina; mesopleura entirely smooth and polished; stigma narrow, much less than half as broad as long; radius arising distinctly beyond middle of stigma, perpendicular to anterior margin of wing, and considerably longer than intercubitus, with which it is usually joined in an even curve rather than a sharp angle; posterior coxae smooth and polished with only a few punctures on the outer edge at base; spurs of posterior tibiae subequal in length and half as long as metatarsus; abdomen nearly as long as the thorax, rather broad to the middle of the third segment, beyond which point it narrows strongly, being compressed at the apex; first tergite considerably broader at apex than at base, finely, closely rugulose, though much more weakly so on the basal half; second tergite subtrapeziodal, twice as broad as long and a little broader at apex than at base, finely closely rugulose, except down the median line where it is smooth and shining and distinctly elevated; third tergite also somewhat elevated along the median line, smooth and polished except for a little weak sculpturing in the basal lateral angles; remainder of dorsum of abdomen smooth and polished; hypopygium not surpassing apex of the last dorsal segment; ovipositor sheaths only slightly exserted. Black; scape below and the mouth parts more or less yellowish-brown; legs yellow, the fore and middle coxae at base and the posterior coxae except at extreme apex beneath, black; posterior tarsi very slightly infuscated; tegulae testaceous; wing bases blackish; wings hyaline, stigma and veins pale brown; abdomen black, more or less brownish yellow at base beneath.

Male.—Like the female except for the longer and somewhat paler antennae.

Cocoons.—Gregarious, embedded in a mass of white silk.

Type.—Cat. No. 28043, U.S.N.M.

Type-locality.—Westerly, R. I.

Host.—*Pyrophila pyramidoides* Guenée.

Described from 20 female and 2 male specimens reared from a single larva of the above host, July 3, 1917, by R. T. Webber, under Gipsy Moth Laboratory No. 12155 C 3. Five of the paratypes are at the gipsy moth laboratory, Melrose Highlands, Mass. The type, allotype, and remaining paratypes are in the United States National Museum.

APANTELES TELEAE, new species

Runs direct to *smerinthi* in my key, but can be at once separated from that species by the longer, more slender abdomen and by the first and second segments combined being decidedly shorter than the remainder of the abdomen, also by the distinctly smoother, more shining propodeum.

Female.—Length, 2 mm. Face broader at base of clypeus than long, faintly punctuate, shining; frons, vertex and temples smooth and shining; temples bulging very slightly behind the eyes; ocell-ocular line distinctly a little longer than postocellar line; antennae about as long as the body; mesoscutum finely punctate, shining; scutellum very faintly, indistinctly punctate and strongly shining; propodeum mostly smooth and polished with only a few irregular transverse rugae near the middle; stigma not more than twice as long as broad; radius arising exactly from middle of stigma, and slightly longer than intercubitus; posterior coxae not extending beyond the middle of the abdomen, smooth and shining; spurs of posterior tibiae subequal in length and not more than half as long as the metatarsus; abdomen slightly longer than the thorax, slender; chitinized plate of first tergite broadening slightly behind, mostly smooth and shining, with only a few punctures apically; sculptured area of second tergite transverse, more than twice as broad as long, defined laterally by curved grooves, distinctly broader at apex than at base, and mostly smooth and shining, with only a little faint sculpturing; third tergite hardly twice as broad as long and like the following tergites, smooth and polished; first and second abdominal segments combined not half the length of the abdomen; hypopygium not quite attaining apex of last dorsal abdominal segment; ovipositor sheaths extending slightly beyond apex of abdomen. Black; antennae wholly black; tegulae yellow; wings hyaline; stigma and veins pale brown; coxae black or blackish, the fore and middle pairs a little yellowish below; remainder of legs entirely yellow, with the posterior tarsi only very faintly dusky; abdomen brownish beneath toward base.

Type.—Cat. No. 28051, U.S.N.M.

Type-locality.—Waterford, Pa.

Host.—*Telea polyphemus* Cramer.

Described from two female specimens reared by A. B. Champlain from a larva of the above host; 22 cocoons were obtained in September, but only two of these produced adults the following spring.

APANTELES COXALIS, new species

Falls near *euphydryidis* Muesebeck, but differs particularly in the smoother face, the much more strongly sculptured and darker posterior coxae, and the less strongly compressed abdomen. From *acronyctae* Riley, which is a parasite of the same host, it differs in having yellow tegulae, in the distinctly curved posterior margin of second abdominal tergite, in the smaller, less polished scutellum and the more strongly sculptured posterior coxae.

Female.—Length, 2.2 mm. Face much broader at base of clypeus than long, faintly punctate, shining; frons and vertex smooth and shining; temples and cheeks practically impunctate, smooth and shining; antennae fully as long as the body, slender, the four apical segments considerably shorter than the preceding, but slender and much longer than broad; postocellar line slightly shorter than ocellocular line; median ocellus removed from lateral ocelli by the length of its own diameter; mesoscutum closely, coarsely punctate, much more shining laterally than in the middle; scutellum small, strongly convex, distinctly sparsely punctate, strongly shining; propodeum coarsely rugoso-reticulate, with a more or less distinct median longitudinal carina; mesopleura closely punctate anteriorly, polished posteriorly; stigma more than twice as long as its greatest breadth, radius arising beyond middle of stigma, slightly directed outwardly and not longer than intercubitus, sometimes distinctly shorter, posterior coxae punctate and subopaque, not distinctly half as long as the abdomen; spurs of posterior tibiae of equal length and not quite half as long as the metatarsus; abdomen slightly longer than the thorax, somewhat compressed toward apex; chitinized plate of first tergite broadening gradually from base to apex, finely, very closely rugulose; lateral membranous margins along this plate slender; second tergite rectangular, about as broad at apex as at base, entirely closely rugulose and opaque, the posterior margin distinctly curving forward laterally; third tergite twice as long as broad, and with the following tergites, smooth and polished; hypopygium large, extending a little beyond the last dorsal abdominal segment; ovipositor sheaths only slightly exserted. Black; antennae black, except the scape, which is yellow beneath; wings hyaline, stigma and veins brown; legs bright testaceous except the basal half of posterior coxae, which are black, and the posterior tarsi, which are more or less dusky; venter of abdomen testaceous, except on the apical third.

Male.—Like the female in practically all respects. The antennal scape, however, is darker.

Type.—Cat. No. 28048, U.S.N.M.

Type-locality.—Manchester, Conn.

Host.—*Acronycta oblinita* Smith and Abbot.

Described from 24 females and 4 males reared July 7, 1923, from a single larva of the above host, by J. V. Schaffner, jr., under Gipsy Moth Laboratory No. 12449 J 2. The type, allotype, and 18 paratypes are in the United States National Museum; the remaining 8 paratypes are at the gipsy moth laboratory.

APANTELES HADENAE, new species

Nearest *smerinthi* Riley, but differing in the broader, first abdominal tergite and in having the first and second tergites, as well as the base of the third, finely rugulose.

Female.—Length 2.2 mm. Face much broader at base of clypeus than long, weakly punctate, shining; frons and vertex smooth and polished; postocellar line and ocell-ocular line subequal; antennae nearly as long as the body, the segments becoming gradually shorter apically, but even the last three or four segments much longer than broad; mesocutum very finely shallowly punctate, faintly so posteriorly, strongly shining; scutellum rather large, convex; indistinctly punctate, polished; propodeum finely rugulose with the median longitudinal carina usually wanting or indistinct; mesopleura practically entirely smooth and polished with only a very few scattered punctures anteriorly; stigma more than twice as long as broad; radius arising from middle of stigma, perpendicular to anterior margin of wing and much longer than intercubitus; posterior coxae smooth and polished; spurs of posterior tibiae of equal length and not distinctly half as long as the metatarsus; abdomen about as long as thorax; first tergite broadening gradually toward apex, punctate, shining; second tergite transverse, more than twice as broad as long, finely punctato-granular, with rather broad unsculptured lateral margins; suturiform articulation fine, straight; third tergite impressed along its anterior margin, where it is usually feebly sculptured; remainder of dorsum of abdomen smooth and polished; hypopygium not surpassing apex of last dorsal segment; ovipositor sheaths subexserted. Black; antennae black; tegulae yellow; wing-bases brown; all coxae black; remainder of legs, including even posterior tarsi, entirely yellow, without a suggestion of duskiness; abdomen brownish beneath toward base.

Male.—Agrees with the female in all essential characters. The antennae are longer and more slender, and the second abdominal tergite is usually relatively narrower at base.

Cocoons.—White, gregarious, but not surrounded by a mass of loose silk.

Type.—Cat. No. 28049, U.S.N.M.

Type-locality.—Cranbury, N. J.

Host.—*Hadena turbulenta* Huebner.

Described from 12 females and 8 males reared by R. T. Webber under Gypsy Moth Laboratory No. 11788 H 1. The type, allotype, and 12 paratypes are in the United States National Museum; the remaining paratypes are at the gipsy moth laboratory.

APANTELES CERURAE, new species

Runs to couplet 162 in my key [1] and in most similar to *congregatus*, from which it is at once distinguished, however, by the shorter and more robust abdomen, the shorter and broader second abdominal tergite, the more delicate sculpturing of the basal abdominal tergites, and by the much narrower membranous margins on the first tergite.

Female.—Length 2.2 mm. Face but very little broader at base of clypeus than long, weakly punctate, shining; frons and vertex smooth, polished; postocellar line at least as long as ocell-ocular line; antennae as long as the body, the segments becoming gradually shorter apically, but even the last three or four segments being much longer than broad; thorax robust; mesoscutum rather uniformly covered with distinct close punctures; scutellum large, evenly convex, very faintly punctate and polished; propodeum finely rugulose, with the median longitudinal carina usually wanting or indistinct; mesopleura polished, with only a few punctures anteriorly; stigma more than twice as long as its greatest width; radius arising beyond middle of stigma, much longer than intercubitus and distinctly tending outwardly; posterior coxae large, considerably more than half as long as the abdomen, polished; inner spur of middle tibiae distinctly longer than metatarsus of middle legs; inner spur of posterior tibiae decidedly more than half the length of posterior metatarsus; abdomen shorter than thorax, broad; chitinized plate of first tergite broadening strongly behind, the lateral membranous margins being so narrow that they are apparent only at extreme apex of the tergite; basal half of this plate smooth and polished, the apical half weakly punctate; second tergite transverse, nearly three times as broad as long, with a suggestion of oblique grooves laterally, weakly irregularly punctate and strongly shining, polished medially, and its posterior margin slightly curved; third tergite much more than twice as long as broad, and together with the following tergites, smooth and polished; hypopygium scarcely attaining apex of last dorsal segment; ovipositor sheaths barely exserted. Black; antennae entirely black; tegulae yellow; wings hyaline, stigma and veins pale brown; coxae black, the fore and middle pairs more or less yellowish beneath; remainder of legs yellow, except extreme apex of hind femora above and the posterior tarsi, which are slightly infuscated; abdomen black, a little yellowish beneath at base.

---

[1] Proc. U. S. Nat. Mus., vol. 58, 1920, pp. 487–502.

Male.—Like the female except for the usual sexual differences.

Cocoons.—Pale yellow, gregarious, but not embedded in loose silk.

Type.—Cat. No. 28046, U.S.N.M.

Type-locality.—Manchester, Conn.

Host.—*Cerura*, species.

Described from eight females and three males reared from a larva of an undetermined species of *Cerura*, by J. V. Schaffner, jr., under Gipsy Moth Laboratory No. 12164 J 98. The adults emerged August 21, 1923. At the gipsy moth laboratory there is another series of specimens of this species, under Gipsy Moth Laboratory No. 11707 K 25, likewise reared from an unidentified species of *Cerura*, which was taken in Somerville, N. J., by M. T. Smulyan.

APANTELES LYCIAE, new species

Exceedingly similar to *cerurae*, described above, but differs in having the first and second abdominal tergites more strongly sculptured, and in the more distinctly punctate scutellum. Reared material of the two species can be even more readily separated by the cocoons.

Female.—Length, 2.3 mm. Face scarcely broader at base of clypeus than long, distinctly finely punctate; frons and vertex smooth and polished; postocellar line about equal to ocell-ocular line; antennae about as long as the body, the flagellar segments gradually decreasing in length toward the apex; mesoscutum evenly closely punctate; scutellum moderately large, convex, distinctly punctate; propodeum rugulose, usually with a faint, more or less complete, median longitudinal carina; mesopleura finely punctate anteriorly, polished posteriorly; stigma more than twice as long as broad; radius arising a little beyond middle of stigma and not so distinctly tending outwardly before joining intercubitus, as in *cerurae*, and only slightly longer than intercubitus; nervulus distinctly shorter than first abscissa of discoideus; posterior coxae large, more than half as long as the abdomen, smooth and shining; inner spur of middle tibiae exceptionally long, being considerably longer than metatarsus of middle legs; outer spur of posterior tibiae slightly more, the inner spur much more than half the length of posterior metatarsus; abdomen robust, a little shorter than thorax; first tergite large, broadening gradually from base to apex, polished at base, closely punctate apically; lateral membranous margins of this tergite not distinct except at extreme apex; second tergite transverse, nearly three times as broad as long, entirely finely ruguloso-punctate, and its posterior margin straight, so that the tergite is no longer medially than at the sides; third tergite a little more than twice as broad as long, and together with the following tergites, smooth and polished; hypopygidium not surpassing apex of last dorsal segment; ovipositor

sheaths not exserted. Black; antennae entirely black; tegulae yellow; wing-bases brown; all coxae black; remainder of legs yellow except extreme apex of posterior femora above, apex of posterior tibiae, and the posterior tarsi, which are dusky; wings hyaline, the stigma and veins brown; abdomen more or less yellowish at base beneath.

Cocoons.—Bright buff in color, gregarious but not embedded in a mass of loose silk.

Type.—Cat. No. 28054, U.S.N.M.

Type-locality.—Hampden, Me.

Host.—*Lycia cognataria* Guenée.

Described from 16 female specimens reared August 6, 1923, from larva of the above-named host, by J. V. Schaffner, jr., under Gipsy Moth Laboratory No. 12199 J 1. The type and 12 paratypes have been deposited in the United States National Museum; the 3 remaining paratypes are at the gipsy moth laboratory.

MICROGASTER ZONARIA Say

Microgaster zonaria SAY, Boston Journ. Nat. Hist., vol. 1, 1836, p. 263.
Microgaster cinctus PROVANCHER, Natural Canad., vol. 12, 1881, p. 196; Faun. Canad. Hymen., 1883, p. 529; Addit. faun. Canad. Hymen., 1886, p. 139.
Apanteles cinctus PROVANCHER, Addit. faun. Canad. Hymen., 1888, p. 388.
Apanteles cinctus MUESEBECK, Proc. U. S. Nat. Mus., vol. 58, 1920, p. 504.

The second cubital cell in this species is so small that it is easily overlooked. This accounts for Provancher's placing *cinctus* in *Apanteles*. His type is a perfectly normal female of the striking *zonaria* Say.

MICROGASTER MELLIGASTER Provancher

Microgaster melligaster PROVANCHER, Addit. faun. Canad. Hymen., 1886, p. 143.
Microgaster rubricoxus PROVANCHER, Addit. faun. Canad. Hymen., 1888, p. 386.
Microgaster rubricoxa MUESEBECK, Proc. U. S. Nat. Mus., vol. 61, 1922, p. 33.
Microgaster melligaster MUESEBECK, Proc. U. S. Nat. Mus., vol. 61, 1922, p. 33.

The type of *rubricoxa* is clearly a male of *melligaster*, which was described from a female specimen.

MICROGASTER SCOPELOSOMAE, new species

Most similar to *comptanae* Viereck, but differs especially in the much more coarsely sculptured face, the finer sculpture of the basal abdominal tergites and the shorter female antennae.

Female.—Length 2.8 mm. Face at base of clypeus nearly twice as broad as long, and together with the clypeus, coarsely confluently

punctate and opaque; malar space shorter than basal width of mandible; frons strongly punctate laterally and with fine curved striae below median oscellus; vertex and temples punctate, subopaque; ocell-ocular line subequal with postocellar line; antennæ much shorter than the body, the three or four apical segments hardly longer than broad; mesoscutum finely punctate anteriorly, polished posteriorly; scutellum impunctate, highly polished; propodeum rugose with a prominent median longitudinal carina; mesopleura shallowly punctate anteriorly, polished posteriorly; stigma a little more than twice as long as broad; radius arising from beyond middle of stigma, strongly tending outwardly, and longer than first intercubitus; posterior coxae smooth and shining on the outer face; abdomen short and stout; first tergite short and broad, broadening strongly posteriorly, distinctly broader at apex than long, finely closely rugulose over its entire surface, more weakly so in the median impression at base; second tergite rectangular, three times as broad as long, entirely finely rugulose and opaque; suturiform articulation fine, straight, not at all curving forward laterally; third tergite scarcely as long as the second, smooth and shining, with only a few faint punctures at base; remaining tergites much shorter, smooth, and polished; hypopygium large, but not surpassing apex of last dorsal segment; ovipositor sheaths about half as long as the abdomen. Black; scape black; antennal flagellum brownish beneath, black above and at apex; wings uniformly slightly dusky; all coxae entirely black; trochanters, femora, tibiae and tarsi of all legs entirely testaceous; abdomen completely black, including even venter at base.

Male.—Like the female except for sexual differences. The antennae are about as long as the body.

Cocoons.—Gregarious, encased in a ball of silk, which very closely resembles the cocoon mass of *Apanteles atalantae*, and is easily mistaken for a spider egg cocoon.

Type.—Cat. No. 28052, U.S.N.M.

Type-locality.—Melrose Highlands, Mass.

Host.—*Scopelosoma devia* Grote.

Described from 4 female and 2 male specimens reared from the above-named host by J. V. Schaffner, jr., under Gipsy Moth Laboratory, No. 12164 J 34.

○