

teeth are blunt, very prominent, in a radial row (as in *Paravitrea*), with the palatal directly opposite the parietal lamella.

The type, U. S. N. M. Cat. No. 359722, was collected by P. V. Roundy near Strawn, Palo Pinto County, Texas. It measures: Height, 0.67 mm.; maj. diam., 1.6 mm.; min. diam., 1.47 mm. Height of aperture, 0.5 mm.; diam. of aperture, 0.5 mm.; umb. diam., 0.57 mm.

I have also seen specimens from Cleveland County, Oklahoma, collected by R. Frank Hedges.

This species may be easily distinguished from others of the genus by the presence of a tooth on the palatal wall. Discovery of *Pilsbryna* in the Ozark region, shows that the group more nearly parallels *Paravitrea* in distribution.

ENTOMOLOGY.—*New ichneumon-flies*.<sup>1</sup> R. A. CUSHMAN, Bureau of Entomology and Plant Quarantine. (Communicated by HAROLD MORRISON.)

This paper consists of the descriptions of one new genus and thirteen new species, and a few generic transfers and notes on synonymy, together with a key to the North American species of the genus *Neliopisthus*.

The descriptions of new species are published at this time to make the names available for use in important economic papers on the host insects.

Most of the material on which the discussion is based was received from various laboratories of the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, type material of eight of the new species being reared at the Gipsy Moth Laboratory of that Bureau at Melrose Highlands, Mass., and that of another at laboratories devoted to the investigation of the oriental fruit moth. Types of four of the new species were received from State colleges and experiment stations, while material of the old species discussed was received largely from the Bureau of Entomology and Plant Quarantine.

*Phaeogenes epinotiae*, n. sp.

Very variable with respect to the color of the abdomen, which may range from piceous black with only the narrow apices of tergites 2-4 reddish, to black at base and apex with tergites 2-4 entirely ferruginous. The holotype is, in this respect, intermediate between the two extremes.

*Female*.—Length 4 mm., antennae 2.25 mm.

*Head* twice as broad as thick; temples strongly convex and nearly as long antero-posteriorly as short diameter of eye; occiput rather deeply concave; ocellar triangle weakly transverse, postocellar and ocellular lines subequal, ocelli small; vertex, frons, and face opaque coriaceous with shallow punctures; eyes parallel above, weakly divergent below antennae and about their long diameter apart; antennae situated opposite lower fourth of eye;

<sup>1</sup> Received August 22, 1935.



face more than twice as broad as long, medially slightly elevated; clypeus much more than twice as broad as long, polished, with a single row of punctures near apex; malar space two-thirds as long as basal width of mandible; mandible long parallel-sided, upper tooth the longer; antennae slightly more than half as long as body, 22-jointed, thickened toward apex, basal joints of flagellum subequal in length and each much less than twice as long as thick. *Thorax* hardly as broad as head, slightly depressed, nearly twice as long as deep; mesoscutum densely punctate, scutellum sparsely so and shining; mesopleurum opaque, punctate, speculum polished; propodeum very densely rugulose opaque; areola coriaceous, about as broad as long, only obscurely closed posteriorly, petiolar area shallowly concave; radius slightly behind middle of stigma; nervellus perpendicular, broken far below middle; legs rather slender; hind coxa usually mutic, rarely with a very small carina. *Abdomen* narrower than thorax, granularly opaque; second tergite fully as long as first and as long as broad, gastrocoeli strongly transverse, situated nearly at basal third of tergite; ovipositor sheath slightly exerted.

Black; abdomen with tergites 2-4 narrowly reddish at apex or more extensively reddish, sometimes entirely so; clypeus and mandibles reddish piceous; antennae fusco-ferruginous, darker above, scape and pedicel piceous; wings hyaline, venation brown, radices white, tegulae piceous; legs piceous, coxae darker; apical joints of trochanters, tibiae, and tarsi more ferruginous.

*Male*.—Face and clypeus relatively narrower than in female; malar space shorter; antennae 23-25-jointed, fully three-fourths as long as body, tapering toward apex; abdomen narrower, barely fusiform.

Clypeus and mandibles white, clypeus sometimes fuscous in apical middle; face entirely black to entirely white, frequently white at sides and sometimes also in middle; legs more reddish, especially the front and middle legs; abdomen black with at most the narrow apical margins of middle tergites piceous.

*Hosts*.—*Epinotia nanana* Treitschke; *Recurvaria piceaella* Kearfott.

*Type locality*.—Georgetown, Maine.

*Type*.—No. 51056, U. S. National Museum.

Eleven females and 12 males received from the Gipsy Moth Laboratory, all but two reared from *Epinotia nanana*, the two from *Recurvaria piceaella*. All bear Gipsy Moth Laboratory No. 9590. Other localities, all in Maine, are Bristol, Harpswell, and Boothbay.

#### ***Diadromus subtilicornis* (Gravenhorst)**

*Synonym*.—*Herpestomus plutellae* Ashmead (new synonymy).

Discovery that Ashmead's species is a *Diadromus* and not an *Herpestomus* led me to compare it with *subtilicornis*, a species commonly recorded as a parasite of *Plutella maculipennis* in Europe. They are undoubtedly the same.

#### ***Chrysopoctonus chrysopae* (Ashmead) Cushman**

*Synonym*.—*Chrysopoctonus atriceps* (Ashmead) Cushman (new synonymy).

Because of the marked color antigeny I did not suspect the synonymy of *atriceps* when I transferred both names to my genus *Chrysopoctonus*.<sup>2</sup> The

<sup>2</sup> CUSHMAN. Proc. U. S. Nat. Mus 55: 518-520. 1919.



male (*chrysopae*) is largely black, while the female (*atriceps*) is uniformly ferruginous with the head black. The fact that they are the sexes of the same species is indicated by a series of 410 specimens (326 females and 84 males) collected in traps in connection with the Mediterranean fruit fly survey in Florida some years ago.

***Aenoplex betulaecola* Ashmead**

*Synonym*.—*Aeneoplex plesiotypus* Cushman (new synonymy).

The characters employed to distinguish *plesiotypus* from *betulaecola* in the original description of the former have been found, on examination of many additional specimens reared principally from the oriental fruit worm, *Grapholitha molesta* (Busck), to be variable within the species.

***Aenoplex molestae* (Uchida), n. comb.**

*Hemiteles* (*Isadelphus*) *molestae* Uchida, *Insecta Matsumurana*, 7: 158, fig. 2. 1933.

This Japanese parasite of *Grapholitha molesta* (Busck) is very similar to the American parasite of the same host, *Aenoplex betulaecola* Ashmead, but is easily distinguished by its dorsally more shining thorax and abdomen, and the distinct white base of the hind tibia.

**Genus APTESIS Foerster**

*Aptesis* Foerster, *Wieg. Archiv.* 17: 34; 1850; *Verh. nat. Ver. preuss. Rheinland* 25: 173, 1868; *Schmiedeknecht, Opusc. Ichn.*, fasc. 8: 650, 1905. Genotype, *Pezomachus sudeticus* (Grav.), by designation of Viereck, 1914.

*Pezoporus* Ashmead, *Proc. U. S. Nat. Mus.* 23: 27; 1900 (not Foerster). Genotype, *Pezomachus nigrocinctus* (Grav.), by designation of Ashmead. Monobasic.

*Microcryptus* Thomson, *Opusc. Ent.*, fac. 5: 520; 1870, fasc. 9: 850, 1883; *Schmiedeknecht, Opusc. Ichn.*, fasc. 8: 607, 1905. Genotype, *Cryptus erythrinus* Grav. Monobasic.

At the time of his original description of *Aptesis*, a genus of brachypterous females. Foerster referred to it, among other species, *sudeticus* (Grav.) and *nigrocinctus* (Grav.). In 1868, in his key to his family Phygadeuontoidae, he erected four new genera, including *Pezoporus*, for brachypterous species without indicating what species he intended to place in them. At the same time he maintained *Aptesis* in its original position in the *Pezomachoidae*. His notebooks give no further information as to the nature of the new genera, but it seems probable that he intended to divide *Aptesis* into several genera based on differences in the extent of venation in the wings.

In 1900 Ashmead transferred *nigrocinctus* (Grav.) to *Pezoporus*, designating it as the type of that genus, and placing it in the genus as a result of



his own reversal of the characters employed by Foerster to distinguish *Pezoporus* and *Stibeutes*. As a matter of fact, in Foerster's key the species runs to *Stibeutes*, and can not rightfully serve as type of *Pezoporus* Foerster.

Schmiedeknecht (1905) treats *Aptesis* as a subgenus of *Microcryptus* Thomson, ignoring the priority of *Aptesis*. The genotype of *Aptesis* is unknown to me, but there appears to be no doubt that it is congeneric with the fully-winged type of *Microcryptus*, as *nigrocinctus* certainly is.

The only described North American species heretofore assigned to *Aptesis* is *Cryptus micropterus* Say, renamed *pterigia* by Bradley because of preoccupation of Say's name. The fully-winged male of this species, reared with females from cocoons of *Neodiprion* sp. at Lincoln, Maine, is identical with a male identified by G. Stuart Walley as *Phaeogenes indistinctus* Provancher upon comparison with the type of that species. The synonymy, therefore, is as follows:

***Aptesis indistincta* (Prov.), n. comb.**

*Cryptus micropterus* Say, Boston Journ. Nat. Hist. 1: 238, 1935 (Leconte ed., vol. 2, p. 694), female, not *Aptesis microptera* (Gravenhorst). New synonymy.

*Brachypterus micropterus* Walsh, Can. Ent. 2: 11, 1869.

*Phaeogenes indistinctus* Provancher, Add. Faune Ent. Can. Hym., p. 43, 1886, male.

*Aptesis micropterus* Cresson, Syn. and Cat. N. Amer. Hym., p. 199, 1887.

*Aptesis pterigia* Bradley, Bul. Brooklyn Ent. Soc. 13: 100, 1918, female. New synonymy.

The following North American species with fully-winged females belong to *Aptesis* in this broader sense:

(**Cryptus**) *Aptesis alacris* (Cresson). New combination.

(**Cryptus**) *Aptesis occidentalis* (Provancher). New combination.

(**Phygadeuon**) *Aptesis tegularis* (Provancher). New combination.

(**Cryptus**) *Aptesis brevicauda* (Ashmead). New combination.

The following North American species, formerly placed by me in *Microcryptus*, appears better placed in *Chaeretymma*, where it is very closely allied to *parvula* (Gravenhorst) and *pleuralis* (Thomson): (**Cryptus**) ***Chaeretymma osculata* (Prov.) (new combination.)**

The new species described below is of the *Microcryptus* type.

***Aptesis ferruginea*, n. sp.**

*Female*.—Length 8 mm., antennae 4 mm.

*Head* in dorsal view about twice as broad as thick; occiput shallowly concave; temples rather weakly convex and moderately sloping; vertex and temples sparsely, shallowly punctate, shining; frons laterally opaque, sha-



greened, medially shining and punctate; ocelli their diameter apart and a little farther removed from eyes; head in front view roundly subquadrate, the mouth very wide; eyes distinctly divergent below; antennae inserted not far above lower tangent of eyes; face opaque, shagreened and coarsely, closely punctate with a sparsely punctate median rounded elevation; clypeus nearly three times as broad as long, with a few coarse punctures medially, its apical margin thin and very broadly truncate, labrum exposed, broadly rounded; mandibles long and stout, lower tooth distinctly the longer; palpi slender; antennae stout, scape obliquely truncate, flagellum thickened toward apex and slightly flattened below, first joint hardly as long as second and hardly a half longer than thick, joints from sixth to those near apex transverse. *Thorax* flattened above and below, subopaque except mesoscutum, scutellum, and speculum, which are shining; pronotum irregularly rugose in impression; mesoscutum sparsely punctate, notauli shortly distinct basally; scutellum polished, with a few punctures; mesopleurum striatopunctate, sternauli deep but incomplete; propodeum precipitous behind, horizontal and vertical faces about equal in length, apical carina of nearly uniform strength throughout, combined basal area and areola constricted before and subangulate behind middle, costulae obsoletely indicated, basal areas partly shining and punctate, otherwise the propodeum is obscurely rugulose and opaque; wings of normal size; radial cell very short; intercubiti slightly convergent above, second distinctly longer than first and almost entirely bullated; nervulus recurved posteriorly; nervellus broken near bottom; legs stout, hind coxae large, closely punctate, especially above. *Abdomen* very finely shagreened and subopaque; first segment broad, the postpetiole nearly square; all other tergites transverse; sheath about as long as first tergite, ovipositor strongly compressed, subsagittate at apex.

Ferruginous, with occiput, stains along thoracic sutures, and petiole black; clypeus and mandibles testaceous; flagellum blackish with a broad white annulus; anterior margin of pronotum and scutellum paler, the latter at apex and postscutellum yellowish; wings hyaline, veins blackish, stigma and costa as well as tegulae stramineous; front and middle coxae and all trochanters stramineous; hind femur more or less piceous within.

*Male*.—Head more narrowed below, the face, clypeus, and mouth narrower; flagellum tapering toward apex, basal joints longer; thorax more rounded, not so distinctly flattened above and below, more shining; propodeum completely areolated, more strongly rugose behind; abdomen narrower, petiole more slender, postpetiole longer than broad, second tergite as long as broad. Face, frontal orbits, clypeus, mouthparts, lower cheeks, scape below, humeral angle of pronotum, subalar tubercle, tegulae, and front and middle coxae and trochanters yellow. The male is very variable in color, the darkest specimens having the head, except below antennae, and the thorax, except dorsally, piceous to black.

*Type locality*.—Riverdale, Maryland.

*Type*.—No. 51057, U. S. National Museum.

Described from 15 females and 13 males, all taken May 18–21, 1934, by H. S. McConnell of the Maryland Agricultural Experiment Station on or near the ground where many hundreds of the larvae of *Tomostethus multicinctus* Rohwer were entering the soil for pupation. Presumably the species is parasitic on the *Tomostethus*.<sup>3</sup>

<sup>3</sup> Since this was written Mr. McConnell has reared the species from cocoons of *Tomostethus*.



*Calliephialtes laspeyresiae* (Uchida), n. comb.

*Ephialtes laspeyresiae* Uchida, Insecta Matsumurana, vol. 6: 160, Pl. and fig. 18, 1932.

Dr. Uchida has been kind enough to send me a female specimen (Paratype, No. 51058, U. S. National Museum) of this species. Also there are before me one female and three males reared from *Grapholitha molesta* (Busck) in Japan by G. J. Haeussler of the Bureau of Entomology and Plant Quarantine.

This species and *benefactor* Cushman, an American parasite of the same insect, are very similar, and were it not for the very distinct difference in the male genitalia I would be inclined to consider them as no more than races of the same species. The genital sheath in *benefactor* is unusually long, slender, and strongly exserted, while in *laspeyresiae* it is of normal form. Otherwise the two species structurally are practically identical.

The female of *laspeyresiae* differs from that of *benefactor* in the paler under side of the basal joints of flagellum, the almost entirely pale yellow front and middle coxae, and the possession of a whitish streak on the extensor surface of the hind tibia reaching from the base nearly to the apex.

The male differs from that of *benefactor* in having the under side of the flagellum pale yellowish stramineous except toward the apex, the front and middle legs almost entirely pale, the hind coxae and femora rather broadly pale at the apex, and the dorsal stripe of the hind tibia more conspicuous (sometimes lacking in *benefactor*).

In neither sex does there appear to be any tendency to exhibit red coloration on the thorax, even on the scutellum. However, specimens occur rarely in both sexes of *benefactor* with entirely black thorax.

*Lissonota recurvariae*, n. sp.

In Cresson's key to the species of *Lampronota* (Trans. Amer. Ent. Soc. 3: 160, 1870) the female runs to *laevigata* Cresson and the male to *pleuralis* Cresson, from both of which it differs in the white margins of the tergites and in other details.

*Female*.—Length 4.5 mm., antennae 4.5 mm., ovipositor 5.0 mm.

*Head* much narrowed behind, temples strongly receding but strongly convex, little more than half as long antero-posteriorly as short diameter of eye; ocellar triangle weakly transverse; ocell-ocular and postocellar lines equal and a little longer than diameter of an ocellus; vertex and temples minutely coriaceous, subpolished; face and frons subopaque, coriaceous; head in front view a little broader than long, eyes about as long as width of face, mostly parallel, but slightly divergent toward lower ends; face prominent medially; clypeus strongly convex and deeply separated from face; malar space nearly as long as basal width of mandible; antennae 30-jointed, very slender filiform with all flagellar joints much longer than thick. *Thorax* slender, rather strongly compressed, twice as long as deep, subopaque coriaceous and minutely punctate, pronotal scrobe and speculum polished; mesoscutum and scutellum distinctly longer than broad; propodeum opaque,



the sculpture very fine and dense with a suggestion of transverse aciculation, with a narrow median groove, transverse carina at apical fourth; legs slender, hind coxa reaching apex of first segment; areolet sessile, nervulus postfurcal, postnervulus broken far below middle, nervellus broken at lower third and inclivous. *Abdomen* slender, subopaque coriaceous, without punctation, the sculpture coarser in the impressions; first tergite fully a half longer than broad at apex; second and third tergites both longer than broad at base, second nearly as long as first; hypopygium hardly reaching apex; ovipositor very slender, sheath slightly longer than body.

Black with the following parts whitish: Apical half or more of clypeus, mouthparts, spots in superior orbits, more or less broken lines on antero-lateral margin of mesoscutum, tegulae, narrow bands at apices of tergites 2-6, interrupted laterally on 4-6, and hypopygium and venter largely; legs ferruginous, front and middle coxae and trochanters more or less whitish, the front ones almost entirely so; hind trochanter piceous, apically and below whitish; hind tibia and tarsus fuscous; wings hyaline, venation brown, stigma paler.

*Male*.—Essentially like female, but eyes and ocelli larger, ocell-ocular line hardly as long as diameter of an ocellus; antennae 34-jointed; abdomen even more slender, first tergite nearly twice as long as broad at apex.

The following whitish, in addition to the parts so designated for the female: Face, inner orbits and clypeus throughout, cheeks, lower margins and humeral angles of pronotum, notauli, subalar tubercle, a stripe on lower mesepisternum, and apex of seventh tergite. The entire front and middle coxae and trochanters, the apical joint of the hind trochanter, and the apex of the hind coxa are also whitish.

*Host*.—*Recurvaria piceaella* Kearfott.

*Type locality*.—Bristol, Maine.

*Type*.—No. 51059, U. S. National Museum.

One of each sex reared July 6 (female) and July 3 (male), 1932, under Gipsy Moth Laboratory Nos. 9590e47 and 9390e43.

An abnormal male from the same host at Boothbay, Maine, June 26, 1932, Gipsy Moth Laboratory No. 9590e30, is not included in the type series because of its abnormality.

#### Genus NELIOPISTHUS Thomson

I have previously<sup>4</sup> discussed the characters, systematic position, and synonymy of this anomalous genus, and the three North American species known at that time. Since that publication I have added a fourth species, and present herewith two additional species, together with a key for distinguishing the six North American species.

#### KEY TO NORTH AMERICAN SPECIES

1. Face fully twice as long as broad and three-fourths as broad as frons; eyes not longer than width of frons. . . . . 2
- Face much less than twice as long as broad and not or barely two-thirds as broad as frons; eyes longer than width of frons. . . . . 5
2. Hind coxae black. . . . . 3
- Hind coxae red. . . . . 4

<sup>4</sup> Proc. U. S. Nat. Mus. 56: 379. 1919.



3. Middle coxae largely piceous; joints 11-12 of flagellum white on inner side; ovipositor sheath barely as long as first segment. . . . . *niger* Cushman  
Middle coxae whitish, only extreme base piceous; flagellum entirely black; ovipositor sheath distinctly longer than first segment. . . . .  
..... *longicauda*, new species
4. Malar space nearly half as long as basal width of mandible; intercubittella not or barely as long as abscissula; mesoscutum in female largely or entirely red. . . . . *luggeri* (Ashmead)  
Malar space very short; intercubittella distinctly longer than abscissula; mesoscutum in female entirely black. . . . . *nigradorsum* Cushman
5. Ocelli large, in female much more than half as long as, in male longer than, ocell-ocular line; mesoscutum in both sexes largely red, if at all black this color medial. . . . . *densatus* (Say)  
Ocelli small, in female not or little more than half as long as, in male distinctly shorter than, ocell-ocular line; mesoscutum in female largely black, with center of disk red, in male thorax not at all red. . . . .  
..... *piceae*, new species.

***Neliopisthus longicauda* n. sp.**

Very similar to *niger* Cushman, but distinguished at once by its distinctly longer ovipositor sheath, paler middle coxae, and lack of any trace of antennal annulus.

*Female*.—Length 6.5 mm.; antennae 4.5 mm.; ovipositor sheath 1.3 mm.

*Head* more than twice as broad as thick, temples strongly convex; ocellar triangle strongly transverse; eyes slightly shorter than greatest width of frons, weakly convergent below; face more than twice as broad as long, medially almost hemispherically elevated; clypeus nearly as long as face; foveo-ocular line fully a third as long as interfoveal line; malar space nearly half as long as basal width of mandible; antennae 30-jointed, basal joint of flagellum about three times as long as thick. *Thorax* hardly twice as long as deep, densely punctate and with dense, short pubescence; areola nearly as broad as long, broadly truncate at base. *Abdomen* broadly ovate, distinctly broader than thorax; first tergite with a strong carina from spiracle to apex, postpetiole with a median longitudinal impression; second tergite much broader at apex than at base; ovipositor sheath distinctly longer than first segment.

Black; center of mesoscutum and scutellum (in type) dark rufous; spot at top of eye, face except medially above, clypeus, malar space, cheeks, mandibles, palpi, upper and lower margin of pronotum and tegulae whitish; wings hyaline; veins black, stigma reddish stramineous, legs ferruginous; front and middle coxae and trochanters whitish, the trochanters behind and middle coxae basally piceous; hind coxa and basal joint of trochanter black femur basally below, tibia basally and apically above, and tarsus infusate; abdomen black with tergites except first very narrowly pale at apex; venter pale with sternites piceous; sheath black with ventral margin partly whitish.

*Type locality*.—Lind, Washington.

*Type*.—No. 51060, U. S. National Museum.

Two females taken May 15, 1922, and May 7, 1923, by M. C. Lane of the Bureau of Entomology and Plant Quarantine.



The paratype is smaller, lacks the red color on the thorax, and has the legs more extensively dark.

**Neliopisthus piceae, n. sp.**

Similar to *densatus* (Say), from which it is most easily distinguished by the distribution of red on the thorax.

*Female*.—Length 4.0 mm., antennae 3.5 mm., ovipositor sheath 0.8 mm.

*Head* half as thick as broad, temples strongly convex; ocellar triangle not very strongly transverse; diameter of an ocellus about half as long as ocell-ocular line; eyes strongly convergent below, longer than width of frons; face nearly as long as its least width, medially somewhat elevated; clypeus much shorter than face; foveo-ocular line and malar space much reduced; antennae very slender filiform, first flagellar joint fully four times as long as thick. *Thorax* very nearly as long as deep, densely punctate; areola much longer than broad, narrowly truncate at base. *Abdomen* rather narrow, hardly broader than thorax; first tergite without carinae from spiracle to apex, postpetiole without median impression; second tergite nearly as long as first, its sides weakly divergent; ovipositor sheath distinctly longer than first tergite.

Black, center of mesoscutum, scutellum, mesopleurum, and metapleurum more or less rufous; spot at top of eye, face, clypeus, malar space, cheeks, mandibles, palpi, scape and pedicel below, upper and lower margins of pronotum, and tegulae whitish; legs ferruginous, front and middle coxae and trochanters whitish; basal joint of hind trochanter piceous at base, whitish at apex; tibia basally and apically above and tarsus infusate; wings hyaline, veins blackish, stigma stramineous; abdomen black, tergites beyond first broadly ferruginous laterally and narrowly pale apically; venter whitish with sternites piceous; sheath black, its lower margin partly white.

*Male*.—Eyes parallel below antennae; foveo-ocular line and malar space each about half as long as basal width of mandible; diameter of an ocellus nearly as long as ocell-ocular line; areola fully twice as long as broad; abdomen distinctly narrower than thorax. Black without ferruginous, at most the abdomen piceous laterally; hind coxae more or less piceous above.

*Host*.—*Recurvaria piceaella* Kearfott.

*Type locality*.—Southport, Maine.

*Type*.—No. 51061, U. S. National Museum.

Two series of specimens, the first (two females and one male), including the type and allotype, reared from the host under Gipsy Moth Laboratory Nos. 12467 and 9590 at Southport and Bristol, Maine; the second (three females and two males) received from Stanley Garthside, who collected them in Itasca State Park, Minnesota, in September 1927.

The Minnesota specimens are larger, with the red color and the pale margins of the tergites brighter. One of the females in the latter series is headless.

**Oocenteter, n. gen.**

*Head* in dorsal view transverse, the temples nearly as broad as eyes and very strongly convex; in front view broadly transversely oval; eyes strongly convergent below; clypeus deeply separated, convex, broadly rounded at apex; malar space nearly obliterated; mandibles stout, strongly convex basally, lower tooth the longer; palpi very short and stout; ocelli in a strongly transverse triangle; occipital carina somewhat more sharply curved



medially than elsewhere, meeting hypostomal carina shortly behind base of mandible; antennae in female a little longer than head and thorax, stout and slightly tapering toward apex, in male somewhat longer and more slender, scape almost squarely truncate at apex. *Thorax* stout ovoid; epomia lacking; notauli weak; scutellum strongly convex, medially higher than mesoscutum, immargined laterally, fovea very deep, smooth; postscutellum with a deep, undivided fovea at base; sternauli weakly impressed anteriorly; mesolcus very deep, not closed behind; metapleurum nearly as high as long, strongly convex; propodeum very short, carinae very high, especially the apical carina, costulae lacking, basal area and areola nearly equal in size and triangular, spiracles circular and situated on a small elevation; wing veins heavy; stigma rather broad with radius at middle; radial cell short, barely as long on metacarpus as stigma; basal vein meeting medius at a slightly acute angle; areolet elongate, oblique with recurrent nearly at its apex; discocubitus strongly curved basally; recurrent nearly straight, the bullae not or weakly separated; nervulus postfurcal and strongly inclivous; postnervulus broken far below middle; nervellus strongly inclivous and broken far below middle; legs, especially front femur, rather stout; tibiae and tarsi conspicuously spinose; calcaria very short; claws simple. *Abdomen* broadly fusiform; first segment subtriangular, about as broad as long in female, a little narrowed in male, sides nearly straight, lateral carinae complete to apex, dorsal carinae to middle, basal lateral foveae very deep; hypopygium rather prominent though not reaching apex of abdomen; sheath short and rather broad, barely surpassing apex of abdomen, ovipositor very slender and slightly upcurved.

*Type of genus.*—*Oocenteter tomostethi*, new species.

The natural position for this genus is somewhat obscure. The lack of epomia, the open mesolcus, and the entire lack of costulae would seem to exclude it from the Tryphonini, to which in general form and in the distinct dorsal carinae of the first tergite it seems most closely allied. Moreover, the structure of the ovipositor and the habit of internal parasitism definitely exclude it from that tribe. In the Mesoleptini most of its characters would place it in the subtribe Mesoleiina, where it runs best to *Hypsantyx*, though not with entire satisfaction. To me it seems most closely related to *Trematopygus*, though it differs markedly from that genus in its deeply separated clypeus, convergent eyes, and very short ovipositor sheath. In most other respects it is similar to *Trematopygus*. Neither of these genera belongs, I believe, to the Perilissina, but rather to the Catoglyptina, where the gap between them and the more typical genera is partly bridged by *Provancherella* Dalla Torea. To this subtribe I would also relegate *Lethades* Davis and *Zaplethocornia* Schmiedeknecht.

The generic name refers to the habit of ovipositing in the egg of the host whereas the larva feeds within the host larva.

*Oocenteter tomostethi*, n. sp.

Fig. 1

*Female.*—Length 5.5–7.0 mm.

*Head* densely, finely punctate, sparsest on temples and densest on face, with dense short silvery pubescence; temples nearly as long antero-posteri-



only as short diameter of eye; diameter of an ocellus much shorter than ocellular line and hardly half as long as postocellar line; convergence of eyes as 3 to 2; clypeus shining, sparsely and rather coarsely punctate, nearly twice as broad as long; antennae longer than head and thorax by the length of its apical 7 or 8 joints, 28- to 30-jointed, first joint of flagellum slightly more than twice as long as thick at apex and about a half longer than second joint, joints beyond middle transverse. *Thorax* conspicuously pubescent, especially laterally, shining, finely punctate, with speculum polished and impunctate, mesoscutum and scutellum subpolished and less densely punctate, and apical areas of propodeum irregularly roughened. *Abdomen* subopaque and densely, finely punctate, subpolished toward apex.

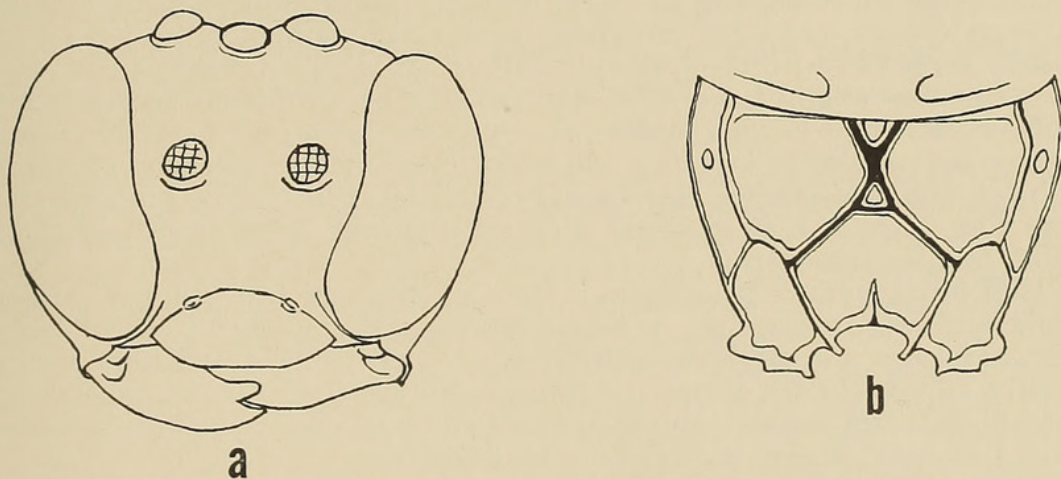


Fig.1.—*Oocenteter tomostethi* Cushman. a, head, front view; b, propodeum.

Head and thorax black; clypeus ferruginous, darker toward base; mandibles yellowish; palpi pale reddish; scape ferruginous, flagellum pale yellowish ferruginous; legs ferruginous, hind tibia slightly darkened above; wings hyaline, venation black with base of stigma and costa yellow, tegulae and a small humeral spot reddish. Abdomen ferruginous, more or less darkened at apex, especially laterally and ventrally, the last three ventral segments and sternites of others piceous, membrane yellow.

*Male*.—Eyes less strongly convergent; antennae longer and more slender, 33-jointed, none of the joints transverse; abdomen narrower, first segment somewhat blackened basally; otherwise essentially like female.

*Host*.—*Tomostethus multicinctus* Rohwer.

*Type locality*.—Riverdale, Maryland.

*Type*.—No. 51062, U. S. National Museum.

Described from the following material: Three females and four males (type and allotype) reared April 29, 1935, by H. S. McConnell of the Maryland Agricultural Experiment Station from cocoons of the host collected at the type locality; three females and five males extracted September 22, 1934, from cocoons of the host at College Park, Maryland, by Mr. McConnell; 29 females captured in the act of ovipositing in the eggs of the host on May 4, 1934, at Riverdale by Mr. McConnell; and two females reared from the same host at Boston, Mass., on May 14, 1925, under Gipsy Moth Laboratory No. 12164K17b.



*Perilissus tomostethi*, n. sp.

*Female*.—Length 7 mm., antennae 8 mm.

Body opaque, shagreened, with only speculum polished and face, mesoscutum, mesopleurum, and basal tergites obscurely punctate.

*Head* a little more than half as thick as broad, temples broad and strongly convex; eyes and ocelli small, ocell-ocular line nearly twice the diameter of an ocellus and malar space two-thirds basal width of mandible; eyes slightly divergent below, not emarginate; clypeus not separated from face, but there is a broad shallow transverse concavity involving lower part of face and base of clypeus; clypeus broadly truncate, its margin thick and bearing coarse setiferous punctures; lower tooth of mandible larger and longer than upper tooth; flagellum slender filiform, all joints longer than thick, first joint about three times as long as thick. Notauli faintly impressed; scutellum strongly convex, not at all margined; propodeum without defined basal or middle areas but with three sharply-defined apical areas, which are irregularly rugulose; stigma large, with radius slightly before middle; areolet large, oblique, recurrent beyond middle; nervulus postfurcal; nervellus inclivous, broken below middle; legs long and slender, hind inner calcarium hardly a third as long as basitarsus, claws weakly pectinate. First tergite subpetiolate, less than twice as long as broad at apex, glymmae large, translucent; all other tergites transverse.

Dull ferruginous with occiput, middle of face and frons, upper side of scape and base of flagellum, thoracic sutures, stains on mesothoracic lobes and on pleura and sternum, petiole, coxae more or less, and hind femur piceous to black; sides of face and frons, malar space, and scutellum yellow; mandibles, palpi, tegulae, and wing-bases stramineous; hind tibia infusate, tarsi yellowish; wings hyaline, venation blackish.

*Male*.—Structurally much like female but more slender, head larger, eyes smaller, and propodeum with areola defined laterally.

Head yellow with only occiput and middle of vertex and frons black; scape and pedicel below yellow; thorax black, with humeral angle and lower margin of pronotum, mark on lateral margin of mesoscutum, scutellum, irregular stripe below on mesopleurum connected with one across prepectus, and subalar tubercle yellow; mesoscutum sometimes partly ferruginous; front and middle coxae and trochanters and hind coxa and trochanter below yellow, hind coxa and trochanter otherwise black; hind femur black only within; first tergite largely black.

*Host*.—*Tomostethus multicinctus* Rohwer.

*Type locality*.—Boston, Mass.

*Type*.—No. 51063, U. S. National Museum.

Two females and one male reared from the host May 28 to June 1, 1928, under Gipsy Moth Laboratory No. 12164K17b.

## Genus PHAEDROCTONUS Foerster

As generic characters go in the Campoplegini, the lack of the areolet and the broad, nearly right-angled radial cell of this genus together with the somewhat different facies seem to be sufficient ground for separating it from *Nemeritis* Holmgren. I therefore, do not follow Viereck<sup>5</sup> in synonymizing *Phaedroctonus* with *Nemeritis*. Some, if not all, of the American species as-

<sup>5</sup> Can. Ent. 57: 201. 1925.



signed by Viereck to *Nemeritis* should be transferred to *Phaetroctonus*. The genus seems to be associated rather definitely with coniferous trees.

The three new species which are described below are congeneric with the species *Phaetroctonus transfugus* (Gravenhorst), *argyresthiae* Rohwer, *minutus* Ashmead, and (*Limneria*) *Phaetroctonus cupressi* (Ashmead), (new combination), and also, apparently, with the new species described by Viereck in the work cited.

*Phaetroctonus epinotiae*, n. sp.

In Viereck's key to North American species of *Nemeritis* (loc. cit., p. 178) this will run directly to *cupressi* (Ashmead) and agrees with all the key characters leading to that species. From the type of *cupressi* it is immediately distinguishable by its much more strongly receding temples, broader abdomen, and shorter ovipositor sheath.

*Female*.—Length 4.0 mm, antennae 3.0 mm, ovipositor sheath 0.8 mm.

*Head* granularly opaque, in dorsal view transversely ovate, occiput rather deeply concave, temples strongly receding and only moderately convex; diameter of an ocellus and postocellar and ocell-ocular lines subequal, the first sometimes slightly the shortest; eyes distinctly convergent below; face slightly broader above than length of combined face and clypeus; clypeus convex, rather strongly rounded at apex and separated from face by an arched impression; malar space distinctly more than half as long as basal width of mandible; antennae 25- to 27-jointed (26-jointed in holotype), barely three-fourths as long as body. *Thorax* much more than twice as long as broad, the propodeum sloping gently from near base and overlapping more than the basal third of hind coxa; thorax generally finely granularly opaque with only speculum polished, with distinct punctation, the propodeum minutely shagreened; basal area very narrow and nearly parallel-sided, areola much longer than broad, acutely angled at base, longitudinal carinae beyond basal and the costulae obsolescent or absent; wings and legs normal for the genus. *Abdomen* opaque granulate, very weakly compressed apically; second tergite as long as first and fully three times as long as broad at base, spiracles distinctly but not far beyond middle; third tergite as long as broad at base; sheath only slightly longer than first segment.

Black; mandibles, palpi, scape and pedicel beneath, and tegulae yellow; wings hyaline, venation blackish; front and middle coxae piceous at base, their apices and their trochanters yellow, their femora and tibiae pale ferruginous, the tibiae above and their tarsi stramineous, the tarsus fuscous apically; hind coxa black, basal joint of trochanters piceous, apical joint yellow, femur rufo-piceous, tibiae fuscous, slightly paler at base and in middle, calcaria white, tarsus fuscous; abdomen black, the compressed portion yellowish ferruginous below, plica yellow.

*Male*.—Essentially like female; antennae nearly as long as body; malar space barely half as long as basal width of mandible; front and middle coxae largely yellow.

*Host*.—*Epinotia nanana* Treitschke.

*Type locality*.—Bristol, Maine.

*Type*.—No. 51064, U. S. National Museum.

Seven females and 13 males reared from the type-host under Gipsy Moth Laboratory No. 9590, mostly from the type locality, two males from Harps-



well, Maine, and one male from Georgetown, Maine; also one of each sex labelled "ex leaf-miner on *Picea*" under Gipsy Moth Laboratory No. 12467, the female from Southport, Maine, and the male from the type locality.

***Phaedroctonus temporalis*. n. sp.**

Like *epinotiae* this species runs best in Viereck's key to *cupressi* (Ashmead), but has the temples broader and the ovipositor longer. From the above description of *epinotiae* it differs principally as follows:

*Female*.—Length 5 mm., antennae 3.5 mm., ovipositor sheath 1.5 mm.

*Head* in dorsal view transversely oblong, temples extending straight backward and continuous with outside tangent of eye, occiput less strongly concave; postocellar line distinctly longer than ocell-ocular line, the latter not or barely as long as diameter of ocellus; eyes virtually parallel; clypeus nearly flat, not separated from face, apex nearly transverse; malar space barely longer than basal width of mandible; antennae 28-jointed; longitudinal carinae of propodeum distinct, parallel; abdomen more distinctly compressed; ovipositor sheath more than one and a half times as long as first segment.

Front and middle coxae more extensively black, the middle coxa entirely so above and reddish brown below; basal joint of middle trochanter somewhat darkened basally; front and middle tarsi infusate; compressed portion of abdomen not pale below.

*Host*.—*Laspeyresia youngana* Kearfott.

*Type locality*.—Groton, Vermont.

*Type*.—No. 51065, U. S. National Museum.

Two females reared August 15, 1927, under Gipsy Moth Laboratory No. 12164M255a, from infested cones of red spruce.

***Phaedroctonus piceae*, n. sp.**

Runs in Viereck's key to *laevis* Viereck, but is apparently distinct from that species in its entirely black front coxae, darker tarsi, uniformly dark hind femur, and entirely black tergites.

Differs from above description of *epinotiae* as follows:

*Female*.—Length 4 mm., antennae 2.5 mm., ovipositor sheath 1 mm.

*Head* in dorsal view with temples strongly convex and weakly receding, occiput less strongly concave; postocellar line evidently longer than ocell-ocular line or diameter of ocellus, the latter two subequal; eyes virtually parallel; clypeus weakly convex, not separated from face, weakly rounded at apex; antennae 23- to 24-jointed (24-jointed in holotype), less than three-fourths as long as body; thorax but little more than twice as long as broad, propodeum sloping convexly and abruptly and not reaching to basal third of hind coxae; areola hardly longer than broad, distinctly defined laterally, costulae distinct, petiolar area slightly concave and rugulose; second tergite distinctly shorter than first and distinctly less than three times as long as broad at base, third tergite distinctly broader at base than long; sheath about a half longer than first segment.

Scape and pedicel and all coxae entirely black; hind tibia alternately annulated with whitish and black, middle tibia whitish above, stramineous below; hind tarsus fuscous with base of basitarsus whitish; tergites entirely black.

*Male*.—Essentially like female; antennae longer, malar space slightly shorter, front and middle coxae pale apically.



*Hosts*.—*Recurvaria piceaella* Kearfott (type); *Epinotia nanana* Treitschke.

*Type locality*.—Georgetown, Maine.

*Type*.—No. 51066, U. S. National Museum.

Two females reared from the type host under Gipsy Moth Laboratory No. 9590 from North Andover, Mass. (type) and Georgetown, Maine; one female from *Epinotia nanana* at Ocean Point, Maine, under Gipsy Moth Laboratory No. 12467; and one male reared from the type-host at Harpswell, Maine, under Gipsy Moth Laboratory No. 9590; all during the last week of June.

***Cremastus grapholithae*, n. sp.**

Very distinct from all previously described North American species in its very long propodeal areola, the posterior margin of which is nearly or quite interstitial with the lateral portions of the apical carina.

*Female*.—Length 7.5 mm., antennae 4.0 mm., ovipositor sheath 2.5 mm.

*Head* finely shagreened all over, a little more than twice as broad as thick, temples short, strongly receding and weakly convex; diameter of an ocellus nearly or quite as long as postocellar line and distinctly longer than ocellular line; head in front view distinctly transversely oval; face impressed and minutely punctate on each side of middle, distinctly broader than combined length of face and clypeus; eyes as long as width of face, parallel or very weakly divergent below; clypeus somewhat more than half as long as interfoveal line, inflexed and very broadly rounded at apex; malar space hardly two-thirds as long as basal width of mandible; antennae 29- to 32-jointed. *Thorax* hardly twice as long as deep, finely shagreened, with mesoscutum, scutellum, mesopleurum and sternum shallowly punctate, propodeum medially and apically more or less transversely rugulose; speculum polished; notauli very weakly defined anteriorly; scutellum weakly convex; propodeum extending well beyond middle of hind coxae, areola more than twice as long as broad, its posterior margin nearly or quite interstitial with lateral portions of apical carina; stigma rather broad, with radius distinctly beyond middle, nearly as long as radial cell measured on metacarpus; postnervulus broken above middle; nervellus broken at or a little below middle; hind legs rather stout, tibia as deep apically as femur, inner calcarium about a third as long as basitarsus. *Abdomen* slender; first tergite entirely without lateral carinae, its lateral margins nearly meeting ventrally; second tergite a little more than four times as long as broad at base; compressed portion three times as long as deep, third tergite slightly less deep than fourth; second tergite obscurely longitudinally striate, others shagreened; sheath twice as long as first segment.

Black, ferruginous, and yellow; head yellow with stemmaticum and occiput black, the space between and middle of frons black to brownish ferruginous; antennae black, scape and pedicel yellow in front, flagellum more or less reddish below, especially at apices of joints; thorax ferruginous with pronotum medially, prescutum (usually), lateral areas of scutellum and postscutellum, propodeum medially, metasternum, and sometimes mesosternum black; propleura, upper and lower margins of pronotum, humeral margins of mesoscutum and notauli, scutellum except apex, tegulae, subalar tubercle, and an oblique band on mesopleurum yellow; wings hyaline, venation brownish, marginal half of stigma and metacarpus pale; front and middle legs pale ferruginous, coxae and trochanters pale yellowish, tibiae with a pale stripe on extensor surface; hind coxa and trochanter yellowish, basal joint of trochanter more or less marked with piceous, femur



piceous with distinct stripes of yellow on dorsal, ventral, and inner surfaces, tibia infuscate at base and apex, yellowish in middle and with a distinct yellow stripe on extensor surface, tarsus fuscous, paler below and at bases of joints; abdomen black, apices of tergites narrowly but indefinitely reddish, lower half or third of compressed portion pale yellow, epipleura yellowish hyaline, venter yellow.

*Male*.—Eyes and ocelli large, malar space and ocell-ocular line much reduced, diameter of lateral ocellus as long as or longer than postocellar line and several times as long as ocell-ocular line; eyes much longer than width of face, the latter hardly broader than combined length of face and clypeus; second tergite five times as long as broad at base.

Head and thorax colored as in female, but frons not black medially and pronotum not at all ferruginous; abdomen not at all yellow but tergites 3–5 each with a broad apical band of ferruginous, broader laterally, tergites 6 and 7 broadly yellowish ferruginous laterally.

*Host*.—*Grapholitha molesta* (Busck).

*Type locality*.—Harriman, Tennessee.

*Type*.—No. 51067, U. S. National Museum.

Described from fifteen specimens of each sex selected from more than twice that number and reared from the type host at field stations of the Bureau of Entomology. Seven females and 12 males, including the type and allotype, are from the type locality; one female from Kingston, Tennessee; one female from Cornelia, Georgia; one female from Raleigh, North Carolina; four females and two males from Berlin, Maryland; and one of each sex from Moorestown, New Jersey.

In one of the Harriman specimens the thorax is black only in the scutellar region.

In the additional material are specimens from Fairfax, Virginia, and Clemson College, South Carolina. Another lot not included in the type series was reared from *Acrobasis caryae* Grote at Brownwood, Texas, under Quaintance Nos. 27894, 27896, 27906, 27926, and 27929; while a single specimen from the Agricultural and Mechanical College, Mississippi, was reared from *Laspeyresia caryana* (Fitch).

### ***Cremastus chilonis*, n. sp.**

Reminiscent, in its very dense short thoracic vestiture and long narrow areola, of the genus *Pseuderipternus* Viereck.

*Female*.—Length 9 mm., antennae 6 mm., ovipositor sheath 3.5 mm.

*Head* rather thick, barely twice as broad as thick, temples strongly convex but narrow, occiput rather deeply concave; eyes divergent below; face slightly wider at top than length of eye, opaque coriaceous and more or less distinctly punctate; frons and temples coriaceous; clypeus more than half as long as broad, broadly arcuate at apex; malar space subequal to basal width of mandible. *Thorax* opaque and with very dense, short, silvery pubescence; notauli rather deeply and sharply impressed; scutellum rather flat but not distinctly margined; propodeum extending a little beyond middle of coxae, densely and rather coarsely punctate, apical areas transversely rugulose, carinae unusually high, areola much longer than petiolar area and strongly separated from it; stigma narrow with radius at middle;



radial cell narrow, much longer on metacarpus than stigma. *Abdomen* stout, strongly compressed only apically, coriaceous, postpetiole and second tergite partly longitudinally striate, others sparsely punctate; first tergite with its lateral margins approximate and nearly enclosing the sternite, petiole deeply grooved laterally; second tergite barely twice as long as broad at base, hardly as long as first.

Ferruginous with head more yellowish and with the following black or blackish markings: Occiput, middle of vertex and frons, lobes of mesoscutum largely, mesosternum, propodeum partly to entirely, stains along all thoracic sutures, tergites 1 and 2 except apices, other tergites in basal middle; antennae, palpi, tegulae, and tarsi black or blackish, as are also the base and apex of each tibia, the hind femur at apex, and the hind trochanter; wings hyaline, venation blackish, stigma dark stramineous.

*Male*.—Essentially like female but ocelli larger in diameter, this being nearly as long as ocell-ocular line; abdomen narrower, the second tergite about two and a half times as long as broad at base. Black color more extensive.

*Host*.—*Chilo forbesellus* Fernald.

*Type locality*.—Douglas Lake, Cheboygan County, Michigan.

*Type*.—No. 51068, U. S. National Museum.

Three females and three males from the type locality and two males labeled merely Cheboygan Co., all reared from larvae of the host during July and August 1934 by Paul S. Welch of the University of Michigan.

#### *Cremastus protractus*, n. sp.

Because of the unusually long posterior extension of the propodeum and the very long, slender, and blade-like abdomen this might be considered to represent a new genus, but since those portions of the body are subject to a considerable degree of variation within the present genus it seems wisest to place it here, at least for the present.

*Female*.—Length 10 mm., antenna 3.5 mm., ovipositor sheath 3.5 mm.

*Head* thin, more than twice as broad as thick, temples very narrow, moderately convex, occiput shallowly concave; ocelli small, diameter much shorter than ocell-ocular line; head in front view subtriangular, slightly broader than long; eyes parallel; face much broader than length of eye, coriaceous, subopaque with scattered minute punctures; frons coriaceous, rugulose in the scrobes and with a weak median carina below; clypeal suture at about level of lower eye margin; clypeus nearly twice as broad as long, apex nearly straight; malar space fully as long as basal width of mandible, which is only a little longer than broad; width of mouth (i.e., distance between bases of mandibles) distinctly less than that of face. *Thorax* slender, compressed, coriaceously opaque and evenly punctate, with propodeal "neck" extending slightly beyond apex of hind coxa; notauli broadly impressed; scutellum nearly flat, subcarinately margined nearly to apex; propodeum basally coriaceous with scattered punctures, transversely rugulose behind basal carina and laterally, areola and petiolar area confluent; wings, because of the great length of body, appearing very short; stigma broad with radius at middle; radial cell very short, hardly longer on metacarpus than stigma; legs rather short, hind femur reaching only a little beyond apex of first segment. *Abdomen* fully three times as long as thorax, very slender, blade-like, compressed from base of third tergite, this portion many times as long as deep, tergites beyond sixth concealed; first tergite with its lateral margins parallel, not enclosing the sternite, petiole with a deep furrow on



each side nearly the entire length; second tergite distinctly longer than first, about six times as long as broad at base, weakly longitudinally striate, its spiracles slightly beyond middle; compressed portion shagreened, with sparse punctation, tergites 3-6 each deeply incised at apical middle.

Black; apex of clypeus and mandible yellowish red; wings hyaline, venation blackish, tegulae and radices yellow; legs ferruginous, hind coxae toward base, hind tibia above, and tarsi blackish; venter yellowish with dark sternites.

*Host.*—*Coleophora* sp. on *Aster eatoni*.

*Type locality.*—Pullman, Washington.

*Type.*—No. 51069, U. S. National Museum.

One specimen reared July 16, 1933, by J. F. Gates Clarke of the Washington State College of Agriculture.

## PROCEEDINGS OF THE ACADEMY AND AFFILIATED SOCIETIES

### GEOLOGICAL SOCIETY

#### 526TH MEETING

The 526th meeting was held in the Assembly Hall of the Cosmos Club, March 13, 1935, President SCHALLER presiding.

*Informal communications.*—G. W. STOSE and ANNA I. JONAS: *Limestones of Frederick Valley, Maryland*. The Frederick Valley of Maryland is a limestone valley east of the Blue Ridge-Catoctin Mountain uplift, and therefore in the Piedmont belt. The limestone is locally exposed from beneath the cover of Triassic rocks which have been dropped down about 3,000 feet by a normal fault along the east foot of Catoctin Mountain. A few fossils of Ordovician age were collected from the limestone by Keyes as early as 1890. Fossils collected later from the Le Gore quarry were first regarded as Beekmantown but are now assigned to the Upper Ozarkian by Ulrich and Foerste. Bassler in 1919 separated the limestones of the Frederick Valley into two formations. He called the pure thick-bedded quarry rock Beekmantown limestone on the basis of the fossils found at the Le Gore quarry, and the thin-bedded slabby somewhat fossiliferous limestone Frederick limestone, and determined its age to be probably Chazy. He considered the Frederick to lie unconformably on the Beekmantown. Later Miss Jonas in re-mapping the limestones during a survey of Frederick County for the Maryland Survey found highly quartzose limestone everywhere present in the supposed Beekmantown at the contact with the Frederick, which threw doubt on the unconformable relations. Recent structural study by Miss Jonas and Mr. Stose established the fact that the thick-bedded quarry rock is in synclines in the Frederick limestones and not in anticlines, as interpreted by Bassler. This structural interpretation conflicts with the fossil evidence as applied by Bassler. It was found that the confusion arose from correlating the pure quarry rock throughout the valley, which is generally unfossiliferous, with the quarry rock containing the Ozarkian (formerly Beekmantown) fossils in the Le Gore quarry. These fossils occur only in the north wall of the quarry and a vertical normal east-west fault passing through the quarry separates it from other pure limestone in the south wall of the quarry, which carries a fauna very similar to that in the underlying Frederick limestone. It was found that the Ozarkian is restricted to the small triangular area at





1935. "New Ichneumon-flies." *Journal of the Washington Academy of Sciences* 25, 547-564.

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