

The Canadian Entomologist.

VOL. XXXVI.

LONDON, JUNE, 1904.

No. 6

NEW NOCTUIDÆ FOR 1904.—I.

BY JOHN B. SMITH, SC.D.

Noctua dislocata, n. sp.—Ground colour bluish, ash-gray, marked and more or less suffused with reddish. Head gray, tending to reddish on the vertex; palpi deep brown at the sides. Thorax mouse to fawn gray or reddish, immaculate. Primaries in a general way are gray to the middle of the wing and reddish beyond; but they may be an even reddish-gray throughout. All the normal maculation is present, but not contrasting. Basal line geminate; but the outer line is obscure and only the inner is dark brown and obvious. T. a. line narrow, brown, single, preceded by a narrow paler line, just a little outcurved between the veins and a little outcurved as a whole. T. p. line geminate, about parallel with the outer margin; the inner line narrow, brown, somewhat irregular, tending to lunulate; the outer is obscure, more even and sometimes marked only by the difference between the gray-included space and the reddish brown s. t. space. S. t. line pale and a little irregular, as a whole nearly parallel with the outer margin. A series of small dark terminal lunules which may be obliterated. Median shade line starts from about the middle of costa, darkens the space between the ordinary spots, then runs from the bottom of the reniform close to and parallel with the t. p. line to the inner margin. As a rule the terminal space is grayish, or, at least, lighter in colour than the s. t. space. Claviform just indicated and very small. Orbicular large, gray, oval, open to the costa, usually defined by gray scales. Reniform of good size, kidney-shaped, incompletely outlined and not relieved. Secondaries yellowish at base, smoky toward outer margin, where a dusky terminal line relieves the reddish fringes. The discal lunule and outer line of the under side are usually indicated above. Beneath, smoky with a reddish tinge, which is best marked at the margins, secondaries more yellowish except along costa; both wings with a dusky extra median line, secondaries with an obvious discal lunule.

Expands 1.25–1.40 inches = 31–35 mm.

Habitat.—Calgary, head of Pine Creek, in July, F. H. Wolley Dod.

Four ♂ and two ♀ examples are at hand. The species resembles *Calgary* at first sight, but differs in that the median shade line is dislocated on the median vein and, instead of continuing an even course across the wing, resumes it below the reniform and runs close to the t. p. line. There are other superficial differences and the genitalic structure is distinctive; but the character just pointed out should enable the species to be recognized.

Euxoa pestula, n. sp.—Ground colour a dull smoky luteous, more or less powdered with bluish-gray, brown and black; but never so as to obscure the luteous base. Head with a dark frontal and inter-antennal line, the dark shade ranging from brown to black. Collar with a somewhat obscure brown or blackish median line, surmounted by a distinct or even prominent gray line. Thorax not otherwise definitely marked. Primaries with all the normal maculation well defined, though not prominent, and in some examples there is a distinct ferruginous dot or spot at the insertion of the costal margin of primaries. There is no basal dash or mark below the median vein. Basal line distinctly geminate, blackish, included space a little paler than the ground. T. a. line geminate, blackish, a little outcurved in the interspaces and, as a whole, a little outwardly oblique. Included space of the ground colour or a little paler. T. p. line geminate, not very well defined, inner portion more or less lunulate, outer more even and tending to form a series of venular points. As a whole, abruptly bent on the costa, outcurved over the reniform and then nearly parallel with outer margin. S. t. line pale, a little irregular, preceded by a dusky costal patch and an ill-defined dusky shading, followed by a terminal space, which is darker, except at apex. Median shade line distinct, though scarcely prominent. It is single, starts from costa between the ordinary spots, bends to the base of the reniform, then runs parallel with and close to the t. p. line. Claviform rather small, outlined in dark scales, not otherwise contrasting. Orbicular oval, oblique, open to the costa, gray-filled, not otherwise well defined. Reniform large, only a little lighter than ground; kidney-shaped, tending to a pale annulus. Secondaries yellowish at base, smoky toward the outer margins. Fringes white, or whitish with a dusky interline. Beneath smoky, secondaries paler and more powdery, both wings with an incomplete outer line and a small discal spot.

Expanse, 1.25-1.50 inches = 31-37 mm.

Habitat.—Calgary, Alberta, July, August and September, F. H. Wolley Dod.

Twenty examples, representing both sexes in almost equal numbers. The relationship is to *messoria* because of the obvious median line; but also to *tessellata* because the space between the ordinary spots is darkened. It is one of the group containing *incubita*, *terrenus* and *pleuritica*; differing from each as much as they do from each other.

Mamestra obesula, n. sp.—Ground colour a somewhat luteous gray, more or less shaded with reddish gray and smoky brown. Head with brown or blackish frontal line; collar with median and subapical black lines; patagia with black or brown submarginal line; disc a little discoloured, tufts well marked. Primaries with all the ordinary markings well defined, but so broken and shaded as to seem confused. Basal line black, geminate, included space pale, dislocated on the median vein. T. a. line geminate, black, the two portions almost equally defined, included space of the palest ground; as a whole a slight outcurve, only a little indented on the veins. T. p. line geminate, obscure, inner portion a little lunulate, outer almost even; as a whole it is abruptly bent on the costa, a little curved over the reniform and somewhat drawn in below. There is a narrow, obscure, median shade line which crosses obliquely between the ordinary spots and afterwards continues from the bottom of reniform, close to the t. p. line. S. t. line pale, somewhat contrasting, preceded by sagittate black spots, strongly indented on veins 3 and 4 and again below the apex, forming in the first case a conspicuous, pale W. A series of black terminal lunules. The long fringes are interlined, a little notched, cut with whitish opposite the veins. Claviform rather broad and short, black margined, filled with smoky, forming a conspicuous feature. Orbicular round or oval, oblique, pale ringed, dark centred, an oblique paler shading, continued behind the claviform to the t. p. line. Reniform large, upright, a little drawn in centrally, more so from outside, narrowly pale ringed, dusky-filled. Secondaries pale yellowish to a broad blackish margin. There is a smoky discal lunule, a narrow smoky line before the broad margin, and the fringes are yellowish. Beneath, reddish gray, powdery, each wing with a blackish discal mark, a smoky median line, a dusky s. t. shading before a pale terminal space, and a series of small terminal lunules.

Expands 1.20–1.32 inches = 30–34 mm.

Habitat.—Calgary, Alberta, head of Pine Creek, July 20, 22, and August 5, F. H. Wolley Dod; Denver, Colorado, July 8.

One ♂ and three ♀♀ are now before me. The species is in a way intermediate between *M. Farnhami* and *M. trifolii*, having the colour contrasts of the former, with the build and maculation of the latter. The specimen from Denver has been doubtfully associated with *Farnhami* for some years; but until I received specimens from Calgary I did not feel safe in determining it as distinct.

Mamestra Dodii, n. sp.—Ground colour lilac-gray, more or less suffused with reddish brown. Head concolorous. Collar with a more or less obvious brown median line. Thorax almost fawn-gray, not obviously maculate. Primaries in a general way are gray in the basal and s. t. spaces, and at the apex; reddish or brown along the costa and in the median space, the darkest portion between veins 1 and 2 and over the claviform; but no two examples are alike in the relative distribution of the shadings. Basal line obscure, gray, not defined by darker lines. T. a. line geminate, defining lines narrow, included space gray; outcurved in the interspaces and outwardly oblique. T. p. line gray, defined by the dark median space and by a following dusky shading. S. t. line pale, forming a small *W* on veins 3 and 4, preceded by a brown line or shade, sometimes entire, sometimes broken up into spots. Terminal space narrow, brown except at apex. A narrow, brown terminal line. The long brown fringes are cut with gray on the veins. Claviform black marked, broad at base, narrowed to a point near, but not quite at the t. p. line. Orbicular oblique, varying in size and in the ground; always at least gray and sometimes contrasting; sending an oblique gray shade across the median space above the claviform. Reniform upright, of moderate size, a little constricted, not well defined, reddish marked in upper portion. Secondaries pale smoky yellowish, with a diffuse, broad outer margin, yellowish fringes and a smoky discal lunule. Beneath, smoky to yellowish-gray, powdery, all wings with a discal lunule and an outer shade band, which is diffused and variable in the specimens.

Expands 1.25–1.50 inches = 31–37 mm.

Habitat.—Calgary, Alberta, head of Pine Creek, June 21, 22, 27, July 4 and 7; mouth of Fish Creek, July 7, Mr. Dod; Bullion Park, Colorado, July 27.

Seven males and one female are at hand, no two alike, yet obviously one species, resembling *Tacoma* and *rugosa*. I had, in fact, considered

the species to be a form of *rugosa*; but Sir George Hampson, to whom specimens were sent, declared this to be an error. Mr. Dod thereupon kindly sent additional material, and I secured typical *rugosa* from Maine and New Brunswick for comparison. The result is this description, which I believe characterizes as good a species as any in the genus. *Rugosa* is a smaller, less irrorate, more sharply-defined species, with ordinary spots of different form, s. t. line hardly indented, costal region gray, and colour of secondaries more decidedly yellow.

Mamestra acutermis, n. sp.—Related to *Goodelli* in general characters; but is smaller, darker, the maculation barely traceable, the apex of the primaries distinctly better marked. Of the seven specimens before me, two have no relieved maculation at all, though the general ornamentation may be made out by careful scrutiny; three others have a little black mark at the end of the claviform, and in these it is somewhat easier to determine the general markings. In the other two the ordinary spots are partly outlined by black scales, and the remainder of the ornamentation may be readily made out.

Expands 1.20–1.30 inches = 30–32.5 mm.

Habitat.—Calgary, Alberta, July 9, head of Pine Creek, Mr. Dod; Cartwright, Manitoba, Mr. Heath; Wellington, Brit. Col., July 17, August 24, Mr. Bryant; Volga, South Dakota, Mr. Truman.

Five males and two females. One male measures 1.20, another 1.30 inches; all of the others measure 1.25 inches. An equal number of *Goodelli* range from 1.35 to 1.50 inches; 1.40 being about the usual size.

Orthosia verberata, n. sp.—Ground colour varies from dull grayish to reddish luteous. Head and thorax immaculate. Primaries with all the maculation defined; s. t. space a little the darkest part of the wing, but not strongly contrasting. Basal line single, smoky, nearly upright. T. a. line single, narrow, smoky, outwardly angulate on costal, inwardly on median vein, outcurved in the submedian interspace and well bent out below the internal vein. T. p. line geminate, the inner part narrow, smoky, linear, the outer merely a darkening of the s. t. space, even in course, outcurved over cell, a little incurved below. S. t. line outwardly diffused, irregular, pale, preceded by a distinct reddish shade. There is a series of small, smoky terminal lunules. Median shade diffuse, smoky, outwardly bent between the ordinary spots so as to darken the reniform

inferiorly, then bent inward and darkening the outer third of median space. Orbicular round or nearly so, concolorous, defined by a narrow smoky ring. Reniform moderate in size, kidney-shaped, outlined in brown, concolorous, except for the leaden-gray lower end. Claviform incompletely outlined by reddish scales, concolorous, reaches to the median shade, but is scarcely traceable in some examples. Secondaries with the disc smoky, costal margin broadly, the others narrowly yellowish or reddish. Beneath, yellowish to reddish, a little powdery, with a discal lunule and an outer smoky line on each wing.

Expands 1.35-1.50 inches = 34-38 mm.

Habitat.—Calgary, Alberta, head of Pine Creek, at treacle, September 17, 23 and 27, Mr. Dod.

Two males and two females, in good condition. Both the males expand about 34 mm. and both the females about 38 mm.; but this proportion may not hold. The species is allied to *ferruginoides*, and is one of several new forms worked out in the course of a revision of the genus which is now in progress.

Cucullia indicta, n. sp.—Ground colour bluish-gray, all the maculation vague. Head darker, smoky brown. Collar smoky at base and with a blackish median line. Disc of the thorax smoky behind the tuft; but this is not contrasting. Dorsal tufts of the abdomen smoky. Primaries almost concolorous. T. a. line barely traceable, with the usual long teeth. T. p. line marked by a geminate curved line in the submedian interspace. This is followed by a pale line and by a more obvious blackish-brown line, which extends along below vein 2 to the outer margin. There is a broken, blackish terminal line. The ordinary spots are as in *postera*, but barely traceable. Secondaries dull yellowish-white at base, smoky toward the outer margin and with a white fringe. Beneath, dark smoky, disc of secondaries whitish, else immaculate.

Expands 1.80-2.08 inches = 45-52 mm.

Habitat.—Calgary, Alberta, South Fork of Sheep Creek, July 12, 29, F. H. Wolley Dod.

One male and one female, the latter much the larger. I have also a ♀ from Colorado which may be this species, but is not good enough to make the matter certain. The relation is with *postera*, but all the brown has disappeared, and the maculation is almost gone with it.

THREE NEW CECIDOMYIID FLIES.

BY T. D. A. COCKERELL, COLORADO SPRINGS, COLO.

Near Monument Creek, Colorado Springs, my wife and I recently came across an undetermined species of *Artemisia*, about three feet high, bearing many Cecidomyiid galls. The flies emerged from these galls on April 2, and, as the species is new, it is herewith described :

Diplosis Coloradella, n. sp.—♂. Length hardly 2 mm. Head black; thorax black, reddish posteriorly, mesothorax with rows of black bristles; legs reddish-brown, suffused with dusky; abdomen narrow, reddish passing into yellowish, with long lateral hairs, genitalia darker, terminal joint of forceps stout; wings with a very long fringe; first vein reaching costa about or very slightly below middle of wing; third vein reaching the margin at the apex of the wing, but the apex is subtruncate, rather bulging below, so that the most distal point seems a little below the end of the vein; fifth vein forked beyond its middle, but its distal half reduced to mere shadowy lines; antennæ reddish, 15 (2 + 13) jointed, joints cylindrical, slightly constricted in the middle, pedicellate with very long hairs, terminal joint subacuminate. The antennal joints are like those figured by Coquillett of *D. violicola*.

♀.—Head black; thorax and abdomen dull crimson, dorsum of thorax usually blackish or black, sides and apex of abdomen more or less variegated with pale yellowish; ovipositor when exerted scarcely two-thirds length of abdomen; antennæ 15 (2 + 13) jointed, in one example 2 + 12 only, joints nearly sessile.

Pupa-shell white, fuscous anteriorly. Larva bright orange.

Gall a deformed flower-head, about 10 mm. long, and 5 to 6 broad, covered by the greatly enlarged involucre bracts, which are smooth and vary from reddish to yellowish outwardly, but on the inner side are clothed with white hair. The flies emerge from between these bracts.

The *Artemisia* mealy-bug, *Erium lichtensioides* (Ckll.), proves to be extremely abundant at Colorado Springs.

Rhabdophaga Porterae, n. sp.—*Gall*.—A slight irregular smooth swelling of a very small red willow-twig. The gall may be only about 2 mm. long, with a single cell, or 6 or 7 mm, with half a dozen or more larvæ; it is in all cases inconspicuous, like a small gouty swelling of the twig.

Pupa.—The pupa-shell is white, the thoracic parts not appreciably darkened, but there are two long reddish-brown cephalic spines, precisely as in *R. saliciperda*, Duf.

Imago.—Unfortunately, the only available flies are shrivelled and broken. They are similar to *R. saliciperda*, with the same produced ovipositor. Thorax rather dark gray-brown, scutellum prominent and pallid; abdomen yellowish brown; ovipositor clear light ferruginous. Legs pale brown. Venation about as in *R. saliciperda*. Length about 2 mm.

Hab.—Near Las Vegas, New Mexico, January 31. (Wilmatte Porter and Mary Cooper.) The gall is apparently nearest to *Cecidomyia salicis-hordeoides*, Walsh, among the American species.

Cecidomyia perocculta, n. sp.—*Gall*.—The insects form no true galls, but live in numbers under the bark of willow stems, the adults hatching about the middle of April.

Pupa.—Pupa-shell colourless; base of antennæ light brown; no cephalic spines.

Imago.—♂. Length about 3 mm. Black; scutellum dark red, abdomen faintly reddish; legs dark brown, tarsi more reddish; insect with abundant long dark hairs; sides of abdominal segments with large piliferous tubercles; thorax slightly shining, with two longitudinal velvety-black bands; knobs of halteres black or almost so; eyes united on vertex; forceps stout; antennæ moniliform, 2 + 18-jointed, with nearly globular stalked joints bearing single whorls of very long hairs; apical joint with a small terminal knob; wings ample, lower margin with a strong fringe; first vein terminating about middle of costa; no cross-vein between first and third; third distinct from the base, strong, bent downwards at end, but terminating before the most distal point of wing; median fold distinct; fifth vein colourless, forked near or rather beyond the middle.

Hab.—Colorado Springs, Colorado, April, 1904.

EARLY ARRIVAL OF AN ARCHIPPUS BUTTERFLY.—I was surprised to see on the 10th of May a worn specimen of *Anosia plexippus* (*Danaus archippus*) flying about at the corner of Yonge and Bloor streets, Toronto. It alighted on the street close to my feet, and I could easily have secured it if I had had a net with me. The preceding three or four days were very warm, which may account for its coming north so early.—J. B. WILLIAMS.

SYNOPSIS OF BEES OF OREGON, WASHINGTON, BRITISH COLUMBIA AND VANCOUVER.—II.

BY H. L. WIERECK, ASSISTED BY T. D. A. COCKERELL, E. S. G. TITUS, J. C. CRAWFORD, JR., AND M. SWENK.

ANDRENIDÆ.

The species here treated belong to genera previously "lumped" under *Andrena*.

Three submarginal cells.

♀ with joint 3 of the antennæ shorter than 4 and 5; ♂ with joint 3 shorter than 5, rarely as long as 4; sculpture in both sexes with few exceptions coarse, enclosure usually ridged, depressions of abdominal segment usually sharply defined; ♀ with a simple tibial scopa *Trachandrena*.

♀ with joint 3 as long as or longer than 4 and 5; ♂ with joint 3 longer than 4.

Tibial scopa of ♀ simple.....*Andrena* or *Opandrena*.

♂. Clypeus or face without yellow marks; joint 3 not longer than 4 and 5.....*Andrena*.

♂. Clypeus or face with yellow marks.....*Opandrena*.

Tibial scopa of ♀ plumose.

Tibial scopa thin, thinly plumose; ♂ without yellowish face marks; joint 3 longer than 4 and 5, cheek with a rounded angle *Ptilandrena*.

Tibial scopa dense, densely pubescent; ♂ the same as ♂ *Opandrena* *Pterandrena*.

Two submarginal cells in both sexes; ♂ with yellowish face marks.....*Parandrena*.

For details of the new species of Andrenidæ, see classification of North American species, which will appear in Transactions American Entomological Society, Phila.

TRACHANDRENA, Robt.

Females.

- Second dorsal segment depressed about one-third.....*crategi*.
- Second dorsal segment depressed more than half, but not more than two-thirds 1.
- Second dorsal segment depressed two-thirds or more..... 8.
- 1. Abdomen *without* distinct whitish fasciæ 2.
- Abdomen *with* distinct whitish fasciæ at least laterally..... 5.

2. Anal fimbria pale ochreous.
 Dorsulum rugose, not distinctly punctured *amphibola*.
 Dorsulum partly rugulose, but with distinct punctures *indotata*.
 Anal fimbria dusky dark brown or black.
 Sculpture of the elevated portion of abdominal segments dense,
 dullish 4.
 Sculpture of raised portion of abdominal segments not dense,
 shining 3.
3. Face and pleura with black hairs *cupreotincta*.
 Face and pleura with ochreous hairs *ochreopleura*.
4. Hairs on dorsulum thick *crassihirta*.
 Hairs on dorsulum thin.
 Abdomen coarsely punctured, metathorax coarsely
 sculptured *perdensa*.
 Abdomen finely punctured, sculpture of metathorax not
 coarse 4½.
- 4½. Pubescence on dorsum brownish, first segment of abdomen shining,
 punctures well separated, as are the striæ of the area on
 metathorax *hadra*.
 Pubescence on dorsum whitish, first segment of abdomen dull,
 punctures close together, as are the striæ of the area on
 metathorax *limaræa*.
5. Anterior half of dorsulum with distinctly contiguous punctures;
 usually dull 7.
 Anterior half of dorsulum with punctures separated; usually
 shining 6.
6. Dorsulum shining; first segment closely punctured; lower half of
 frontal fovea broader than the adjoining shining space; tibiæ and
 tarsi of posterior legs, tarsi of anterior and middle legs pale
 honey colour or nearly *hippotes*.
7. Anterior half of dorsulum dull.
 A sharp demarcation between enclosure and adjoining area at the
 sides; dorsulum rather dull *salicifloris*.
 No sharp demarcation between enclosure and adjoining area at the
 sides; dorsulum rather shining *salicifloris* var.
8. Distinctly separated punctures scarce or absent on dorsulum.
 Dorsulum rugose; abdomen blue *cleodora*.
 Dorsulum not rugose; abdomen black 9.
 Distinctly separated punctures numerous on dorsulum 10.

9. Anal fimbria dark brown; wings dark; abdomen globose *fuscauda*.
 Anal fimbria bright golden; wings pale.
 Punctures on dorsulum numerous, close together; abdomen
 depressed *auricauda*.
 Punctures on dorsulum very sparse; abdomen more
 globose *pernuda*.
10. Abdomen not densely punctured.
 Pubescence white; stigma black *semipunctata*.
 Pubescence ochreous; stigma pale *striatifrons*.

Males.

- Second dorsal segment depressed about one-third, sixth ventral segment
 with reflexed angles *cratægi*.
 Second dorsal segment depressed more than one-third, but not as much
 as half 1.
1. Ridges of the area prominent, very coarse 3.
 Ridges of the area not prominent, rather smooth 2.
2. Abdomen distinctly fasciate.
 Dorsulum distinctly punctured; pubescence yellowish to bright
 fulvous *salicifloris*, var. a.
 Dorsulum indistinctly punctured; pubescence white *semipunctata*.
 Abdomen indistinctly fasciate *salicifloris*, var. b.
3. Abdomen distinctly fasciate, enclosure large, with numerous
 striæ *salicifloris*.
 Enclosure small, with few striæ *salicifloris*, var. c.
 Abdomen indistinctly fasciate.
 Distinct punctures numerous on anterior half of dorsulum *indotata*.
 Distinct punctures absent on anterior half of dorsulum *limarea*.
- Trachandrena cratægi*, Robt., Trans. Am. Ent. Soc. Phil., XX., p. 223.
 Corvallis, Oregon, 6th May, 1899; 8th, 9th, 10th June, 1898
 (Cordley). Washington.
- Trachandrena amphibola*, n. sp.
- ♀ 12 mm. Pubescence whitish, foveæ with brownish pubescence.
 ♂ about the same size, colour and general appearance of ♀,
 antennæ dull.
- Type locality: Corvallis, Oregon; type Coll. Acad. Nat. Sci., Phila.*

*It is believed that the types will eventually go to this institution.

Corvallis, Or., 8th November (Cordley.) Washington.

Trachandrena indotata, n. sp.

♀ 11 mm. Pubescence short and white, not abundant, that in the foveæ also white; ♂ smaller, similar; antennæ dull.

Type locality: Corvallis, Oregon. Type Coll. Acad. Nat. Sci., Phila.

Corvallis, Or., 5th June, 1897; 8th, 20th, 25th May, 1898; 2nd June, 1899 (Cordley).

Trachandrena cupreotincta, Ckll., Can. Ent., XXXIII., p. 153.

Type locality: Skokomish River, Washington. Type U. S. Nat. Mus., Washington, D. C.

Skokomish River, Wash., 26th April, 1892 (T. Kincaid).

Trachandrena ochreopleura, n. sp.

Same size as the preceding, of which it may be only a variety.

Type locality: Skokomish River, Washington. Type U. S. Nat. Mus., Wash., D. C.

Skokomish River, Washington, 1st May, 1892 (T. Kincaid).

Trachandrena crassihirta, n. sp.

♀ 12 mm. The nearly black appearance of abdomen, the brownish pubescence in the foveæ, and, moreover, the short, thick, brown hair on dorsulum, make this a very distinct species.

Type locality: Washington? Type Univ. Nebr., Lincoln, Nebr.

One specimen presumably from Washington.

Trachandrena perdensa, n. sp.

♀ 11 mm. Pubescence of thorax and foveæ whitish.

Type locality: Victoria, British Columbia. Type Acad. Nat. Sci., Phila.

Victoria, B. C., 22nd July, 1902.

Trachandrena hadra, n. sp.

♀ 10 mm. Thorax and foveæ with pale yellowish pubescence; abdomen nearly entirely black; base of scopa black.

Type locality: Washington. Type Am. Ent. Soc., Phila.

Washington.

Trachandrena limarea, n. sp.

♀ 10 mm. Superficially like the preceding, but not so dark, pubescence more abundant.

Type locality : Corvallis, Oregon. Type Acad. Nat. Sci., Phila.

Corvallis, Or., 10th June, 1896 (Cordley); Vancouver Is. (50).

Trachandrena hippotes, Robt., Trans. Am. Ent. Soc., Phila., XXII., p. 120.

Corvallis, Or., 1st June, 1896; 21st May, 1899 (Cordley); Washington.

This may be the same as *miranda*, Sm., but the ♂ described by Smith does not resemble the ♂ of *hippotes*.

Trachandrena salicifloris, Ckll., Proc. Acad. Nat. Sci., Phila., 1897, p. 351.

Olympia, Wash., 4th April, 9th May, at willow blossoms (T. Kincaid). Seattle, Wash., 21st April, 1895, on gooseberry (Lot 214). Corvallis, Or., 22nd April, 24th April, 30th May, 1898; 23rd, 24th May, 1899; 2nd, 3rd June, 1899 (Cordley). Livingston, Vancouver, 5th, 17th, 19th, 25th May, 1896. Wellington, B. C., 15th April, 1903 (Harvey).

Trachandrena cleodora, n. sp.

♀ about 11 mm. A very distinct species, being the only *Trachandrena* known with blue abdomen.

Type locality : Mt. Hood, Oregon. Type Am. Ent. Soc., Phila.

Mt. Hood, Oregon.

Trachandrena fuscicauda, n. sp.

♀ about 10 mm. Its dark colour, dense thoracic sculpture and pale foveæ make this a distinct species.

Type locality : Washington. Type Am. Ent. Soc., Phila.

Washington.

Trachandrena auricauda, n. sp.

♀ about 10 mm., sculptured much like the preceding, from which it can be at once separated by the golden anal fimbria.

Type locality : Washington. Type Am. Ent. Soc., Phila.

Washington.

Trachandrena pernuda, n. sp.

♀ about 10 mm. Superficially this resembles *salicifloris*.

Type locality : Pullman, Washington. Type Univ. of Nebraska.

Pullman, Washington (C. V. Piper).

Trachandrena semipunctata, Ckll., Ann. Mag. N. H., 9 (7), p. 102.

Seattle, Wash., 5th April, 1896 (T. Kincaid).

Trachandrena striatifrons, Ckll., Entom., 1897, p. 308.

Olympia, Wash., 19th April, 1894 (T. Kincaid); Victoria, B. C.

ANOTHER GEOMETRID COMBINATION.

BY RICHARD F. PEARSALL, BROOKLYN, N. Y.

By a recent article in this Journal giving the life-history of *Sabulodes arcasaria*, Walk., Dr. Otto Seifert demonstrates the need of careful study of some of our species of Geometridæ. A similar case has come under my notice. In June, 1896, I gathered in beating ten rough-looking mahogany-red larvæ from a small group of oaks (*Quercus nigra*). They were exactly alike in form and colour, and apparently well-grown, so I carried them home, supposing they would quickly mature. They had no thought of it. Most of the time they spent in a state of rigid extension, at an angle from the twig they stood upon, feeding only at night and eating very little at one time. About Aug. 16th they began to spin long web filaments over the food-plant, and finally disappeared under the loose leaves and chips on the surface of the earth in their box, where they spun very slight cocoons of webbing, sometimes none at all, and transformed to pupæ. These produced the imagoes from Sept. 2nd to 6th, four males and four females. Of the latter, three have the large black spot on the inner angle of the primaries, a characteristic marking of the species, and one is without it. I placed them in my collection, therefore, over the name *Metanema quercivoraria*, Guen. Recently I had occasion to study more carefully my Geometridæ, with the intention of arranging them in accord with Dr. Hulst's revision and Dr. Dyar's "List." Much to my surprise, I found my males were excellent examples of *Metanema textrinaria*, G. & R., while the females were *quercivoraria*, Guen., as I had named them. The pattern of markings on the upper side of these two sexes of one species, as I am now compelled to regard them, is quite unlike, but on the under side the colour, lines and markings are similar, and it is curious this was not noticed before. Although *textrinaria* was described from a male specimen by Grote and Robinson (Ann. N. Y. Lyc. Nat. Hist., V., VIII., p. 449), it was omitted from Grote's "Check List" of 1882, perhaps because he had detected this relationship, though I can find no proof in his writings to that effect. *Textrinaria*, G. & R., becomes, then, a synonym of *quercivoraria*, Guenée.

[The above communication was received before the publication of Mr. Taylor's query in the May number respecting this species, but after the article was in type; the coincidence is interesting.—ED. C. E.]

THE COCOON OF THE RAY SPIDER (*THERIDIOSOMA GEMMOSUM*).

BY THEO. H. SCHEFFER, MANHATTAN, KAN.

The Ray Spiders live a retired life along the banks of some creek, where overhanging bushes and projecting rocks afford the gloom which they seem to seek. In such locations, especially in the dark recesses

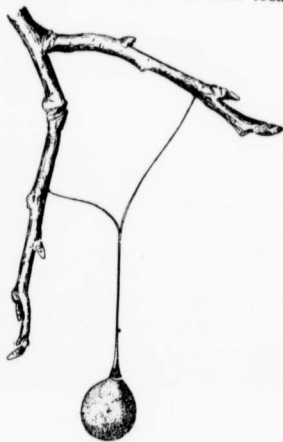


FIG. 6.

under clusters of roots, we may look for their cocoons in mid-summer. They are among the most interesting to be found—little golden-brown balls, about one-eighth of an inch in diameter, suspended by a single glossy-white thread nearly an inch long. They are paper-like in texture and are attached to their stiff silken pedicels by a dilation of the latter in the form of a cone. At the time of hatching this little cone lifts up like a lid, adhering by merely a point of the circumference, and uncovers a small circular hole through which the young escape. The pedicel itself usually hangs suspended from two or three cross lines of silk

attached to surrounding objects. (Fig. 6.)

From some cocoons collected in the vicinity of Ithaca, N. Y., on August 23, the young spiders emerged August 28. Females imprisoned in glass tubes about the same time also spun cocoons.

ANNUAL MEETING OF THE MONTREAL BRANCH.

The 31st annual meeting of the Montreal Branch of the Entomological Society of Ontario was held on May 9th in the Library of the Natural History Society. All the reports of the officers showed good progress during the past year. The membership roll contains twenty-two names, two of whom are honorary members. The following officers were elected

for the coming year: A. E. Norris, president; A. F. Winn, vice-president; Geo. A. Moore, 24 Lorne avenue, secretary-treasurer; D. Brainerd, librarian and curator; H. H. Lyman, Charles Stevenson and Lachlan Gibb, council.

Mr. A. E. Norris read a paper, illustrated by lantern views prepared by himself, on Hydrécias and several other Lepidoptera.

CHARLES STEVENSON.

APHODIUS ERRATICUS, LINN., ON MONTREAL ISLAND.

BY CHARLES STEVENSON, MONTREAL.

With the opening of the season, my son, Kenneth R. Stevenson, has proceeded to keep up his reputation as a Coleopterist by finding two specimens of *Aphodius erraticus*, Linn., on the first of May under stones on a waste piece of ground in Maplewood, near Montreal.

This beetle is widely distributed throughout Europe, and has been identified by comparison with a series of the species from France and Italy in the collection of Mr. G. Chagnon. I can find no previous record of its being taken in Canada among the lists I have had reference to. It was taken by the late Otto Lugger, near Baltimore, some years ago, and was described previously by Melsheimer under the name *pensvallensis*, from a specimen of which there are doubts as to whether it was a native or an accidental cabinet specimen. Dr. George H. Horn describes it in his monograph of the *Aphodiini* as inhabiting the United States (*Trans. Amer. Ent. Soc.*, XIV., Jan. 1887, p. 7), and it is in Henshaw's List under No. 5514.

ACKNOWLEDGMENTS.

The Curator begs to acknowledge with grateful thanks the receipt of a box of Coleoptera from Mr. Norman Criddle, Aweme, Manitoba, containing over one hundred specimens, representing about fifty species; also from the same gentleman twelve specimens of Lepidoptera, including the following interesting species: *Chionobas Alberta*, *Hemileuca maia* var. *lucina*, *Dysocnemis borealis*, *Pseudotamila Avemensis*, *Leucobrepbos Middendorfi* and *Apocheima Rachelæ*.

From the Rev. C. C. Waller, Principal of Huron College, London, Ont., specimens of the Carpenter Ant (*Camponotus Pennsylvanicus*) and portions of a Basswood tree showing its work.

NEW SPECIES OF NORTH AMERICAN LEPIDOPTERA.

BY WILLIAM BARNES, S. B., M. D., DECATUR, ILL.

In order to avoid needless repetition, I wish here to express my sincere thanks to Prof. John B. Smith and Dr. H. G. Dyar for numerous favours, and also to Mr. O. C. Poling for his great liberality in furnishing me with many of the species here described. Mr. Poling has made a number of collecting trips to little known parts of Arizona and Utah, and in addition to many new species has turned up many rare forms discovered years ago by Morrison and Doll. The fauna of Southern Arizona is essentially Mexican, and as there is at present no collection of Mexican Lepidoptera in this country worth mentioning, one in describing apparently new species from that region is certain to make synonyms. The probabilities are that within a few years one of the best if not the best Mexican collection in the world will be in Washington, then we shall have some foundation to build on, and will not have to waste time and burden our catalogue with a lot of names to be later relegated to the synonym list.

Syntomeida Hampsonii, n. sp.—Resembles *joda*, Druce, Biol. Centr. Am. Het., II., p. 333, pl. 71, f. 15 (1897); Hampson, Catalogue Lep. Phalænæ, Vol. I., p. 305. Head and thorax blue-black. Tegulæ and patagia orange-yellow, edged with black. Fore coxæ whitish on inside, yellowish outwardly, fore tibiæ yellowish inwardly, hind tarsi more or less whitish, palpi yellow, tipped with black, tongue yellow. Antennæ black, with more or less whitish towards tip. Abdomen black, with metallic blue scales on dorsum and sides, dorsal yellow spots on first, subdorsal on remaining segments. Anal tuft yellow above, black at sides and tip. Ventral valve yellow, edged with black. Abdomen beneath with yellow bands. Wings black, somewhat bluish metallic along costa, especially of males. A large orange-yellow spot in and below cell on fore wings and one midway between it and apex. Hind wings white or somewhat yellowish white at base, and a large orange-yellow spot beyond cell.

Types: several specimens collected by Mr. Poling in Southern Arizona. Aside from many minor differences, this species may readily be separated from *joda* by the presence of orange subdorsal yellow patches on all the abdominal segments, while in *joda* they are confined to the first, fourth and fifth;

Pygarcia Neomexicana, n. sp.—Expanse: ♂ 36 mm., ♀ 40 mm.

Female.—Palpi red, tipped with drab. Head drab in front, vertex red. Collar drab, patagia drab, bordered with red internally. Thorax drab in centre, bordered with red. Abdomen red, with dorsal and lateral rows of black spots. Beneath: thorax red, abdomen drab, legs drab, with the exception of fore femora, which are red within, tarsi more or less blackish. Antennæ dark brownish. Primaries stone drab, with a few red hairs just at base. Edge of costa whitish, fringe white, with dark line at base. Secondaries slightly darker shade of drab. Inner margin from base to inner angle red, about 2 mm. in width. Beneath as above. In the male the fore wings are of a rather light yellowish-fawn colour, darkened a little along the veins; hind wings are somewhat darker than the fore, otherwise the markings are the same as in the female. The male being somewhat rubbed and probably faded, the description is made from the female.

Types: 1 ♂, Alpine, Texas, June 28th; 1 ♀, Marfa, Texas, July 3rd.

Moma tybo, n. sp.—Expanse: ♂ 34 mm., ♀ 36 mm.

Colour bluish green, of about the same shade as *geminata*. Lines black, double but fragmentary, lighter filled. Basal half line represented by one or two dots on costa, and one or two on basal dash. T. a. irregular, broken, a dot on costa remaining, together with a heavy mark in middle of wing, prolonged as a well-marked basal dash to base, broadly exerted as a finer line below submedian vein to inner margin. The outer accompanying line is rather widely removed in centre of wing, but more closely approximated at costa and inner margin, quite faint and poorly defined. The median shade is represented by a double line, the inner well defined, the outer faint and fragmentary. The inner is heavy above and to outer side of orbicular, narrow and irregular though quite continuous the rest of its course. T. p. double, scalloped. The inner line faint, fragmentary, widely removed from outer, which is widely exerted around cell, then deeply incurved to inner margin. It is irregular, usually heavy below costa, opposite cell and at lower third, reduced to a fine line or almost disappearing in other places. S. t. line much closer to t. p. line than to margin, emphasized by a more or less evident following paler shade. The space between it and t. p. more or less suffused with black, especially at inner margin. The line itself is

rather faint and irregularly scalloped. In terminal space opposite cell there is usually a quite distinct sagittate spot, in some specimens reaching even to t. p. line. There are usually one or two similar spots just above inner angle. Fringe white or greenish white at ends of veins, black between them, pale line at base. A marginal row of black lunules against the black spots of fringe. Orbicular moderate in size, round, concolorous, with whitish centre, almost completely black ringed. Reniform large, erect, kidney-shaped, concolorous, white centred. The black limiting line more or less incomplete and fragmentary. Hind wings rather dirty white, darker outwardly, distinct though not prominent, rather irregular mesial band. Discal dot present. Terminal more or less interrupted black line. Fringe pale, with tendency to formation of black spots as on fore wings.

Beneath: fore wings somewhat dusky, paler along inner margin. Three prominent black spots on costa, marking the inception of more or less distinct dusky transverse, rather diffuse bands; faint discal bar. Fringe as above. Secondaries somewhat paler, a black demi-band at basal third and a more complete outer one, both somewhat jagged and irregular. Discal dot, terminal line and fringe as above. Head dusky white. Collar, patagia and thorax green. Collar black on edge and extending mesially through it to head. Patagia edged with black internally at base. Thorax with some black scales posteriorly. Abdomen fuscous, showing tendency to be pale banded, fan-shaped tuft at base, green-black at tip. Palpi black outwardly, whitish within. Tongue yellow. Legs dirty white. Tarsi black ringed.

Types: Cochise Co., Ariz. Collected by Mr. Poling and myself.

Caradrina tacna, n. sp.—Expanse: 26–27 mm.

♂.—General colour a rather dark glistening golden brown, inclined to reddish in some specimens, slightly darkened along veins. There is a light frosting of white scales, which is emphasized around the ordinary spots and along the lines, bringing them out in a beautiful manner in fresh specimens on close inspection or under the lens, but it is so fine and delicate that but little remains in worn specimens. The subterminal space next to t. p. line is a trifle lighter than the rest of wing, and shades gradually into the concolorous terminal space. Head, collar and thorax concolorous, the edge of collar with more white scales than the remainder. Abdomen fuscous. Inception of ordinary lines marked by faint white dots on costa.

Basal half line only traceable on most perfect specimens. T. a. transverse, quite regularly scalloped. T. p. waved, almost transverse opposite cell, then making a slight inward angle, with a slight inward curve to inner margin. S. t. line quite irregular. Terminal line quite straight, very slightly scalloped between veins. Fringe brown, paler at base, edge and opposite veins. Orbicular prostrate, oblong or pear-shaped, with outward projecting point, in some specimens fusing with corresponding projection from reniform, which is large, erect, slightly constricted, with lower portion swollen and with sharp inward projection at lower edge. Hind wings pale dirty white, fuscous towards margins, very faint trace of discal dot and pale mesial band. Beneath pale brown, suffused with gray along costa and outer margin, evidences of pale mesial band, more marked towards costa. A few pale points along costa as on upper surface. Hind wings as above, only darker, along costa and mesial band a trifle more pronounced.

♀ similar to ♂, except the hind wings are darker throughout and the discal dot and mesial band better defined.

Types: Kerrville, Texas; Shovel Mt., Texas. Collected by Mr. Lacey and Mr. Schaupp.

Hadena Kyune, n. sp.—Expanse: 34 mm.

Head, collar and thorax very dark gray, almost black. Under the lens the collar shows a median jet black band and also a slightly darker shade along the margin, extreme edge being, however, somewhat lighter gray. The collar is slightly bilobed. Palpi rusty brownish. Eyes naked. Fore wings to s. t. line dark purplish brown, beyond s. t. line of a rusty light yellowish brown, forming a sharp contrast with the rest of the wing. Lines and ordinary spots marked in jet black. Basal half line distinct, though not prominent. T. a. line outwardly oblique, somewhat irregular, thickened at either end and in the middle. T. p. line single, black, distinct, widely and broadly exerted over cell, thence parallel to outer margin in a quite direct course to inner margin, followed by a narrow, slightly paler shade. The line itself is lunular, the individual lunules are considerably thickened in the middle, and two of those opposite cell project inwardly as two black dashes as far as reniform. S. t. line widely removed from margin, black, somewhat irregular, closely following course of t. p. line from inner margin to opposite cell, so that it gives the appearance of a double line. In the centre of the wing the line

is thickened opposite to and projecting into the lunules of the t. p. line. Terminal space light yellowish brown, very even in colour. Black lunular lines at base of fringes, which are defective in the specimen before me, but appear to be concolorous with terminal space. Hind wings fuscous, somewhat darker externally to an obscure mesial line. Discal dot present, though not pronounced. Abdomen yellowish fuscous. Beneath yellowish fuscous, with the common median band and discal dots not prominent on hind wing. Legs, thorax and abdomen somewhat darker fuscous.

Type: 1 ♀, Huachuca Mts., Ariz.

Ocoenemis Polingii, n. sp.—Expanse: 28 mm.

Head, collar and primaries from base to t. p. line, as well as the terminal space, of a light brown colour. Thorax, orbicular and subterminal space lighter in colour, contrasting, the first two being of a yellowish-white or gray colour, while the last, showing less of the yellow tinge, is of a more bluish-gray colour. The head and palpi are of the same general buff ground colour, with an admixture of black and white. There are two black bands across the head between antennæ, and three across the collar, which is tipped with whitish. The thorax and patagia are clothed with a mixture of buff, black and white hairs and scales, the white predominating so as to give a yellowish-gray effect as a whole. There is a quite well marked posterior thoracic tuft. Abdomen of a quite uniform buff colour; along the dorsum, especially of the basal segments, a few black hairs can be seen grouped together, and at the base of the anal tufts they form a transverse band, which is quite distinct under a lens. Thorax and abdomen beneath a shade lighter than above, the former thickly coated with hair. Legs checkered buff and black. Anterior tibiæ with stout spur. Primaries above with the ordinary lines and spots distinctly and neatly marked. Basal half line single, black and well defined, joined at lower end by spur from t. a. line along median vein. The t. a. line is somewhat thickened at its origin, which is almost directly above the inner edge of the orbicular; from this point its course is downward and inward to the median vein, thence downward and outward, making two outwardly convex scallops before reaching inner margin. The line is black, distinct and neatly defined; it is accompanied on its inner side by a brownish line, more diffuse and not so neatly defined. The accompanying line follows the spur connecting the basal and t. a. lines on both upper and lower sides. On the upper side it joins a similar line on the outer side of

the basal line, which is then continued across along costa to t. a. line again, thus forming a brownish ring in the superior enclosed part of basal space; the centre of the ring shows as a spot somewhat lighter in shade than the general ground colour. The inferior part of the basal space is also somewhat lighter than the ground colour. With the lens a few black scales can be seen as an extension of the connecting line to the base, but not enough in the specimen before me to be called a basal dash. The median shade is black, heavier, and more prominent than the other lines, especially at the costal end. It runs from the costa downward and outwards along inner border of reniform to its lower border, where it meets the t. p. line and accompanies it to inner margin. The t. p. line is thickened at its origin on costa, is exerted over cell, touches lower border of reniform, thence by three inward scallops between veins to inner margin; the upper portion of line is only slightly scalloped. The t. a. line is nearer the base of the wing in this species than in *occata*, so that there is a wider space between it and the t. p. line on inner margin, and the median shade does not tend to diffuse itself over this space as in *occata*, but clings to the t. p. line as a well-defined band, only covering from one-third to one-half the space. To the outer side of the t. p. line is an accompanying brown shade line, which is more pronounced on costa. The s. t. line is pale, and indicated chiefly by the contrast between the terminal and subterminal spaces. It is irregular and not well defined. The veins from the t. p. line outward are more or less coated with black scales, and the spaces between them in the subterminal space are somewhat dusted with brown scales, which in the lower three or four spaces show a tendency to arrange themselves into rather poorly-defined arrow heads, with the points in. *Occata* shows neat black dashes in those spaces. There is a neat, even, black line at base of fringes which seem to be concolorous with terminal space and not checkered as in *occata*, but in the specimen before me they are quite worn away, so that it is impossible to give an accurate description of them. The orbicular is strikingly different from that in *occata*; it is almost or quite as large as the reniform, oval, with long axis longitudinal, neatly outlined by a fine black line, and of a bluish-gray colour, contrasting with the brown of the median space. Closely within the black ring there is a narrow brown ring. The reniform is upright, oval, concolorous and outlined by a fine black line, which is a little irregular in its course, it is a little darker to the inner side, seemingly due to the median shade encroaching on it. The claviform is

large, touching orbicular above, finely outlined in black to the inner side and centrally concolorous, somewhat paler along upper, outer and lower sides from an admixture of paler scales. Secondaries pale yellowish, veins darker, faint discal dot, mesial line distinct, but fine, and not conspicuous, outer border of wing almost but not quite to mesial line, black. Fringe brown at base, white outwardly. Under surface pale yellowish from base to mesial line, external to this, blackish. A black blotch on middle of costa of both wings. Faint discal dot on secondaries. Mesial line on primaries, distinct on upper half, fading out as it reaches inner margin, on secondaries distinct through its entire course and emphasized by black dots on the veins.

Type: 2 ♂'s from Southern Arizona. One from Mr. Poling and one of my own collecting.

While recalling *occata* to a striking degree, it does not require any very close inspection to readily separate them.

Rhizagrotis socorro, n. sp.—Expanse: 36 mm.

Ground colour varying from a pale yellowish brown, in some specimens, through a quite well-marked luteous or reddish brown in others, to a quite dark blackish brown form. Black shades and pale yellowish or luteous markings encroach so much on the ground colour, however, as to give a quite mottled effect. Aside from the ordinary lines and spots there is a prominent black shade through cell from just before orbicular to t. p. line, more pronounced in the darker specimens, more contrasting in the paler. A broad, heavy basal dash extends to t. a. line, and after being interrupted by it, is continued on as the prominent solid black claviform from a quarter to half across the median space. There is also a blackish shade on costa just before subterminal line, and one on outer margin opposite cell beyond it. The costa is broadly pale creamy or luteous yellow to t. p. line, with five or six dark spots on its edge, marking inception of transverse lines. In some specimens these spots are more or less fused, thus encroaching somewhat on the pale border. Ordinary lines double, black, pale-filled. The basal half line not present, except the dots on costal edge. T. a. moderately outwardly oblique, only marked on costa and below cell, slightly scalloped, outer line more prominent. T. p. moderately exerted over cell, thence with only slight curve quite obliquely to inner margin, about 2 mm. from t. a. line, well scalloped, inner line well marked, outer faint. S. t. line bluish white,

beginning with a quite well-marked apical patch of the same colour, quite irregular, projecting inwardly opposite cell and again in lower third, traces of black dashes preceding it in some specimens. Orbicular small, round, black outlined, complete or open above, concolorous with costa, usually darkened centrally. Reniform about normal shape and size, pale creamy yellow, luteous centred, outlined in black. Claviform solid black, moderate in size. Black terminal line, emphasized between veins into lunules, which show a tendency in some specimens to extend across the terminal space. Fringe luteous at base, darker centrally, whitish at edge. Secondaries subpellucid, white, slightly dusky at apex and along veins. Fringe white, dusky line at base. In ♀, smoky with faint discal dot. Beneath fore wings more or less smoky, paler along inner margin. Discal dot, though not prominent. Mesial band distinct on costa, fading out before inner margin. Pale area at apex preceded by dark patch at inception of outer shade. Hind wings whitish, some dark scales along costa, small discal dot. Mesial band evident on costa and continued by a few dusky dots a short distance across wing. In ♀, the wings beneath are darker and the bands more prominent. Head, collar, thorax and abdomen concolorous with ground colour. Collar with mesial black band. Patagia inwardly edged with black at basal half. Posterior edge of abdominal segments paler in some specimens, especially the females, giving a banded appearance. Palpi blackish externally, luteous at tip and internally. Thorax and abdomen grayish white beneath, more or less tinged with luteous. Anal tufts luteous. Legs gray, tarsi banded black and luteous.

Types: Huachuca Mts., Ariz.

Rhizagrotis salina, n. sp.—♂. Expanse: 32 mm.

Fore wings warm blackish brown, with a faint reddish tinge. Costa broadly luteous yellow to outer edge of reniform, darker along extreme edge. Distinct black basal dash to t. a. line. A black dash from before orbicular through cell to t. p. line. Basal line obsolete. T. a. line double, obsolete above, scalloped between veins below median, outer portion black, quite distinct, inner faint, luteous yellow filling. T. p. line evident beyond cell, but not prominent, pale, confining lines scarcely discernible. The remainder of line to inner margin scarcely traceable, except in certain lights. S. t. line not evident. A triangular portion of subterminal space below costa somewhat darker than ground colour. The terminal space, especially opposite cell, is also more or less irregularly

darkened. Fringe fuscous, paler at base and preceded by black marks between veins, those opposite cell being more prominent and almost or quite reaching t. p. line. Orbicular a minute round yellowish dot. Reniform quite broadly oval, upright, yellow narrowly outlined in black and including a central ochraceous annulus. Three or four pale points on costa towards apex. Claviform short, well marked, outlined in black. Hind wings white, very slightly darkened along costa and at apex. Fringe white, with faint dusky line at base. Beneath fore wing smoky, somewhat paler along costa, discal dot, extra mesial band and short bar from costa, close to apex, well marked but not prominent. Hind wings with faint discal dot and mesial line, the latter traceable only a short distance from costa. Costa somewhat darkened, the rest of wing white. Palpi brown, terminal joint ochraceous. Head and collar mixture of gray and ochraceous, the former with two black spots between antennæ, the latter with mesial black transverse band. Patagia ochraceous, strongly black margined within, thorax pale gray, abdomen pale brown.

Type: 1 ♂, Huachuca Mts., Ariz.

(To be continued.)

NOTES ON GENERIC CHARACTERS IN THE LYCOSIDÆ.

BY RALPH V. CHAMBERLIN, ITHACA, N. Y.

(Continued from page 148.)

In *Lycosa* there is in most cases present a small, apically more or less rounded flap or lobe at and pressing against the base or origin of the embolus. This lobe, which may be spoken of as the *palea*, is often small or but weakly developed; but in *L. pulchra* it is very long and conspicuous. Here it embraces and supports the embolus along much of its length, being at the same time shifted ectad from its usual position. This special development of the supporting palea in *L. pulchra* is associated with the peculiar position of the embolus, which, instead of curving back to rest along the lectus in the usual manner, here arches forward and outward (i. e., ventrad) free from the bulb, only its apical part, which turns forward and rests obliquely across the auricula, being at all in contact with the lectus. The unusual size of the palea is evidently necessitated by the otherwise unsupported condition of the proximal portion of the embolus. Above and ectad of the origin of the embolus is a variously complicated lobe, which was first unhappily termed the *spermaphorum* by Menge, under the false impression that its function was that of a sperm

reservoir. It has been better called the *conductor emboli*. The conductor usually presents an elevated rim or edge along its length dividing two commonly depressed areas or furrows, the upper one frequently raised along its length or sometimes transversely into a series of parallel rugæ. Upon the upper edge of the lower furrow, opposite which is normally during quiescence the embolus, is borne a variously-formed, but mostly needle- or blade-like, strongly chitinized process or apophysis, which may be termed the *tenaculum*. There may be a second or third similar but smaller *accessory* tenaculum. Other features of the conductor need not be mentioned here.

The large, strongly-arched basal division of the bulb, covering over most of the hæmatochoa, is protected by a number of variously-formed chitinous plates, which, together with other hard parts at the surface of the palpal organ, were collectively termed the tegulum by Wagner. The largest of these plates and the one covering over much of the lobe is the *basal plate*. Proximad from this and sometimes concealed by its protrusion backward, is a smaller plate covering over and protecting the *fundus* of the semeniferous tube, the walls of the latter structure not being themselves chitinized at and towards its enlarged end. This plate may be spoken of as the *lunate plate*. It is usually in connection with a more slender rod-like plate, which is joined by one end to the wall of the alveolus, and which may be spoken of as the *petiolar rod* or *petiole*.

Toward the middle or more often the anterior end of the basal division of the bulb and either at the middle or toward the exterior side is borne a conspicuous and often large, highly chitinized apophysis, which is in large part plate- or blade-like, in form being thinner more or less dorso-ventrally. The different position and structure of this apophysis, which will be called the *scopus*, serve very readily to distinguish the genera now under consideration, the differences being clear and well-marked. About the base of the scopus in *Pardosa* and *Lycosa* is elevated a fold of varying height, forming thus what may be spoken of as the scopal pit. In some *Lycosidæ* there is no trace of such a fold.

In *Pardosa* the scopus occupies, without exception, a median position, for the most part some distance back of the front margin of the lobe. It is free for the greater part of its length, being attached only at its base. The scopus bears a process or spur, which is always basal in position, and which may be in part or as a whole concealed by the basal fold. The basal fold in *Pardosa*, however, is comparatively low, covering but little

of the basal part of the scopus. The basal spur is relatively short, in most more or less uncatate distally, and extending out nearly at right angles to the scopus. The scopus may be short and stout, relatively wide, as *P. lapidicina*, *brunnea* and *Californica*; in other cases it may be long, as in *P. Emertoni* and *Banksi*.* In *P. sternalis* and *P. minima*, etc., the scopus curves freely forward and outward to or beyond the outer margin of the alveolus, and is of nearly the same width throughout its length.

In *Lycosa* the scopus is transverse and essentially exterior in position. It is free only apically. Toward its base, *i. e.*, mesally, it flattens out in plate-like form, and is usually covered over by the extended basal fold. It lies immediately back of the lectus. Below its apex it is always provided with a more or less retrorsely directed and variously pointed process, "spur" or barb, which is often conspicuously salient. The apical process itself may also be salient, or in other cases it may not rise above the side of the alveolus. In some species the scopus is comparatively small, and almost concealed at the side of the bulb both in side and ventral views.

In *Pirata* the scopus is borne in a median position, but distinctly farther forward than in *Pardosa*, being attached by its base to the front face of the basal lobe, and projecting freely forward to or beyond the front margin of the alveolus. The scopus is broad from side to side. The base of the scopus is always extended transversely on the exterior side into a well-developed branch, which in most has the front angle at its free end produced anteriorly in varying degrees. The basal portion of the scopus is thus very broad; and it nearly always completely conceals the comparatively small embolus from sight. The principal branch of the scopus is typically very wide proximad, narrowing gradually distad, and running more or less to a point, the branch distally curving in some degree outward; *i. e.*, in the same direction as the basal process (Cf. *Wacondana*, *insularis*, etc.). A process or spur may be borne upon the main branch above its lower part, either at the outer side or upon the inner (*i. e.*, dorsal) face. There is such a spur in the latter position, for example, in *P. insularis*, which may be detected only when the palpus is viewed obliquely or from the side. The scopus is less deeply chitinized than in *Pardosa* and *Lycosa*. The conductor is but little developed.

*New names for *pallida*, Em., and *littoralis*, Bks., respectively, which are pre-occupied.

Seemingly associated with the apical position of the scopus in *Pirata* is a drawing forward of parts at the base of the bulb. The lunate area is large and conspicuous, being one-third or more as long as the entire bulb; whereas in *Lycosa* and *Pardosa* it is evidently smaller. In *Schizocosa* (new) it is very small and of a characteristic form.

Of course there is a considerable number of structures in the copulatory organs other than those which have been briefly treated here, which furnish characters available for systematic work. The conductor emboli, for example, in its general form and in the structure of its furrows, and especially in the form and disposition of the tenacula, affords characters by which alone, at least the commoner genera may be separated by one who has sufficiently acquainted oneself with them.

In conclusion, it may be well to give brief diagnoses of the three genera that have been more particularly discussed in the preceding pages, and also of *Schizocosa*, new. The last named genus is erected for a group of species, including *ocreata*, Hentz, and its allies, some of which have been placed in *Lycosa*, others in *Pardosa*, or the same one in both by different workers. Other species of the genus are *venustula*, Hentz, (= *Pardosa gracilis*, Bks., and *Lycosa relucens* and *verisimilis*, Montg.), *bilineata*, Em. (= *Pardosa bilineata*, Em., and *Lycosa ocreata pulchra*, Montg.), and *humuli*, Bks. For the sake of brevity, only characters drawn from the copulatory organs are given below without indicating other important characters in correlation.

PARDOSA, C. Koch.

Epigynum with a distinct guide, which is but weakly or not at all developed anteriorly, its transverse arms entire; openings of the spermatheca protected, leading on each side into a relatively large and depressed fovea or basin, the lateral furrows becoming narrower and shallower anteriorly. Pars basalis of bulb of male palpus bearing a scopus in a median position and evidently proximal from the front edge of the lobe; scopus attached only at base, toward which it bears a short spur, when elongate, comparatively slender, not much widening proximad; a true lectus but rarely present, when so, never produced into an auricle; extreme lower or posterior margin of inferior furrows of conductor bearing a variously-formed but usually stout and often lobed or dentate tenaculum.

LYCOSA, Latr.

Epigynum with a strongly-developed guide, the septal piece distinct and well-developed anteriorly; openings of the spermatheca protected;

lateral furrows widest anteriorly, where they are also comparatively deep, narrowed posteriorly by the inward protrusion of the side walls, the channels leading to the spermatheca being thus much contracted; transverse arms of guide not divided. Scopus borne at exterior side of bulb; transverse in position and attached along front side well distad, bearing a subapical more or less retrorse process or barb; median margin of furrow of conductor bearing one or sometimes two slender needle- or blade-like and always simple tenacula. Lectus well developed, with a distinct auricula of moderate size.

SCHIZOCOSA, n. gen.

Epigynum with a distinct guide, which is elevate and well developed anteriorly as in *Lycosa*; transverse arms of guide double (i. e., divided from their exterior ends mesad a varying distance); lateral furrows not widening anteriorly, the sides straight or nearly so and subparallel. Bulb of male palpus bearing a scopus transverse and exterior in position with a subapical process or barb; superior furrow of conductor ill-defined, showing no rugæ. Conductor elevated at its exterior end anteriorly and more or less produced into a horn-like process of varying length; median rim bearing more or less ectad of its middle a basally broad and apically-pointed, relatively short, plate-like tenaculum, which is curved backward and dorsad distally, a shorter similarly stout secondary tenaculum ectad and cephalad from the first. Auricula of lectus very long, extending forward along the side of the conductor and attaining, or nearly attaining, the front margin of the alveolus. Embolus distinctly angled or elbowed at base of auricula. Lunate area very small.

PIRATA, Sund.

Epigynum possessing no true guide, in most cases presenting behind two more strongly-chitinized lobes or tubercles upon which the spermatheca open free. Bulb of male palpus bearing a scopus in a median and subapical position; its base attached on front face of basal lobe of bulb; its principal branch reaching to or in most extending beyond the front margin of the alveolus; a basal process of large size. Embolus small, nearly or quite concealed by proximal part of scopus. Lunate area large, fully one-third or more the total length of the bulb.

ERRATA IN PREVIOUS PART.

- P. 145, line 14 from top, for *generic* read *genetic*.
 P. 146, line 14 from bottom, for *fourtionellement* read *fonctionellement*.
 P. 147, line 10 from top, for *embrolus* read *embolus*; line 18 from

top, for *Schizogyna* read *Schizocosa*; line 11 from bottom, for *leaving* read *having*, and insert the clause, *but . . . anteriorly*, within the parenthesis after *littoralis*.

P. 148, lines 14, 24 and 35 from top, for *Priata* read *Pirata*; line 15 from top, for *Anocosa* read *Allocosa*; line 27 from top, insert between *probably* and *insularis*, Em., the words *related to*; line 14 from bottom, for *semiferous* read *semeniferous*; line 19 from bottom and in foot-note, for *Tullgren* read *Tullgren*; in the foot-note, for *Lönberg* and *Ahad*, respectively, read *Lönberg* and *Akad*.

BOOK NOTICE.

THE HARRIMAN ALASKA EXPEDITION, VOLS. VIII. AND IX.—Insects, Part 1, pp. ix + 238, 17 plates; Part 2, pp. 284, 4 plates; numerous headpieces and figures in the text. Published by Doubleday, Page & Company, New York.

These two sumptuous volumes contain the entomological results of the far-famed Harriman Expedition to Alaska in the summer of 1899. The voyage was undertaken by the generous leader of the enterprise, as a journey for recreation and enjoyment, but its far-reaching importance was established by the invitation of twenty-three literary and scientific men to accompany the party. The results are now being made known to the world by the publication of a series of splendid volumes, beautifully printed and bound, and fully illustrated with admirable plates and a variety of artistic engravings.

The entomologist of the party was Professor Trevor Kincaid, of the University of Washington at Seattle. How zealously and successfully he worked may be gathered from the fact that during the two months devoted to the Expedition, a large portion of which was necessarily spent on board ship in travelling from place to place, he collected about 8,000 specimens, including 5,500 pinned insects and a variety of Arachnida, Myriapoda and larval forms. On his return home, these collections were carefully gone over and then sent to Dr. L. O. Howard, United States Entomologist, for distribution to specialists for study and report. The results are now given in these two volumes, and form eighteen papers by twelve well-known entomological authorities. Prof. Kincaid himself furnishes a very interesting introduction, in which he describes the localities visited, and the flora and insect fauna that came under his observation, and also papers on

the Metamorphoses of Alaska Coleoptera, the Tenthredinoidea, and the few Sphegoidea and Vespoidea obtained. Mr. Nathan Banks describes the Arachnida and Neuropteroid Insects; Mr. O. F. Cook, the Myriapoda; Mr. Justus Watson Folsom, the Apterygota; Mr. A. N. Caudell, the Orthoptera; Mr. Theo. Pergande, the Aphididæ and Formicidæ; Dr. Wm. H. Ashmead, the Homoptera and Hymenoptera; Mr. O. Heidemann, the Heteroptera; Mr. Rolla P. Currie, the Odonata; Mr. E. A. Schwarz, the Coleoptera; Dr. H. G. Dyar, the Lepidoptera; and Mr. D. W. Coquillett, the Diptera. Each writer gives a list, with dates and localities, of the species assigned to him and describes the new forms. Altogether the entire collection consisted of 1,001 species, of which no less than 344 were considered to be new to science, and are accordingly named and described in these volumes.

It is evident from the foregoing summary that a very important addition has been made to the knowledge of the insects of the far north-western regions of North America, regarding which nothing has been known, except in the order Coleoptera, which received much attention from early Russian investigators and was more recently catalogued by the late Dr. John Hamilton. It will now be comparatively easy for travellers in the future to collect and identify the insects found in Alaska, and our friends in British Columbia will obtain in these volumes a large amount of valuable information regarding the forms inhabiting that portion of our country. To them, indeed, this work will be indispensable, and it should find a place in all the public libraries of the Province.

JOCULAR ENTOMOLOGY.

The remarks of Prof. Aldrich on the above subject in the March number of the CANADIAN ENTOMOLOGIST suggest to me the existence of a good deal more humour, intentional or otherwise, in scientific (?) nomenclature than appears on the surface. It must sometimes be very difficult, if not impossible, for an author to choose a name, especially one not preoccupied, having some reference to specific characters, habitat, or *modus vivendi*, and it is quite obvious that thousands of names in existence were never intended to have any such reference whatsoever. The custom of naming things after people, whether they lived many years B. C. or in more modern times, or after classical myths, might become intolerable if carried too far, and it seems as if a little humour, which is often the fresher for being unconsciously suggested, is bound to creep in

somewhere. And why not? It is surely an improvement on so much of the dog-latin, or what may just as well be termed cat-greek (not to mention the false concords!), with which scientific lists are crowded. It is hard enough at times for one who, like myself, has no pretensions as a classical scholar, to make so much as a vague guess at the translation of names that are grammatically correct, without trying to discover their application too. To hear the pronunciations often given to names must have made many a schoolmaster squirm. And why do not describers more often state their reason for a name when that is not self-evident?

I was the other day arranging in series, previous to examination, a species I had received by mail. There were 5 or 6 specimens, and they had but one antenna each, some the right and some the left. As I looked at them I wondered whether such an accident had ever given birth to the name *alternata*. Can it have been the condition of the type specimen to which the name *Leucania imperfecta* was intended to refer? Or did successfully-replaced wings, antennæ, etc., give rise to the application of *refecta* to an *Oncocnemis*? Alas! there must be many a type to which *trita* would be much better suited than the name it bears, and Sir George Hampson, who has the care of the types at present, can perhaps tell us whether Morrison's *Agrotis intrita* does not require redescription, say, as it has travelled far, as *fracta*. I cannot find that a description of *dirupta* has ever been published. The mail clerks send me lots. It seems to have a very wide range, and is referable to a large number of genera. One might be excused for wondering whether when Walker described *Dryobota illocata* he was doubtful as to its affinities. Such apparently was really the case with Prof. Smith sixteen years after Grote had redescribed the species. But reference to Prof. Smith's Catalogue shows that lack of a locality label on the specimen evidently suggested Walker's name. Would that all collectors would endeavour to obviate this application of the name again. "Retained" is often the final comment made—and, I must admit, generally in full justice—by specialists to collectors on new forms sent for naming. Yet, strange to say, *retenta* is not yet in use in the N. American Lepidoptera. There is, however, a *Xylopharia remissa*, which in this sense may or may not have been misapplied. These suggestions might doubtless be carried very much further.—F. H. WOLLEY DOD, Millarville, Alberta.