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ENTOMOLOGICAL SOCIETY OF ONTARIO.

The thirty-fifth annual meeting of the Society was held in Montreal on the 8th and 9th of November, in order that the members might join in the celebration of the twenty-fifth anniversary of the foundation of the Montreal Branch. A full account of the business transacted and the papers read will be published in the annual report of the Society. A very enjoyable conversazione was held in the rooms of the Natural History Museum in the evening of the 8th. Short addresses on the history and progress of the Society were made by Mr. Lyman (the President), Dr. Fletcher, and the Rev. Drs. Bethune and Fyles. A large number of microscopes, with slides of an entomological character, were furnished by the Microscopical Society, and a splendid display of specimens, chiefly Lepidoptera, was made by the members of the Montreal Branch.

The following were elected officers for the ensuing year :

President.—Henry H. Lyman, M. A., Montreal.

Vice-President.—Rev. T. W. Fyles, D. C. L., F. L. S., South Quebec.

Secretary.—W. E. Saunders, London.

Treasurer.—J. A. Balkwill, London.

Directors.—Division No. 1—W. H. Harrington, F. R. S. C., Ottawa ; Division No. 2—J. D. Evans, Trenton ; Division No. 3—Arthur Gibson, Toronto ; Division No. 4—A. H. Kilman, Ridgeway ; Division No. 5—R. W. Rennie, London.

Directors Ex-officio (ex-Presidents of the Society).—Professor Wm. Saunders, LL. D., F. R. S. C., F. L. S., Director of the Experimental Farms, Ottawa ; Rev. C. J. S. Bethune, M. A., D. C. L., F. R. S. C., Headmaster of Trinity College School, Port Hope ; James Fletcher, LL. D., F. R. S. C., F. L. S., Entomologist and Botanist, Experimental Farms, Ottawa ; John Dearness, I. P. S., London.

Director Ex-officio (Ontario Agricultural College).—Professor Wm. Lochhead, Guelph.

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Delegate to the Royal Society.—Rev. Dr. Fyles, South Quebec.

Delegates to the Western Fair.—J. Dearness and W. E. Saunders, London.

Committee on Field Days.—Dr. Woolverton, Messrs. Balkwill, Bowman, Elliott, Law, Percival, Rennie, Saunders, and Spencer, London; Dr. Hotson, Parkhill.

Library and Rooms Committee.—Messrs. Balkwill, Bethune, Dearness, Moffat, and Saunders.

NOTES ON SOME ALBERTA BUTTERFLIES.

BY F. H. WOLLEY DOD, CALGARY, ALBERTA.

Chionobas.—To hear of the occurrence of *Chionobas Macounii* in the hill-prairie district south of Calgary* will doubtless be as much of a surprise to most entomologists as the discovery of it here has been to myself. That a man who, like myself, is ever on the outlook for anything fresh in the way of butterflies, should have lived for five years in a *Macounii* locality without knowing it surpasses my comprehension. Whilst overhauling, relaxing, and setting last winter from the captures of the past two seasons, I came across, amongst some papered specimens that had been handed to me by a Mr. Hudson, an ardent collector here, a papered butterfly labelled "*Chionobas Chryxus*, ♀, July 4th, 1896," taken amongst the spruce about twelve miles west of here; that is to say, about 26 miles to the south-west of Calgary. Now, though I have never yet seen *Chryxus* here, I have always been expecting to come across it amongst the spruce, and was not much surprised. However, after relaxing and setting the specimen, lo and behold! it was not *Chryxus*, but agreed rather closely with some *C. californica* ♂♂ that I have from Ft. Klamoth, Oregon. Having learnt from Mr. Elwes's "Revision of *Ceneis*" that a supposed *Macounii* ♀ had been taken by Prof. Macoun

* A fine male of this species taken at Red Deer, N.-W. T., by Mr. T. N. Willing, of Olds, Alta., was shown at the annual meeting of the Entomological Society of Ontario in 1895.

at Morley*, Alta., my suspicions were aroused, as the locality where Mr. Hudson took the specimen is very like the Morley district, viz., thick spruce and pine timber. To make sure whether the species was *Macounii* or not, of course, needed a ♂, so I determined to visit the locality this season and work specially for it. On June 18th of this year Mr. Hudson brought me a fine ♂ of the same species that he had just captured about a mile west of my place (*i. e.*, about ten miles east of the eastern limit of the spruce here), and which, from its resemblance in size and colour to my Oregon *Californica*, except for the absence of sex mark, I had not the slightest doubt was *Macounii* from the moment I saw it. I am generally too busy with other matters to devote more than one day in the week to butterfly catching, and as the spruce district is a far better hunting-ground for various species than the more immediate neighborhood, it is thither that about once a week I generally wend my way. Accordingly, on June 19th, Mr. Hudson and myself visited last year's locality together, and succeeded in capturing, amongst other species, one fine ♂ *Macounii* flying in the thick timber in company with *Jutta*. On 26th we took two ♂♂ and two ♀♀ in the same locality, and saw about two more, and noted the fact that it is less partial to the thick spruce than *Jutta*, as three of the four specimens were taken outside the spruce, one several hundred yards from it, whilst *Jutta*, though common under cover of the woods, is seldom seen outside. The capture by myself on July 4th of a ♀ in fair condition, on the hill-prairie about two miles east of where Mr. Hudson first took it this year, brings me to believe that it must be somewhat widely distributed, though it is certainly far from common. Up to date we have turned up nine specimens in all, and only seen about two more. I can recognize it on the wing at a glance, and its flight being slow and somewhat clumsy, it is very easy to net on open ground. Three of the four specimens which I caught myself near the spruce, I disturbed from dead boughs lying on the ground. One of these I followed—I cannot say chased—laboriously over fallen timber for about a hundred yards, the butterfly every now and then settling on a log, and resting with closed wings and a tilt to one side at an angle of about 45° to the log. It allowed me every time to come almost within striking distance before it took wing again, and had the nature of the ground permitted me to run a yard it would never have settled twice after I had first seen it. After one

* There is no doubt as to the identity of the specimens taken at Morley and referred to by Mr. Elwes. There were two males and one female. These were taken by Mr. W. T. Macoun, and were exhibited by Dr. Fletcher at one of our annual meetings.

or two stalkings, it flew when rising, apparently from clumsiness, towards me instead of away, and thus ended its career. The specimen I took on the prairie I observed settle on a flower-head—of what species I know not—a habit I have never yet observed in either *Jutta*, *Alberta* or *Varuna*. The ♂♂ agree fairly well with my *Californica*, except that both primaries and secondaries are broader and more rounded, the sex marks absent, and the primaries have two ocelli, rarely a trace of a third, whereas my *Californica* have only one; and the ground colour of the under side of secondaries is paler, and the band more contrasting. My only explanation of the fact that I have not met with it here before this year, is that it must be very erratic in appearance, as so conspicuous a butterfly is not easily overlooked. I should be glad to hear something about it from those who have taken it at Nepigon.

A NEW PLANT LOUSE ON TOBACCO.

BY THEODORE PERGANDE, WASHINGTON, D. C.

Dr. L. O. Howard, who is preparing a general article on the subject of insects affecting tobacco, for the Year Book of the U. S. Department of Agriculture for 1898, has called my attention to a plant louse feeding upon tobacco plants grown on the grounds of the Department, which he wishes to mention specifically in his article, and since it is a new species, at his request, I submit for publication the following description.

I had been familiar with this undescribed species since 1897, and had found it on the grounds of the Department of Agriculture in smaller colonies on *Rumex crispus*, *Leucanthemum vulgare*, *Forsythia viridissima*, and also on the leaves of the apple, pear, and egg-plant. Specimens have also been received from Mt. Holly, Md., where they were reported to feed in immense numbers on the tomato plant.

NECTAROPHORA TABACI, new species.

Winged Viviparous Female.—Length of body, 2.8 mm. to 3 mm.; expanse of wings, about 8 mm.; length of antennæ, 3 to 4 mm. Colour yellowish-green and faintly pruinous, with the median line and lateral margins of the abdomen more or less distinctly darker. Head, thoracic lobes and sternal plate light brownish and polished; the anterior angle of the median lobe and posterior angle of the scutellum frequently black. Eyes brown; ocelli colourless, margined at inner side with black. Antennæ black, reaching considerably beyond the tip of the tail, the two basal joints pale, dusky or with a greenish tinge, extreme base of third

joint pale greenish. Legs rather long and slender; femora pale greenish at base, shading gradually from brown to black at the apex; coxæ pale greenish; tibiæ dark yellowish, their apex and the tarsi black. Nectaries long and slender, slightly stoutest at base, about two-thirds the length of the femora, reaching beyond the tip of the tail, and of a black colour, with their basal fourth or less, pale greenish. Tail about one-fourth the length of the nectaries, curved upwards, densely covered with minute spines, and provided with a few rather long and fine hairs along the edges; green, changing gradually to dusky towards the end. Rostrum short, not reaching to the median coxæ, pale dirty yellowish, the last two joints brown or black. Wings transparent, iridescent; the subcosta faintly yellowish or greenish, its base more or less distinctly yellow; stigma pale greenish, and with a pale dusky shading along the outer and inner margin; costa and veins slender and black.

The antennæ are apparently without any sensoria, but are provided with a few short and capitate sensorial hairs; those of the tibiæ are quite numerous and slightly enlarged at the tip.

Apterous Female.—Length, 4 to 4.4 mm. to the tip of the tail. Coloration as in the winged form, though more distinctly pruinous; head yellowish; coxæ and femora pale bluish-green, their apex black; tail pale green or frequently yellowish. Hairs of antennæ and legs as in the winged form. The larvæ, and especially the pupæ, are distinctly pruinous, giving to them a whitish appearance in a certain light. The younger larvæ are yellowish, with antennal joints three and four white, tipped with black. Pupæ pale yellowish-green, head and thorax pale greenish, the wing-pads almost white, and with a dusky streak near inner edge; coloration of antennæ as in the larvæ; femora very pale greenish, the tibiæ pale yellowish, with the apex black.

THE HESSIAN FLY ATTACKING TIMOTHY.

When examining some stems of timothy grass taken from a wheat field in Prince Edward Island, where this year's crop had been badly infested with Hessian Fly, I found two of the stems of timothy which bore the undoubted flax-seed-like puparia of the Hessian Fly. There was only a single puparium on each stem, and these were at the second joint from the root, lying inside the sheathing base of the leaf close above the knot. The Hessian Fly is recorded as attacking timothy in Russia, but I do not recall any record of similar work in America.

J. FLETCHER, Ottawa.

SOME NEW NEMATIDS.

BY C. L. MARLATT, WASHINGTON, D. C.

PONTANIA CONSORS, new species.

Larva and Galls.—Dyar, Jour. N. Y. Ent. Soc., VI., June, 1898, p. 121.

Female.—Length, 4.5–5 mm.; slender; surface shining, not at all pubescent; clypeus distinctly emarginate, lobes triangular; ocellar basin distinctly defined, but with walls rounded; crest rather sharp, unbroken; fovea oval, distinctly defined; antennæ short, joints 3 and 4 subequal; sheath moderately broad, regularly rounded at tip; clothed with a rather dense fringe of long brownish hairs; cerci narrow and elongate; claws deeply cleft, rays subequal; venation normal, upper discal cell of hind wings elongate, as long as or exceeding lower. Colour black; orbits and face brownish-yellow, including the area between the bases of the antennæ; pronotum, tegulæ and legs for the most part and venter of abdomen yellowish or resinous; bases of coxæ black; posterior tarsi strongly infuscated; sheath dark brown; apical half of abdomen, dorsally, resinous, more or less infuscated; veins and stigma dark brown or strongly infuscated; wings hyaline, or nearly so.

Male.—Length, 4.5 mm.; structural characters in general as in female; antennæ rather more robust, short, scarcely as long as head and thorax; upper discal cell of hind wings distinctly elongate and exceeding lower cell in length. Colour in general as in female; wing veins darker, almost black, and dorsum of abdomen altogether black; proclitella not longer than wide.

Described from one female and two males reared by Mr. Dyar from willow galls on *Salix sericea*. In the table of the genus given in my Revision of the Nematinae (Bull. 3, Tech. Ser., Div. Ent. U. S. Dept.) the female of this species would fall next to *pisum*, Walsh, from which *consors* is readily distinguished by having a somewhat elongate third cubital cell, and by the elongate upper discal cell in the hind wings. The male of this species falls in the table next to *pomum*, from which it is readily separated by the long upper discal cell in *consors* much exceeding lower cell.

PONTANIA BOREALIS, new species.

Larva and Galls.—Dyar, Journ. N. Y. Ent. Soc., VI., June, 1898, p. 121.

Female.—Length, 4 mm.; rather slender, glistening; body clothed with minute yellowish hairs, particularly evident on thorax; clypeus deeply emarginate; ridges about anterior ocellus rounded, nearly obsolete;

frontal crest well developed, not broken; fovea minute, oval; antennæ stout, much shorter than head and thorax; joints subequal; sheath narrow, elongate, regularly tapering or slightly excavated beneath, clothed with short black hairs; cerci long and narrow and not extending to the tip of sheath; claws evenly notched or nearly so; upper middle cell of hind wings projecting one-third its length beyond lower cell; venation otherwise normal. Colour black; narrow inner orbits and cheeks resinous, strongly infuscate; spot between bases of antennæ: mouth-parts generally, pronotum, tegulæ, legs for the most part, and the central area of venter of abdomen resinous infuscate; bases of coxæ darker, and tarsi, especially posterior pair, more strongly infuscate than the rest of the legs; sheath edged with black; veins brown; stigma and costa distinctly infuscate; general surface of wings somewhat infuscate.

Described from two females reared by Mr. Dyar from galls on *Salix sericea*. The species is allied to *P. californica*.

Type No. 3859, U. S. N. M.

PTERONUS CARPINI, new species.

Larva.—Dyar, Journ. N. Y. Ent. Soc., VI., June, 1898, p. 121.

Female.—Length, 6 mm.; rather robust, shining; clypeus very broadly and shallowly emarginate, nearly truncate; vertex roughened with coarse punctures; ocellar basin distinctly defined, with prominent walls; crest strongly bent anteriorly, scarcely broken centrally; fovea triangular, deep, with sharp limiting ridges; antennæ long, very strongly tapering, joints 3 and 4 subequal, 5 scarcely shorter; sheath short, rounded at tip, slightly emarginate beneath, clothed with dark brownish hairs; claws deeply notched, rays subequal; venation normal, upper cell of hind wings slightly exceeding the lower cell, stigma very robust. Colour black; small triangle below the antennal fovea, the clypeus and other mouth-parts, pronotum, tegulæ, legs for the most part, large sternal spot, and the venter of the abdomen light resinous yellow; posterior legs with the tips of their femora and tips of tibiæ and all the tarsi black; edge of the abdomen dorsally and a central line, interrupted on the first and last segments, yellow; wings hyaline, veins and stigma dark brown.

Described from a specimen reared by Mr. Dyar from gregarious larvæ on "ironwood," either *Ostrya virginica* or *Carpinus carolina*; taken at Fort Lee, N. J., in September. In the table of species (l. c., p. 45) *P. carpini* will follow *P. thoracicus*.

Type No. 3859, U. S. N. M.

PTERONUS QUERCUS, Marlatt.

Male.—Length, 4.5 mm.; rather robust; structurally as in the female except that the intercostal nervure is not interstitial (nor is it quite so in the companion female); procidentia inconspicuous. Colour as in female,

except that the antennæ are light yellowish beneath, much more distinctly so than in the case of the other sex.

The female of this species was described in my Revision of the Nematine of North America (Bulletin No. 3, technical series, U. S. Dept. Agr., Div. Ent., p. 67, No. 35), from a specimen bred March 22nd, from an oak larva taken at Ithaca, N. Y., by Mr. Trelease. Mr. Dyar has handed me two specimens, a male and female, reared from solitary larvæ taken at Brook Haven, L. I., resting on the edges of the leaves of *Quercus alba*, the adults issuing April 15th, 1898. Opportunity is now taken to characterize the male insect.

Type No. 3860, U. S. N. M.

NEMATUS CHLOREUS, Norton.

Male.—Length, 4 mm.; moderately robust and shining; clypeus distinctly and broadly emarginate, lateral lobes small, sharp pointed; vertex smooth, with the walls of ocellar basin indistinct or subobsolete, and the frontal crest scarcely raised; fovea semicircular, distinctly defined; antennæ short, robust, joint 3 slightly larger than joints 4 and 5; procidentia short, scarcely projecting; claws deeply notched; venation normal. Colour in general black; face, beginning with the frontal crest and including the cheeks and orbits (interrupted opposite ocelli), pallid; pronotum, tegulæ and venter for the most part, light resinous, inclined to reddish yellow; line across the middle and the upper and posterior edge of meso-epimera black; base of posterior coxæ black; tarsi, especially posterior pair, slightly infuscated; wings hyaline; veins light brown; costa and stigma yellowish, nearly hyaline.

The female of this insect was described in my Revision of the Nematine of North America (l. c., p. 90), from two specimens collected in Texas. Mr. Dyar has recently reared a male and female of this species from solitary edge-feeding larvæ taken on black oak (*Quercus coccinea*) at Bellport, L. I., and the male is now characterized. (See description of larva, Journ. N. Y. Ent. Soc., Vol. VI., June, 1898, p. 123.)

Type No. 3861, U. S. N. M.

Papilio brevicauda, Saunders.—This rare butterfly, which has hitherto only been recorded from Newfoundland, Anticosti, Labrador, Gaspè, and a few other localities on the Bay of Chaleur, has now been found at Kamouraska, a village about eighty-five miles below Quebec, by Mr. A. F. Winn, of Montreal. He found the larvæ feeding upon the leaves of *Archangelica*, and also obtained eggs from the female butterflies. The insect has now been carried through all its stages, as related by Mr. Winn in the paper he read at the annual meeting of the Entomological Society of Ontario in Montreal. This paper will be published in the forthcoming Annual Report.

CLASSIFICATION OF THE HORNTAILS AND SAWFLIES, OR THE SUB-ORDER PHYTOPHAGA.

BY WILLIAM H. ASHMEAD, ASSISTANT CURATOR, DEPARTMENT OF
INSECTS, U. S. NATIONAL MUSEUM.

(Paper No. 7.—Conclusion.)

FAMILY XIV.—TENTHREDINIDÆ.

This family is probably the most extensive of any of the families of the sawflies, and is of world-wide distribution, representatives of it being found in all parts of the world, although, as a whole, it is more numerously represented in the Palearctic and Neotropical regions than elsewhere.

I have separated the family into four subfamilies, distinguishable by characters made use of in the following table :

Table of Subfamilies.

Lanceolate cell contracted before the middle, but still *open*, the contracted part not quite extending to or uniting with the submedian vein, and with or without an oblique or straight cross-nervure beyond the middle.

Front wings with *three* submarginal cells.

Third transverse cubitus wanting, the first and second submarginal cells each receiving a recurrent nervure.....Subfamily I., Athlophorinæ.

Second transverse cubitus wanting, the second submarginal cell therefore large and receiving both recurrent nervures.....Subfamily II., Dolerinæ.

First transverse cubitus wanting, the first and third submarginal cells each receiving a recurrent nervure.....Subfamily III., Strongylogasterinæ (pars).

Front wings with *four* submarginal cells, the second and third each receiving a recurrent nervure..Subfamily III., Strongylogasterinæ.

Lanceolate cell with a straight or oblique cross-nervure at or a little before the middle ; if contracted, *closed*, the contracted part extending to and uniting with the submedian vein ; front wings with four submarginal cells.....Subfamily IV., Tenthredininæ.

Subfamily I.—ATHLOPHORINÆ.

This subfamily is based upon the genus *Athlophorus*, Burmeister, described in 1847, from Java. It is unknown to me in nature, but is

so admirably described and figured by Burmeister, that I have no hesitancy in considering it a distinct group near the *Dolerinae*.

The venation of the front wings is quite different from the other sub-families, in lacking the third transverse cubital nervure and in the shape of the mandibles.

This group is evidently peculiar to the Oriental region, and we may naturally expect the discovery of other genera in it when the sawflies of that region are more extensively collected, since at present our knowledge of them is most meagre.

The single genus known may be briefly characterized as follows :

Hind wings without a closed discal cell, the anal cell a little shorter than the submedian ; right mandible simple, acute ; left mandible acute at apex, but with an incision or tooth at the middle within ; claws cleft.....Athlaphorus, Burmeister.

Subfamily II.—DOLERINÆ.

This subfamily was first separated as a tribe by S. C. Thomson, in 1871, with one genus, *Dolerus*, Jurine, established in 1807. Pastor Konow, however, in 1890, separated this genus into two distinct genera, based upon the shape of the eyes and the length of the malar space. An examination of a large series of species of *Dolerus* shows that these characters are scarcely reliable or always to be depended upon for separating the genera, the length of the malar space being variable in the same species, while the shape of the eyes merges gradually from a short oval to a long oval. I am, however, not yet prepared to reject the new genus *Loderus*, Konow, and give below the characters made use of by him for separating the two genera.

Table of Genera.

Three submarginal cells, the second long, receiving both recurrent nervures.

Eyes oval or rounded and strongly convex ; malar space as long or longer than the pedicel.....*Dolerus*, Jurine.

Eyes long-oval, slightly emarginate within ; malar space very short, linear, shorter than the pedicel.....*Loderus*, Konow.

Subfamily III.—STRONGYLOGASTERINÆ.

This group or subfamily has been heretofore confused with the *Selandriides*, possibly on account of the similarity of neurination. To me, however, the genera here brought together under the above subfamily

name have very little real affinity with that family. On the contrary, taking into consideration their larval characteristics, their narrow elongate shape, and especially the shape of the head, I believe them to be genuine Tenthredinids, sufficiently differentiated from the original type to form a natural group by themselves, although not yet sufficiently divergent to be considered a distinct family. This group may be the phylum from whence originated the Selandriidæ.

The genera are very numerous, but may be recognized with the aid of the following table :

Table of Genera.

Lanceolate cell with a transverse or oblique nervure between the contraction and the apex. 3.

Lanceolate cell without such a cross-nervure, simply contracted but still open before the middle.

Hind wings with two discal cells ; front wings with four submarginal cells.

Third joint of antennæ usually longer than the fourth or of an equal length. 2.

Third joint of antennæ not longer than the fourth, usually a little shorter ; claws simple.

Anal cell in hind wings much shorter than the submedian ; sheaths usually triemarginate at apex. . . Thinax, Konow.

2. Head with the frontal area well defined, enclosing the front ocellus ; anal cell in hind wings a little shorter than the submedian, briefly petiolated ; antennæ slender, the first joint shorter than the second ; claws with a strong tooth at base. . Stromboceras, Konow.

Head with the frontal area wanting or subobsolete ; anal cell in hind wings as long as the submedian.

Antenna shorter, thicker, less distinctly pilose, the scape short, scarcely or rarely thicker than the pedicel ; third joint scarcely longer than the fourth ; claws

bifid. Strongylogaster, Dahlbom.

Antennæ long, pilose, tapering off toward tips, the scape large, much thicker than the pedicel ; third joint almost as long as joints 4-5 united. Waldheimia, Brullé.

3. Front wings with three submarginal cells. 12.
Front wings with four submarginal cells.

Eyes not extending to base of mandibles, the malar space therefore distinct, as long or longer than the pedicel 9.

Eyes extending to base of mandibles, or very nearly; lanceolate cell with an oblique cross-nervure, very rarely with a straight or perpendicular cross-nervure.

Hind wings with two discal cells 7.

Hind wings with one discal cell 6.

Hind wings without a discal cell 4.

4. Hind wings normal, without a bordering nervure at apex 5.

Hind wings with a bordering nervure at apex, although occasionally wanting between the radius and the cubitus.

Bordering nervure wanting at apical cell between the radius and cubitus; head and thorax coarsely cribrately punctate, opaque; antennæ rather short, stout, not tapering towards

apex. ♂ *Pseudosiobla*, Ashm., n. g.
(Type *S. excavata*, Nort.)

Bordering nervure entire; head and thorax smooth, shining, at the most sparsely punctate, except sometimes the head anteriorly; antennæ neither short nor stout, tapering toward tips, the third joint longer than the fourth; claws cleft.

Anal cell in hind wings as long as the submedian; flagellar joints cylindrical. ♂ *Strongylogastroidea*, Ashm., n. g.
(Type *S. apicalis*, Say.)

Anal cell in hind wings a little longer than the submedian; flagellar joints sub-compressed.

♂ *Dimorphopteryx*, Ashm., n. g.
(Type *S. pinguis*, Say.)

5. Anal cell in hind wings as long as or longer than the submedian; clypeus deeply semicircularly emarginate; claws cleft.

Transverse median nervure uniting with the median vein at the middle of the first discoidal cell; third antennal joint not quite as long as joints 4-5 united; hind tarsi not longer than their tibiæ *Parasiobla*, Ashm., n. g.
(Type *S. rufocinctus*, Nort.)

Transverse median nervure uniting with the median vein much before the middle of the first discoidal cell; third antennal

- joint longer than 4-5 united ; hind tarsi much longer than their tibiae Allomorpha, Cameron.*
- Anal cell in hind wings shorter than the submedian, briefly petiolate ; claws bifid.
- Head and thorax coarsely cribrately punctate ; third antennal joint as long as joints 4-5 united. ♀ . . . Pseudosiobla, Ashm., n. g.
- Head and thorax not cribrately punctate, shining ; third antennal joint scarcely longer than the fourth Aomodyctium, Ashm., n. g.
6. Anal cell in hind wings not so long as the submedian, briefly petiolated, the second discoidal cell present ; no closed submarginal cell.
- Head and thorax coarsely cribrately punctate, opaque ; antennae rather short, stout, not tapering off at tips.
- ♀ Pseudosiobla Ashm., n. g.
(Type *S. excavata*, Nort.)
- Anal cell in hind wings a little longer than the submedian, a closed submarginal cell as well as the second discoidal cell present.
- Head and thorax not cribrately punctate, shining ; antennae tapering toward tips, the third joint long but shorter than joints 4-5 united. ♀ Parasiobla, Ashm., n. g.
(Type *P. bicolor*, Ashm.)
7. Anal cell in hind wings shorter than the submedian, briefly petiolated 8.
- Anal cell in hind wings as long or a little longer than the submedian cell.
- Lanceolate cell with an oblique cross-nervure ; claws cleft.
- Clypeus large and deeply semicircularly emarginate.
- Second joint of hind tarsi one-fourth the length of the basal joint ; pedicel annular, wider than long.
- ♀ Dimorphopteryx, Ashm., n. g.
- Second joint of hind tarsi one-third the length of the basal joint ; pedicel not annular, fully twice

**Allomorpha* may be wrongly placed in my table. Cameron says nothing about the venation of the hind wings. His description reads, "Alar neuration resembles *Strongylogaster* (Cingulatus group)." Now, *S. cingulatus* has two discal cells in the hind wings. Kirby, however, who, I believe, examined the type, says : "*Hind wings with one discal cell.*" The artist, however, employed by Kirby has figured it on Plate X., No. 22, without a cell in the hind wings! In my perplexity I have followed the artist, since I find his figures of sawflies known to me perfectly accurate.

as long as wide or still longer.

♀ Strongylogastroidea, Ashm., n. g.
(Type *S. apicalis*, Say.)

Clypeus truncate. ♂ *Siobla*, Cameron.
(Type *S. mooreana*, Cam.)

8. Claws bifid or cleft.

Clypeus small, truncate or at the most sub-emarginate anteriorly.

♀ *Siobla*, Cameron.

Claws simple or with a minute tooth at base; clypeus distinctly emarginate; head with the frontal area well developed, enclosing the front ocellus; third antennal joint longer than

the fourth. ♀ *Stromboceras*, Konow.

9. Hind wings with two discal cells. 11.

Hind wings without a discal cell. 10.

10. Anal cell in hind wings shorter than the submedian, usually briefly petiolated.

Marginal cell in hind wings at apex subacute, *with* a short appendage, the recurrent nervure originating far before the transverse median nervure; claws cleft or with a long tooth at base. *Aphilodactium*, Ashm., n. g.
(Type *S. rubripes*.)

Marginal cell in hind wings at apex rounded, *without* an appendage, the recurrent nervure originating just before the transverse median nervure; claws with a triangular median or basal tooth. *Taxonus*, Hartig.

11. Wings elongate, narrowed; hind tibiae very long, nearly twice the length of their femora; anal cell in hind wings shorter than the submedian; claws bifid; clypeus triangularly emarginate anteriorly. *Rhoproceros*, Konow.

Wings normal; hind tibiae not nearly twice as long as their femora; anal cell in hind wings fully as long as the submedian.

Transverse nervure in anal cell straight, perpendicular; claws with a median tooth; head coarsely punctate, opaque, without a frontal area; clypeus triangularly emarginate; third and fourth antennal joints equal. . *Polystichophagus*, Ashm., n. g.
(Type *S. filicis*, Klug.)

Transverse nervure in anal cell oblique; claws cleft or simple.

Clypeus semicircularly emarginated; frontal area poorly

- defined ; third antennal joint longer than the fourth ;
claws cleft *Hypotaxonus*, Ashm., n. g.
(Type *T. pallipes*, Say.)
- Clypeus truncate anteriorly or at most sub-emarginated ;
frontal area distinct, enclosing the front ocellus ; third
antennal joint not longer than the fourth ; claws
simple *Hemitaxonus*, Ashm., n. g.
(Type *T. dubitatus*, Nort.)
12. Hind wings without a discal cell 14.
Hind wings with one discal cell 13.
Hind wings with two discal cells ; anal cell in hind wings a little
shorter than the submedian, briefly petiolated. *Heptamelus*, Haliday.
(= *Cænoneura*, Thoms.)
13. Anal cell in hind wings a little shorter than the submedian, briefly
petiolated ; claws cleft or bifid.
Abdomen depressed, ovate ; first submarginal cell much longer
than the second ; antennæ long, the flagellum sub-
compressed *Harpiphorus*, Hartig.
Abdomen more or less compressed, strongly constricted
beyond the base ; first submarginal cell not or scarcely longer
than the second ; antennæ short, slender, thickened beyond
the middle *Emphytoides*, Konow.
14. Anal cell in hind wings shorter than the median ; clypeus anteriorly
sub-emarginated ; claws with a small tooth at base. *Emphytus*, Klug.

Subfamily IV.—TENTHREDININÆ.

This subfamily is probably the most extensive one in the family, there being several hundred species already described, the majority of which are found in the Palearctic and Neotropical regions. The subfamily is easily recognized by the lanceolate cell in the front wings, which is either contracted before the middle and *closed*, or divided into two parts by a straight or an oblique nervure.

Two of the described genera, viz., *Parabia*, Somenow, and *Cocosyndia*, Kirby (= *Pampholyx*, Freymuth), I have been unable to place in my tables, not being able to obtain specimens, nor to consult the descriptions.

Pampholyx, Freymuth, was changed to *Cocosyndia* by Kirby on account of the former name being preoccupied ; but he gives no description of it, merely stating that it is the only wingless sawfly known. I have

4. Hind wings with a surrounding nervure at apex. ♂ ..Perineura, Hartig.
5. Malar space wanting or very narrow, linear, always shorter than the pedicel. 6.
Malar space distinct, as long or longer than the pedicel or second joint of antennæ. 10.
6. Lanceolate cell with an oblique cross-nervure. 9.
Lanceolate cell with a short, straight or perpendicular cross-nervure.
Hind wings without a discal cell. 8.
Hind wings with one discal cell. 7.
Hind wings with two discal cells.
Anal cell in hind wings as long as the submedian.
♀ Tenthredopsis, Costa.
Anal cell in hind wings a little shorter than the submedian.
Head and thorax cribrately punctate ; antennæ short, not tapering at tips. ♀ Sciopteryx, Stephens.
Head and thorax smooth, shining, at the most sparsely punctate ; antennæ not short, tapering toward tips.
♂ Rhogogastera, Konow.
7. Hind wings with a surrounding nervure at apex, the anal cell a little shorter than the submedian. ♂ Tenthredopsis, Costa.
Hind wings without a surrounding cell at apex, the anal cell a little shorter than the submedian. ♂ Amestasteiga, Costa.
8. Hind wings with a surrounding nervure at apex, the anal cell as long as the submedian. ♂ .
Hind wings without a surrounding nervure at apex.
Anal cell as long as the submedian. ♂ ...Homœoneura, Ashm., n.g.
(Type P. delta, Prov.)
Anal cell shorter than the submedian. ♀ ..Rhogogastera, Konow.
9. Hind wings with two discal cells, the anal cell shorter than the submedian. Pachyprotasis, Hartig.
Hind wings with one discal cell, the anal cell as long as the submedian. Beleses, Cameron.
10. Hind wings with two discal cells. 11.
Hind wings with one discal cell. 14.
Hind wings without a discal cell. 15.
11. Wings not narrowed, the transverse radius not or rarely strongly curved. 12.

Wings narrowed, the transverse radius strongly curved; lanceolate cell long and narrow, with a short cross-nervure; anal cell in hind wings as long as the submedian; head quadrate; antennæ long and slender, the third joint a little shorter than the fourth, the following gradually shortening, the second with a small tooth within at apex.....Dipteromorpha, Kirby.

12. Hind coxæ normal, the femora not or rarely extending to the tip of the abdomen..... 13.

Hind coxæ much lengthened, so that the femora extend to or beyond the tip of the abdomen; lanceolate cell with a short straight nervure (or shortly contracted); anal cell in hind wings shorter than the submedian.....Macrophya, Dahlb.
(= Emilia, Costa.)

13. Frons on each side above the antennæ elevated into more or less distinct ridges and with deep furrows on either side; antennæ 9-jointed, filiform, slender toward tips, the third joint never longer than joints 4-5 united; anal cell as long as the submedian.....Tenthredo, Linné.

Frons on each side above the antennæ truncate, or feebly emarginate and without or with only a feeble furrow between the antennæ; antennæ usually more or less thickened before apex.

Antennæ 8-jointed.....Labidia, Prov.

Antennæ 9-jointed.

Anal cell in hind wings shorter than the submedian.

Clypeus subemarginate; antennæ long, slender, tapering off at tips, the third joint much longer than fourth, but shorter than 4-5 united.

♀.....Tenthredopsis, Costa.
(? = Parastatus, Kirby.)

Clypeus deeply semicircularly emarginate; antennæ not long, subclavate, or somewhat thickened towards apex, the third joint long, longer than 4-5 united.....Allanthus, Jurine.

Clypeus truncate; antennæ not long.

♀.....Laurentia, Costa.

Anal cell in hind wings as long or a little longer than the submedian; claws cleft.

Scutellum normal or only slightly elevated; transverse median nervure straight perpendicular and placed before the middle of the anal cell.

Head small, much narrower than the thorax; clypeus at apex truncate or rounded; antennæ much shorter than the abdomen, incrassated towards apex. *Colochelyna*, Konow.

Scutellum conically elevated; transverse median nervure oblique and placed beyond the middle of the anal cell; clypeus deeply emarginated. *Conaspidia*, Konow.

14. Hind wings without a surrounding nervure at apex.

Lanceolate cell with an oblique cross-nervure; third joint of antennæ longer than joints 4-5 united. . *Aglaostigma*, Kirby.

Lanceolate cell with a straight cross-nervure; anal cell in hind wings fully as long or a little longer than the submedian; clypeus truncate. ♀ *Homœoneura*, Ashm.

(Type *P. delta*, Prov.)

Hind wings with a surrounding nervure at apex; lanceolate cell with a straight cross-nervure; anal cell in hind wings a little shorter than the submedian. ♂ *Tenthredopsis*, Costa.

15. Hind tarsi not longer than their tibiæ; hind wings with a surrounding nervure at apex; anal cell as long as the submedian; clypeus truncate. ♂ *Homœoneura*, Ashm.

FAMILY XV.—CIMBICIDÆ.

The 5- to 8-jointed, clavate antennæ, in both sexes, and the acutely margined abdomen readily distinguish this family from all the other families of sawflies. It may be separated into two subfamilies as follows:

Table of Subfamilies.

Lanceolate cell with a transverse nervure. Subfamily I., *Cimbicinæ*.

Lanceolate cell contracted at the middle Subfamily II., *Abiinæ*.

Subfamily I.—CIMBICIDÆ.

This subfamily contains rather large, robust sawflies, with rather stout or more or less swollen hind femora, which are often toothed beneath, and always have the lanceolate cell in the front wings divided into two parts by a transverse nervure. Their larvæ are external feeders and are scarcely distinguishable from the *Tenthredinidæ*.

Table of Genera.

- First dorsal abdominal segment posteriorly deeply emarginate, and filled with a chitinous membrane; hind femora not toothed. . . *Cimbex*, Oliver.
 First dorsal abdominal segment posteriorly not or scarcely emarginate and without a membrane; hind femora more or less distinctly toothed.
 Antennæ 8-jointed, with five joints before the indistinctly jointed club. *Trichiosoma*, Leach.
 Antennæ 7-jointed, with four joints before the indistinctly jointed club. *Clavellaria*, Leach.

Subfamily II.—*ABINÆ*.

The species included in this subfamily resemble those of the former in shape and general appearance, but as a rule are much smaller, more or less metallic, and may be easily separated from them by the difference in the lanceolate cell, which is always longly contracted at or a little before the middle. Five genera have been recognized, separated as follows:

Table of Genera.

- First submarginal cell not receiving both recurrent nervures. 2.
 First submarginal cell receiving both recurrent nervures; antennæ 7-jointed (the seventh joint sometimes showing an indistinct suture), the third joint long, bent, club 3-jointed. *Abia*, Leach.
 2. First and second submarginal cells each receiving a recurrent nervure 3.
 First submarginal cell receiving only one recurrent nervure, the second recurrent interstitial with the second transverse cubitus.
 Antennæ 7-jointed, the club 2-jointed *Praia*, André.
 Antennæ 6-jointed, the club unjointed. *Plagiocera*, Klug.
 3. Stigma normal; fourth joint of antennæ about half the length of the third. *Amasis*, Leach.
 Stigma abnormally large, and produced outwardly beyond the costal margin; fourth joint of antennæ two-thirds the length of the third *Pachylosticta*, Klug.

PERSONAL.

We wish to offer our very hearty congratulations to the REV. T. W. FYLES on his receiving the degree of D. C. L. *honoris causa* from the University of Bishops' College, Lennoxville, P. Q., at a recent convocation. The ability and scientific work of the reverend Doctor well entitle him to this distinction.

CARL F. BAKER has left Auburn, Ala., on a two years' leave of absence. He goes as Field Botanist to the Herbert H. Smith Exploring Expedition, which will be engaged in biological work in North-western South America. All letters, etc., for him should be addressed to St. Croix Falls, Polk Co., Wisconsin.

NOTES ON COCCIDÆ, WITH DESCRIPTIONS OF
NEW SPECIES.BY J. D. TINSLEY, NEW MEXICO EXPERIMENT STATION,
MESILLA PARK, N. M.

ERIOCOCCUS TINSLEYI, Ckll.

Adult ♂. Length, 1.3 mm.; expanse of wings, 2.5 mm.; colour, head and abdomen purplish-gray; mesothorax light ochreous, some specimens show a white longitudinal streak on the abdomen. Legs and antennæ concolorous with body. Antennæ 10-jointed. Joint 2 is bottle shaped, proximal end smallest, 70 μ long, practically identical with second joint of *Phenacoccus solenopsis*, Tins., except that *E. Tinsleyi* has a number of stout blunt spines interspersed with the bristles; joint 3 cylindrical, considerably longer than any of the others (130 μ long), only differing from *P. solenopsis* in having the stout blunt spines; joint 4 often shorter than 5, but sometimes longer, 76-85 μ ; joint 5, 81-87 μ long; joint 6 usually next, longer than 2, 68-78 μ long; joint 7 shorter than 2, 68 μ long; joint 10 usually next, 65 μ ; next 8, 56 μ ; shortest 9, 50 μ . Joint 10 is flask shaped, tapering distally. All the segments bear the stout blunt spines, interspersed with rather stout bristles. Formula 3, 5, 4, 6, 2, 7, 10, 8, 9.

Legs rather slender; femur tapering proximally, 180 μ long, with some medium sized bristles; tibia quite slender, tapering very slightly proximally, 250 μ long, quite bristly, with the stout blunt spines interspersed; tarsus bristly and with the stout blunt spines, 90 μ long, bearing a pair of short stout digitules which are very slightly dilated at the end; claw rather slender, 20 μ long.

The usual pair of long slender white caudal filaments. Male sac creamy white, about 2 mm. long and .75 mm. wide, elliptical, inclining to cylindrical.

Hab.—On roots and portions of stems lying on the ground, of *Atriplex canescens*. A. and M. College campus, Mesilla Park, N. M.; Aug. 4, 1898; coll. J. D. Tinsley.

ERIOCOCCUS TINSLEYI, Ckll.

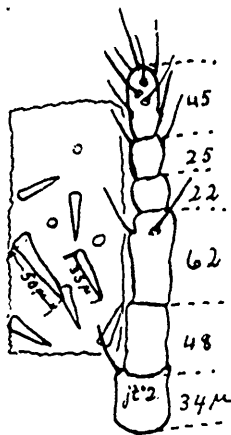
♀. Having recently studied this species somewhat in detail, I wish to add the following facts to Prof. Cockerell's description in CANADIAN ENTOMOLOGIST., Vol. XXX., No. 9, p. 247. The antennæ

(Fig. 20) in this species are quite variable both in regard to the relative length and actual size of the segments. I have observed the following

formulæ: $\begin{matrix} 4 & 3 & 7 & 2 & 5 & 6 \\ 3 & 4 & 2 & 7 & 6 & 5 \\ 4 & 3 & 2 & 7 & 6 & 5 \end{matrix}$ While in many cases the tarsus is longer than

the tibia (Ckll., *loc. cit.*), yet they are often subequal. The full-grown young females appear much more spiny than the old females.

Some time since I received specimens on *Malvastrum coccineum*, collected by Mr. E. Bethel, at Denver, Colo., which I at the time thought to be a distinct species, and from those specimens prepared the accompanying figure. I now consider them to be this species.



Prof. Cockerell has, in Aug., 1898, collected specimens on the leaves of *Atriplex canescens*, growing on the campus of the A. and M. College of N. M., which I also refer to this species.

The Colorado specimens are fairly constant in their antennal formulæ of 4 3 2 7 5 6.

The specimens on the leaves of *Atriplex* are

quite variable in their formulæ; e.g.: $\begin{matrix} 3 & 4 & 7 & 2 & 5 & 6 \\ (3 & 4) & 7 & 2 & 5 & 6 \\ 3 & (4 & 7) & 2 & 5 & 6 \\ 3 & 4 & (7 & 2) & 5 & 6 \end{matrix}$

Their legs and antennæ are stouter than in the type form, and they have more hairs between the bases of the antennæ and legs.

DACTYLOPIUS KINGII, Ckll., var. *Neo-Mexicana*, n. var.

During the past summer I collected this insect on the roots of *Gutierrezia sarothrae* in the Organ Mts., N. M., at an altitude of about 5,000 feet. They were, in all cases, attended by ants.

Adult ♀. Length, 2 mm.; width about 1 mm. Shape, ellipsoidal, rather plump. Colour yellowish. Nearly naked; no lateral or caudal filaments; dorsum sparsely mealy. The antennæ are 8-jointed, and with the formula of *Kingii*, 81235764, the fourth joint, while shortest, is relatively longer than it usually is in *Kingii*. Hairs on the segments about the same as in *Kingii*, perhaps a little smaller. The whole antenna is a little smaller than is usual in *Kingii*. Legs are rather smaller than in *Kingii*: femur 130 μ long; tibia, 140 μ long; tarsus, 75 μ long;

claw, 25 μ long. Hairs and digitules nearly as in *Kingii*. The most marked difference is in the ovisac. *Kingii* secretes a loose, fluffy, shapeless ovisac, while this var. secretes a compact, elliptical ovisac, very little larger than the female, in which the female lies partially embedded. The ovisac resembles that of an *eriococcus* very much.

PHENACOCOCCUS SOLENOPSIS, Tinsley.

Adult δ . Length, 1 mm.

Colour white, head tinged with gray, eyes red, mesothorax yellowish, legs light yellowish brown. Antennæ 10-jointed; joint 1 short and stout, 35 μ ; joint 2 bottle shaped, proximal end smallest, 70 μ long; joint 3 is considerably longer than any of the others, being 120 μ long; joint 5 next, being 90 μ ; 6 next, 85 μ ; the remaining joints are variable in relative length. Formulæ of the antennæ of one individual: 3 4 5 (6 9) 10 7 2 8 1
3 4 5 (6 8) (7 9) 10 2 1

All the segments are quite bristly. Legs rather slender. Femur 250 μ long, bearing a few bristles; tibia 265 μ long, bearing numerous stout bristles; tarsus 95 μ long, bearing numerous stout bristles; claw 31 μ long, rather slender. Tarsal digitules long and slender; claw without digitules. The usual caudal filaments.

Hab.—On roots of *Atriplex canescens*; Aug. 4, 1898; coll. J. D. Tinsley.

DACTYLOPIUS AZALEÆ, n. sp.

Adult φ . About 3 mm. long, about 2 mm. wide.

Flattened ellipsoidal, rather pointed at the ends. Colour of dried specimen, purplish-gray secretion, white, granular, practically hiding the true colour of the body. Lateral filaments very short on the thorax, increasing in length toward the anal extremity. Caudal filaments not conspicuously longer than those of posterior segments of the abdomen. The lateral and caudal filaments are just easily seen with the naked eye. Epidermis with numerous spinnerets. Dorsum with scattered, rather large, hairs. Ventrally the hairs are quite large and rather numerous, especially on the posterior segments. Largest hairs on posterior segments are 60 μ long. Sides with rows of spinneret spine areas.

Antennæ colour reddish, 8-jointed; medium size, all the joints have quite long hairs. The joints are rather variable in their relative lengths;

1 and 2 are often subequal, although in many cases 2 is appreciably longer, and 3 may be longer than 1; 5 is most usually longer than 7; 4 and 6 are shortest, sometimes one and sometimes the other. Two of the most common formulæ are 8(12)35746 and 82315764. (See figure 21.) Legs reddish, medium size. Femur, 215 μ long, 85 μ wide, with long, rather slender hairs.

Tibia 215 μ long, with long, rather slender hairs; tarsus 112 μ long; claw 33 μ long; digitules of tarsus 40 μ long, knobbed; digitules of claw long, slender, knobbed.

Anal lobes bearing one large, long hair (250 μ long), and one smaller hair. The usual group of spinnerets and spines. The spines quite stout.

Anal ring with the usual 6 hairs, which are quite large (140 μ long).

Boiled in potash the insects turn a very dark bluish green, almost black; if they are now treated with acid they turn red. The colouring matter contained in this insect has been found in but few other Coccids; most Coccids turning a red, of some shade, when treated with potash.

Ovisac loose and fluffy, white, not covering the female, but containing the eggs, which are purplish.

Hab.—On Azalea in Japanese nursery, San José, Cal. Collected by Mr. Edward M. Ehrhorn; Sept., 1898.

Remarks.—This species is very closely allied to *D. pandani*, Ckll., especially in the characters of the antennæ, anal lobes and ring, and the hairs on the epidermis. It differs, however, in colour, secretion on margin, and colour in potash. Being found in a Japanese nursery, it is almost impossible to say from whence it came, but it may possibly be Japanese.

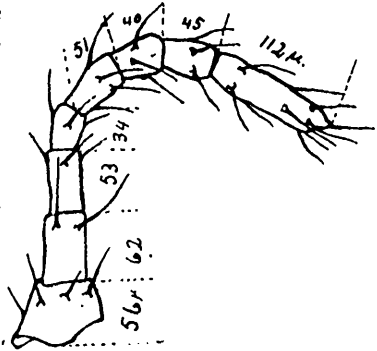


FIG. 21.

DESCRIPTIONS OF NEW NOCTUIDS.

BY JOHN B. SMITH, RUTGERS COLLEGE, N. J.

Eutolyte grandis, n. sp.

Ground colour an even, smooth, bluish-gray, washed with smoky brown. Head with a little admixture of brownish in front. Collar with a small central brown spot. Patagiæ margined with brown. Basal tuft of thorax with an admixture of black scales. Primaries with all the ordinary markings obscured, the most evident feature being a broad light gray band at inner third, outwardly margined by a brownish shade, which is the darkest part of the wing. The basal space is uniformly smoky gray to the t. a. line, which is narrow, geminate, even, a little incurved between the subcostal and submedian veins. The included space is light gray, and the light gray shade extends to the rigid median shade, including the orbicular. T. p. line narrow, geminate, denticulate, widely bent over the cell, then with a deep incurve beneath, narrowing the median shade at the inner margin. The entire median space beyond the gray band has a warm brown tint in which the large reniform is obscurely visible as a dull, lead-coloured blotch, outlined by paler gray scales. Beyond the t. p. line the wing is of the same dull gray as at base, interrupted by the diffuse, somewhat irregular s. t. line. There is a dusky line at the base of the fringes, which are alternately black and white marked at their tips. Secondaries smoky brown, much paler at base, and with a darker line at the base of the fringes. Beneath, primaries smoky blackish, powdered with bluish-gray scales in the terminal space. Secondaries grayish-white, powdery, with a blackish outer line and discal spot.

Expanse 1.70 inches = 42 mm.

Habitat.—Kansas City, Mo., March 28; F. J. Hall. Massachusetts.

The type is a fine male received from Mr. Hall, who has others, I believe. The antennæ are yellow and lengthily pectinated. This is the largest species thus far known of the genus, and recognizable also by the peculiar banding of the fore wing, which is unique thus far. The Massachusetts specimen is in the Strecker collection, and has been in his hands for several years.

Hadenella laevigata, n. sp.

Ground colour brown with a reddish tinge, the pale shades gray. Head dark, without special markings, except that there may be a paler line between the antennæ. Collar with a darker, sometimes black, line above the middle. The base and tip with gray scales. Thorax without

distinct maculation. Primaries with all the markings fairly evident. As a whole, the wing is darker from the base to a little beyond the middle; then a variably distinct pale gray or even whitish shading extends to the s. t. line, the terminal spaces being again dark. There is a variable amount of red in the dark colouring of the wing, and sometimes the median space is quite distinctly reddish. Basal line geminate, black, not very well defined. T. a. line geminate, black, the included space marked by white scales, as a whole forming a rather even outcurve and only a little irregular between the veins. The extreme base may be a little lighter than the rest of the basal space. T. p. line geminate, brown, usually not very distinct for the upper portion of its course, because it passes through the pale space already described. It makes a wide outcurve over the reniform and a correspondingly deep incurve under the cell. The s. t. line is distinct, emphasized by the difference in shade between the dark terminal and the paler preceding space; and it is also emphasized by a dusky shading which precedes it, and thus shows that it has three rather even and equal outcurves. There is a black terminal line, followed by a yellowish line at the base of the dull brown fringes; the outer margin just a little irregular. There is a trace of a median shade on the costa extending between the ordinary spots to the median vein; but not traceable below that point. The claviform is moderate in size, extends half way across the median space, is outlined by black scales, filled with the ground colour of the wing and followed by a reddish blotch. Orbicular moderate in size, a little oblique, outlined by black scales and hardly paler than the rest of the wing. Reniform large, broad, hardly kidney-shaped, and yet less indented inwardly than at the outer side; usually of the palest colour of the wing. The veins through the pale part of the wing are usually marked by blackish scales. Secondaries an even smoky gray; fringes a little paler and with a yellowish line at the base. Beneath, powdery gray; the secondaries with a more or less obvious discal dot and powdery outer line. In some specimens the primaries also show a trace of this line, and in others neither of the wings have any markings whatever.

Expanse 1 to 1.12 inches = 25 to 28 mm.

Habitat.—Glenwood Springs, Colorado, in August; Dr. Barnes. Garfield County, Colorado; Mr. Bruce.

I have eight specimens under examination and have seen others, most of them females. The latter are as a whole larger, the markings

more sharply defined, with more contrast and more red. The males are much less contrasting, but otherwise do not differ perceptibly. No two specimens are quite alike; but in a general way we have a reddish shade through the middle of the wings, a pale gray shade to the s. t. line, and the s. t. line itself is rather well marked by the three subequal outcurves. The species reminds one of *Bryophila*; but the vestiture is rougher, and there is a series of small dorsal tufts on the abdomen.

Hadenella subjuncta, n. sp.

Ground colour ashen gray, varying in colour and in depth; sometimes with a very strong admixture of brown or reddish. Head usually darker, in pale specimens sometimes with a dark band below the antennæ. Collar with a blackish line in the middle. Primaries with all the markings traceable in most of the specimens; in some very dark forms considerably obscured. Basal line geminate, black, usually marked on the costa only. The basal space is usually powdered or light in colour superiorly, while along the inner margin there is a blackish or black shade below the submedian vein. T. a. line geminate, black, with a rather even outcurve. The included space paler, sometimes marked with white scales. The t. p. line geminate, blackish in some cases, brown in others; the included space usually white, strongly bent over the reniform and deeply incurved below. The s. t. space is usually paler, more or less white powdered to the whitish s. t. line. This has two large and one smaller outcurve, and is defined by the dark ordinary space and a dusky preceding shade. The veins are marked with blackish through the paler portion of the wing. There is a series of black terminal lunules, beyond which there is a pale line at the base of the fringes; the latter are rather pale, but cut with smoky opposite the interspaces. A median shade is marked on the costa and extends beyond the reniform, where it becomes lost in some specimens; but in others reappears close to the t. p. line in the inferior portion of the wing. There is a dusky blotch which cuts the s. t. line in the submedian interspace. The claviform is moderate in size, of the ground colour, extends less than half way across the median space, but is continued by a black streak or bar to the t. p. line. Above this black bar there is a reddish shade, which varies as the examples are dark or light in colour. The orbicular is oval, oblique, somewhat irregular, usually paler than its setting. The reniform is kidney-shaped, of good size, a little oblique, usually white marked; but variable, according to the ground colour of the wing. Secondaries dull, smoky

fuscous; fringes with a pale line at the base. Beneath, gray powdered. Secondaries usually with a darker discal spot. None of the examples that I have seen had any maculation on the primaries.

Expanse .80 to 1 inch = 20 to 25 mm.

Habitat.—Glenwood Springs, Colo., Aug.; Dr. Barnes. Garfield County, Colo., 6,000 feet; Bruce. Calgary, Canada, July 9th, 16th, 19th and 27th; Mr. Dod.

Thirteen specimens are under examination and others are in collections. This is an ally of *laevigata*, with the same type of maculation; but considerably smaller in size. It is as variable in colour as the other species; but in this case the females are the darker and smaller as a whole, while the males are brighter and have the contrast much better marked. In all the specimens the black line connecting the ordinary median lines is well marked. In all specimens the dorsal tuftings, particularly in the male, are obvious.

Lathosea ursina, n. sp.

Ground colour a very pale whitish-gray, the maculation black or smoky brown. Head and thorax without markings; the vestiture very long, hairy, loose, and a little mixed with brown and gray, so as to give a somewhat powdery appearance. The sides of the palpi are blackish. Primaries with all the transverse markings obliterated. The most obvious ornamentation is a series of black dashes in the interspaces beginning between veins one and two and extending to just below the apex; in all five of these blotches arranged in an oblique series. A brown shade extends through the cell and the median vein is bordered on both sides with blackish. A black basal dash extends a short distance through the submedian interspace, and another black dash marks the internal angle. Vein one is also usually black marked. A brownish shading occupies most of the centre of the wing, leaving the costal and terminal spaces a little paler, though the white powdering sometimes extends also along the internal margin. The ordinary spots are vague, pale, without defining lines: the orbicular transversely oval; the reniform an indefinite small lunule. The veins are more or less powdered with black. Secondaries smoky gray, with a more or less well-defined discal lunule, which is rather a reflection of what is found on the under side. Beneath whitish, powdered with gray, the veins darker marked. The secondaries with a fairly well defined discal lunule in most specimens.

Expanse 1.40 to 1.60 inches = 35 to 40 mm.

Habitat.—Glenwood Springs, Colo., March 27th to April 13th: Dr. Barnes. Garfield County, Colo., 6,000 feet; Mr. Bruce.

Twelve specimens are under examination, only one of which is a female. Judging from this single example, there is no difference between the sexes, except possibly in size, because the female is next to the smallest specimen in the series; but this may be an accidental occurrence. As compared with *pullata* this is a smaller species, not nearly so dark, and distinct by the oblique series of black marks in the interspaces.

Pleroma bonuscula, n. sp.

Ground colour a very dark, powdery blue-gray. Head without perceptible markings; the antennæ whitish anteriorly. Collar with the basal half whitish-gray, relieving a narrow black transverse line. The disc and patagiæ have no special markings. The primaries are as a whole a little paler in the costal region. The transverse maculation is much obscured and hardly traceable, except on the costa. T. a. line single, blackish, preceded by white scales. It is oblique to the median vein, then forms an incurve, with another tooth on the submedian vein, which meets the t. p. line at the same point. The t. p. line is geminate, blackish, the included space marked with whitish scales. It is very slender, and as a whole very evenly oblique inwardly, reaching the inner margin at the same point with the t. a. line. There is a traceable median shade which parallels the t. p. line just within its course. S. t. line whitish, broken, consisting rather of a series of spots which do not extend quite to the apex, preceded by blackish spots and shades and sending in opposite the anal angle a white tooth which extends to the t. p. line. The terminal space is dusky. The ordinary spots are very feebly marked: the orbicular not traceable in the specimens before me; the reniform an irregular, small, upright mark. Secondaries smoky brown, without obvious markings, except a vague discal lunule. Beneath pale brown, powdery. Secondaries with a distinct discal spot, and primaries with an indication of such a spot, which may become better marked in some cases than in the examples before me.

Expanse 1.20 inches = 30 mm.

Habitat.—Glenwood Springs, Colo., in March; Dr. Barnes.

Three male specimens are under examination and they agree closely; none of them are quite perfect, and were taken at the electric lights. As compared with *obliquata* this is a smaller species and much more obscure in general appearance. The type of marking is the same; but in the

new species the s. t. line is a much more distinctive feature, particularly in the tooth which it sends to the t. p. line in the submedian interspace.

There is another undescribed species from California belonging to this genus; but the material is at present insufficient to enable me to characterize it properly. I call attention to this fact at present because the female type of *obliquata* is from California and is not the same species as the male examples which I marked type from Colorado. In other words, what I considered at the time that I described *obliquata* to be sexual differences are really specific. I have since seen male examples from California that agree with my female type, but have no male myself to authorize a description.

THE COCCID GENUS SPHÆROCOCCLUS IN MASSACHUSETTS.

BY T. D. A. COCKERELL AND GEO. B. KING.

Sphærococcus sylvestris, n. sp.

Much like an *Eriococcus* in shape, $2\frac{1}{2}$ millim. long, $1\frac{1}{2}$ wide, dark dirty brown, with a little white cottony down at its anal end, and on the mid-dorsal line a distinct longitudinal nearly white band. (King.)

♀.—Boiled and mounted in balsam, broad oval, 2 millim. long, transparent, without legs. Antennæ pale brownish, thick, subconical but very blunt at end, about $100\ \mu$ long, five-segmented; of the segments, 3 is longest, and about as broad as long; 5 next longest, slightly longer than broad; the others more than twice as broad as long, very short, 4 the shortest; 5 with a few bristles at tip. Mouth-parts yellowish-brown, very large and well-developed, about $200\ \mu$ wide. Anal ring hairless; caudal tubercles quite absent, their place represented by a few hairs. A few circular dermal glands in the caudal region. Two large stout spines, and a few small ones, on each side of the body. Spiracles as usual in the genus. (Ckll., from King's Mount.)

Hab.—Methuen, Mass., June 15, 1898, on white oak. (King.)

This is a most interesting discovery in every way, no *Sphærococcus* being hitherto reported from America. Whether the present insect is strictly congeneric with Maskell's type of *Sphærococcus* from Australia, must remain uncertain until the newly-hatched larva is found; but there is nothing in the adult ♀ on which to make a generic separation. At all events, our insect is surely congeneric with *Sphærococcus parvus*, Maskell, found on cherry, and possibly on oak, in Japan.

S. sylvestris will be readily known from *parvus* by its better developed antennæ.

CORRECTIONS.

The Rev. Dr. Fyles writes that the title of his paper on page 294 (November, 1898), "Tæniocampa alia, Gn., at Quebec," is incorrect, and should read, "*Tæniocampa subterminata*, Smith, at Quebec."

Prof. A. R. Grote, Hildesheim, Germany, writes: "On page 257, I find my name *Melanomma auricinctaria* changed to *M. auricinctarium*. I protest against this alteration in my original spelling. In all cases the gender implied originally by the author should be conformed to subsequently If I conceive of *Melanomma auricinctaria* as a golden-ringed, black-eyed woman, there is none competent to contradict me and insist that I should conceive of it as a golden-ringed, black-eyed stone!" "I refer to Bull. U. S. Geol. Survey, Vol. IV., 674, 1878, for my opinion as to the position of *auricinctaria*. I have not since examined the insect, which, I agree with Dr. Dyar, is not a Geometrid. It may be a pyralidiform Noctuid, allied to *Boletobia fuliginaria*, which I only know from figures.

"I also wish to correct the corrupt spelling of two species of *Plusia*, which has been lately used. It is *Plusia æroides*, not *æroides*; also, it is *P. pasiphæia*, not *pasiphæa*."

ACKNOWLEDGMENT.

SIR,—I desire on behalf of the Entomological Society of Ontario, to acknowledge the receipt of three species of Noctuides, new to the Society's collection, from Mr. C. E. Grant, of Orillia, Ont. :

Rhynchagrotis gilvîpennis, Grote.

Carneades pleuritica, Grote.

Mamestra vicina, Grote.

Also, a pair of fine, fresh *Euprepia Caja*, Linn., and three *Catocala Antinympha*, Hub., which, he said, came last season in profusion to a light in his window.

Also, bred specimens of the following species of *Hydræcia*, from Mr. H. Bird, Rye, N. Y. : A pair each of *H. purpurifascia*, G. and R. ; *H. rutila*, Guen. ; *H. nitela*, var. *nebris*, Guen. ; and a single specimen of *H. necopina*, Grote.

The delightful fresh bloom upon these specimens, in contrast to those that are taken by capture, is quite surprising, and has to be seen to be fully realized.

J. ALSTON MOFFAT, Curator.

BOOK NOTICE.

HANDBOOK OF INSECTS INJURIOUS TO ORCHARD AND BUSH FRUIT.—
By Eleanor A. Ormerod. Simpkin, Marshall & Co.: London, Sept.,
1898. 8vo., 286 pp.

The excellent work which has been done for economic entomology by Miss Ormerod, particularly in England, but also in many other parts of the world, is well known to everyone. Her valuable annual reports are eagerly looked for every year by all interested in the practical application of the study of insects for the prevention of their injuries to crops. We have just received from this talented authoress another evidence of her unselfish labours for the good of her countrymen. The above named volume is in reality a compendium of the original observations made during the last twenty-one years by Miss Ormerod and her correspondents, together with the latest results and the most approved remedies for the various pests of large and small fruits.

As in all former publications bearing Miss Ormerod's name, the arrangement of the subjects for convenience of reference, the presswork and the general get-up of the volume bear the stamp of a most careful and tasteful master hand. The different fruit crops treated of are: Apple, cherry, currant, gooseberry, medlar, nut, pear, plum, quince, raspberry, and strawberry. At the end is a list of the fruit crops infested by insects, with the names of the insect infestations; the subjects are arranged alphabetically; and after the name of each tree or crop mentioned in the work the names of each of the infestations to which it is liable in England are classified under subordinate headings as Bark, Blossoms, Fruit, Leaves, Shoots, Wood, according to the nature of the attack. The insects are given with their scientific and popular names, and so far as possible are arranged together as to kinds, as Aphides, Beetles, Moths, etc., with the number of the page of the detailed observation in the volume. In four instances where the pests are causes of much mischief to several kinds of crops, the infestation appears under its own name. These exceptions are: Earwig, Red Spider, Root-knot Eelworm, and Wasps.

Particular mention must be made of the excellence of the illustrations, which seem to be perfect types of what such illustrations should be in works on insects for the use of practical fruit-growers.

J. FLETCHER.

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