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A HOUSE-INFESTING SPRING-TAIL

(Lepidocyrtus americanus, n. sp.*)*.

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

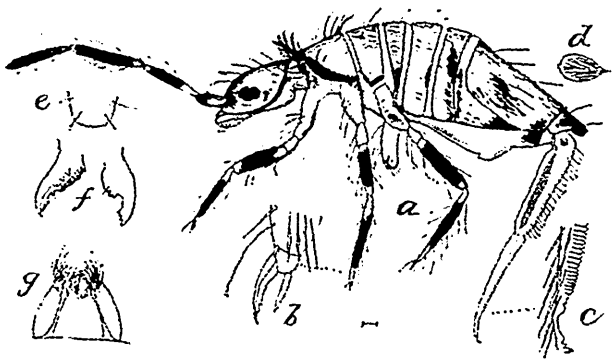

FIG. 22—*Lepidocyrtus americanus*, n. sp.
a, lateral view of female; *b*, foot; *c*, tip of spring; *d*, scale; *e*, labrum; *f*, mandibles; *g*, maxillæ and labium (original).

In the course of a comprehensive study of insects frequenting dwellings, attention was early drawn to a very handsome little Collembolan, which occurs commonly in moist situations in houses in Washington. It may often be found on window-sills, especially if there is unusual moisture from the presence of window plants, or in bathrooms, and, in fact, wherever moist conditions prevail. This species is a very handsome one, and seems, from reference to the authorities, to be undescribed. From the manner of its holding the head, bent downwards almost at right-angles to the thorax, it would seem to fall into the genus Lepidocyrtus, erected by Sir John Lubbock. In habit it has in Europe a close ally in *Seira domestica*, Nicolet, which, as its name implies, is a frequenter of houses, and is separated generically from Lepidocyrtus by rather unimportant characters. Before referring to this insect in a popular article, it seems desirable to have a technical description put on record, and the following characterization of the species has therefore been prepared :—

Lepidocyrtus americanus, n. sp.

Length, 1.5 mm.; with spring unfolded above 2 mm.; head bent strongly downward, as in *L. curvicollis*, Lubbock; antennæ 4-jointed, more than one-half length of body; basal joint not much more than one-half length of others, which are subequal; abdomen with four segments, the third of which equals one-third length of body; legs tapering, with minute terminal tarsal joint; armed at apex with large spur, notched at tip and below, which is a strong simple spur or spine; spring more than half length of body, jointed at centre, the apical portion bifurcated; densely clothed with long fine hairs; terminal rays very finely and regularly comb-notched on lower or posterior edge and somewhat curved downward at tip, with three or four short, rather distinct, teeth at extreme tip; catch a strong groove or sheath extending one-third length of venter of abdomen and grasping spring strongly up to middle joint; body clothed with flat striate scales, and dorsally with scattering heavy, almost clubbed, hairs; the anterior margin of pronotum is ornamented with very dense tuft or fringe of strong hairs; hairs of antennæ and legs for the most part fine and long. Colour silvery gray, marked with violet-purple, lighter on antennæ and legs and very dark on body markings; eyes black; antennæ, except base of lower joints, femora and tibiæ, with spot connecting antennæ, light purple; anterior and lateral margins of thorax, spots along side of body, hind margin of second, third and fourth abdominal segments, lateral spot on middle of third segment, dark purple, sometimes appearing almost black.

One-third and one-half grown specimens do not differ from adult notably, except in size and very slightly in coloration. The illustration which is presented herewith is sufficiently elucidated in the accompanying explanation. In the figure the head is bent up more than in its normal position in state of rest. The mouthparts are very difficult to work out. The labrum is simple. The right and left mandibles differ notably in the character of the teeth on their inner edges. The maxillæ and labium are of similar structure, consisting of large basal lobes, apically covered with long and rather dense brushes of hairs. The food of the insect, from the appearance of the alimentary canal, consists of particles of dust, possibly taken by the insect in its feeding on the moist vegetable moulds of decay which may be assumed to be its normal food, in the absence of any other evident material on which it could subsist.

STILL ANOTHER APHILANTHOPS.

BY T. D. A. COCKERELL, MESILLA, NEW MEXICO.

Aphilanthops concinnulus, n. sp. — ♀. Length, 9 mm. Rufous, with white markings, a rather obscure broad black band extending across vertex, including most of the ocelli, its lower margin concave, mandibles darkened towards tips, mid and hind tarsi darkened. The white or yellowish-white marks consist of a small spot on each lower corner of face, a small obscure suffused spot on mandibles near base, the prothorax above, the tegulæ except extreme base, the tubercles, a large patch behind tubercles having a linear oblique projection above, the anterior margin of scutellum, a spot on each side, the postscutellum, spots at the apices of anterior and hind femora, longitudinal bands on all the tibiæ, a large patch on each side of the first three abdominal segments, a band on the fourth, a broad quadrate spot medially on the fifth. Venter immaculate. Face with the usual silvery appressed pile. General structure, wings, etc., as in *quadrinotatus*, but the third submarginal cell is much less produced at its apex, and the third at its base, than in *quadrinotatus*, this character, however, being liable to variation. The anterior tarsi present numerous gray spatulate hairs. The apex of the abdomen is of the same type as in *quadrinotatus*.

♂. Length, 8 mm. Black with white markings; the legs, the first segment of the abdomen, the second and sometimes the third more or less dorsally, the sides of the prothorax and greater part of metathorax sometimes, dark rufous. Markings as in ♀, except that the clypeus is yellowish-white, the anterior and middle femora have a white subapical patch behind, the abdomen above has five continuous bands, the second and third sometimes narrowly interrupted, the venter has three white bands, interrupted in the middle. Apex of abdomen pointed. Scape dark rufous with a pale yellowish ring. Face densely covered with silvery pile. Clypeus (if the light portion wholly coincides with it) very low and broad, with a median lobe extending upwards; it is probable, however, that the sides of the clypeus above are dark. Anterior margin of clypeus with three very distinct, but small, teeth. A brush of yellowish hairs in front of each mandible at its base. Mandibles rufous, with a light spot at base, simple. Punctuation of vertex much closer than in *taurulus*. Nervures and stigma piceous or black.

Hab.—Several of both sexes, Rincon, New Mexico, July 5, visiting the flowers of *Chilopsis saligna*, Don. (Bignoniaceæ), in the river bed. One *A. taurulus* was taken with them.

I am convinced that these are the sexes of one species, but the ♂ and ♀ would come at opposite ends of Mr. Dunning's table (CAN. ENT., XXVIII., 206). The males known from North America, with three teeth on the anterior edge of the clypeus, may be separated thus:—

(1.) Ground colour rufous. . . . . *utahensis*, Baker.

(2.) Ground colour black.

(a.) Head and thorax densely hairy. . . *hispidus*, Fox (L. Cala.).

(b.) Head and thorax not unusually hairy. . . . *concinnulus*, Ckll.

The female of *concinnulus* is smaller than *quadrinotatus*, and has not the black head and thorax.

NEW COCCIDÆ FROM MASSACHUSETTS AND NEW MEXICO.

BY T. D. A. COCKERELL, MESILLA, N. M.

In Europe and in New Zealand species of the genus *Ripersia* have been found, which lived in the nests of certain ants. It had always seemed to me singular that nothing of the kind should occur in this country; but Mr. G. B. King has proved that they merely wanted looking for, his researches in Massachusetts having led to the discovery of three species, here briefly described.

(1.) *Ripersia Kingii*, n. sp.— ♀. About 1½ mm. long, oval, legs and antennæ very pale yellowish; the natural colour of the insect could not be determined from the alcoholic specimens, but Mr. King states that when alive it is pink, shading into purple. Mentum (so-called) elongate, dimerous, with four bristles in a group at each side near the tip, and two on the sides further up, at considerable intervals. Antennæ fairly stout, 6-jointed: 6 much longest, and about as long as 3, 4 and 5 together. Formula 6 (21) (534). All with very sparse whorls of hairs. 6 with 3 whorls. Femur stout, with four bristles on its outer margin. Tibia a little shorter than femur, with four long bristles on outer margin and two on inner. Tarsus distinctly longer than tibia. Claw very long, sharp, not much curved. Digitules very inconspicuous, filiform, with very minute knobs. Anal ring with 6 moderately small hairs. Caudal tubercles low, scarcely developed, with several hairs like those of the anal ring. Dermis with very few short hairs. Antennæ about as far apart as the length of a femur.

Hab.—Dracot, Mass., April 14, 1896, with *Lasius flavus*, L., very abundant [G. B. King]. From the character of the legs, I think these specimens are only of the second stage, but in any event the species

seems quite distinct. Another lot, also from Dracot, April 20, 1895, "with *Lasius claviger*, Rog., and *L. flavus*, very common," presents no structural differences, though Mr. King gives the colour when alive as purple. A third lot, "with *Lasius claviger* and *L. flavus*, Lawrence, Mass., April 10, 1894, colour purple," also agrees with *R. Kingii;* but one specimen of this lot has the antennal formula 631 (245), 6 with only two whorls of hairs, and may represent another species. Another has the formula 63 (21) (54).

(2.) *Ripersia lasii*, n. sp.—♀. Small, elongate-oval, clear white when alive (as I learn from Mr. King); legs ordinary, rather slender; tibia slender at base, almost as long as femur, but only about half as thick; tarsus about two-thirds length of tibia; claw rather long, pointed, slender; tibia and tarsus each with three short bristles on inner side. Trochanteric bristle not very long. Mentum dimerous, three hairs on each side near tip. Digitules apparently absent. Antennæ 7-jointed: 7 longest, longer than 5 + 6, but not quite as long as 4 + 5 + 6; 2 next longest; 3, 4 and 6 subequal; 5 shortest, a very little broader than long. Joints with very sparse whorls of hairs: 7 with three whorls, 7 a little constricted about the beginning of its apical third. Another specimen has only 6-jointed antennæ, varying thus like the European *R. pulveraria:* 3 is almost as long as 6. Formula 6 (31) 254. Four is as broad as long. As in *pulveraria*, the third joint divides to make the 7 joints. The joints are more constricted at the sutures than in *pulveraria* as figured by Newstead.

From *R. Kingii* it differs by the narrower third joint of antennæ, the somewhat less tapering apical joint, the more slender tibia and tarsus, the tarsus less tapering to claw, the claw less curved, femur not so stout, tarsal hairs shorter, stronger, not so curved, mentum shorter in proportion to its length, legs rather brownish than yellowish.

Hab.—Methuen, Mass., June 17, 1896, with *Lasius americanus*, Em., not common [G. B. King]. Another lot is marked by Mr. King, "with *Lasius flavus*, L., Methuen, Mass., Oct. 10, 1894, colour clear white, not very common." This is, I think, certainly the second stage of *R. lasii*, and may be described thus: Very slightly over 1 mm. long, rather elongate-cylindrical, though not excessively so; legs quite large; femur fairly stout, but not so stout as in adult; tibiæ somewhat shorter than tarsi. Antennæ 6-jointed: 6 about as long as 3 + 4 + 5, but not so long as in the adult. Formula 63 (21) (54). This second stage may be

known from *Kingii* by the third joint of the antennæ being distinctly longer than the second, as well as by the quite different colour when alive.

(3.) *Ripersia flaveola*, n. sp.—♀. Rather slender, about 1½ mm. long, colour about a light French yellow when alive (Mr. King informs me); antennæ slender, 6-jointed: 6 longest, a little longer than 4+5; 2, 3 and 4 subequal, 4 a little the shorter, but quite remarkably long, fully twice as long as broad; 1 next longest, then 5, which is a third longer than broad; 3 has a deep constriction at its distal third, so that it looks as if there were 7 joints, with a very small 4th, broader than long; 6 with three whorls of hairs. Legs slender, except femur, which is fairly stout. Tibia about as long as femur, tarsus about two-thirds length of tibia. Claw rather long, fairly stout, not much curved, with a small subbasal tubercle on its inner side. Digitules apparently wanting. Mentum rather short, ordinary.

Another shows 7-jointed antennæ: 4 dividing into two, so we have 4, 5 and 6 all short and equal, or about so, 5 a little the shorter. This differs from 7-jointed *R. lasii* in being longer and slenderer, the sutures between the joints nearly flat for the most part, 6 much narrower, 2 and 3 longer, especially 2, which is at least twice as long as broad.

Hab.—Methuen, Mass., April 18, 1896, with *Lasius claviger*, Rog., not common [G. B. King]. Differs at once from *R. Tomlinii* by the antennæ; it is smaller than *R. corynephari*.

(4.) *Dactylopius prosopidis*, n. sp.—♀. Oval, about 2 mm. long, pale gray, varying to dark slate-gray and pale brownish-gray, with a sparse mealy covering, which is most dense along back and at sides, leaving fairly well-defined broad subdorsal bands of a somewhat darker colour, due not to pigment, but to the exposure of the body. No caudal or lateral cottony filaments, except in half-grown individuals, which show six short cottony caudal tufts.

The females live in subspherical masses on the twigs, after the fashion of *D. filamentosus*, and are attended by ants. The ♀ forms a dense cushion of white cottony matter, on which it rests; this cushion is visible all round the margin of the insect, and does not at first protrude greatly behind. In it are laid the very pale greenish-yellow eggs. Eventually the females become dark slate-gray, and have a cross of white secretion on the hind end. They at this period possess a Pulvinaria-like ovisac, projecting behind about as much as the length of a ♀, but thick, its height at the hind extremity of the ♀ being probably not less than the length of the ♀.

Boiled in caustic soda, they stain the fluid cochineal-red, and turn orange. Anal ring with the usual 6 hairs. Caudal tubercles very low, subobsolete, with setæ which are about twice as long as the hairs of the anal ring in the second stage, but not so long as this in the adult. Antennæ 8-jointed: 8 much longest, as long as 5+6+7, which are subequal, but 5 the shorter; 4 shortest, broader than long; 3 and 2 equal. Formula 8 (32) 7 (61) 54. Legs ordinary, tarsus about ⅝ to ⅔ length of tibia, claw fairly large, digitules filiform, hardly knobbed.

Hab.—In the town of Mesilla, N. M.; on Mesquite *(Prosopis)*. I was astonished to come across this on some bushes I had passed many times. I have never seen it before on the numbers of Mesquite bushes I have examined in the vicinity. The eggs are produced at the latter part of July. This insect, in structure, particularly in the antennæ, closely resembles *D. solani*, var. *atriplicis*, which is probably a distinct species. Perhaps *prosopidis* and *atriplicis* may be forms of one species, but they seem distinct.

(5.) *Pulvinaria amygdali*, n. sp.—♀. Ochraceous, much wrinkled in drying; length of a boiled specimen under cover-glass hardly 2½ mm., broad oval. Ovisac about 7 mm. long, pure white, convex, like that of *P. ribesiæ*, not parallel-sided like *camellicola*, etc., nor adherent to anything that touches it, like *macluræ*, *innumerabilis*, etc.

Antennæ 8-jointed: 3 much longest, then 4, then 8 almost as long, 2 very little longer than 5; 6 and 7 subequal and shortest, 6 a little the shorter; 5 with two long bristles; 2 with a long hair at its end. Trochanter with a very long hair. Femur stout, more than twice as broad as tibia, with an erect hair on its inner side near the middle. Tibia and tarsus slender, tibia about as long as femur, tarsus hardly half as long as tibia. Claw short and curved, sharp. Tarsal digitules slender; those of claw tolerably stout, with oblique knobs, extending considerably beyond tip of claw. Marginal spines simple, slender, not numerous.

Prof. Tinsley, who was looking over the material with me, observed a specimen in which the third and fourth antennal joints were about equal.

Hab.—Abundant on a peach tree in Mr. Stanley's garden at Pinos Altos, N. M. (over 7,000 ft. alt.); found only on one tree. The antennæ are much like those of *P. persicæ*, Newst., but *amygdali* has the eighth joint decidedly longer. The knobs of the claw-digitules are larger and more oblique than in *persicæ*, and our insect is much smaller than Newstead's. The affinity of *amygdali* is clearly with *P. ribesiæ*, Sign.,

but I have specimens of that, and it is clearly a different thing; the scale is dark-coloured. I do not suppose that *P. amygdali* was introduced into Pinos Altos on trees, but rather that it lives on some rosaceous shrub or tree in the mountains adjacent and has been carried to the peach tree on the feet of birds. This idea is favoured by the observation that it suffers severely from a Chalcidid parasite. The insect was discovered on July 8, 1896.

(6.) *Aulacaspis montanus*, n. sp.—♀. Scale circular to slightly oval, slightly convex, white, exuviæ exposed, rather large, pale straw-yellow, first skin on second, but to its side. Diameter of scale little over 1 mm.

♀. When dry, brown-black, colourless after boiling in caustic soda. Mouthparts far anterior. Five groups of ventral glands, caudolateral and median groups compact, caudolaterals of 8, cephalolaterals 13, median 7. Median lobes wide apart at base, rounded, very low, their height above the margin less than half their breadth, their bases pointed, their colour slightly yellowish, not dark. Second and third lobes small, rounded, nearly obsolete. Plates small, spinelike. Anal orifice some distance from hind end, but caudad of the level of the caudolateral grouped glands. Margin with narrow sacs or saclike incisions, about as long as the greatest breadth of a median lobe.

♂. Scales in colonies, much as in *A. texensis*, brownish-white, distinctly 3-carinate, exuviæ at one end, pale orange.

Hab.—Pinos Altos, N. M., July 8, 1896, on the trunk and limbs of *Quercus Wrightii*. It is evidently nearest to *A. texensis*, which lives on *Sophora* in Texas, but the median lobes are differently shaped and do not show the prominent serrations. The ♂ scales are not so white and have sharper keels than in *texensis*, but the ♀ scales are whiter and have the exuviæ more contrasting with the scale.

I found four species of Coccidæ on the *Quercus Wrightii* at Pinos Altos, namely: *Aulacaspis montanus*, n. sp.; *Aspidiotus ancylus*, Putnam (evidently native); *Kermes galliformis*, Riley; and *Olliffiella cristicola*, Ckll., ined. The last is an extraordinary gall-making species, the type of a new genus of Idiococcinæ, the larva resembling *Crocidocysta;* the adult, *Sphærococcus*—Australian insects! The galls were abundant on the leaves.

I found at Pinos Altos two other species of oaks (*Q. Gambelii* and *Q. hypoleuca*), kindly identified for me by Mr. C. A. Keffer, but on neither of them did I observe any Coccidæ. Pinos Altos is the only locality in the Rocky Mountains where I have seen as many as three species of oaks growing on one hillside.

A SUMMARY OF THE MEMBERS OF THE GENUS CHILOSIA, MEIG., IN NORTH AMERICA, WITH DESCRIPTIONS OF NEW SPECIES.

BY W. D. HUNTER, ASSISTANT IN ENTOMOLOGY, UNIVERSITY OF NEBRASKA.

Chilosia signatiseta, n. sp.

Eyes bare, arista plumose, scutellum with long hairs on the margin, third antennal joint very large, bright yellowish-red. Legs black.

Male.—Front prominent, opaque, strongly sulcate medially, very indistinctly punctulate, long black pilose. Face shining black, pollinose on the sides and pilose on orbital margin below; below the antennæ deeply concave to the tip of the tubercle, thence gently concave to the epistoma. Tubercle projecting somewhat beyond the base of the third antennal joint, round. Cheeks shining, sparsely whitish pilose. Ocellar area black pilose. Eyes metallic. First antennal joint black, second dark reddish-brown, third bright yellowish-red, very large, subquadrate, with the lower outer corner rounded, upper corner obtusely pointed. Arista basal, black, incrassate, densely plumose. Dorsum of the thorax very lightly punctate, shining greenish-black, abundantly whitish pilose (viewed from in front) mixed with black in the middle, longer posteriorly. Scutellum lightly punctate, abundant long black pilose, with a few light hairs intermixed. Pleura abundant long whitish pilose. Abdomen with the sides almost parallel, short sparse yellowish pilose, more abundant on the sides, where it is intermixed with a few black hairs. First segment entirely opaque, second and third except on the lateral margins, fourth entirely, bright shining greenish. Legs black, all the knees reddish; pile in most reflections black; on the under side of all the tarsi and the anterior tibiæ, golden in some reflections. Wings hyaline, veins dark brown, apical cross-vein almost straight, without stump. Length, 7½ mm. Al., 7 mm.; 1 4-5 mm. wide.

Female.—Differs from the male in having the front shining and lighter pilose, the dorsum shorter pilose, the abdomen entirely shining, and the third antennal joint much larger; in this sex it is enormous—one and one-half times as large as in the male, but of the same shape.

Three specimens; Moscow, Idaho; Prof. J. M. Aldrich.

This species is closely allied to *C. Willistoni*, but is specifically quite distinct in the larger size and different shape of the third antennal joint, in the fact that the arista is densely plumose, while in that species it is loosely so, and that in the male the abdomen is largely opaque.

The third joint of the antennæ in *C. Willistoni* is small, subquadrate, and very much rounded at the tip; in the present it is very large, subquadrate, and obtusely pointed at the tip.

Chilosia cyanea, n. sp.

Eyes bare, arista plumose, scutellum with bristles on the margin, third antennal joint subquadrate, a little longer than broad, bright reddish-yellow. Legs black.

Female.—Shining blue. Front slightly sulcate medially, shining black, distinctly punctate, black pilose. Face shining black, not pilose, almost imperceptibly pollinose, deeply concave below the antennæ (so that in profile the concavity recedes to the eyes), tubercle rounded, obtuse, projecting about as far as the middle of the third antennal joint, below the tubercle almost straight (so that a line from the apex of the antennal callosity parallel to the posterior eye margin would coincide with the outline of the face below the tubercle). Cheeks shining black, nearly bare. First and second antennal joints black, second reddish at the apex. Third joint of medium size, a trifle longer than wide, subquadrate, with the lower outer angle rounded, light reddish-yellow, light pollinose in some reflections. Arista at the extreme base of the joint black, incrassate for about one-half of its length, long loose plumose. Occiput olivaceous, lightly pollinose, superiorly black and inferiorly white pilose. Thorax shining blue, finely punctate in front, more coarsely so posteriorly and on the scutellum, with very short black pile, lengthened into slender bristles on the sides posteriorly and on the border of the scutellum. Scutellum entirely shining blue, its pile and that of the adjacent dorsum yellow (viewed from in front). Pleura shining, with light-coloured pile. Abdomen broadly ovate, widest at the apex of the second segment, everywhere shining blue, less strongly punctured than the scutellum, with short white pile that when viewed from above appears to form narrow oblique bands, meeting at the middle of the anterior margin of the segments. Tarsi and legs, except the knees, black. Wings hyaline, much longer than the abdomen, tegulæ and veins testaceous. Posterior cross-vein slightly incurved, apical cross-vein straight, with outward stump at base and about one-third of its length above. Length, 7½ mm. Al., 8 mm.

One specimen; Moscow, Idaho; Prof. J. M. Aldrich.

This species is closely related to *C. Willistoni*, but may be separated from that species by the general colour and by the colour of the third antennal joint.

Chilosia Aldrichi, n. sp. (Named after Prof. J. M. Aldrich.)

Eyes bare, arista scarcely pubescent, scutellum without bristles, legs black.

Female.—Shining black, almost bare. Front trisulcate, coarsely punctate, yellow pilose. Face shining on middle portion, powdered on the sides, between the lateral sutures and the eyes short pilose, below the antennæ deeply concave, below the tubercle slightly so. Tubercle round, projecting as far as the apex of the third antennal joint. Cheeks shining black, white pilose. Occiput shining olivaceous, light pilose. Ocellar area with a few black hairs. Antennal joints one and two black, third flattened, oval, slightly longer than broad, reddish-brown, darker above. Arista basal, almost bare, black, somewhat incrassate at base. Dorsum shining black, lightly punctate, very sparsely short yellow pilose, humeri dark. Pleura shining, pilose like the dorsum. Scutellum black, shining, more strongly punctate than the dorsum. Abdomen oval, widest at the apex of the second segment, everywhere shining black; black pubescent in the middle, and short white pilose at the sides anteriorly. Legs black; front pairs, including the coxæ on the under side and posterior tarsi at apex, very indistinctly golden pubescent. Wings subhyaline, indistinctly tinged on the basal half with brownish, long, rather slender, veins brown. Apical cross-vein without stump, except at the base. Tegulæ white. Length, 9 mm. Al., 8 mm.

Three specimens; Craig's Mt., Idaho; Prof. J. M. Aldrich.

The colour of the third antennal joint in this species varies from very dark reddish to almost black.

TABLE OF NORTH AMERICAN SPECIES OF CHILOSIA.

1. Eyes pilose.....2
   Eyes bare.....8
2. Legs black.....*Aldrichi*, n. sp.
   At least the tibiæ more or less light-coloured.....3
3. Third joint of the antennæ light reddish-yellow or yellow.....4
   Third joint of the antennæ black or reddish-brown.....5
4. Abdomen shining (female), arista black.....25
   Abdomen largely opaque (female), arista brown.....28
5. Third antennal joint nearly square.....6
   Third antennal joint rounded.....7
6. Face in profile almost vertical below the antennæ, produced considerably below the eyes.....*lasiopthalma*.

Face strongly concave below the antennæ.....*Baroni.*

7. Shining portion of the abdomen steel-blue; pile of the front light-coloured.....*chalybescens.*

Shining portion of the abdomen metallic-green; pile of front black.....*occidentalis.*

8. Legs black; at most, the knees lighter.....9

Tibiæ at least largely yellow.....14

9. Third antennal joint black.....27

Third antennal joint brown, yellow or reddish-yellow.....10

10. Arista plumose.....11

Arista bare.....13

11. Third antennal joint reddish-brown; arista loosely plumose; general colour blackish; antennæ moderate in size (female)....*Willistoni.*

Third antennal joint bright reddish-yellow.....12

12. Arista densely plumose; general colour blackish; dorsum of thorax (female) yellowish pilose; third antennal joint very large (female).....*signatiscta*, n. sp.

Arista loosely plumose; general colour blue; dorsum of the thorax (female) not black pilose, but black pubescent (viewed from in front).....*cyanea*, n sp.

13. Third antennal joint reddish-brown or brown; rounded; tegulæ black ciliate; wings blackish in front.....*nigripennis.*

Third antennal joint reddish-yellow, subquadrate; tegulæ white ciliate; wings not blackish in front.....*versipellis.*

14. Scutellum without bristles or bristlelike hairs on the margin.....15

Scutellum with bristles or bristlelike hairs on the margin.....18

15. Posterior femora largely reddish, or at least so coloured at the base.....23

Posterior femora, except the tip, always black.....16

16. Abdomen entirely shining in both sexes.....*comosa.*

Abdomen, at least in the male, largely opaque.....17

17. Four anterior tibiæ entirely yellow; pile of front light-coloured.....*capillata.*

Four anterior tibiæ yellow only at apex and base; pile of front black.....*tarda.*

18. Arista briefly pubescent.....19

Arista plumose or long pilose.....20

19. Femora yellow.....*prima.*

Femora largely black or brown.....24

20. Third antennal joint quadrangular..... ..... *Townsendi.*
Third antennal joint rounded-ovate or ovate.....21
21. Abdomen in both sexes entirely shining.....26
Abdomen of the male largely opaque.....22
22. Posterior femora on basal third, and at apex, yellow; scutellum yellow, except the narrow base..... ....*pallipes.*
Posterior femora, except the apex, black; scutellum only piceous at apex; first posterior cell broader and last section of fourth longitudinal vein accordingly longer.....*tristis.*
23. Second abdominal segment partly opaque; four anterior tibiæ entirely yellow..... .....*prima.*
Abdomen entirely shining; four anterior tibiæ with at least a dark band..... *parva.*
24. Pile of dorsum of thorax black, abundant.....*sorocula.*
Pile of dorsum of thorax sparse, whitish or yellowish.....29
25. Thorax long pilose, third antennal joint moderate; arista pubescent..... .....*aurotecta.*
Thorax short pilose..... 27
26. Anterior femora largely black.....*cyanescens.*
Anterior femora yellow..... ....*plumata.*
27. Scutellum with bristlelike hairs.....*lævis.*
Scutellum destitute of such hairs.....*lucta.*
28. Scutellum with bristles..... .....*petulca.*
Scutellum without bristles..... .....*sororia.*
29. Pile of the abdomen long, yellow..... .....*chalybescens.*
Pile of the abdomen short..... .....*hoodiensis.*
30. Posterior femora light-coloured at base and apex; dorsum of thorax smooth..... .....*pallipes.*
Posterior femora light-coloured only at the apex; dorsum of thorax roughened..... .....*leucoparea.*

CATALOGUE OF THE DESCRIBED NORTH AMERICAN SPECIES OF CHILOSIA.

Chilosia.

Meigen; Syst. Beschr. III., 296 (1822), Cheilosia.
Ibid., id., VII., 128 (1838).
Cartosyrphus, Bigot, Ann. Soc. Ent. Fr., 1883; 555. (Will.)
Melanogaster, Bigot, Ann. Soc. Ent. Fr., 1883; 258. (Pt.)
Syrphus and Eristalis ex parte, auctorum.

Chilosia Aldrichi, Hunter ante.

Chilosia aurotecta, Giglio-Tos ; Bulletino Mus. Zool. e. Anat. R. Univer., Torino ; Vol. VII., 132, p. 4. (1892). Orizaba, Mexico.

Chilosia Baroni, Willist., Syn. N. A. Syrph. 40. (1886). Cala., Washington State.

Chilosia capiliata, Loew, Centur. IV., 65, 1863.—O. S. Cat. N. A. Dipt., 1878, p. 121 ; Will. Syn. N. A. Syrph. 43. D. C.—Virginia. Cartosyrphus lamprurus, Bigot, Ann. Soc. Ent. Fr., 1884, 552 (Will.)

Chilosia chalybescens, Will., Kans. Uni., Quart. Vol. II., No. 2, 1893. Cala.

Chilosia chrysochlamys, Will., Biol. Cent. Am. Dipt., III., p. 8 (1891). Omilteme, Mexico, and Sierra de las Aguas Escondidas, Mex.

Chilosia comosa, Loew, Cent. IV., 66, 1863.—O. S. Cat., 1878, 121., Will. Syn. N. A. Syrph. 44. Colo., English River; Winnipeg.

Chilosia cyanea, Hunter ante. Idaho.

Chilosia cyanescens, Loew, Cent. IV., 66, 1863.—O. S. Cat., 1878, 121. Will Syn. N. A. Syrph. 42. Conn.; New Hampshire ; Illinois.

Chilosia hoodiensis, Bigot, Ann. Soc. Ent. Fr., 1884, 552 (Cartosyrphus hoodianus). Will. Syn. N. A. Syrph. Appendix, 292. Oregon.

Chilosia lævis, Bigot, Ann. Soc. Ent. Fr., 1883, 552 (Cartosyrphus). Will. Syn. N. A. Syrph. Ap. 292. Washington State.

Chilosia lasiopthalma, Will., Proc. Am. Phil. Soc. XX, 306, 1882. Ibid. Synopsis, 40, 1886. Colorado.

Chilosia leucoparea, Loew, Cent. IV., 69 —O. S. Cat. N. A. Dipt., 1878, 121 ; Will. Syn. N. A. Syrphidæ, 45. Carolina.

Chilosia lucta, Snow, Kans. Uni., Quart. Vol. III., 228, April, 1895. Colorado.

Chilosia nigripennis, Will., Proc. Am. Phil. Soc. XX., 307 ; 1882. Oregon. Cartosyrphus infumatus, Bigot, Ann. Soc. Ent. Fr, 1884, 553.

Chilosia occidentalis, Will., Proc. Am. Phil. Soc. XX., 305. Ibid. Synopsis, 41. California.

Chilosia pallipes, Loew, Cent. IV., 70, 1863.—O. S. Cat. N. A. Dipt., 1878, 121. Will. Synopsis, 41, Ib. Appendix, 293. White Mts.; Washington, Cala.

Chilosia parva, Will., Proc. Am. Phil. Soc. XX., 307 ; 1883. Oregon. Melanogaster ochripes, Bigot, Ann. Soc. Ent. Fr., 1884, 555. (Will.)

Chilosia petulca, Will., Synopsis 39, 1886. Snow, Kans. Uni., Quart. Vol. III., 228. State of Washington ; Colorado.

Chilosia plumata, Loew, Cent. IV., 68, 1863.—O. S. Cat. N. A. Dipt., 1878, 121. Will. Synopsis, 42, 1886. Virginia.

Chilosia prima, Hunter, CAN. ENT. XXVIII., 92, 1896. Pennsylvania.

Chilosia signatiseta, Hunter ante. Idaho.

Chilosia sorocula, Will., Biol. Cent. Am. Dipt. III., 1891. Snow, Kans. Uni., Quart. III., 228. Mexico: Omilteme, 8,000 feet; Xucumanatlan, 7,000 feet; Sierra de las Aguas Escondidas, 7,000 feet;—all in Guerrero, U. S., New Mexico.

Chilosia sororia, Will., Biol. Cent. Am. Dipt. III., 9, 1891. Mexico. Ciudad in Durango, 8,100 feet.

Chilosia tarda, Snow, Kans. Uni., Quart. Vol. III., 228. Colorado.

Chilosia Townsendi, Hunter, CAN. ENT., Vol. XXVIII., 94, 1896. California. Chilosia sp., ? Townsend; Dipt. Baja, Cala., in Proc. Cala. Acad. Sci. Series ii., Vol. 4, 611.

Chilosia tristis, Loew, Cent. IV., 71, 1863.—O. S. Cat. N. A. Dipt., 1878, 121. Will. Synopsis, 41. Red River. (Loew.)

Chilosia versipellis, Will., Synopsis 44. State of Washington.

Chilosia Willistoni, Snow, Kans. Uni., Quart. Vol. III., 227 (1895). Cala.; Col. This species was described as *C. lugubris* by Williston—Synopsis, p. 45, 1886. Snow has suggested the present name because "the name *lugubris* is preoccupied for a Swedish Chilosia by Zetterstedt." According to Herr T. H. Becker, Zetterstedt's species will not stand, as the types of that species are partly teneral forms of a well-known species of Meigen and partly mature specimens of other species. However, this does not affect the propriety of Mr. Snow's suggestion which I have adopted.

SPECIES NOT INCLUDED ABOVE.

Chilosia frontosa, Bigot, Ann. Soc. Ent. Fr., 1883, 552. Will. Synopsis, p. 46. Mexico.

Chilosia rufipes, Bigot, Ann. Soc. Ent. Fr., 1884, 555 (Melanogaster).

It is quite probable that this species is a Chilosia, from the fact that Mr. Bigot, in his table for the separation of the genera of Syrphidæ, distinguishes Melanogaster from Cartosyrphus by the fact that in the former genus; "Face, female, pourvue de sillons lateraux."

It will be impossible to recognize the species from the description, as the three very important characters—the bareness or pilosity of the eyes and arista, and the presence or absence of bristles on the scutellum—are entirely omitted.—North America (Bigot).

Chilosia, n. sp. ? Snow, Kans. Uni., Quart. Vol. III., 229. Colorado.

A NEW PULEX FROM QUEEN CHARLOTTE ISLANDS.

C. F. BAKER, FORT COLLINS, COLO.

Pulex Keeni, n. sp.

Belonging to Division II., group two of the genus as given in my Preliminary Studies. Nearest *sciurorum*.

Head without combs of spines, in the female normal, highest at the occiput, gradually sloping forward, then rapidly curved in front, anterior edge of face nearly perpendicular, but rounded; head in male flat above or slightly concave, strongly rounded in front, the anterior edge of the face slightly receding. Bristles on head few, these being on both sides of the antennal groove and on the occiput. Antennal groove open, bristles on joint 2 short. Mandibles equalling or slightly exceeding the fore coxæ. Pronotal comb of twenty-two spines. Bristols on dorsal abdominal segments in two rows, the second of six to ten rather short bristles, on the ventral segments in single rows of usually six bristles. First three or four dorsal segments furnished on discs with two to six very short stout teeth. Leg spines rather weak except on the fore coxæ and all the tibiæ. Apical spines on joint 2 of hind tarsi much shorter than joint 3; two of the apical spines of middle tibiæ longer than first joint of tarsi. In fore tarsi joint 1 equals 2 and three-fourths of 5, 3 a little shorter than 5, and 4 little more than half of 5. In the middle tarsi joint 5 equals three-fourths of 2, 3 is one-half of 1 and nearly equals 5, and 5 is twice 4. In the hind tarsi joint 2 is two-thirds of 1, 1 is two and a half times 3, 2 equals 3 and 4 together, while 4 is one-half of 3, which is somewhat longer than 5. In the male the upper claspers are long, narrow, pedunculate, sides nearly parallel, anterior margin slightly angulated, apex rectangular and furnished at tip behind with a long, stout bristle, and on posterior edge with two short, stout, blunt black spines; the lower or posterior claspers differ widely from those of *sciurorum* in being short and suddenly broadened towards the tip. Colour light brown. Length: male, 2.5; female, 3 mm.

Described from several specimens taken on *Sitomys Keeni*, at Masset, Queen Charlotte Islands, in August of 1895, by Rev. J. H. Keen, to whom the species is dedicated. I am indebted to Dr. James Fletcher for the opportunity of examining this very interesting and well-marked form.

NOTES ON SAWFLY LARVÆ.

BY HARRISON G. DYAR, PH. D., NEW YORK.

Trichiosoma triangulum, Kirby.

Two flies have emerged from cocoons which had passed two winters. Last summer I noticed an example of mistaken instinct. The eggs of this species are laid under the lower epidermis by saw-cuts in the edge of the leaf. Several eggs so laid were found on *Ilex verticillata.* In due time the larvæ hatched, but refused their food, and would undoubtedly have perished had I not recognized them and supplied them with willow, which they attacked voraciously.

Macrophya tibiator, Norton.

The description of the larva of this species in Harris's Correspondence, p. 369, is included in the first paragraph only. The remaining notes under the same heading refer to larvæ of *Harpiphorus varianus.*

M. tibiator has a variable number of stages, difficult to determine, much as in the case of *H. varianus.* I have mature larvæ with width of head 1.4, 2.2 or 2.5 mm. The following description is a little more definite than that of Harris, though his is excellent:—

Pale yellowish, thickly overspread with a fine mealy-white secretion, less abundant subventrally and on the legs, which consequently appear yellowish; venter without bloom; anal plate concolorous. On vertex of head a large defined black band ending in a rounded point above the clypeus; eye in a black spot. Segments 7-annulate; a row of small velvety black lateral spots, two per segment (on third and fifth annulets above the spiracle), the anterior spot the larger; only one spot on joints 3 and 4, none on joint 2, and only a trace of any on joint 13. Thoracic feet colourless, with a black mark at the extreme base. Abdominal feet on joints 6 to 13. The larvæ curl spirally like the Cornus larvæ. Sometimes the white secretion become slightly woolly, but never as in *H. varianus.* Head only slightly pruinose.

Ultimate stage.—Head shining, dull honey-yellow, finely shagreened, no marks; eye black. Body segments neatly 7-annulate, very shining, pale greenish-yellow, without marks or any white bloom except the dark spiracles and faint tar-brown shades in the folds. Thoracic feet colourless. The larvæ immediately enter the earth. Found on the elder (Sambucus) in VanCortlandt Park, New York, and also sent me by Mrs. Slosson, from Franconia, N. H.

Harpiphorus maculatus, Norton.

I think the last word has not been said in the controversy as to the identity of this form with *Monostegia ignota*. Mr. Mally apparently disposed of the question (Insect Life, III., 9) by showing that *M. ignota* had always four submarginal cells and came from a larva with immaculate head, whereas *H. maculatus* may have three or four submarginal cells, but comes from a larva with a black spotted head.

Now I have to record the breeding of two specimens of *H. maculatus* from larvæ with black spotted head (as required), but also two specimens of the same insect (three submarginal cells) from larvæ with immaculate head, on strawberry, and another specimen from a similar larva on raspberry.

These observations are contradictory to Mr. Mally's conclusions; but agree with the original contention of Mr. Harrington, that the species are identical. Another fact is in favour of Mr. Harrington's view. The larvæ of both forms are structurally and in habits those of Harpiphorus (or Emphytus), not Monostegia, Eriocampa or Caliroa. The two types are rather distinct.

Egg.—I have nothing to add to Mr. Mally's account.

Stage 1.—Head black or dark brown, with a black shade around the eye; width .25 to .3 mm. Body whitish, rather opaque, but the food showing by transparency; distinctly annulate, no marks. Thorax slightly enlarged. Rests with the body extended.

Stage 2.—Head pale brown, with or without traces of a vertical and lateral black patch; eye black; width .4 mm. Body all whitish, food showing; annulate, as before.

Stage 3.—Head pale brown or whitish-testaceous, shining, the eye black, immaculate or with the three black spots of the mature larva (black spotted variety); width .6 mm. Body whitish, not shining, about 6-annulate, no marks. The larva rests with the body curled.

Stage 4.—Head whitish to pale brown, as before; width .8 mm. Body whitish, like ground glass, only coloured by the food from within. Feet on joints 6 to 13; thorax a little larger than abdomen; head large in proportion.

Stage 5.—Head whitish or slightly brownish, immaculate, except for the black eye, with a trace of black shades or a dusky black cloud on the apex and a smoky darker patch behind and a little above the eye; width 1.0 to 1.15 mm. Body as in the next stage, but without the small points;

immaculate or with more or less distinct traces of a dusky lateral band; rarely a faint black suranal dot.

Stage 6.—Head whitish, with a brown shade over the vertex, or pale brown, immaculate or with the three black patches; eye black; a groove at the vertex of each lobe; width 1.3 to 1.5 mm. Thorax enlarged, mostly dorsally, the lateral outline regular; segments neatly 6-annulate, with minute blunt white points on the second and fourth annulets. Whitish, not shining, a faint green tint dorsally. Thorax dark green from the large crop full of food; posterior portion of alimentary canal nearly empty; dorsal vessel greenish. No marks or a lateral smoky black band of segmentary dusky patches and traces of a geminal dusky dorsal shade. A small quadrate black suranal patch. Thoracic feet colourless, with brown tips; tracheæ not very evident. Sits with the body outstretched or curled.

Stage 7 (ultimate stage*).—Head sordid whitish, vinous tinted or pale greenish, immaculate or with the spots represented by leaden or tar-brown shades; width as before. Body the same colour, more or less shaded with tarry-brown in the folds and in an indistinct subdorsal shade.

Caliroa obsoleta, Nort. (CAN. ENT., XXVII., 338, *3S.*)

Head very pale testaceous, eye black; width .7 mm. Body colourless or very faintly greenish, food showing distinctly. Skin shining and sticky; feet on joints 6 to 12, all colourless, including the thoracic feet. Thorax enlarged, the feet truncate.

Ultimate stage.—Not shining, rather opaque pale whitish ochreous; segments obscurely annulate, with transverse dorsal shining areas.

Feeds on wild cherry *(Prunus serotina* and *P. pennsylvanica).* Rests on the under side of the leaves, never on the upper; solitary. The larva is smaller than *Eriocampa cerasi*, without any trace of the blackish colour.

The variation in the number of submarginal cells and in the colour of the head in the larva of *Harpiphorus maculatus* recalls the case of *Monostegia quercus-albæ.* If we disregard the colour of the head here also, there are still three well-marked types of larvæ as follows :—

1. On white oak, rarely on black oak; sides of the thorax concolorous with the body; head colourless, pale brown or black. Imago, 16 speci-

* I propose this term for that final larval stage of certain sawflies in which they do not feed, but only seek for a place for pupation; the colour is usually markedly different from the preceding stage, but the head has the same width.

mens: four with two middle cells in hind wings, five with one middle cell, and seven with no middle cells (five of the latter are males; all the rest females). Larva with the pale head described in Trans. Amer. Ent. Soc., 1867, and CAN. ENT., XXVII., 195, as *M. q.-albæ;* with black head, described, CAN. ENT., XXVI., 43, and XXVII., 195 (the last time as *Caliroa obsoleta*).

2. On black oak, rarely on white oak and yellow birch; sides of thorax orange tinted; head whitish or black. Imago, nine specimens: seven with two middle cells in hind wings, at least on one side; two with one middle cell on both sides. Larva with pale head described, CAN. ENT., XXVI., 42, as *M. q.-coccineæ;* with the black head, CAN. ENT., XXVII., 193, as *Eriocampa fasciata.*

3. On wild cherry, entirely pale, and never gregarious, as the two preceding generally are. Imago, four specimens with no middle cells in the hind wings. Larva described as *Caliroa obsoleta.*

Pristiphora grossulariæ, Walsh.

Larvæ common on gooseberry at Jefferson, N. H. The four last stages were observed with widths of head .4, .6, .8, 1.2 mm. The segments are obscurely 6-annulate, with minute dark setæ on the second and fourth annulets, and on the subventral region; no anal prongs. Walsh's description is sufficient.

Pristiphora tibialis, Norton.

I have already described this larva on birch and willow. The occurrence on the latter food plant would seem to confirm Norton's original suggestion that the species is the same as *P. sycophanta*, Walsh, since the larvæ might have entered a deserted gall on their food plant when preparing to spin and thus be classed by Walsh as "inquiline." More recently I have bred *P. tibialis* on high bush huckleberry (Vaccinium) from near New York City. The following is a description of the single larva found on this plant: Abdominal feet on joints 6 to 11. Head pale testaceous greenish, a brown shade from the eye to the vertex and a darker one on the median suture, spreading out on the clypeus; width 1.3 mm. Body clear green, rather dark; dorsal vessel a distinct black band edged with a broad green stripe of fat-granules which fade away to near the lateral area, blending into the ground colour. On joint 13 a dorsal and subdorsal mass of fat, the end of the joint solidly filled in with the green fat. Segments rather distinctly 6-annulate; subventral

folds black dotted. Thoracic feet faintly brownish. The larva rests on the edge of the leaf, curling its body more or less downward.

Nematus dorsivittatus, Cresson.

Larvæ on poplar at Jefferson Highlands, N. H. Identical with *Nematus mendicus*, except in size; width of head 1.7 mm. The dark spottings on the head fail to separate these species, for in these most recent specimens of *N. dorsivittatus* they are about as distinct as in *N. mendicus*. The anal prongs pointed, black tipped. Larva described, Trans. Am. Ent. Soc., XXII., 303.

Cladius pectinicornis, Foucr. (= *isomera*, Harris.)

Larvæ on wild rose in VanCortlandt Park, N. Y. Five stages observed with width of head .3, .5, .7, 1.0, 1.4 mm. No ultimate stage. The larvæ are already adequately described.

AGRONOMA AGAIN.

BY JOHN B. SMITH, SC. D.

In 1895, according to Mr. A. R. Grote, "the European type of *Agronoma* seems certainly to be *vestigialis*." This species was declared to be congeneric with the American species classed by me as *Feltia*, and the latter genus was dropped in favor of *Agronoma*, and Mr. Slingerland was scolded because he had adopted the generic name used by me. In the January (1896) number of the CAN. ENT. I pointed out for Mr. Grote's benefit, and also for the information of American students, that there existed certain points of structural difference which had escaped Mr. Grote's examination, which made the declared type of *Agronoma* a member of the genus *Agrotis* as restricted by me, the latter genus being based upon the very species which Mr. Grote said was its type. As the result of this paper, it has become much less "certain" to Mr. Grote's mind that *vestigialis* is, after all, the type of *Agronoma*, and on reconsidering the matter, it seems to him that *crassa* had better be considered the type. Mr. Grote states, in the June number of the journal of the New York Entomological Society: "I have examined here, in the Roemer Museum, specimens of *crassa*. The fore tibiæ are heavily armed; the front is roughened or tuberculate; the male antennæ are pectinate. It is therefore a *Feltia*"..... "It follows that the type of *Agronoma* must be changed, and *crassa*, the first species cited, is then the type." It is to be noted that Mr. Grote refers to the front as being "roughened or

tuberculate," and this at once made it more than reasonably doubtful whether his conclusion, "It is therefore a *Feltia*," was justified; because in *Feltia* the front is not tuberculate; it is roughened and protuberant only. A tuberculate front is the chief characteristic of Mr. Grote's genus *Carneades* and of my genus *Porosagrotis*. It became necessary, therefore, for me to examine specimens of *crassa*, and this again presented evidence of Mr. Grote's failure to make strictly accurate, scientific statements. The structure of *crassa*, with the exception of the pectinated antenna, is exactly the same as that of his genus *Carneades*, and it adds force to what I previously said, that Mr. Grote did not recognize the extent of his own genus when he described it. The pectinations of the antennæ in this group are not of generic value. *Feltia* contains some species that have antennæ pectinated, and some that have them serrated. Both *Porosagrotis* and *Carneades* contain species ranging in the same way, with either pectinated or serrated antennæ; but the essential point, the tuberculate clypeus or front is characteristic of Mr. Grote's genus *Carneades*, and this is exactly what he failed to recognize in the European species *crassa*. My genus *Porosagrotis* is the only one ever described by me which is based on genitalic characters. In *Carneades* the clasper is forked, or consists of two prongs. In *Porosagrotis* the clasper is single. Now, in *crassa* we have exactly the same structure that we find in *Porosagrotis*, and the species is rather closely allied in general appearance to what I have described as *dædalus*, and also to Mr. Grote's species, *texana*. If *crassa* is the type of *Agronoma*, *Agronoma* must replace *Porosagrotis*. If *Porosagrotis* is not a good genus, because based on genitalic characters, Mr. Grote's *Carneades* must sink in favour of Hübner's *Agronoma*. It does not make very much difference to me which conclusion is adopted. Mr. Grote expresses himself as much obliged to me for showing the necessity of changing the type of Hübner's genus. I am equally obliged to him for giving me another opportunity to show how little his statements as to structural characters can be trusted.

There is another point that may be mentioned here. Mr. Grote has several times referred to *Mamestra comis*, and has questioned the correctness of my reference of this form to *olivacea*. Most recently he questions the correctness of my identification of the type, and from descriptions refers *circumcincta* as the same as *comis*. I called attention, in speaking of *comis*, to the fact that the insect was peculiarly set and that it was a remarkably pretty specimen, and I may add that the

description is a very good one of the type seen by me. The peculiarity about the specimen is that it was very fresh when caught, and the wings, apparently, had not become entirely hardened. When placed upon the spreading-board they broke near the base and formed a little shoulder, such as almost every one who has ever spread insects has found himself compelled to deal with. The insect was well spread in other respects, and the little break of the wings was almost concealed by the heavy vestiture of the thorax. With its bright colours and the comparatively broad, short wings, produced by the imperfection just mentioned, the specimen has quite a distinctive appearance, and it was in seeking to locate just exactly what this distinction consisted of, that I might place the species into its proper place in a synoptic table, that I found that it did not differ in any respect from *olivacea*. I have in my collection at the present time a specimen which agrees in brightness of colour and general appearance with *comis*, but being fully matured and with the wings at full length, shows its relation to *olivacea* at a glance. I would again call attention to the extreme desirability of verifying Mr. Grote's statements before accepting them when they involve a change in nomenclature or in the synonymy.

ADDITIONS AND CORRECTIONS TO MY 1894 LIST OF WINNIPEG BUTTERFLIES, WITH NOTES FOR SEASON OF 1895.

A. W. HANHAM.

Argynnis cipris, Edw.—One specimen taken August 4th. Kindly identified by Mr. James Fletcher.

Phyciodes carlota, Reak.—One specimen. June, 1894.

Phyciodes, sp.—Five specimens taken June 17th to 24th, 1894, and recorded as *Nycteis* in error in my 1894 list.

Phyciodes nycteis, Db.-Hew.—June 30th to July 10th. Common in a new locality visited this year. Not taken in 1894.

Colias eurytheme, Bdv.

var. *eriphyle*, Edw.—August 4th, etc.
var. *keewaydin*, Edw.—August 4th, etc.

Colias philodice, Gdt.—This species may not occur here; *C. eriphyle*, Edw., being mistaken, most likely, for it.

Pamphila ottoe, Edw.—June 30th (a ♀), July 1st (a ♀ and a ♂). The male was lying with its wings expanded (as if at rest) on a flower head in a clearing; it was dead, however, but a fair specimen. Kindly identified by Dr. Hy. Skinner.

Amblyscirtes vialis, Edw.—One. June 30th.

Owing to a visit to England in the spring, I did no collecting here until nearly the end of June, consequently many of the early-occurring species were missed. On the 23rd June very few species were flying. "Blues" were plentiful; *Sæpiolus* especially so, mostly ♀. Other species were: *Melissa* (only males), *Afra* (1), *Lucia* (1). "Skippers," only a *Cernes* and a worn *Pylades*. *Danais archippus* and *Cœnonympha inornata* complete the list.

From that date until the end of the season many visits were paid to the different favourite localities around the city, but "things," almost without exception, were scarce, and many of the species taken in 1894 were not met with. Not a single *Thecla* or *Papilio* was seen on the wing.

Phyciodes tharos, Dru.—Pupæ of this species were found on July 4th and 14th, attached to the palings of my back yard.

Pyrameis cardui, Linn., was very noticeable on the wing, in and around the city, at the end of June and early in July, and later the webs of its larvæ were thick among the thistle heads everywhere. Very few of these, I think, reached the "imago" state.

Cœnonympha inornata, Edw.—Specimens of this butterfly taken June 23rd were mostly worn, but the species was met with as late as July 10th.

Lycæna melissa, Edw.—Captured or seen June 23rd, July 23rd, August 24th and 25th, and September 2nd. On August 25th I took my first and only ♀.

Thymelicus garita, Reak.—This species occurred in some abundance locally from June 30th to July 13th, but most of the specimens netted were poor.

Pamphila manitoba, Scud.—According to Dr. Skinner, my Winnipeg specimens are the var. *Assiniboia*, Lyman. I captured one this season (August 4th), and have yet to take my first ♀ here.

Mailed September 9th.