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WILLIAM HAGUE HARRINGTON, F R. S. C.

PRESIDENT OF THE ENTOMOLOGICAL SOCIETY OF ONTARIO, 1893-5.

# The Canadian Entomologist.

VOL. XXXI.

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No. 2.

## THE COLEOPTERA OF CANADA.

BY H. F. WICKHAM, IOWA CITY, IOWA.

### XXX. THE LUCANIDÆ OF ONTARIO AND QUEBEC.

This family is of small extent, and the members are as a rule easily recognized by their peculiar habitus. In the genera *Lucanus*, *Dorcus*, *Platycerus* and *Ceruchus* the males are marked by a greater development of the mandibles, associated in turn with a greater or less broadening of the head. The antennæ differ from those of the Scarabæidæ (to which family the Lucanidæ are closely allied) in not having the plates of the club completely opposable. In other words, the club is pectinate rather than lamellate. These organs offer a good character for the division of the family into two divisions—the first containing those genera in which the antennæ are geniculate (*i. e.*, crooked like a bent knee, the second and following joints forming an angle with the first, as shown in the figure of *Lucanus dama*, fig. 12), while the second is composed of those in which they are straight. The male antennæ frequently differ from those of the female, but it is not necessary to enter into details for the purpose of this paper.

So far as known, the larvæ of the North American species are lignivorous, feeding upon dead wood in various stages of decay. They resemble in general form those of the larger Scarabæidæ, and may often be seen under logs in the woods. Some of them construct a cocoon of chips before passing into the pupal state. (Fig. 11 represents the larva and cocoon of *Lucanus dama*.)

The genera found in our region may be separated by the following table, which is but slightly changed from that of Mr. Chas. Fuchs in his synopsis of the family :

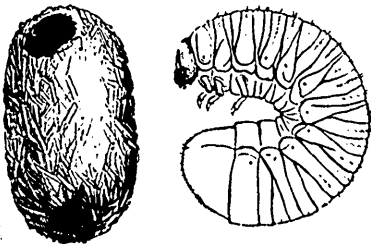


FIG. 11

- A. Antennæ geniculate.
- b. Elytra smooth or nearly so . . . . . *Lucanus*.
- bb. Elytra striate and punctate (obsoletely in one case).
- c. Eyes strongly notched by the margin of the head.  
Larger species. . . . . *Dorcus*.
- cc. Eyes entire or nearly so. . . . . *Platycerus*.
- AA Antennæ straight (*i. e.*, not geniculate).
- Smaller species. Front of head simply excavated or with a depression. . . . . *Ceruchus*.
- Larger species. Front of head with a short bent horn, pointing forward. . . . . *Passalus*.

Further remarks on structural characters will be found under the head of each genus. The specific differences indicated are in the main those used by Mr. Fuchs in the paper above mentioned. *Nicagus* is omitted, for though the genus is now included in the Lucanidæ, the single Canadian species, *N. obscurus*, was treated of under the Scarabæidæ in CAN. ENT., Vol. XXVI., p. 206. It is entirely different in appearance from the other Canadian Lucanids, looking, as Dr. Leconte has said, like some of the Sericæ or a nearly smooth *Trox*.

#### LUCANUS, Linn.

Contains two Canadian species. They are large brownish beetles of shining surface, with very prominent mandibles, which are most strongly developed in the males. The tibiæ are armed externally with large teeth, but are without the finer serrations seen in the following genus.

Femora yellowish or very light brown.

Mandibles with but one tooth internally.

Head of well-developed male broader than prothorax. .92-1.40 in. . . . *dama*, Thunb.

Femora dark brown or nearly black, not lighter than the rest of the leg. Mandibles straighter, with several teeth in the male, two ill-defined ones in the female. Head narrower than prothorax. Punctuation of upper surface of body better defined than in the preceding .96-1.40 in. . . . . *placidus*, Say.

Fig. 12 represents *L. dama*.

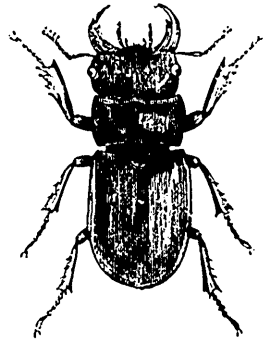


FIG. 12.

## DORCUS, MacL.

Somewhat like *Lucanus*, but the species are rather smaller, and the teeth on the front tibiae are less pronounced, becoming mere serrations on the proximal portion. *D. parallelus*, Say, is dark brown, nearly black, the head and thorax shining, with fine sparse punctures. Elytra distinctly striate, the striae and interstitial spaces both evidently and rather closely



FIG. 13.

punctured. In the males the head is nearly as broad as the thorax, and the mandibles have an enormous median tooth, which points obliquely inward and upward. Length, .60-1.04 in. The form called *brevis*, Say (fig. 13, after Packard), is smoother, and the head and thorax are much more developed. This variety is rare, and I have never seen it.

## PLATYCERUS, Geoff.

These are much smaller insects than those belonging to the foregoing genera. The eyes are nearly entire instead of being notched in front by the encroachment of the sharp side margin of the head, and the anterior tibiae are armed externally with numerous fine sawlike teeth. The mandibles of the males have an upward inclination and are larger than those of the females.

Sides of prothorax rounded, hind angles rather obtuse or rounded.

Brownish, greenish or bluish, shining, elytral striae less deep. .40-.48 in. . . . . *quercus*, Web.

Sides of prothorax quite distinctly angulate near the middle, hind angles rectangular, distinct. Blackish, often with slight metallic reflections. Elytral striae deeper, surface less shining. .44-.53 in. . . . . *depressus*, Lec.

In the Pacific provinces other species are found. *P. oregonensis*, Westw., is known from Vancouver Island. It is of a bluish colour, and looks something like *depressus* as far as form is concerned, but may be at once distinguished from that species by having the sides of the thorax straighter in the male and the hind angles obtuse or indistinct. It is of the same size as *depressus*. *P. Keeni*, Casey, from the Queen Charlotte Islands, was described in the CAN. ENT., Vol. XXVII., p. 153, so it is not worth while to repeat the characters here. It is .50 inch long, stouter than *oregonensis*, the elytra subcostulate and the legs very thick. The type was of a blackish-castaneous colour.

CERUCHUS, MacL.

*C. piccus*, Web., is the only representative in the east, but two others occur in the Pacific provinces, so that they are all included in the table. They are more convex insects than *Platycerus*, highly polished and shining. In colour all are brown. The males have the mandibles highly developed, and with an enormous median internal tooth. The head is also much broader in that sex, and bears a deep frontal excavation.

Elytra striate only on the disk. Striæ fine, intervals very strongly punctate. .52 in. .... *punctatus*, Lec.  
Elytra striate on disk and sides.

Striæ deep, coarsely, strongly punctured. .64-.68 in. *striatus*, Lec.

Striæ shallower, more sparsely and less deeply punctured. (Fig. 14.)

.40-.60 in. .... *piccus*, Web.

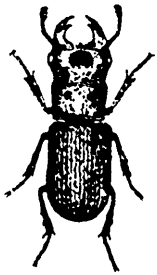


FIG. 14.

Both *punctatus* and *striatus* are known from Vancouver Island, where I got them in 1889. In the same region occurs *Sinodendron rugosum*, Mann., which belongs to the division of the family with straight antennæ, but may at once be distinguished from its neighbors by the fact that the clypeus bears a recurved horn, much longer in the males. In this sex the thorax is higher and sharply declivous anteriorly. The form of body is more cylindrical than any of our other



FIG. 15.

Lucanidæ, while the sculpture is extremely coarse, the thorax being very coarsely confluent punctured, becoming rugose in the females. The elytra are striate, but the lines are fine and almost effaced by large punctures. Length, .44-.72 in. A male is shown in fig. 15.

PASSALUS, Fabr.

This genus is represented only by *Passalus cornutus*, Fabr., which must be rather rare in Canada, though common farther south. It is a very thick-set, heavy, shining brown beetle, 1.24 to 1.64 inch. in length, parallel-sided, the prothorax quadrate, about as broad as the elytra and with a distinct median groove. The head is narrower, without great mandibular development, but bearing a curious horn, which has the tip bent forward. The antennæ are stout, pubescent, and while not geniculate, seem to lie in a curve with the hollow anteriorly so as to give something of the same optical effect. The elytra are deeply striate, the striæ very finely punctured at bottom. A slightly reduced representation is shown by fig. 16.



FIG. 16.

I know of but one paper treating synoptically of the North American species.

1882. Fuchs, Chas. Synopsis of the Lucanidæ of the U. S. Bulletin Brooklyn Ento. Soc., V.

Capt. Thos. L. Casey has described a number of new species of *Platycerus* in various publications, but has not tabulated the genus.

### A NEW SPECIES OF ASTEROSCOPIUS, Bd.

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

Lederer characterizes *Asteroscopus* essentially as follows: Narrow-winged owlets, resembling Bombycids in the shaggy, loose vestiture. Palpi short, not exceeding the front, drooping. Tongue short and weak. Eyes naked, with bristly lashes. Antennæ comparatively long, with a tuft of hair at the base; in the male with short pectinations to the tip; in the female with sharp, ciliated angles to each joint. Thorax broad, convex, clothed with long, woolly hair. Abdomen shaggy, untufted. Body beneath and legs with dense woolly vestiture. Legs short, anterior tibia with a long claw at the tip.

The caterpillars are naked, considerably enlarged posteriorly, green, with a pale lateral stripe, and have an abrupt declivity or step on the last segment. They feed on various deciduous trees, and when at rest elevate the anterior segments as do some of the Notodonts. They pupate underground and remain unchanged an unusually long time.

Heretofore no species properly referable to this genus has been described from our fauna. The *A. barometricus* of Goossens, Le Nat. III., 380, is simply a redescription of *Ufeus plicatus*, Grt. Every structural character given by Goossens contradicts the description of the genus to which he refers his species and agrees with those of *Ufeus*.

A species properly referable to this genus was taken by Mr. E. F. Heath, sent to Dr. Dyar for determination, and by him referred to me. I characterize it as follows:

#### ASTEROSCOPIUS BOREALIS, n. sp.

Ground colour a dark ashen gray, powdered with black, hairlike scales, which gives the insect a sordid, smoky appearance. Head and thorax perhaps a trifle darker than the wings, the head much retracted. Abdomen with somewhat finer vestiture, which show a tendency to a mouse-gray tint. Antennæ of the male yellowish-brown, distinctly but not lengthily pectinated, and with a tuft of creamy hair at the base.

Primaries with all the veins black marked, giving the insect a somewhat strigate appearance. No basal line. T. a. line single, broad, diffuse, outwardly bent so as to form almost a right angle in the submedian interspace. T. p. line single, blackish, shortly dentate on the veins, starting from the costa over the reniform, bent outwardly far beyond the cell, then almost parallel with and rather close to the outer margin, to the inner margin. There is no s. t. line and there are no terminal dots; but the fringes are cut with triangular black dashes, the apices of which rest on the middle of the interspaces. There is a vague series of oval, darker shades in the interspaces beyond the t. p. line. A median blackish shade starts obliquely from the middle of the costa, reaches the median vein at the bottom of the reniform, and is then discontinued. The reniform is large, irregular, of the ground colour, outlined by a diffuse blackish line. Orbicular very long and narrow, decumbent, scarcely defined, reaching from the t. a. line almost to the reniform. Claviform distinct, narrow, extending almost to the middle of the wing, outlined in diffuse blackish.

Secondaries, smoky over whitish, powdery, the apex and margin paler. Fringes whitish. Veins dusky. A series of blackish, somewhat undefined terminal spots in the interspaces. Discal spot of the under side showing through the wing.

Beneath, primaries smoky, powdery, shading to almost white toward the outer margin, which is marked by a broken terminal line and small, interspaccal black dots. The reniform appears here as a darker smoky shading, and the course of the t. p. line is marked by a diffuse smoky shade which disappears before it reaches the inner margin. Secondaries white, shaded with smoky along the costal and inner margins. Veins marked with blackish. A series of smoky terminal spots in the interspaces. A large blackish discal lunule, from which a black line extends to the base through the middle of the median cell.

Expands 2 inches = 50 mm.

Habitat: Cartwright, Manitoba.

A single male specimen, donated by Mr. Heath to the U. S. National Museum, where it is marked Type 4107!

The species should be an easily recognizable one, not only from the generic characters, but from the distinct bombyciform appearance and the quite striking maculation of the under side. The nearest approach to this occurs in *Rancora*, next to which the present genus and species may be placed in the series.



DESCRIPTION OF LARVA OF *INGURA DELINEATA*, GUEN.

BY HARRISON G. DYAR, WASHINGTON, D. C.

I have named my specimens in accordance with the material in the National Museum, arranged by Prof. Smith. The result is unsatisfactory, because this is the gum-tree larva described by Edwards and Elliot as *I. prapilata*, Grt. (Papilio III., 135). The larva mentioned in Guenée as *delineata* has a different food plant. There is evidently some confusion here, which must be adjusted by the next monographer of the genus.

*Egg*.—Low and flat, domed, like *Apatela*, the edges wavy, thin and flat. Surface smooth, with numerous rows of little elongated beads radiating regularly from the micropyle, reaching the number of about 160 around the margin. The points of increase are not perceptible, as the surface is entirely flat, without ribs, and the beads not contiguous. Transparent, colourless, green from the leaf showing through. Diameter 1.2, height .2 mm.

*Stage I*.—Head bilobed, long, shining pale brownish; width .3 mm. Body slender, translucent ochreous-yellow; setæ normal, long, stiff, brownish, arising from small rounded brown tubercles. Tubercle iv. is behind the spiracle about equidistant between iii. and v.; vi. not present. Feet normal; no markings.

*Stage II*.—Head whitish-yellow; width .45 mm. Body slender, anal feet stretched out behind, thorax a little enlarged. Pale yellowish, rather translucent, the food showing green, darkest in the thorax. Skin a little shining, smooth, the segmental incisures of joints 4 to 11 very well marked. Setæ five, rather long; tubercles obsolete.

*Stage III*.—Head translucent, pale yellow; width .8 mm. Slender, smooth as before, but the incisures of joints 5 to 11 folded and marked in pale yellowish pigment, giving six faint, transverse intersegmental bands. Four tubercles on the anterior edge of cervical shield are minutely black. No other marks. Setæ smaller than before, except at the ends.

*Stage IV*.—Less slender, thicker and a little flattened, tapering behind; width of head 1.2 mm. Translucent green, head slightly whitish; intersegmental bands supplemented by a broken subdorsal, and continuous, straight stigmatal line, pale yellow, the subdorsal consisting of a dot behind tubercle ii. and a dash below it, distinct except on the thorax. Blood somewhat green; setæ pale; feet slender.

*Stage V.*—Head dull yellowish, translucent; width 1.9 mm. Body green, marked with opaque yellow; twelve short, transverse, intersegmental, dorsal bands, reaching below the level of wart ii., that between joints 13-14 broken into three dots. Many irregular dots, about nine on each side above the straight, narrow superstigmatal line, and nine below it, none on the tubercles, which are concolorous or brownish (iii. to v. are brown); four black tubercles on anterior edge of cervical shield. A yellow line on the divergent anal feet. Tubercle iv. at the lower edge of spiracle.

*Stage VI.*—Head retracted at apex under joint 2; dull yellowish; width 2.5 mm. Body thick and flat, joints 11 to 13 tapering, anal feet outstretched backward, all the feet with long claspers, slender, normal. Yellow-green, clear, but not translucent, the light yellow marks as before, but the dorsal transverse bands shorter (just below tubercle ii.), except the broken one between joints 13 and 14, which almost touches the stigmatal line; dots more numerous (about 12 to 18 instead of nine in each space), some irregular. No black dots on cervical shield. These have suddenly disappeared; spiracles brown, just below the narrow superstigmatal line; cervical shield and anal plate with a yellow edge. Setæ pale, long subventrally; tubercles obsolete, not coloured, iv. opposite lower edge of spiracle. Feet pale whitish, dorsal vessel dark. Length 23 mm. The larva sits flatly on the back of the leaf.

At the end of this stage the larvæ spun cocoons of white silk between partly bitten up leaves. Imago in about three weeks.

Found on gum tree (*Liquidambar*) at Glendale, L. I.; also at Morris Plains, N. J.

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#### A PROLONGED SEASON OF OCCURRENCE FOR *SCHISTOCERCA AMERICANA*.

At Wooster, Ohio, this species was observed in the fields on May 26, and at Alliance, nearly due east, on October 24, while at Bridgeport, in the extreme eastern central part of the State, it was found, active, on November 4, all during 1898. It appears to have been more numerous of late in the vicinity of the south shore of Lake Erie than elsewhere in the northern portion of the State, and more abundant than I have formerly observed it in the same latitude in Indiana and Illinois.

F. M. WEBSTER.

## NOTES ON SOME ONTARIO ACRIDIIDÆ.—PART III.

BY E. M. WALKER, TORONTO.

(Continued from Vol. XXX., page 275.)

## IV. —ACRIDIIDÆ.

20. *Schistocerca americana*, Drury.*Gryllus americanus*, Drury. Illustr. Nat. Hist., app. (1773).*Aceridium americanum*, Scudd. Mat. Mon. N. A. Orth., 466 (1862).*Schistocerca americana*, Blatchley. CAN. ENT., XXIII., 79 (1891).

This large and beautiful locust has been twice reported from Ontario, at London (CAN. ENT., XXVII., p. 52), and at Toronto (CAN. ENT., XXIX., p. 89), a single example being taken in each instance. These were probably wanderers from the South, certainly in the case of the Toronto specimen, and the insect can hardly be regarded as a native of our Province, though it may be established in the extreme southern portion.

21. *Podisma variegata*, Scudder.*Pezotettix glacialis*, Comstock. Introd. Ent., 107 (1888).*Podisma variegata*, Scudd. Revision of the Melanopli, from Proc. U. S. Nat. Mus., XX., 101 (1897).

I have taken this beautiful little species in two large swamps, one at De Grassi Pt., Lake Simcoe, and the other about six miles further west. Altogether I have taken sixteen specimens, eight ♂s and eight ♀s, six from De Grassi Pt. and ten from the other spot. Dr. Brodie has also taken it at Muskoka, where he found it in considerable numbers. The only other localities where it has been found are Ithaca and Enfield Falls, Tomkins Co., N. Y. (Scudd, Rev. Melanopli, p. 102).

It can be at once distinguished from all our other Acridiidæ, except its ally, *P. glacialis*, Scudd., by its having no trace of either tegmina or wings. The latter species, which is not uncommon in the White Mountains, N. H., has been taken at Sudbury, Ont., by Dr. Scudder (Rev. Melanopli, p. 100), but is not found with us at the south, being, like most of the genus, a species which affects high altitudes or latitudes. It differs from *P. variegata* mainly in the shorter hind legs and antennæ, the stouter cerci, and the almost uniformly green hind femora, those of *P. variegata* being pale yellowish, thrice banded with dark brown.

The two swamps where I secured my specimens are quite similar in character. They are for the most part densely wooded with a mixed growth of arbor-vitæ, tamarack, balsam fir, and spruce, with raspberry

bushes, *Eupatorium purpureum* and *perfoliatum*, and many other plants in less abundance growing in the sunny openings. In the wetter parts of the swamps, where tamarack is almost the only tree to be found, I have never seen *P. variegata*, which seems, indeed, to be the most particular about its haunts of any of our Acridians.

They are generally seen sunning themselves on the leaves of shrubs, sometimes close to the ground, though more often three or four feet above it. Most of my specimens were taken from the leaves of the red raspberry (*Rubus strigosus*), one from Labrador Tea (*Ledum grœnlandicum*), others from the branches and trunk of arbor-vitæ (*Thuja occidentalis*). I found a dead and decayed male clinging to a raspberry twig. It had evidently been the victim of some fungus like that which infests the common two-striped locust (*Melanoplus femoratus*).

Besides the mature specimens, I have also a female nymph, which resembles the adult much more closely than do those of *Melanoplus*, the colour and markings being quite similar to those of the adult.

It is a late appearing insect, all but three of my specimens having been taken in September. One of these three, my first capture of the species, is dated Aug. 6, 1895, and the other two Aug. 23, 1867. I do not know how late they remain, as I always leave De Grassi Pt. before the end of September, at the time when they are most easily obtained.

## 22. *Melanoplus atlantis*, Riley.

*Caloptenus atlantis*, Riley. Ann. Rep. Ins. Mo., VII., 169 (1875).

*Caloptenus atlantis*, Thos. Bull. Ill. Mus. Nat. Hist., I., 68 (1876).

*Melanoplus atlantis*, Scudd. Rep. U. S. Ent. Comm., II., app., 24 (1881).

This is one of our commonest grasshoppers, doubtless occurring in all parts of the Province. It appears earlier than most of our *Melanopli*, and continues until late in the fall. In the season of 1898 I saw a number of adults on June 16th, though they are not usually seen until about a week later. It is to be found mostly on sandy soil, often in immense numbers, and is our most destructive locust.

I have specimens from Rat Portage, Aug. 28, 1897; Nepigon, Aug. 27, 1897; Severn River, Aug. 17, 1898; Lake Simcoe, and Toronto. Along the Severn River they were not nearly so common as one would have expected, from the sandy and rocky character of much of the country, *M. collinus* far exceeding it in numbers.

All my specimens have the typical red hind tibiæ, nor have I ever noticed a specimen with tibiæ glaucous or otherwise differently coloured.

23. *Melanoplus Dawsoni*, Scudder.

*Pezotettix Dawsoni*, Scudd. Daws. Rep. Geol. and Res. 49th Par., 343, (1875). CAN. ENT., XII., 75 (1880).

*Pezotettix tellustris*, Scudd. Ann. Rep. Chief Eng., 502 (1876). CAN. ENT., XII., 75 (1880).

*Pezotettix abditum*, Dodge. CAN. ENT., IX., 113 (1877).

*Melanoplus Dawsoni*, Scudd. Rev. Melanopli, 227 (1897).

This little species is not uncommon near Toronto in certain parts of High Park and the adjoining country. Here it frequents dry sandy soil, generally somewhat bushy or scrubby, but it also occurs in open sandy fields. I also found it quite common at Macdonald's Falls, Severn River, in a sandy and somewhat hilly district, thinly wooded with oak and white pine, with a scattered undergrowth of blueberry bushes (*Vaccinium*), New Jersey Tea (*Ceanothus americana*), Sweet-fern (*Comptonia asplenifolia*), and many other shrubs; the vegetation closely resembling that of the drier parts of High Park, where *M. Dawsoni* occurs.

Dr. Scudder, who kindly determined this species for me, says he has never before seen a specimen taken east of Iowa and Minnesota. I have also found it very common on the prairies of Manitoba.

The specimens from the Severn were taken on Aug. 25th, 1898, while those from Toronto were all taken during September, as I am always away from the city during the summer months. They remain until the beginning of October.

24. *Melanoplus islandicus*, Blatchley.

*Melanoplus islandicus*, Blatchley. Psyche, VIII., 196 (1898).

*Melanoplus abortivus*, E. M. Walker. CAN. ENT., XXX., 90 (1898).

Since my description of this species was published I have taken it in a few new localities which somewhat widen its known range. On July 15, 1898, I found a few specimens in a low, rich wood, a few miles north of Toronto, and on Aug. 8 I found it in a similar wood on the banks of the Severn, near Sparrow Lake, and at several other spots along the river as far as Gloucester Pool, near Georgian Bay. In most of these spots it was met with in moderate numbers, being about as common as it is at Lake Simcoe.

25. *Melanoplus fasciatus*, Walker.

*Pezotettix borealis*, Scudd. Can. Nat., VII., 286 (1868).

*Acridium fasciatum*, Barnston. Ms. Walk. Cat. Dermapt. Salt. Brit. Mus., IV., 680 (1870).

*Caloptenus fasciatus*, Walk. Cat. Dermapt. Salt. Brit. Mus., IV., 680 (1870); CAN. ENT., IV., 30 (1872).

*Melanoplus rectus*, Scudd. Proc. Bost. Soc. Nat. Hist., XIX., 284 (1878).

*Melanoplus fasciatus*, Caulfield. Rep. Ent. Soc. Ont., XVIII., 71 (1886).

*Pezotettix septentrionalis*, Morse. Psyche VII., 53 (1894).

The short-winged form (*curtus*, Scudd.) of this species is tolerably common in Ontario in dry open woods, preferably on sandy or rocky soil. It is frequently associated with *Chloea conspersa*, and sometimes with *M. islandicus*, though the latter usually prefers damper, richer, and shadier haunts than *M. fasciatus*. While generally fairly numerous where it occurs, it is never very abundant.

I have a single ♀ of the long-winged form (*volaticus*, Scudd.), taken at De Grassi Pt., and hitherto only known from Michigan.

My specimens, taken between June 24th and Aug. 17 (though they are certainly to be found later than this), are from Toronto and neighboring localities, De Grassi Pt., Stony Lake, Peterborough Co., and various points along the Severn River.

26. *Melanoplus femur-rubrum*, DeGeer.

*Acridium femur-rubrum*, DeG. Mém. Hist. Ins., III., 498 (1773).

*Caloptenus femur-rubrum*, Burm. Handb. Entom., II., 638 (1838).

*Melanoplus femur-rubrum*, Scudd. Hitchc. Rep. Geol. N. H., I., 375 (1874).

This extremely common species occurs throughout the settled parts of Ontario, frequenting every field and roadside during late summer and autumn. It seems to be most abundant in the southern part of the Province, but is plentiful enough in the north in beaver-meadows and wherever there is a rank, luxuriant vegetation. The specimens found in these wild places are apt to be more brightly coloured than those of the fields and roadsides.

They usually make their first appearance with wings towards the end of July, but I have three males from De Grassi Pt. dated July 2, 1896, an unusually early record. They remain later in the fall than any other species, being often seen in sunny, sheltered spots as late as the first week in November.

*Melanoplus extremus*, Walk., an allied species, will in all probability be met with in Northern Ontario, as it has been reported from most of the Northern United States, from Quebec, and various parts of arctic and sub-arctic Canada.

27. *Melanoplus minor*, Scudder.

*Caloptenus minor*, Scudd. Proc. Bost. Soc. Nat. Hist., XVII.,  
478 (1875).

*Melanoplus minor*, Scudd. Cent. Orth., 84 (1879).

I have found this insect in considerable numbers in the sandy tract of land between Toronto and the Humber River. It frequents dry grassy fields and sandy, bushy or thinly-wooded country.

In most of the specimens from this locality the hind tibiæ are bluish-green, though they may vary from a "robin's egg" blue to almost colourless or pale pink. Males with pink tibiæ are seldom seen, these being nearly always bluish-green or blue, or sometimes nearly colourless. Of the females, about 25% have pink tibiæ, and in about as many they are glaucous or grayish.

The adults appear much earlier than any other species of *Melanoplus* found in Ontario, usually in early June. I took several ♂'s on the 30th of May, 1896; but these were all rather soft, evidently having been full-fledged but a short time. I have never remained in the city long enough in the summer months to ascertain how long in the season they remain, the latest date upon which I have taken a specimen being July 21, when they were still fresh and moderately plentiful.

28. *Melanoplus collinus*, Scudder.

*Melanoplus collinus*, Scudd. Proc. Bost. Soc. Nat. Hist., XIX.,  
285 (1878).

This dark-coloured locust is quite plentiful in Ontario in late summer, although this is the first time it has been recorded from Canada.

It frequents sandy or gravelly uplands, more or less open, or rocky, unsettled country, such as characterizes the Laurentian area in Ontario. During August, 1898, I found this locust extremely common along the Severn River, which flows from Lake Couchiching, at the north end of Lake Simcoe, to Georgian Bay through a somewhat hilly region of gneiss and granite, near the southern boundary of the Laurentian area. Here it was decidedly the most abundant grasshopper, far outnumbering any other *Melanoplus*, and flew about the rocks and scanty soil in large numbers. The specimens seen in this locality showed a wider range of

colour variation than those found in the fields and pastures about Toronto and De Grassi Pt. In some the contrast between the light and dark marking is very great, in others the colours are almost suffused with blackish.

This species is common, locally, at Toronto and Lake Simcoe, but is less so than on the Severn River. I have also taken a male at Hawk Lake, on the C. P. R., north of Lake Superior. In this specimen the contrast in the markings is as great as in any specimen I have seen. This latter locality is the most northern from which it has been recorded.

This is one of our late-appearing species, not usually being seen before August. I have one ♀, however, taken July 2nd, 1896, more than a month earlier than it is usually seen. My other specimens are dated from Aug. 11 to Sept. 28, though it can be taken several weeks later than this.

29. *Melanoplus femoratus*, Burmeister.

*Caloptenus femoratus*, Burm. Handb. Ent., II., 638 (1838).

*Acridium flavo-vittatum*, Harr. Ins. Inj. Veg., 140 (1841-42).

*Caloptenus bivittatus*, Uhler (pars). Say. Ent. N. A., ed. Lec., II., 238 (1859).

*Melanoplus bivittatus*, Scudd. (pars). Hitchc. Rep. Geol. N. H., I., 376 (1874).

*Melanoplus bivittatus*, var. *femoratus*, Morse. List of N. E. Acrid., Psyche, VII., 106 (1894).

*Melanoplus femoratus*, Scudd. Proc. Bost. Soc. Nat. Hist., XIX., 285 (1878).

This large, robust locust is so well known throughout Ontario that it need only be mentioned. I have found it in every part of Ontario where I have done any collecting. Though often seen on our roadsides, it prefers places where there is an abundance of rank grass and luxuriant vegetation, such as wet meadows and open marshes. I have often found it on old lumber-roads through swampy woods, and in natural openings in them.

My specimens are dated from June 26 to Sept. 28, but I have seen worn specimens in early October.

30. *Melanoplus punctulatus*, Uhler.

*Caloptenus punctulatus*, Uhler. Ms. Scudd., Bost. Journ. Nat. Hist., VII., 465 (1862).

*Caloptenus griseus*, Thos. Ann. Rep. U. S. Geol. Surv. Terr., V., 454 (1872); Bruner, CAN. ENT., IX., 144 (1877).



*Melanoplus punctulatus*, Scudd. Hitchc. Rep. Geol. N. H., 1., 376 (1874).

*Melanoplus griseus*, Blatchley. CAN. ENT., XXIV., 30, 31 (1892).

This interesting species is occasionally met with in Ontario, but is one of our rarest Acridians. During the last four years I have not seen on an average one specimen during a season. During 1892 and 1893 they were more numerous, but since I was not specially interested in Orthoptera at that time, not many were taken. In all I have taken but nine specimens, all of which are females. I think it likely that the species will prove to be commoner when I have ascertained its exact habitat, nearly all my specimens having been taken accidentally. They were mostly found on old wooden fences or tree trunks, on the borders of damp, shady coniferous woods. Two ♀s were taken on tamarack stumps in a swamp at De Grassi Pt. In every instance in which I have taken this insect further search has proved fruitless.

It is a very sluggish insect, with much shorter hind legs than any of our other Melanopli, and relies not so much upon these for protection as upon its mottled gray colours, which make it difficult to observe when squatting on an old lichen-covered fence or stump.

My specimens are dated from Aug. 2nd to Oct. 8th. This is the first time this species has been recorded from Canada.

#### APPENDIX.

##### Tryxalinae.

##### 5a. *Chloealtis abdominalis*, Thomas.

*Chrysocraon abdominalis*, Thos. Syn. Acrid, N. A., 74 (1873).

*Chloealtis abdominalis*, McNeill. Rev. Trux. N. A., in Proc. Davenport Acad. Nat. Sc., VI., 229 (1897).

During my canoe trip down the Severn River last summer I came across quite a number of what I took to be merely large specimens of *Chloealtis conspersa*, Harr. I noticed that the sides of the pronotum of the ♂s were not black like those of the ordinary *conspersa*, but it never occurred to me that it could be anything but a mere colour variation. Unfortunately, though they were not uncommon, only 3 ♂s and 2 ♀s were secured. When I returned to Toronto an examination of these

specimens proved that they were not *consersa* at all, but agreed exactly with specimens of *C. abdominalis*, which I took during the summer of 1897 at Banff, in the Rocky Mountains, and in the Province of Manitoba, except that the tegmina are a little longer, especially in one of the ♀s, in which they are nearly twice the length of the pronotum, while in the Western specimens they are only very slightly longer than the pronotum. In the other ♀ from the Severn they are only about one-fourth as long again as the pronotum.

*C. abdominalis* is easily distinguished from *C. consersa* not only by the greater size and the paler sides of the pronotum in the ♂, but also by the more arcuate lateral carinæ, especially in the ♀. Very few *consersa* were seen during my canoe trip.

My specimens are dated Aug. 15 and 18, 1898. This is the first time it has been recorded from Canada, and the first time east of Dakota.

*Encoptolophus sordidus*, Burm.—This species was quite common at Toronto last fall, and during a bicycle trip along the lakeshore I found it gradually increasing in numbers as I rode to Hamilton and Niagara Falls.

*Scirtetica marmorata*, Harris.—I found this beautiful locust exceedingly numerous last summer all along the Severn River, in many places being even more abundant than *Circotettix verruculatus*. It flies about the bare gneiss and granite rocks and on the dry, scanty soil which partly covers them.

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#### THE ODOUR OF COCCIDÆ.

Prof. Webster's interesting note on p. 4 leads me to offer a few remarks. The species of the sub-genus *Toumeyella* of *Lecanium* have quite a strong musky odour; but ordinarily I have been unable to detect any marked odour in species of Coccidæ. I suppose, however, that all possess some odour, and that its purpose is to attract the males to the females. This seems the more probable when we remember that in many species the male puparia are not on the same part of the plant as the females. Here at Mesilla Park, also, I have lately seen a male of *Margarodes hiemalis*, Ckll. ined., run over the ground until it detected a spot where a female was buried, and then dig down to the female. It must certainly have detected its mate by the sense of smell.

T. D. A. COCKERELL.

## COLLECTING NOTES ON KANSAS COLEOPTERA.

BY W. KNAUS, MCPHERSON, KS.

An experience of eighteen years in collecting Coleoptera in Kansas would naturally lead to the discovery of several good collecting grounds, and to many interesting observations on the abundance or scarcity of certain species for one or more years.

I have found my most interesting and profitable ground on the salt marshes or flats of Wilson County in South-eastern Kansas, and Republic and Mitchell Counties in North Central Kansas; in the valleys of the Verdigris River in Wilson County, of the Republican River in Jewell County, the Smoky Hill River in Wallace County, and the Arkansas River in Hamilton County; the two latter in extreme western Kansas.

I have also collected for years at the electric lights at McPherson. Another most interesting and profitable locality is in the sand hills twenty miles south-west of McPherson. In these sand hills I have taken during the past eight years *Cicindela scutellaris*, *formosa* and *venusta*, all beautiful species; *Stephanucha pilipennis*, Kraatz, one of the rarest Scarabeids; *Serica curvata*, Lec.; *Canthon nigricornis*, Say; *Ammodonus fessor*, Lec., and *Chalcodermus collaris*, Horn. I took from the electric lights last season for the first time a few specimens of *Stenomorphus rufipes*, Lec., a south-western species, but never recorded as taken in this State. McPherson is probably near its northern limit. I also took at the electric lights in June of last year for the first time, four specimens of *Lachnosterna spreta*, Lec., the first capture of this species in this State. Another rare species taken at the lights was *Lachnosterna Ulkei*, Smith, but only two or three specimens were captured. *Lachnosterna bipartita*, Horn, was taken in considerable numbers, both at the lights and in early evening flight. Another beetle taken sparingly at the electric lights in May and June was *Nothopus sabroides*, Lec.; this place is probably near its south-east limit. *Platynus Texanus*, Lec., also occurred sparingly at the lights for the past two years. Each year a few of the handsome *Eretes sticticus*, Linn., are also taken from the electric-light globes.

One of my most interesting collecting grounds is at the range of sand hills parallel to the Arkansas River in Reno County, and about eight miles north of the river. These hills or dunes are blown about by the wind, and in many places are excavated by the air currents to a depth of seventy-five to one hundred and fifty feet, and the fine white sand is

piled in huge dunes, usually north of the excavation. Visits to this region are made in May and June, and are usually well rewarded. The season of 1896 I took *Cicindela scutellaris*, Say, and *Cicindela formosa*, Say, in numbers, the former species being more abundant. I also take the beautiful *Cicindela venusta*, Lec., with the two preceding species, but less abundant; some seasons only a few specimens are taken.

Beginning with the collecting season of 1891, I have each year taken a few specimens, never more than six or eight in a season, of the rare *Stephanucha pilipennis*, Kraatz, first described in 1888 from Nebraska. I have taken it only from May 1st to May 20th, crawling sluggishly over the sand, and have found occasionally dead perfect specimens. Warm evenings, during the latter part of April, will probably furnish the best collecting results for this species. Another handsome and desirable insect taken in May and June in this locality is *Cremastochilus nitens*, Lec. During the warmer parts of the day it can be picked up from the bare sand, but during the hottest part of the day it must be handled quickly, as it becomes active and is a quick flier.

One of the best finds, *Anmodonus fossor*, was made in this locality May 16th, 1897. After collecting over the hills about three hours, I went up the side of the sand hill, about twenty feet from the bottom of a blow-out, and sat down to eat a lunch. I soon saw a small round *Tenebrionid* running over the sand, and captured it. It was difficult to see, as it was almost the exact colour of the sand, and only the closest observation would distinguish it from its surroundings. By digging out depressions left by cattle in passing over the sand, and examining the few plants growing around, I soon took twenty-two specimens from an area of ten feet square. Specimens were sent to Dr. Geo. H. Horn, of Philadelphia, and through his kindness and that of Mr. Chas. Liebeck, were identified as above. The species occurs in sandy locations in Maryland and New York, and in California and Arizona, although the specimens from the extreme west are of a larger size.

In this locality in 1891 I took *Chalcodermus collaris*, Horn, quite abundantly, but have not since seen a single specimen.

The valley of the Smoky Hill River at Wallace, Kansas, within twenty miles of the Colorado line, is an attractive locality for the collector of insects. The clay bluffs south of the Smoky furnish a home and feeding ground for the king of the *Cicindelidæ*, *Amblychila cylindriciformis*, Say. Three short visits to this locality in as many years were rewarded

with the capture of a few specimens of this desirable insect. At rare seasons they are quite abundant, but usually only a few can be taken each night. Another desirable beetle I took by beating the willows on the banks of the Smoky was *Poecilnota thureura*, Say. *Calosoma obsoletum*, Say, is found in alfalfa fields and along old roads the latter part of July and during August. Beating thistles near Wallace resulted in the capture of eight or ten specimens of the rare *Clerus cordifer*, Lec. Under old cow chips near the bluffs were taken a number of the curious and sluggish *Ologlyptus anastomosis*, Say; also numbers of *Trimytis pruinosa*, Lec., and a few *Ophyrastes vittatus*, Say, were found under the same shelter.

Almost directly south of Wallace and distant about one hundred miles is Coolidge in the Arkansas Valley. I collected in this locality one day, July 7th, 1897. The general insect fauna is very similar to that at Wallace, although several species occur at Coolidge that are not taken at the former place. In an alfalfa field adjoining the town, from which the hay was being raked, I took a fine series of *Calosoma triste*, Lec. This species is evidently a variable one, as the elytra of one specimen will be almost smooth, while that of the next one taken would approach the sculptured markings of *obsoletum*.

From horse droppings I took a fine lot of *Canthon depressipennis*, Lec., and thistle heads disgorged *Euphoria Kernii*, Hald., and *inda*, Linn., in proportion of two of the latter to one of the former. But one specimen of the black variety of *Kernii* was taken. Beating vegetation alongside small rivulets and depressions in the prairie yielded numerous specimens of *Monoxia consputa*, Lec., and a few *Diabrotica tricineta*, Say. At Garden City, fifty miles east of Coolidge, a few minutes' beating of plants along the roadside yielded numerous specimens of *Copturus adspersus*, Lec.; *Anthonomus squamosus*, Lec., and *Smicronyx vestitus*, Lec.

The Verdigris Valley in Wilson County yielded a number of desirable things to the collector of Coleoptera. April 20th to 30th marks the appearance of *Lachnosterna calceata*, Lec., the most common Scarabeid in that region. In favored localities on still evenings they swarm over the tender shoots of the young oaks. By jarring these, dozens of the insects fall to the ground, and by the use of the lantern are easily picked up and transferred to the cyanide jar. Other *Lachnosternas* occurring at about this time are *Hornii*, Smith; *gibbosa*, Burm.; *crenulata*, Frch.; *vehemens*, Horn, and *crinita*, Burm. At about the same time, upon a

species of dock that grows over bottom land, can be taken numbers of the beautiful *Phytonomus eximius*, Lec. They are very shy and drop quickly to the ground on the first alarm. The open mouth of the cyanide bottle should be under them before the plant is touched. From the opening leaf-buds of the young hickories may be beaten *Conotrachelus nenuphar*, Herbst., and *affinis*, Boh., and the sap from stumps of freshly cut hickory trees attract numbers of *Colastus semitectus*, Say; *Soronia undulata*, Say; *Perthalyera Murrayi*, Horn; *Pocadius helvolus*, Er.; *Cryptarcha concinna*, Mels., and *Bactridium striatum*, Lec. Under stones near the bluffs bordering the valley may be found rather sparingly *Pasimachus californicus*, Chd., and resting under the same shelter an occasional *Diplotaxis corvina*, Lec. While collecting over the tree-covered stony knoll near Benedict, in this County, in September, 1896, I took a single fresh specimen of *Nomaretus cavicollis*, Lec., the only specimen of this beautiful *Carabid* I ever took south of the Kansas River at Manhattan.

Collecting at Salina, Kansas, in 1884 and 1885, yielded a number of species of *Apions*, identified by Mr. H. C. Fall, of Pasadena, California. Among them were *Apion segnipes*, Say, rather common; *attenuatum*, Smith; *griseum*, Smith; and *occidentale*, Fall, MS., occurred rarely, and are all new to the Kansas list. On the Kansas and Nebraska line, near Superior, Nebraska, the latter part of May, in 1895, I took *Apion minor*, Smith; *spinipes*, Fall, MS., and *Nebraskense*, Fall, MS., a few specimens of each. Near Rago, Kingman County, Kansas, August 15th, 1898, I took a half dozen specimens of *Apion modestum*, Smith, a species also new to the list of Kansas Coleoptera. In the same locality I took *Anthonomus moleculus*, Casey; *Orthoris Crotchii*, Lec., and *Pseudobaris farcta*, Lec.

Some seventy-five miles south-west of Rago, at Belvidere, Kansas, I took on August 16th numbers of *Plectrodera scalator*, Say. This handsome borer was easily taken about sunset on the leaves and twigs of young willows and cottonwoods. Other desirable species taken at this locality were *Lappus lividus*, Casey; *Mitostylus tenuis*, Lec.; *Anthonomus tectus*, Lec.; *Coeliodes asper*, Lec.; *Zygogramma disrupta*, Rogers; *Zygogramma heterothecæ*, Linell.

*Cicindela violacea*, Fab., the beautiful blue or green tiger beetle, is taken in May or June in the wooded valleys of Eastern Kansas. I took two or three specimens near Benedict, in Wilson County, South-east Kansas, last season. Have never taken it west of Manhattan, at the junction of Big Blue and Kansas rivers.

## DESCRIPTIONS OF SAWFLY LARVÆ.

BY CHESTER YOUNG, ELLENVILLE, N. Y.

*Macroxyela ferruginea*.—Larva is about 1.5 cm. long and caterpillar-like, green with yellowish-white markings, prolegs on every abdominal segment, anal area smooth and concolorous with the body, antennæ six jointed. Feeds on *Ulmus americana*.

Head green; antennæ green, except three brown distal joints and a brown ring around the middle of the second and third joints; mandibles rufous at the tips; ocelli black. Body green, with the following parts yellowish-white: two dorsal stripes, a substigmatal line extending along the substigmatal fold of skin from the head to about the third or fourth abdominal segment, and the tubercles; a ventral line of pearly white extending from head to 4th abdominal segment. Segments four annulated, with the tubercles on the normal abdominal segments arranged as follows: none on the first annulation, three on the second annulation, four on the third annulation, and three on the fourth annulation. They are arranged in three general transverse rows. The substigmatal fold of skin with many rudimentary tubercles; dorsal tubercles with many and lateral ones with few to no setæ; setæ very short; two conical projections, with many setæ just above the anus. Legs greenish-white, except for basal joint, which is concolorous with the body.

Cocoon a light shell of sand held together by a few strands of silk.

Larvæ sit curled around the young leaves or terminal buds with the front part of their body free. They feed by eating a line across the bunch of leaves, thus truncating them all. A single brood each year, the adults appearing in April. A few days before the appearance of the adult the larva which has lain in the larval state in its cocoon until this time changes to an active pupa, which bursts its cocoon and comes forth without shedding its skin and exists then as an active pupa at the surface of the ground from twenty-four to forty-eight hours. It then sheds its skin and becomes the true imago. These breedings have proven the, hitherto considered, distinct species of *Macroxyela ferruginea* and *Macroxyela infuscata* to be identical. The former has consisted of the females, while the latter has consisted of the males. Larvæ enter the ground about June 1st.

*Pteronus fulvricus*.—Young larva jet black and possessing a lateral row of yellow spots; anal area black.

Intermediate stage has head black and body green with yellow spots and a dorsal band of black; venter light with black tubercles; prolegs

greenish except for black tubercles. The black line on the dorsum grows more and more broken with each moult until it disappears, except for the black of the tubercles.

Full-grown larvæ are about 1.75 cm. in length and caterpillar-like, green with black tubercles and a lateral row of yellow spots, prolegs on abdominal segments 2-7 and 10, anal area like body, black. antennæ wart-like. Feeds on *Salix sericea*.

Head black or dark brown, with the following parts lighter: a small spot on the genæ between the ocelli and the post-clypeus, the antennæ, the labrum, the labium, and the mandibles and maxillæ except for rufous tips. Body green, with the following parts black: a "Y"-shaped sclerite on the venter of the prothorax, two dorsal tubercles and two tubercles just above the base of the leg on the prothorax, five dorsal tubercles and two just above the base of the leg on both the meso- and metathorax, also a slight cloud of black on the caudal annulation of both segments and one on the cephalic annulation of the metathorax, on normal abdominal segments five dorsal tubercles, two just above the base of the proleg and one on the proleg itself, a black dot between each pair of prolegs except the anal pair, a spot at the centre of the anal area, and the tips of the cerci. A yellow spot of more or less quadrate outline on every segment of the body except the last two abdominal segments just caudad of the spiracle. Legs greenish-white except for a black tubercle on the basal joint and rufous claws. Cocoon is about .9 cm. in length, double elliptical and spun of dark brown silk.

Larvæ are gregarious edge-eaters, two brooded, the adults appearing in May and July. Spins cocoon below the surface of the ground.

*Phymetocera fumipennis*.—Larvæ about 1.25 cm. in length and caterpillar-like, body white above and yellow beneath, tubercles black, head black, prolegs on abdominal segments 2-8 and 10, anal area like the body, antennæ five-jointed. Feeds on *Smilacina racemosa*.

Head dark brown, with the following parts light: the post-clypeus except a spot at the base and one in each depression, the ante-clypeus except a dot in each lateral angle, the labrum at the base, the maxillæ except the tips, a spot on the front at the base of the post-clypeus, and the genæ below a line passing just dorsad of the antennæ. Palpi black except at the joints. Ocelli black.

Body.—Prothorax yellowish, with five black tubercles in a line above the base of the leg. Tubercles simple. Meso- and metathorax white



above and yellow below, with eight black tubercles in a double line above the base of the leg. Metathorax with a black spot on the stigmatal line. Abdomen yellowish below and white above, with eight black tubercles in a double line above the base of the leg on each normal segment. A black spot on the stigmatal line of each segment except the tenth, and a dark clouded area connecting the dots of adjoining segments. Clouded area absent between the dots of the eighth and ninth segments.

Legs gray, with the following parts white: an oblique suture on the first segment, the whole second joint and the third and fourth below.

Remarks.—The larvæ feed on the flowers of the plant, stripping the racemes of the blossoms. In habits they are gregarious, and when the blossoms are consumed the larvæ migrate to the leaves and there complete their development. When feeding on the leaves the larvæ change from the light colour of the time of flower feeding to a dark greenish-slate. This is caused by the food showing through their thin skins. Cocoons are of dark silk, single, and spun beneath the surface of the soil, larvæ entering the ground last of June.

### THREE NEW COCCIDÆ FROM BRAZIL.

BY T. D. A. COCKERELL, N. M. AGR. EXP. STA.

*Icerya (Crypticerya) Hempeli*, n. sp.—♀. Exposed on bark, subglobose, much like a very large *I. roseæ*. Length ♂, breadth  $7\frac{1}{2}$ , height  $5\frac{1}{3}$  mm.; dark slate-gray, with a thin but rather dense coating of cream-coloured mealy secretion. Subdorsal areas marked by a longitudinal series of small round spots free from secretion. Legs piceous or dark brown.

Boiled in liquor potassæ, stains the liquid bright pink. Antennæ and legs after boiling pale reddish-brown. Antennæ small and short, 9-segmented, formula approximately (219)(345678), the segments bracketed being subequal in length: 1 nearly twice as broad as long; 9 short and broad, inversely heart-shaped. Legs small but stout, femur fully twice as thick as tibia; tarsus not quite half length of tibia; claw large, moderately curved. Skin chitinous, very strongly so at the sides, remaining deep sienna-brown after prolonged boiling. There are numerous small glands, which in the less chitinized parts are situated on chitinous patches, the skin between these patches being free from coloured chitin. Towards the sides these patches coalesce, and the whole surface becomes reddish-brown, with the gland-orifices showing as clear dots. There are also

some larger gland-orifices scattered here and there in this area. The skin, in the places where it is colourless, is minutely granular. In the sublateral ventral regions is a considerable quantity of short, light, reddish-brown hair. I find no compound glands, such as exist in *I. Ewarti*.

*Hab.*—Campinas, Brazil, May 12, 1898, on *Mimosa* (?). (*A. Hempel*, 215 d.)

*Mytilaspis bambusicola*, n. sp.—♀. Scale a little over 2 mm. long, very narrow, of uniform width, rather convex, white; with dark sepia-brown exuviae, which are sculptured in a cancellate manner. After boiling in liquor potassæ, the scale dissolves to a milky substance, which consists of fragments of minute moniliform threads.

♀. Greatly elongated; four rounded produced very distinct lobes, all wide apart, the median ones the larger; in the interval between the lobes a short bifid process; immediately laterad of each median lobe a very long gland-hair or squame, nearly twice as long as the lobe; a similar squame a short distance beyond each second lobe, and three more at long intervals on the margin beyond. Beyond the second, third and fourth squame or gland-hair the margin in each case presents two obtuse elevations, not always very distinct. No groups of ventral glands, but many pairs of transversely elongate gland-orifices scattered over the pygidial area. Embryos in ♀ very large.

*Hab.*—Campinas, Brazil, May 12, 1898. On stem of bamboo, with *Asterolecanium bambusæ*, Boisd. (*A. Hempel*, 215 c.). *M. bambusicola*, by the absence of circumgenital glands, etc., approaches *M. striata*, Maskell. The brief preliminary description published by Green of his *M. elongata* is rather suggestive of our species. Fortunately, I have some *M. elongata* from Mr. Green, found on leaves of *Arundinara*, at Punduloya, Ceylon. The insect is now doubtfully referred by Green to *Chionaspis*, and it may well go there, having a *Diaspis*-like ♂ scale, with a vaguely indicated keel. The ♀ scale will easily be known from *bambusicola* by its light orange-brown exuviae.

The following species of *Mytilaspis* will be published in the *Revista do Museu Paulista* (Brazil), but it is desirable to present an abstract of the characters in an entomological journal:

*Mytilaspis argentata*, n. sp.—♀ scale about  $2\frac{1}{2}$  mm. long, often curved, very narrow—linear, in fact—but covered and broadly margined

with a film of semitransparent silvery secretion, which under the microscope has a reticulated structure, resembling a skeletonized leaf. Scale dark brown, exuviae dull orange. ♂ scale white, the filmy margin broad, so that the scale becomes oval, or sometimes subcircular. The ♂ and ♀ scales congregate in large patches on the leaves, and even the area between them is thinly covered with the silvery secretion.

♀. Very long and narrow, dark red. No groups of circumgenital glands. Four lobes, and many pointed processes of the margin. Embryonic larva with two large figure-of-8 glands in the cephalic region.

*Hab.*—On leaves of a forest tree, Campinas, Brazil; April, 1898. (*F. Noack.*)

I will take this opportunity to record a new locality and food plant for *Aspidiotus dictyospermi*, Morgan. Dr. F. Noack found it in May, at Campinas, Brazil, on leaves of ivy (*Hedera helix*).

#### CONTRIBUTIONS TO COCCIDOLOGY. — I.

BY J. D. TINSLEY, NEW MEXICO AGR. EXPT. STA.

*DACTYLOPIUS SORGHIELLUS*, Forbes. Syn. *D. Kingii*, Ckll.

Dr. S. A. Forbes has kindly sent me the type material of this species, which I have examined with much interest. The material studied consisted of 4 specimens. As is usual with these subterranean forms the antennæ are quite variable, both in the number of segments and their relative length.

Only two of the antennæ of the 4 specimens were 8-jointed, the others being 7-jointed, and some plainly aborted. After careful measurement and study, I conclude that the forms described by Cockerell in *Science-Gossip*, Feb., 1897, p. 240, as *D. Kingii*, must be referred to this species.

I have studied quite a number of specimens of subterranean ant's-nest forms collected by Mr. Geo. B. King around Lawrence, Mass., and have called those specimens *D. Kingii* which had an antennal formula of 81237564. Joint 1 is usually appreciably longer than either 2 or 3, although 1, 2 and 3 may be subequal; 7 is sometimes longer than 3, and 6 sometimes longer than 5.

By examining a considerable number of specimens, however, the formula stated above will always be found to stand out quite prominently.

By way of parenthesis let me add here, that no one should undertake to describe the antennal characters of a species of the *Dactylopinæ* from

one or two individuals. The antennæ of all species which I have studied vary greatly both as to the absolute and relative length of the segments. One should measure quite a number, and then select that formula as typical which occurs oftenest. I have on several occasions come very near making serious mistakes by neglecting this; and as a further illustration I might add that Prof. Cockerell's types of both *Ripersia Blanchardii* and *R. flaveola* are specimens with malformed antennæ.

Among the specimens of "*D. Kingii*" from Mass. two forms may be roughly distinguished: one having joint 1 of the antennæ, about 40-50  $\mu$  long; and joint 8, 75-80  $\mu$  long; the femur, 140-170  $\mu$  long and about 80  $\mu$  broad. The second form has jt. 1, 50-65  $\mu$  long; jt. 8, 90-110  $\mu$  long, and the femur 200  $\mu$  or more long, and about 80  $\mu$  wide.

One would be inclined from their general appearance under the microscope to divide them at least into a species and variety; but some specimens show intermediate characters. The specimens of *D. sorghivellus* from Mr. Forbes belong to the group of the smaller individuals, while Cockerell's type of *D. Kingii* inclines toward the larger. It may be possible at some future time to separate the latter at least as a variety, but I do not feel justified in doing so at present.

*Eriococcus Gillettei*, n. sp.—Adult ♀. Ovisac pure white, elongate ellipsoidal, 2-3 mm. long. The ovisacs may be crowded together, but each retains its form; *i. e.*, they do not become a confused mass of cotton.

Dead, shriveled, females brownish and scarcely 1 mm. long, mounted they are about 2 mm. long. When cleaned and mounted the dermis is colourless and bears numerous glands and conical spines; the spines, however, are not so large or numerous as in *E. adenostomæ*, Ehrh., the largest being 15  $\mu$  long; the glands also seem to predominate over the conical spines, while in *E. adenostomæ* the spines are most numerous; there are also a few large hairs scattered over the dermis. Antennæ 7-jointed, the joints quite variable in both actual and relative lengths, each bearing the usual hairs; joint 1 can seldom be measured; joint 2, 28-31  $\mu$  long; joint 3, 45-60  $\mu$  long; joint 4, 25-40  $\mu$  long; joint 5, 15-25  $\mu$  long; joint 6, 20-25  $\mu$  long; joint 7, 25-45  $\mu$  long. It is almost impossible to give an average formula, but joint 3 is always longest. Legs rather long and slender; femur about 150  $\mu$  long by 50  $\mu$  wide; tibia 100-110  $\mu$  long by 30  $\mu$  wide; tarsus 115-135  $\mu$  long by 20  $\mu$  wide. Digitules of tarsus quite long and knobbed; digitules of claw also quite long and knobbed. Segments of leg with the usual hairs, Anal ring with eight

rather large hairs,  $105 \mu$  long. Caudal tubercles well developed, bearing one or two large hairs, several conical spines and a large seta,  $140 \mu$  long.

Hab.—On *Juniperus virginiana*, L., at Solida, Colo.; October, 1898. Collected by Prof. C. P. Gillette.

This species, *E. araucariæ*, Mask., and *E. adenostomæ*, Ehrh., resemble each other so closely externally that they cannot be distinguished by their external appearance. *Araucariæ* and *adenostomæ* resemble each other in the spines, but *araucariæ* has the spines rather more conspicuous, especially a row around the margin, which do not clear as easily as the rest, and therefore stand out rather prominently. In *araucariæ* the tibia and tarsus are subequal, while in *Gillettei* the tarsus is distinctly longer than the tibia, in *adenostomæ* they are nearly subequal. The length of the third joint of the antennæ in *Gillettei* is between those of the other two. *Araucariæ* has the caudal lobes distinctly prolonged, while that is not true in either *Gillettei* or *adenostomæ*.

This species seems to be of economic importance, as Prof. Gillette writes: "The little trees from which I took these specimens seemed almost to be dying from the attacks of these insects. At first I thought the trees literally covered with some *chionaspis* on bark and leaf."

## EARLY STAGES OF TRIGONOPHORA PERICULOSA. GN.

BY REV. THOMAS W. FYLES, SOUTH QUEBEC.

*Eggs*.—Laid dispersedly on the 11th of August. They were pinkish-white in colour; somewhat flattened; striated, and had cross indentations. They hatched on the 21st of the month.

*Newly-hatched larva*.—A half-looper; one-tenth of an inch long. Head bilobed, large. General colour a very pale olive-green, with numerous black warts on head and body, and a few white bristles. Mandibles amber-coloured. Feeds on *Plantago major*. Moulded August 28th.

*Larva after first moult*.—Length a quarter of an inch. Head small, dark brown. Body colour very pale green. Has four sage-green lines down the back, and is dotted with numerous small brown warts, each bearing a single brown hair. Moulded September 4th.

*Larva after second moult*.—Length half an inch. Head amber-coloured, spotted with brown. Body sage-green above, greenish-white below. The two shades separated by a double line—the upper part

brown, the lower white. Along the back is a chainlike series of angular brown lines forming diamond-shaped divisions. In the hinder angle of each division is a conspicuous white spot. The larva lies hid during the day, and comes out and feeds at night. When disturbed it curls up into a bunch. Moulded September 21st.

*Larva after third moult.*—Length after moult six-tenths of an inch. Head amber-coloured, slightly greenish; has a few brown markings and a few white hairs. Body colour of larva above rich warm green, with brown markings and a dorsal line of white spots. Spiracular line creamy-white. Under side of larva pale green with reddish-brown spots. The larvæ are hibernating in this stage. There are probably two broods of *T. periculosa* in the year.

#### BOOK NOTICE.

THE PTEROPHORIDÆ OF NORTH AMERICA.—By C. H. Fernald, A.M., Ph.D. Revised edition, July 30th, 1898. Boston: Wright & Potter Printing Co., 18 Post Office Square. 1 Vol., 800; 84 pp., 9 plates.

Any one who has a copy of Prof. Fernald's Manual of the Crambidæ of North America will hardly need to be told that this later work is exactly what every student or collector of the micro-Lepidoptera wants, and that the way is now made easy for him when he wishes to identify his plume-moths and learn all that is thus far known about the North American species. It is characterized by its author's well-known accuracy and conciseness of statement, and is a complete monograph of the family as far as this continent is concerned. It begins with an historical account of the family in the writings of European entomologists and the more recent publications in America. This is followed by short chapters on the structure, habits, early stages and systematic position of the plume-moths. The body of the work is taken up with descriptions of the genera and species, including very useful synopses in each case. Three of the plates illustrate the external anatomy and the structure of the wings, the remainder depict the genitalia of the species. We miss, however, the exquisite coloured plates that so beautifully illustrated the Crambidæ. We need not say more than that this is a full and entirely satisfactory work on the Pterophoridæ, and that it maintains the high standard of excellence that we now expect in the author's scientific productions.