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THE CANADIAN
ENTOMOLOGIST.

VOLUME IV.

Edited by the Rev. C. J. S. Bethune, M. A.,

Head Master of Trinity College School, Port Hope, Ont.

ASSISTED BY

W. SAUNDERS, London, Ont. ; | E. B. REED, Barrister-at-Law, London, Ont. ;
and J. M. DENTON, London, Ont.

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VOL. IV.

LONDON, ONT., JANUARY, 1872.

No. 1

TO ALL WHOM IT MAY CONCERN—GREETING :

A Happy New Year to you, kindly reader ; may the days of this year roll joyously along for you wherever you may be, whether your lot is cast in our peaceful Canadian land, or in the sea-girt isles of the old home, whether in the midst of the matured Republic of our cousins across the lakes, or in the latest democracy of *la belle France*, whether on the shores of the stormy Atlantic, or on the borders of the broad Pacific, whatever your nationality, whatever your position in life, we look upon you as one of our brotherhood of Entomologists, and we include you amongst our friends.

For the fourth time we are commencing a new volume, and we do so with feelings of more than ordinary satisfaction, inasmuch as we have at length fulfilled all our promises by the punctual completion of the preceding volume within the appointed year. The third volume we commenced with the issue of its first number in April last, and the second in June ; when we began the preparation of the third in the following month, our task seemed hopeless as regarded the performance of it before the close of the year. However, by the regular issue of double numbers, we were enabled to complete the volume of two hundred and forty pages, with its forty illustrations, by the end of 1871, and now we start fair with the new year, and hope to be regular and punctual throughout it. While we thus congratulate ourselves upon our satisfactory position, we must by no means omit to mention—it would be ungrateful in us indeed to do so—how much we are indebted to others, and how highly we esteem the kind assistance that has been so freely afforded us. Especially we would offer our thanks to those friends outside of our own country whose contributions have added so much to the value of our pages. May we beg that they will lay us under still further obligations by the continuance of their favours during the coming year, and that others also will not hesitate to follow their example?

While we thank our many friends for their kind assistance and encouragement, we regret that we have to mete out a word of censure for others

whose forgetfulness—we do not for a moment think it is anything more—threatens to cause us some little embarrassment. We allude to those who have been for some time receiving this publication, but who have neglected to return the *quid pro quo*, and to send us the trifling amount of their subscription. It is true that we are aided by a grant from the Legislature of the Province, but that aid alone is not sufficient to meet all our requirements and necessary expenses, nor indeed is that aid intended by any means to relieve our subscribers from the obligation they have incurred by receiving our publication. We feel that during the past year we have furnished a volume of our journal that is fully worth the dollar charged to all who take even the slightest interest in Entomology, and that we may with justice call upon all in arrears to send in at once the amount of their indebtedness, as well as their subscription for the forthcoming volume. By a resolution of the Council, a copy of this number is sent to all whose names are on our subscription list, but no further numbers will be sent to any one whose dues are not paid before the issue of the second number on the 15th of February next. We regret exceedingly to be obliged to make this statement, but we trust that the allusion to these matters now, will so effectually remind our readers of their duty towards us that we shall never require to refer to the subject again. The CANADIAN ENTOMOLOGIST will (D.V.) be issued regularly on the 15th of each month, and will consist of twenty pages as heretofore.

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For scale of Advertisements, see page 20.

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DESCRIPTION OF THE WHEAT WIRE-WORM.

Agriotes mancus Say.

BY J. PETTIT, GRIMSBY, ONTARIO.

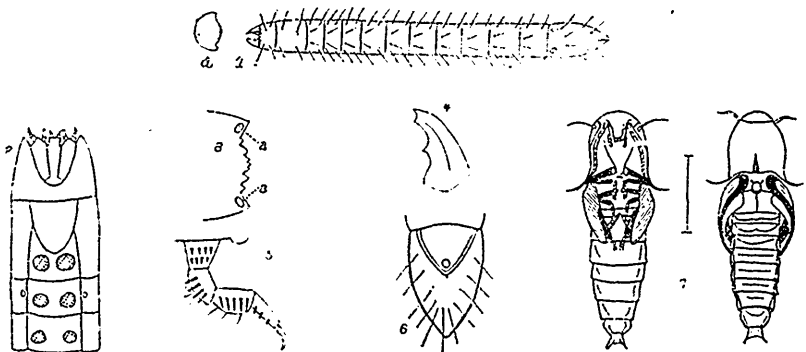
For many years an insect, familiarly known among farmers as "the wire-worm," has committed ravages from time to time among the wheat crops in different parts of the Province. As the history of this insect has not hitherto been traced out, I am happy to be able to make public, through the pages of the CANADIAN ENTOMOLOGIST, the following description of its larval and pupal states.

In the fall of the year 1870, so unusual an amount of damage was inflicted upon the wheat crops in this vicinity by this wire-worm that I was led to try and breed it to the perfect state, with a view to ascertaining what species it was the larva of. By digging about the roots of the wheat plants, I obtained about a dozen specimens, which were placed with a few wheat plants in a large flower-pot, where they were kept supplied with food by planting occasionally a small quantity of wheat. With the first cold weather they ceased to eat, and were then placed in a sheltered situation until the return of warm weather in spring, when they were restored to the breeding cage. They soon gave evidence of being alive, and possessing unimpaired appetites; their rapid consumption of the wheat plants rendered it necessary to renew the supply quite as often as before. They were fed in this way until the month of July, when my absence from home caused them to be neglected; on my return there was not a vestige of food left. Thinking that the worms had probably died of starvation, I paid no further attention to them until the 26th of August, when on removing a part of the earth from the pot, a pupa was disclosed, and on the 3rd of September the first imago appeared, which proved to be a specimen of *Agriotes mancus* Say. As only two more specimens came out during the remainder of September, I turned the earth out of the pot and carefully examined it; the inspection revealed seven specimens of the imago in the little cells in which they had transformed, and one larva.

Among the larvæ collected, I had noticed one less than half the size of the others, and evidently much younger, which would account for the one still in the larval state. It had attained, however, a size fully equal to that of the others when first brought in during the previous autumn; and hence I have formed the opinion that the larval state does not last longer than three years. This opinion has since been strengthened by the obser-

vation of a large number of larvæ, which appeared readily separable into *two sizes*, corresponding to those originally collected for breeding. Westwood, in his "Modern Classification of Insects," (vol. 1, 238), states respecting the larva of an allied species (*A. obscurus*) which, in Europe, feeds upon the roots of wheat, rye, oats, barley and grass, that according to Bjerkander, a Swedish Naturalist, "it is *five* years in arriving at the perfect state." Curtis, in his "Farm Insects," (page 161) makes a similar statement upon the same authority, and adds that those which he had himself feeding for ten or twelve months scarcely increased in size during the time. As already stated, however, I am of opinion that our species is by no means so long lived, but that it attains maturity in three years—a period quite long enough, the agriculturist must think, in which to inflict damage upon the crops.

Through the kindness of Dr. Horn, of Philadelphia, I am enabled to offer to the readers of the CANADIAN ENTOMOLOGIST the following careful description of the larva and pupa which, together with the accompanying illustrations, he has prepared from examples that I furnished him. I need only add that I have now another batch of larvæ in breeding, and that I hope next season to be able to afford some further information on points of interest connected with the life history of this destructive insect. The imago is described in Say's Entomological books, vol. ii., p. 117.



1. Larva much magnified, (natural size |—————|) 1 a. Transverse section. 2. Underside of head and first three or thoracic segments, showing the parts of mouth and the position of first spiracle. 3. Margin of front; a. Position of antennæ. 4. Mandible. 5. Leg. 6. Terminal segment beneath. 7. Pupa, upper and under view. The line between represents the natural size.

LARVA (Fig. 1.) Form.—Elongate subcylindrical, dorsal surface more convex.

Tegument.—Partially corneous, colour testaceous.

Surface.—Smooth shining, with very few wrinkles and a few short erect hairs arranged as follows: two on each side of the middle of dorsum, two near the anterior and two near the posterior margin of each segment, laterally; beneath, one near the anterior and posterior margins on each side; last segment with more numerous setæ.

Cephalic segment one fourth broader than long, sides straight slightly convergent anteriorly, feebly convex and slightly impressed on each side near the anterior margin. Mouth directed anteriorly. Ocelli none (fig. 2).

Antennæ short, three jointed, conical, last joint more slender than the preceding; placed at side of head behind the mandibles (fig. 3a).

Superior cephalic plate prominent at middle, middle lobe itself trilobed, its lateral lobes acute, middle lobe tridentate.

Mandibles robust corneous, moderately arcuate bifid at tip and with a short acute tooth at middle of inner edge (fig. 4).

Mentum elongate, slightly broader in front, less corneous in front; palpigerous pieces connate, together subquadrate; palpi short two jointed, basal joint as wide as long, last joint longer conical.

Maxillæ composed of an elongate basilar piece on each side of mentum: palpi four jointed; outer lobe two jointed, terminal joint obtusely pointed at tip; inner lobe feebly developed, concealed behind the outer lobe and ciliate on its inner margin.

Prothoracic segment subquadrate.

Meso and *Metathoracic* segments shorter than the preceding, and together scarcely longer.

Abdomen, of nine segments, gradually increasing in length, 1st slightly longer than metathorax, last segment nearly as long as the two preceding, elongate oval and obtusely pointed at tip. Segments beneath as above, last segment subtriangular, base straight, sides rounded.

Prosternum truncate in front, oval gradually narrowing behind, leaving a triangular membranous space between it and the inflexed portion of the sides in front of the coxæ.

Coxæ. Anterior narrowly separated, middle more and hinder still more separated.

Legs short. Coxæ conical with a double row of short corneous spines in front. Femur and tibia short, armed beneath with two rows of spinules

and each with one or two long setæ. Tarsal piece cylindrical, longer than tibia, with double row of spinules beneath, and a long moderately arcuate claw (fig. 5).

Spiracles. Nine pairs. First pair on the inflexed portion of the mesothoracic segment slightly in front of the coxæ. The remaining spiracles are placed on the sides of the abdominal segments nearer the anterior margin.

The last abdominal segment (fig. 6, underside) has near its basal margin on each side a deep pit of oval form. These are certainly not spiracles, being very much larger and of different construction. Their appearance leads me to suspect them of being glandular fossæ, but of what use or why so large comparatively, I am unable to decide.

PUPA (fig. 7). The pupa resembles the imago in many of its characters, being however about one fourth longer and in the abdominal region more slender. The only differences of moment being the following:—

Thorax at each angle with a stout bristle-like appendage more slender towards the tip, about a sixteenth of an inch long. That at the anterior angle is supported on a small papilla, the posterior being prolonged from the tip of the angle. Terminal abdominal segment above subquadrate, emarginate at tip, angles acute and divergent, beneath with a deep sinuous groove on each side and a median shallower groove.

Abdomen above and beneath of nine segments, the first very narrow distinctly visible above, beneath visible only at the sides; second slightly broader, beneath nearly entirely concealed. The remaining segments are distinctly visible both above and beneath, the distal angles being slightly prominent, giving the sides of the abdomen a dentate appearance.

In assuming the perfect state, the abdomen loses apparently two segments above and four beneath. These are accounted for in the following way: The first two *ventral* segments are obliterated, the terminal contains the genital apparatus which, with the preceding segment, is retracted and becomes concealed. The penultimate segment is thus the sixth of the imago which is frequently visible by dissection. The first two dorsal segments of the pupa remain in the imago, while the last two are lost as indicated above.

MICRO-LEPIDOPTERA.

BY V. T. CHAMBERS, COVINGTON, KY.

Continued from Vol. III., page 224.

GRACILLARIA.

THE species of this genus bear some resemblance—especially the smaller species—to *Lithocolletis*; but they may be distinguished by the attitude in repose in most species, and by the developed maxillary palpi in all. They usually sit (especially the larger species, for I have not observed it in some of the smaller ones), with the anterior part of the body elevated upon the anterior and middle legs, whilst the posterior legs are applied to the sides of the abdomen, the apex of which touches the surface upon which they rest. In some of the smaller species, the maxillary palpi are small, and sometimes almost concealed by the labial palpi. This is the case in *Gracillaria robiniella* (*Parctopa robiniella* Clemens), and *G. lespedezaefoliella* (*P. lespedezaefoliella* Clem.), upon which Dr. Clemens erected the genus *Parctopa*, as not having any visible maxillary palpi. I have found the maxillary palpi distinct, though small, in *G. robiniella*. *G. lespedezaefoliella* I have not seen; but from Dr. Clemens' description, it is very closely allied to *G. robiniella*, and no doubt has the same structure.

But the genus is by no means a homogeneous nor a distinctly limited one. The species differ in many respects as to structure, as well as style or pattern of ornamentation, and habits of larvæ and pupæ.

The genus *Covisium* was erected to include certain species having the second joint of the labial palpi tufted. But, as Mr. Stainton has well remarked, there is considerable variation among the species in this respect, and the genus seems to pass almost insensibly into *Gracillaria*. The only material point of difference between *Gracillaria* and *Parctopa* was the supposed absence of maxillary palpi in the latter genus, and that was a mistake.

Herrich-Schaffer divides the genus, constructing a new genus, *Euspilapteryx*, for the smaller species, (and in which no doubt he would have included the *Parctopa* of Dr. Clemens), but which does not seem to me to be at all a natural division. And lastly, Zeller divides the genus into two sections, in one of which the discal cell gives off nine veins to the margin, whilst in the other it gives off only eight veins. This appears to

me to be the best division which has been attempted ; but the number of species is not yet large enough to make its division necessary as a matter of convenience, and therefore it appears to me best to let it stand until the study of a large number of species in all stages of growth shall make a natural division possible.

The species differ in the *size* of the labial palpi as well as in their *clothing*. In some, the vertex is very slightly roughened, shewing an approach to *Ornix* ; and in some, the scales at the sides of the vertex project over the base of the antennæ, almost forming small tufts.

There is also considerable difference in the larval habits of the different species. Some, *perhaps*, do not mine leaves at any period of their lives, or for a very short period, if at all. Others mine them only for a short period. When leaving the mine, they become external feeders, rolling the leaves of their food plants into various forms. Others again are miners during their whole larval existence, and of these, some never leave their first mine until they do so to become pupæ, whilst others frequently leave their old mine to construct a new one. Some pupate under a dense but semi-transparent silken coverlet or web, whilst others make a small silken cocoon or *nidus*, and one species known to me pupates in the mine.

In such a genus, it is worse than useless to encumber science with a multitude of generic names until a sufficient study of many species has made a natural division practicable, or at least until the accumulation of species makes an artificial division necessary.

1. *Gracillaria robiniella*.

Parectopa robiniella Clemens. *Proc. Ent. Soc., Phila., 1863, p. 4.*

Dr. Clemens erects this genus for his *P. lespedezaefoliella*, in the *Proc. Acad. Nat. Sci., Phila., 1860, p. 209*, and afterwards describes this species as above stated. *Gracillaria* (*Proc. Ent. Soc., Phila., 1863, page 9*), as limited by him, is Zeller's section A, in which nine veins are given off from the discal cell. This insect belongs to the division in which there are only eight, and its neuration only differs from that of *G. salicifoliella*, *n. sp.*, in having one of the veins, from the apex of the cell, furcate *near its origin*, whilst *G. salicifoliella* has it furcate *at its origin*, and slightly bent. Nor is the head any more tufted than in *Salicifoliella*, and some other *Gracillaria* which have long loose scales on the vertex. As before stated, Dr. Clemens was mistaken in the statement that the maxillary palpi are not visible, and it is therefore as clearly a *Gracillaria* as any of the other small species

belonging to Zeller's section with eight veinlets. It mines the leaves of the Locust (*Robinia pseudacacia* and *R. hispida*), and of various species of *Desmodium*. (Dr. Clemens was acquainted with the larva mining *Desmodium*, but supposed it to be the larva of his *P. lespedezaefoliella*. I have, however, bred *robiniella* from it). Like many other larvæ of *Gracillaria*, it frequently leaves an old mine to construct a new one. The mine is pale yellowish, is usually on the midrib, with lateral branches running out from it. I am not acquainted with any *Gracillaria* which makes a similar mine, but scarcely any two species make mines alike. When the larva is disturbed, it conceals itself on the midrib. *Gracillaria pavoniella*, according to Stainton, (*Nat. His. Tin., vol. 8, p. 186*), has the same habit. It pupates in a small *nidus* on some object on the ground.

The imago is dark golden-brown, almost black, with *three oblique silvery costal streaks*, and the *same number of dorsal ones opposite* the spaces between the costal ones; and a *transverse narrow silvery line* beginning on the costa, within the cilia, near the tip. Head white.

P. lespedezaefoliella, which must also be a *Gracillaria*, seems, from Dr. Clemens' description, to differ from this species mainly in having only *two costal streaks*, and in having all of the streaks situated a little differently. *Alar ex.* less than $1\frac{1}{3}$ inch. *G. robiniella* occurs at Green Bay, Wisconsin. Pennsylvania. Kentucky. New Orleans.

Dr. Clemens says that he always found the mines untenanted when the leaves were mined by *Lithocolletis robiniella*. Such has not been the result of my observations. On the contrary, I have found the larvæ in the mines of both species, and also those of *L. ornatella* in their mines, at all times from the middle of July until November, many of all these species being still in the larval state when the leaves fall. And nothing is more common than to find two, and, very frequently, three of these different species mining the same leaflet at the same time; and, late in the season, *Depressaria pseudacaciella*, and an unknown larva, may be found as intruders in the same mines. And as heretofore stated, I find, during the latter part of summer and in the fall, this species and the two species of *Lithocolletis* in all their stages—larva, pupa, and imago—at the same time.

Gracillaria eupatoriella. N. sp.

This species mines the leaves of *Eupatorium asperatoides* on the under side, the lower cuticle becoming wrinkled. The larvæ were found in the mines in July. They frequently leave old mines and make new ones.

The larva is greenish, with dark green contents, but just before becoming a pupa, it changes color, becoming bright crimson. It pupates in a small *nidus* on the ground.

I am able to describe the imago only from a specimen which emerged from the *nidus*, but was unable to rupture the pupal envelope, which I removed after its death. In this specimen, the head and thorax appeared to be white with a blackish spot on the labial palpi, and a wide longitudinal blackish streak on the thorax. The wings are shining dark brown or black, with purplish reflections, with a dorsal basal white streak ending in a white spot nearly opposite, but a little behind which, is a small costal white streak, behind which again is a long oblique costal white streak reaching almost to the dorsal margin. There is another costal white streak just before the ciliæ. *Alar ex.* a little more than $\frac{1}{4}$ inch. The colours and their arrangement do not differ very greatly, therefore, from Dr. Clemens' two species of *Parectopa* above mentioned. Kentucky.

Gracillaria plantaginisella. *N. sp.*

In this species the labial palpi, which are very long, have the second joint not tufted, but clothed below with long loose scales. They are white, with a golden brown stripe beginning on the apex of the second joint beneath, and extending along the under side of the third to the apex. Maxillary palpi white, tipped with brownish. Antennæ pale brownish, iridescent; face opalescent; vertex brownish golden with a silvery white stripe on each side extending back over the sides of the thorax, which is brownish golden. Anterior wings brownish golden or deep red orange, according to the light, with a longitudinal median white streak near the base, but not touching it, in some specimens; in others reaching the base, and seeming to be a continuation of the white lateral thoracic streaks. Four costal and three dorsal silvery white (in some lights bright metallic) streaks, each of which is dark margined on both sides and around the apex, and the dark margins slightly powdered posteriorly on the disc, those of the third and fourth costal, and second and third dorsal, being confluent with each other and with the brownish portion of the apical part of the wing. The first costal is at about the basal fourth, is the largest, is a little oblique, and produced along the costa towards, but not to, the base. The first dorsal opposite the space between the first and second costal; the second and third dorsal nearly opposite the third and fourth costal respectively; the second and third costal a little oblique backwards; the fourth costal and

the third dorsal a little oblique forwards; the third dorsal and the fourth costal are in the ciliæ. There is a silvery white apical spot. The dorso-apical portion suffused with brown: costal and dorsal ciliæ brown: apical ciliæ silvery white, with a dark brown oblique streak (hook). Hinder marginal line at the base of the ciliæ brown. Under surface and legs silvery or opalescent, streaked and banded with golden brown. *Alar cr.* scarcely $\frac{2}{3}$ inch.

It belongs to Zeller's section A, having nine veinlets given off from the discal cell; has the "hook" in the apical ciliæ; the scales of the vertex are not appressed, and, like those on the under surface of the second joint of the labial palpi, they are long and loose.

It is a very handsome insect, and the ornamentation seems to be intermediate between *G. ononidis* and *G. pavoniella*, as figured in Stainton's *Nat. Hist. Tin.*, v. 8, plate 5. The wings are rather more golden than in *ononidis*, and not so much suffused with brown along the centre, and it lacks the *brown basal* and first dorsal white streak represented in that species. The wings are not so much golden as in *pavoniella*, but it has the basal streak exactly as in that species, and the apical hook; but it lacks the last small dorsal streak or spot of that species, and has the apical spot as in *ononidis*, whilst *pavoniella* has none.

The larva is yellowish, and does not change colour previous to pupation. It mines the leaves of the Virginia Plantain (*Plantago Virginica*) in September, October and November. The mine is at first narrow, winding and linear, filled with frass, ending in a large bladder-like mine, the upper and lower cuticles being puffed out. The linear portion is only visible under the lens. It remains in the mine until it is ready to become a pupa, which it does in a small *nidus* on the ground, and the imago emerges in less than a week. Kentucky. Common.

Gracillaria 12 lineella. *N. sp.*

Palpi and legs white, flecked and spotted with blackish on their outer surfaces. Antennæ pale greyish, annulate with pale fuscous. Head and thorax greyish-white mixed with fuscous. Anterior wings, to the naked eye, pale greyish (which the lens shows to be the intermixture of whitish and fuscous scales), with fuscous spots and blotches on the disc. The posterior margin with twelve alternate white and fuscous streaks small and not distinct, except the tenth, which is situated beyond the apical third, and extends obliquely backwards to the costal margin, where it is confluent with the eleventh dorsal streak, which curves forwards from its base on the

dorsal margin to its union with the tenth streak on the costal margin, there enclosing a triangular dark brown dorsal patch. The twelfth streak is narrow, and extends along the dorso-apical margin, and opposite to it is a distinct costo-apical triangular white spot. There is a series of indistinct small white streaks along the costa, three of which, just beyond the middle, are larger and more strongly dark margined. The first of the three is long, narrow, oblique, and suddenly curved backwards on the disc. The second is nearly concealed by its dark margin, which is pronounced forming an oblique curved black streak, which reaches the middle of the apical part of the wing just over the third streak, which is shorter, white, distinct, and decidedly dark margined on both sides and around the apex. Apex golden brown, ciliae golden brown, tipped with silvery. *Alar ex.* $\frac{2}{3}$ inch. Larva and food plant unknown. Kentucky; not common.

LIST OF COLEOPTERA

TAKEN AT GRIMSBY, ONT., BY MR. J. PETTIT.
Continued from page 107, Vol. III., CAN. ENT.

CHRYSOMELIDÆ.

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|-------------------------|-------------------------------|
| ORSODACNA, <i>Latr.</i> | LEMA trilineata, <i>Oliv.</i> |
| <i>vittata, Say.</i> | UROPLATA, <i>Chcvr.</i> |
| * <i>atra, Lac.</i> | <i>quadrata, Fabr.</i> |
| DONACIA, <i>Fabr.</i> | * <i>pallida, Say.</i> |
| <i>proxima, Kirby.</i> | CASSIDA, <i>Herbst.</i> |
| <i>lucida, Lac.</i> | <i>signifer, Hbst.</i> |
| <i>palmata, Oliv.</i> | <i>clavata, Fabr.</i> |
| <i>subtilis, Kunze.</i> | <i>aurichalcea, Fabr.</i> |
| <i>æqualis, Say.</i> | <i>pallida, Herbst.</i> |
| <i>cuprea, Kirby.</i> | CEROTOMA, <i>Chcvr.</i> |
| <i>pusilla, Say.</i> | <i>caminea, Fabr.</i> |
| <i>Kirbyi, Lac.</i> | PHYLLOBROTICA, <i>Ralt.</i> |
| SYNETA, <i>Esch.</i> | <i>decorata, Say.</i> |
| <i>tripla, Say.</i> | <i>discoidea, Fabr.</i> |
| LEMA, <i>Fabr.</i> | LUPERUS, <i>Geoffr.</i> |
| | <i>meraca, Say.</i> |

Species marked with an asterisk * have not before been included in the list of Canadian Coleoptera.

- DIABROTICA, *Cherr.*
 12-punctata, *Fabr.*
 vittata, *Fabr.*
 GALERUCA, *Geoffr.*
 externa, *Say.*
 sagittariae, *Kirby.*
 *notulata, *Fabr.*
 TRIRHABDA, *Lec.*
 canadensis, *Kirby.*
 OEDIONYCHIS, *Latr.*
 vians, *Ill.*
 quercata, *Fabr.*
 GRAPTODERA, *Cherr.*
 chalybea, *Ill.*
 DISONYCHA, *Cherr.*
 pennsylvanica, *Brongn.*
 alternata, *Ill.*
 triangularis, *Say.*
 collaris, *Fabr.*
 SYSTEMA, *Cherr.*
 frontalis, *Fabr.*
 *marginalis, *Ill.*
 CREPIDODERA, *Cherr.*
 nana, *Say.*
 *copalina, *Fabr.*
 pubescens, *Ill.*
 PHYLLOTRETA, *Cherr.*
 striolata, *Ill.*
 PSYLLIODES, *Latr.*
 punctulata, *Mels.*
 DIBOLIA, *Latr.*
 aerea, *Mels.*
 LABIDOMERA, *Cherr.*
 trimaculata, *Fabr.*
 POLYGRAMMA, *Cherr.*
 10-lineata, *Say.*
 CALLIGRAPHA, *Cherr.*
 scalaris, *Lec.*
 spiracæ, *Say.*
 CALLIGRAPHA, *Cherr.* (Con.)
 philadelphica, *Linn.*
 Bigsbyana, *Kirby.*
 MELASOMA, *Dillweyn.*
 scripta, *Fabr.*
 interrupta, *Fabr.*
 CHRYSOMELA, *Linn.*
 vulgatissima, *Linn.*
 PRASOCURIS.
 phellandrii, *Linn.*
 varipes, *Lec.*
 GASTROPHYSA, *Cherr.*
 polygona, *Linn.*
 PHAEDON, *Meg.*
 viride, *Mels.*
 METACHROMA, *Cherr.*
 †-notata, *Say.*
 dubiosa, *Say.*
 aterrima, *Oliv.*
 BROMIUS, *Cherr.*
 vitis, *Fabr.*
 CHRYSOCHUS, *Cherr.*
 auratus, *Fabr.*
 HETERASPIS, *Dej.*
 curtipes, *Mels.*
 GLYPTOSCELIS, *Cherr.*
 hirtus, *Oliv.*
 PACHNEPHORUS, *Cherr.*
 10-notatus, *Say.*
 *pubescens, *Lec.*
 PACHYBRACHIS, *Suffrian.*
 *subfasciatus, *Lec.*
 *mollis, *Hald.*
 tridens, *Mels.*
 MONACHUS, *Suffr.*
 saponatus, *Fabr.*
 CRYPTOCEPHALUS, *Geoffr.*
 *guttulatus, *Oliv.*
 *sellatus, *Suffr.*

CRYPTOCEPHALUS, <i>Geoffr.</i> (Con.)	COCCIDULA.
mammifer, <i>Newm.</i>	*lepida, <i>Lcc.</i>
*quadruplex, <i>Newm.</i>	MYSIA, <i>Muls.</i>
auratus, <i>Fabr.</i>	*pullata, <i>Say.</i>
*catarius, <i>Suffr.</i>	15-punctata, <i>Olivr.</i>
COCCINELLIDÆ.	PSYLOBORA, <i>Muls.</i>
HIPPODAMIA, <i>Muls.</i>	20-maculata, <i>Say.</i>
13-punctata, <i>Linn.</i>	CHILOCORUS, <i>Leach.</i>
convergens, <i>Guer.</i>	bivulnerus, <i>Muls.</i>
parenthesis, <i>Say.</i>	BRACHYACANTHA, <i>Muls.</i>
maculata, <i>Geer.</i>	ursina, <i>Fabr.</i>
COCCINELLA, <i>Linn.</i>	HYPERASPIS, <i>Redt.</i>
ophthalmica, <i>Muls.</i>	elegans, <i>Muls.</i>
bipunctata, <i>Linn.</i>	SCYMNUS, <i>Kug.</i>
picta, <i>Rand.</i> var.	*ornatus, <i>Lcc.</i>
trifasciata, <i>Linn.</i>	*flavifrons, <i>Mels.</i>
transversoguttata, <i>Fald.</i>	*punctatus, <i>Mels.</i>
lacustris, <i>Lcc.</i>	*terminatus, <i>Say.</i>
novemnotata, <i>Herbst.</i>	collaris, <i>Mels.</i>
sanguinea, <i>Linn.</i>	lacustris, <i>Lcc.</i>
*cardisce, <i>Randall.</i> 1.	SACIUM, <i>Lcc.</i>
*similis, <i>Randall.</i> 2.	fasciatus, <i>Say.</i>
	*obscurus, <i>Lcc.</i>

1. Taken by Dr. Milward. 2. Taken by Dr. Milward.

NOTES OF A COWCATCHER RIDE THROUGH NEBRASKA.

BY CHARLES R. DODGE, WASHINGTON, D.C.

DURING my recent trip through Colorado and adjacent territory, as a member of the New York agricultural editorial excursion party, I made it a point to collect whenever an opportunity was offered. Through Kansas, the three-minute stops at the stations, many of which are out on the open plains, afforded me opportunity for turning over old railroad ties, &c.; for beating the herbage and rank vegetation at the sides of the track, or for searching in the dry grass and weeds for *Orthoptera*. In the mountains it was an easy matter to jump from the ambulance or to follow behind it,

stopping when occasion demanded ; but the most novel collecting was during the trip through Nebraska.

It was our good fortune to have a special train from the Platte river to Omaha, and as the novelty of riding in the cabin of the locomotive had long since worn off, the cow-catcher was next resorted to, and with results that had not been anticipated. Sitting carelessly on the beam that supports the iron framework, "nursing one leg," I was suddenly struck in the face by some small object that decidedly made an impression ; others came in quick succession, and before I could solve the problem, a large grasshopper (*Ædipoda Haldemanni*, Scudd), struck my boot, glanced and rolled into my lap. Having no bottle at hand, I immediately secured it in a leaf from a railroad land document that had been handed me, and placed it in my pocket. By this time we were running at 40 miles an hour, and grasshoppers pelted us like driving sleet. They seemed to fly or jump up from the track at our approach, but not in sufficient time to get out of the way, and so we literally ran into them. Those that struck the engine were generally injured—in some cases completely *smashed*—and blown off at either side, and it was only those that happened to strike on our clothing that were worth preserving. Occasionally a stray dragon fly, or an unlucky wasp would get in the way, and even tiger beetles flew into the trap ; now and then a large wingless *Brachycephalus*, with its coarse spines, would make its presence felt ; but all were fish that came to the net, and soon the leaves of my pamphlet were exhausted, all my pockets filled, and by the time the station was reached, I was only too glad to return to the car and bottle my treasures. In less than half an hour I took more insects than I had room for, and what was still better, found two new species.* The following is a list of the *Orthoptera* taken :—

<i>Brachycephalus magnus</i> .		<i>Ædipoda carolina</i> Linn.
<i>Opomola bivittata</i> Serv.		" <i>trifasciata</i> Say.
<i>Pezotettix megacephala</i> Thos. N. sp.		" <i>tenebrosa</i> Scudd.
<i>Caloptenus spretus</i> Uhler.		" <i>Haldemanni</i> Scudd.
" <i>femur rubrum</i> Burm.		" <i>undulata</i> Thos. N. sp.
" <i>bivittatus</i> Say.		" <i>collaris</i> Scudd.
<i>Acridium emarginatum</i> Uhler.		And two or three other species not yet determined.

* Two other species taken during the trip are found to be new, and have been described by Mr. Thomas. *Acridium frontalis* from Kansas, and *Caloptenus Dodgei*, Colorado.

We were much interested in watching the birds as they flew up before us. The majority of the flock would pass to one side or the other, but one or two would attempt to keep ahead of the engine, straining every muscle, till finally they would fall apparently exhausted, or be struck and drop lifeless. One was captured alive by simply reaching out the hand and taking it.

On all future trips through new country, I shall endeavour to get into the good graces of the conductor and engineer, and thus secure a place under the headlight, for, aside from its being a good "collecting ground," one gets a splendid view of the country, without dust, without the usual jolting, and with a delightful breeze into the bargain, though it doesn't do to reflect too much on the possibility of shipping a cow or two.

NOTES ON A NEW ORTHOPTEROUS INSECT.

BY PROF. C. THOMAS, WASHINGTON, D. C.

Sub-Fam. CONOCEPHALINÆ.*

Copiophora mucronata. *Nov. sp.*

CONE of the vertex smooth on the margins, apex mucronate. Mesosternum bidentate. Green; labrum, clypeus and underside of the cone yellow.

Male and Female. Cone of the vertex standing obliquely forward, apex mucronate, the minute spine slightly deflexed, especially in the female; the sides parallel from the base a little above the first joint of the antennæ, where they are slightly angulate; not serrated or granulated on the margins; front side has, near the base, a prominent tubercle; there is also a tubercle below this between the antennæ. Face oblique, smooth; occiput smooth. Pronotum rounded, not carined, densely punctured; on the dorsum there is generally a glabrous, semi-circular spot; there are also some irregular glabrous impressions on the sides; front margin rounded; posterior margin nearly straight, slightly rounded at the humerus where there is an entering angle. Elytra passing the abdomen about one third their length; upper margin straight from the dorsal angle; lower

* I have here, and expect in the Synopsis of the Acrididæ of the United States, which I am at work on, to adopt the termination INÆ for the sub-families.

margin rounded from the base to the apex ; apex angled. Wings about as long as the elytra. Ovipositor about as long as the body, nearly straight, lanceolate at the apex ; cerci of moderate length, swollen, slightly curved, with a slender, pointed apex. The abdomen of the male has, at the apex of the last ventral segment, the usual cylindrical appendages ; the super-anal plate bilobed ; no cerci apparent in the male I have seen.

Posterior lateral angles of the mesosternum furnished with a prominent spine. External carinae of the femora furnished with strong spines ; also a sharp spine each side of the apex of each, projecting forward. Anterior tibiae without spines in front ; middle with two rows above, two in each row ; the posterior with two rows beneath. Anterior coxæ furnished externally with a strong curved spine. Antennæ very long and slender.

The legs of the male are quite hairy.

Colour. Body and elytra a uniform bright pea-green : underside and edges of the frontal cone a bright yellow ; labrum and clypeus yellow ; mandibles deep piceous black, except the upper external angles, which are green. Ovipositor dull yellow, slightly striped with fuscous near the apex. Tarsi pale fuscous. Eyes brown.

Dimensions. ♀ Length from base of cone to top of abdomen, 1.5 in. ; cone .31 in. ; elytra 1.26 in. ; posterior femora .83 in. ; posterior tibiae .82 in. ; ovipositor 1.5 in. ♂ Length 1.25 in. ; cone .25 in. ; elytra 1.1 ; posterior femora .68 in. ; posterior tibiae .65 in.

As before remarked, this species has evidently been introduced with plants brought from some tropical section. The only plants received at the Department last fall or winter from the tropics were from Central America and Cayenne.

If the mesosternal spines, which are very prominent, do not distinguish it from other species, then the very interesting inquiry arises, has it been produced from the eggs of some known species, the variations between the perfect insects having been produced by the different circumstances under which they have grown to maturity ?

So far as I am aware, the following list embraces all the species hitherto described :—

- | | |
|--|---|
| <i>C. cornuta</i> , Serv.—Para. | <i>C. megacephala</i> , Burm.—Jole St. Johanna. |
| <i>C. mexicana</i> , Sauss.—Mexico. | <i>C. gracilis</i> , Scudd.—Napo, or Maranon. |
| <i>C. lucifera</i> , Burm.—Bahia. | <i>C. cuspidata</i> , Haan.—Brazil. |
| <i>C. flavo-scripta</i> , Walk.—Venezuela. | |
| <i>C. longicauda</i> , Serv.—Cayenne. | |

This species has some strong resemblances to *C. gracilis*, Scudd, but is evidently a different species.

Prof. Glover's figures will be found as follows:—Female pl. VIII., fig. 14 (Orthoptera); Male pl. VII., fig. 8.

THE ACORN MOTH.

Holocera glandulella. N. sp.

BY C. V. RILEY, ST. LOUIS, MO.

ON page 118, of Volume III., I briefly referred to a little inquiline acorn moth by the proposed name of *Gelechia glandulella*. Careful examination shows that it differs from the genus *Gelechia*, principally by the peculiar construction of the basal joint of the ♂ antennæ, and that it belongs to the genus *Holocera* as characterized by Clemens (Proc. Ent. Soc. Phil., II., p. 121). As the insect has been the cause of some dispute between myself and Mr. Couper, I send you the following description:—

HOLCOCERA GLANDULELLA. N. sp.—*Imago*. Alar expanse 0.50—0.80 inch. Front wings silvery-gray, more or less distinctly suffused and marked with fuscous; two distinct dark discal dots: a pale transverse stripe across the basal third of wing, slightly elbowed outwardly at its middle: this stripe is well relieved behind by a dark shade, and this shade generally extends from the elbow to the *costa* above discal spots, forming a more or less distinct triangular shade in the anterior middle portion of the wing: three tolerably distinct dusky marks surround the discal dots on the outside, and a series of minute vein-specks mark the posterior margin; fringes concolorous. Hind wings of a more glossy, warmer, brownish-gray, the reflection inclining to golden in certain lights; fringes concolorous, but not glossy. Under surface uniformly of same tint as hind wings. Head, thorax and legs concolorous with front wings; abdomen, with hind wings, the joints often ringed with a paler shade. Apical joint tipped with yellowish, or pale fulvous hairs, the ovipositor of ♀, which may be exerted one-half the length of abdomen, of same colour. The basal antennal joint of ♀, the nodule on ♂ antennæ, base of palpi, and sometimes tarsi, also tinged with fulvous.

Described from 8 ♂, 20 ♀, all bred from acorns. The intensity of

the dark shadings is quite variable, and in some specimens the basal space shows decidedly paler than the rest of the wing.

Larva. Length 0.35—0.50 inch. Largest in middle of body. Translucent grayish-white, with blue-black, vesicular, dorsal marks. A conspicuous light brown head, darker cervical shield, and small anal plate. Head with the mouth parts darker; epistoma well defined by fine brown lines. Piliiferous spots quite noticeable from their darker polished surface, the hairs springing from them pale and soft; placed in a transverse row on joints 2 and 3, and on joints 4—12, three laterally and four, nearly in a square, dorsally. The normal complement of legs which are of the same colour as body.

I have found the species in Vermont, New Jersey, New York, Illinois and Missouri.

This insect may be found in the larva state all through the fall, winter and early spring months, especially in acorns that have been infested with the acorn weevil (*Balaninus rectus*, Say), and I gave some further account of it on the page already referred to. The larva is readily distinguished from that of *Balaninus rectus*, as the latter of course lacks the legs, cervical shield, anal plate and piliiferous spots, so characteristic of the former, and is besides more wrinkled, more yellowish, less translucent and does not show the blue-black markings on back.

MISCELLANEOUS NOTES

THE AMERICAN ENTOMOLOGIST.—Editors *Rural World*: I regret to inform you that, contrary to the announcement a year ago, this magazine will not be continued during the coming year. The cost of publishing a paper so profusely illustrated, with original figures is great, and the publishers, Messrs. R. P. Studley & Co., have lately concluded to discontinue it, as they have not met with sufficient financial encouragement. I have, however, since they so decided, purchased from them all the illustrations and all interest in the magazine, and hope at no distant day to recommence its publication myself. Meanwhile, I take this means of thanking the many subscribers who, during the year, have sent in expressions of encouragement and appreciation, or who have signified their intention of renewing subscription. I shall ever be glad to hear from them on entomological subjects, and to render them what little service lies in my power. By making this announcement through your columns, you will oblige.

St. Louis, Mo., Dec. 10, 1871.

C. V. RILEY.

ORTHOPTERA. A case of *Orthoptera*, forwarded from America more than a year ago, has just reached me, on account of the recent war, and the obstruction of freight on the railways centering in Paris. As it was undoubtedly stored in damp places, a large proportion of the specimens were covered with mould, some of them so as to be quite invisible. They had, however, suffered very unequally. On examination, I found that specimens which had been pinned in some Paris-made pasteboard boxes, with cork bottoms, had suffered most; those contained in wooden boxes lined with cork much less so, although still presenting a very unsightly appearance; while those placed in two wooden boxes, lined with aloe-pith, instead of cork, were *entirely uninjured*. The position of the boxes in the case seemed to have nothing to do with their immunity, as they were not beside each other.

I would, therefore, recommend the use of aloe-pith for the lining of insect boxes when they are to be used for distant transportation—especially by water.

SAMUEL H. SCUDDER.

Menton, France, Dec. 15, 1871.

KIRBY'S BRITISH-AMERICAN INSECTS.—The types of the species described by Kirby (which we are now reprinting) in the *Fauna Borealis Americana*, are still in existence, we are glad to learn, at the British Museum.

CRAB APPLS. Do not start, Entomological reader; this is not the name of a new species of insect, but we do not know where else to acknowledge the receipt of a little box of "Marango Winter Siberian Crab-apples," sent us by Messrs. Andrews, Herendeen & Jones, of Geneva, N.Y. They are pretty in appearance, pleasant in taste, and are said to especially excel in the quality of keeping.

AGENTS FOR THE ENTOMOLOGIST.

CANADA.—E. B. Reed, London, Ont.; W. Couper, Naturalist, Montreal, P.Q.; G. J. Bowles, Quebec, P. Q.; J. Johnston, Canadian Institute, Toronto, Ont.

UNITED STATES.—The American Naturalist's Book Agency, Salem, Mass.; J. Y. Green, Newport, Vt.; W. V. Andrews, Room 17, No. 137 Broadway, New York.