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The Canadian Entomologist.

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No. 12

A FEW COMMON WOOD-BORING BEETLES.

BY THE REV. C. J. S. BETHUNE, M. A., PORT HOPE, ONT.

Our Canadian wood-boring beetles, with the exception of a few somewhat minute species, belong to the two great families of Buprestidæ and Cerambycidæ. These include an immense number of different genera and species; in Crotch's List of the Coleoptera of North America (north of Mexico) there are enumerated the names of no less than 169 species of the former family and 552 of the latter; about one-third of these are found in this country. It is evident, then, that to give a bare list of all our Canadian species of wood-borers would occupy no little space, while a detailed description of them, if one were competent for the task, would fill many numbers of this journal. We propose, therefore, on the present occasion to merely give a brief account of the eight species depicted on the accompanying plate. These we have selected on account of their frequent occurrence in almost all parts of the country, and the consequent familiarity of their appearance even to non-Entomologists. Our readers will, we are sure, be pleased with the beauty of the figures, which have been admirably drawn upon stone by Mr. L. Trouvelot, of Cambridge, Massachusetts.

Taking the species in the order in which they are numbered on the plate, we come first to

1. *Monohammus scutellatus* Say—A Pine Borer.—This beetle, which derives its specific name from its conspicuously white scutellum, is of a shining black colour on both the upper and under surfaces, thickly punctured with irregular impressions; on the wing-cases there are, as shown in the figure, a number of scattered whitish spots of various shapes and sizes; these, on close inspection, are found to be composed of dense

short white hairs, which often become rubbed off and disappear; the thorax is armed on each side with a thick triangular spine; the antennæ are many-jointed, and about the same length as the body in the male, while in the female they are about twice that proportion. The size of the beetle varies from less than half an inch in the male to over three-quarters of an inch (exclusive of the antennæ) in the female. The larva is a large thick white grub, destitute of legs, divided into a number of well-marked segments; the head armed with a strong pair of jaws. The larva infests the Pine, after the timber has been cut or newly fallen, and often causes serious injury to it by boring large oval-shaped holes which extend for long distances through the interior of the log. The perfect insects appear in June, and are sometimes very abundant; we have occasionally found them swarming in great numbers on fallen pine trees. The insect is common throughout Canada and the neighbouring States.

2. *Clytus speciosus* Say (genus *Glycobius* Lec.)—The Maple Borer.—The colours of this remarkably handsome insect are deep velvety black and bright yellow. The figure represents its shape and markings so accurately that further description is unnecessary; the size depicted, however, is decidedly above the average. This wasp-like beetle is not very abundant, but may occasionally be found on Maple trees, which its larvæ infest both when growing in the forest and also when cut into cord-wood. The eggs are laid by the parent beetle on the trunk of the Sugar-maple during the middle of summer; when hatched the grubs penetrate through the bark and make long winding borings through the solid wood. Occasionally they are very destructive to young Maple trees, but on the whole they are not sufficiently numerous to be objects of dread.

3. *Orthosoma cylindricum* Fab.—A Pine Borer.—This large beetle is the commonest and best known of our wood-borers; its habit of flying through open windows into lighted rooms during the warm evenings of July, usually to the great alarm of the inmates, has caused its appearance to be very familiar to every one. It is one of our largest beetles, measuring oftentimes as much as an inch and a half in length by over a third of an inch in breadth. Its general colour is a chestnut brown, approaching black on the head and antennæ. The thorax is armed with three sharp spines on each side; each wing-case has three slightly elevated ridges running lengthwise for nearly the whole length; the eyes, which are

situated behind the antennæ, are enormously large and very conspicuous. The larva is a large fat white grub, with powerful jaws of a darker colour ; it feeds upon the wood of the Pine, and from its size often injures the timber very materially.

4. *Clytus robinia* Forst.—The Locust tree Borer. (The synonymy of this insect has been rather perplexing ; it is now included in the genus *Cyllene* Newm. ; for a long time we were accustomed to call it *Clytus flexuosus* Fab., but the specific name given above has the priority. It was also long considered to be identical with *C. pictus* Drury, that bores into the Hickory, but the late Mr. Walsh proved satisfactorily that the two species are distinct.)—The general colour of this insect is deep black with light yellow stripes ; on the head and thorax these stripes form narrow transverse bands, but on the wing-covers there is first of all a narrow yellow anterior edging (not shown in the figure), then a slightly flexuous stripe (not straight as in the figure) ; this is followed by a narrow zig-zag band forming a letter W across the wings, and three irregularly wavy and broken stripes ; there is also a yellow dot at the tip, and broader stripes on the sides of the abdomen of the same colour. The antennæ are long and many-jointed, and of a dark brown colour ; the legs are long and of a tawny hue. The larva is a whitish coloured grub, about an inch long and the thickness of an ordinary goose-quill, and is furnished with six very minute legs. When young it appears to bore chiefly into the sap-wood, but afterwards strikes off into the solid wood of the tree, perforating it in every direction. Its presence is early indicated by the little heaps of saw-dust extruded from the holes, and accumulated about the base of the tree.

The history of this insect is rather a curious one. For a little over a hundred years it has been known to inhabit the State of New York, its appearance and habits being recorded by some English Entomologists of the last century. About thirty years ago it was found as far west as Chicago, whence it spread throughout the State of Illinois, but it was not till 1863 that it reached Rock Island, about 200 miles further west, where—Mr. Walsh relates—it suddenly appeared in great swarms and utterly destroyed all the Locust trees. The first record we have found of its appearance in Canada is by Mr. Couper, who states (*Can. Journal*, 1855, p. 377) that he observed some Locust trees attacked by this insect in Montreal in September, 1855. In 1862 it began to be very destructive to the Locusts in Toronto, and for several years was excessively abundant

there. In 1873 Mr. Reed relates its appearance in enormous numbers at London, Ont. ; now it appears to be generally distributed throughout this province, and occasionally becomes very injurious to these ornamental trees. The perfect insect, in the localities it frequents, may usually be found in September on the flowers of the Golden-rod (*Solidago*), of which it eats the pollen, as well as upon the trunks of the trees it infests.

5. *Chrysobothris femorata* Fab.—An Apple tree Borer.—This insect belongs to the family Buprestidæ, while all the others on our plate pertain to the Cerambycidæ ; the difference in shape and structure, and especially in the length of the antennæ, is very noticeable in the figures. The beetle, which may be found basking on the tree-trunks in the hot sunshine in the end of June or during July, is very lively when danger threatens and will take wing instantly if an attempt is made to catch it. Its blackish colour above so much resembles the bark of the tree that it readily escapes the notice of an ordinary observer ; but beneath it is of a beautifully burnished dark copper colour, looking as if it were made of metal ; beneath the wing-covers it is bluish. While the figure gives the shape of the insect very correctly, it much exaggerates its size, which seldom exceeds three-eighths of an inch ; the light spots on the wing-cover are also erroneous in being very much too conspicuous. The larva is a long flattened grub, with an enormously large flat head in proportion to the rest of its body. When first hatched from the egg it eats the soft sapwood of the Apple tree, but afterwards it bores into the harder interior. As it especially attacks young trees, it is often terribly destructive to newly-planted orchards.

6. *Saperda candida* Fab.—An Apple tree Borer.—This insect, which rivals the foregoing species in the injuries it inflicts upon Apple trees, is a pale-brown beetle with two chalky-white longitudinal stripes running from the head to the apex of the wing-covers ; its under side, legs and face are also chalky-white, and its antennæ a little darker ; its length is about three-quarters of an inch. The larva is of a pale yellow or whitish colour, with a brownish polished head and black jaws ; it is destitute of legs, but like other larvæ of the same family, it is enabled to move in its burrows by the contraction and expansion of its well-defined segments ; when fully grown it is about an inch long. It may readily be distinguished from the preceding species by its cylindrical and more symmetrical shape.

Thus far this most injurious insect has only been found in certain portions of this country, being very abundant in the Niagara district, and in the neighbourhood of Montreal and Quebec, but happily rare, or entirely absent, from almost all other parts.

7. *Monohammus confusor* Kirby.—A Pine tree Borer.—This fine beetle, which is especially remarkable for the extraordinary length of its antennæ, is, in our Pine regions, one of the most common and destructive of our insect enemies. Its general colour is an ashen grey, mottled with variable darker spots; the scutellum is white; there are also patches of whitish colour on the head, thorax and abdomen. These variations of colour, being due to a covering of very fine short hairs, which oftentimes are rubbed off, are not to be depended upon in the determination of the species. As in *M. scutellatus* (fig. 1), each side of the thorax is armed with a short thick spine. The length of the insect varies from three-quarters of an inch to an inch and a half—the average size being over an inch; the antennæ of the males vary in length from one and a half to three inches; those of the female are somewhat shorter. The larva is a large, white, somewhat cylindrical grub, destitute of feet. During the summer the female lays her eggs in crevices of the bark of the white and red pine, selecting for the most part timber that has been scorched by fire, or felled by the wind or the lumberman's axe; the larva when hatched soon eats its way into the wood, and before this period of its existence is closed it often burrows immense galleries through and through the solid interior. As it lives a long time in the larval state, the perfect insect is frequently only developed after the timber has been built into a house, and then suddenly emerges from its concealment to the great consternation of the inhabitants of the dwelling. The larva, when burrowing in the wood, makes a loud noise like the boring of an auger, which on a still night may be heard for a considerable distance. The species is very generally distributed throughout Canada and the Northern States; in the pine-growing regions it is often excessively abundant. The late Mr. E. Billings relates that he once saw a pine tree near Lake Clear, in the county of Renfrew, on which he calculated that there were at least three hundred individuals of this species, while numbers more were flying about in all directions. As the insect attacks the cut timber when left over summer in the woods, it is a very serious injury to the operations of the lumbermen of this country.

8. *Oberia tripunctata* Fab.—The Raspberry Borer.—We now come to the last insect on our plate; the figure is a good deal exaggerated in size, the length of the beetle being under half an inch, and its width one-tenth of an inch. Its colour is deep black, with the exception of the thorax above and the front part of the breast beneath, which are rusty yellow; on the thorax there are three small elevated black dots arranged in a triangle (not two only, as in the figure), whence is derived the specific name of the insect. The antennæ are nearly, if not quite, as long as the body. The beetles are usually found in July and the beginning of August; they attack all the varieties of raspberry, and come into gardens from the fields and clearings, where we have often taken specimens and observed their work. The mode of attack is peculiar: the first appearance of injury is usually manifested by the withering and drooping of the ends of the young shoots. On inspection, it is found that at the base of the affected part there are two rows of punctures, half an inch apart, running completely round the canes, and so girdling them that the supply of sap is stopped and the tops necessarily soon wither and break off. The parent insect begins by cutting with its jaws a series of small punctures side by side around the cane, six or seven inches from the top. As soon as the first row is completed, it turns round, and facing the other way, cuts a second row measuring the length of its own body. These two girdles being completed, it makes a small hole a little way above the lower girdle and deposits in it its small yellow egg. The whole operation occupies an hour or more. From this egg there hatches out in a few days a small yellow footless grub, which proceeds to burrow downwards, eating the pith of the cane and eventually causing its destruction.

In order not to occupy too much space, we have forborne to make any mention of remedies which have been applied with more or less success to combat the ravages of these destroyers. Should any of our readers desire information upon this point, we beg to refer them to the Entomological Society's forthcoming Report to the Legislature, which will include many particulars regarding these insects which we have not given above.

AMERICAN ENTOMOLOGICAL SOCIETY—NOTICE OF REMOVAL.—The American Entomological Society has removed to the south-west corner of Nineteenth and Race Streets, Philadelphia, Pa., where all correspondence, &c., should be addressed. Chas. A. Blake is Corresponding Sec'y.

A NEW GENUS OF TORTRICIDÆ.*

BY A. R. GROTE,

Director of the Museum, Buffalo Society Natural Sciences.

In the early spring, from the middle to the end of April, Prof. Lintner and Mr. Hill have taken near Albany a rather small and inconspicuously colored moth, remarkable for its diurnal activity. At first sight I did not recognize it as belonging to the Tortricidæ, but on examination it shows the family characters and seems to be allied to the European genus *Cheimatophila*. But it is not vein 4, but vein 5 that is wanting on the hind wings, and the other characters sufficiently separate our species.

Exentera, n. g.

Sub-median vein of secondaries hairy above at base. Ocelli. Eyes naked. Antennæ of the male brush-like, of the female simple. Fore wings narrow, long, with parallel costal and internal margins; apices not produced; external margin short and even; 12-veined, all the veins separate; vein 1 furcate at base; 2 from median at two-thirds from the base; vein 7 joins the external margin below apex; 10 is thrown off nearly mid-way between 9 and 11. Hind wings 7-veined, 5 wanting; 6 and 7 from one point; 3 and 4 near together at base; 2 at three-fourths from the base of wing. Fringes moderate; ovipositor slightly exerted. Palpi bushy, third article moderate. Front hairy, thorax smooth, legs untufted.

Exentera apriliana, n. s.

♂ ♀. Concolorous, dark olivaceous fuscous, a little mottled, immaculate; hind wings smoky fuscous, sub-pellucid, paler beneath. Under the glass the fore wings and thorax are seen to be covered with whitish-tipped fuscous scales. Length of ♀ primary 11 mil.; length of ♀ body 9 mil.

* Prof. C. H. Fernald, Orono, Maine, is now engaged in the study of our N. Am. Tortricæ, and I have relinquished to him my accumulated material for the purpose. I hope my friends will supply him with the necessary material to enable him to give us a full and much needed paper on the group.

SEXES OF HOMOPTERA LUNATA.

BY THOS. E. BEAN, GALENA, ILLINOIS.

For the purpose of further testing conclusions stated on p. 174 regarding *Homopteras lunata*, *edusa* and *Saundersii*, I have secured all observed at my sugar since the former writing.

There are 38 "*lunata*," 23 "*Saundersii*" and 18 "*edusa*." Having opportunity to examine these while fresh, I observed the anatomy of the sex organs in each specimen as captured. The result verified the view previously advanced—the *lunatae* were all females, the *Saundersii* and *edusæ* all males.

In regard to the wing-markings, the comment already printed applies equally to this lot of specimens; in addition I may say that there appears to be somewhat greater variation of t. p. line among the females (*lunatae*) than in the two series of males (*edusæ* and *Saundersii*).

A large proportion of these specimens—nearly one-half—were taken in September; of those obtained in previous years a majority were captured earlier in the season.

It will be noticed the numerical proportion between the sexes, and also between the two male forms "*Saundersii*" and "*edusa*," already printed, is pretty well sustained in the present lot. The proportion of about 4 "*Saundersii*" to 3 "*edusæ*" is perhaps a tolerable approximation to their relative abundance here, as it was during the past summer my aim to secure all observed.

A note from Mr. Grote advised examination of the frenulum. I have applied this test to each of the 162 specimens, with result confirming the conclusion already reached. This structure is uniformly simple in "*edusa*" and "*Saundersii*," and compound in "*lunata*."

NATURALISTS' DIRECTORY.—A new edition of this convenient publication is promised about May next. Besides containing as complete a list of the names of Naturalists as it is possible to obtain, it is to embrace a list of all the scientific societies in North America, their location, officers and active members. Any communications relating to this Directory should be addressed to S. E. CASSINO, Salem, Mass.

DESCRIPTION OF PREPARATORY STAGES OF NEONYMPH.
SOSYBIUS.

BY W. H. EDWARDS, COALBURGH, W. VA.

Egg laid July 16th, on grass, the female being confined in a bag over a tuft of grass set in a flower pot. Shape nearly that of a semi-ovoid, the base being flattened and the sides at base rounded, the surface under a low power smooth, but under a higher seen to be covered with shallow thimble-like depressions; color greenish-white.

Hatched July 20th.

Young larva—Length .09 inch.

Shape cylindrical, but marked by five or six longitudinal tuberculated ridges; each tubercle sending out a clubbed white hair, some of which are curved forward, others back; color white; head much larger than second segment, rounded, bilobed, rather broader than long, the vertices without processes, pilose, shining black. Duration of this stage 6 days.

After 1st moult—Length .2 inch. Shape cylindrical, thickest in the middle, tapering evenly either way, so that 2nd segment is of about same breadth as 12th; tail forked; color light green; covered with fine white tubercles, arranged in longitudinal rows, not quite regularly, each tubercle sending out a white hair; the space between the two dorsal rows is rather broader than between the rows elsewhere, presenting a clear green medio-dorsal stripe; and at extreme edge of dorsum is also a green stripe, but narrower; legs, pro-legs and under side green; head considerably broader than 2, rounded, a little depressed at top, angular at the sides below; color green, darker than body, much covered with fine white, pubescent tubercles; ocelli and mandibles brown. To next moult 7 days.

After 2nd moult—Length .36 in. Shape as before, and similarly marked, the tubercles of unequal size; the largest arranged in the longitudinal rows, but many small ones placed on the ridges caused by the creasing of the several segments; color blue-green; head no broader than 2, yellow-green, shaped and marked as before. To next moult 6 days.

After 3rd moult—Length .42 inch. Stout, thickest in the middle, rounding somewhat dorsally; color pale green; on either side of the

darker medio-dorsal stripe the row of white tubercles forms quite a broad stripe, another one at edge of dorsum, and another at base, over feet ; the head emerald green, shaped as before. To next moult 5 days.

After 4th moult—Length .56 inch. Without another moult this stage continued till maturity.

Mature Larva—Length .76 inch. Cylindrical, obese, thickest in the middle, rounded dorsally, and sloping slightly to 11, then rapidly to last segment, which ends in forked, divergent tails ; color emerald green, much covered with fine yellow tubercles placed on the ridges caused by the creasing of the segments, and with larger tubercles disposed in longitudinal rows ; each tubercle giving out a fine and short white hair ; at base of body the stripe is more heavily tuberculated than on dorsum ; on either side of a clear, dark green, medio-dorsal stripe is a tuberculated stripe, and another at edge of dorsum ; under side, legs and pro-legs, nearly same green as above ; head rounded, broader than high, bilobed, and but little depressed at the suture, somewhat flattened frontally, broader than 2, equal to 3 ; covered with yellow, conical, fine points, arranged in close vertical rows, and at same time in transverse rows also ; the ocelli black, mandibles brown.

The larva suspended in form of figure 6. Duration of this stage 7 days.

Chrysalis—Length .4 inch ; greatest breadth .1 inch. Cylindrical, the abdomen stouter than anterior portion ; mesonotum rounded, carinated ; the head case truncated, scarcely projecting beyond the mesonotum, slightly arched at top, narrow, beveled at corners ; the wing cases flaring a little on dorsal side, the neuration of wings seen distinctly ; color green, on the abdomen yellow-green ; on either side of dorsum on abdomen is a small ridge, and on either side of this are three black dots, placed in pairs between the mesonotum and extremity ; on either side below wing cases a brown stripe ; the keel of mesonotum brown, and the wing cases are crooked along the principal nervures, and on the margin is a black dot at the end of each nervule. Duration of this stage 13 days.

This species is very common in this part of West Virginia, and is found over the Southern and Southwestern States and in Mexico. Here it is two brooded. It flies in company with *gemma* and *curviris*, keeping within the edge of the forest, or if in the open country, is always near timber. The egg is shaped very much like that of *curviris*, but still more

like the eggs of certain *Papilios*, *turnus* for instance, but is netted on surface like the former and unlike the latter. It is quite different from the egg of *nephela*, and the egg of *gemma* is globular. The young larva is very different from that of *nephela*, but as it passes its several stages the larva grows surprisingly like the corresponding stages of *nephela* both in shape and color, while at every stage it is very unlike *gemma* in these respects. It is less like *curytris* in shape than *nephela*. On the other hand, the chrysalis is very like that of *curytris*, wholly unlike that of *gemma*, and pretty near that of *nephela*. In these preparatory stages its affinities are with *curytris* in egg and chrysalis, with *nephela* in larva, and as unlike *gemma* in larva and chrysalis as if the latter were an *Apatura*.

INSECTS FEEDING ON GLEDITSCHIA.

BY V. T. CHAMBERS, COVINGTON, KY.

Helice pallidochrella Cham., and *Agnippe bicolorella* Cham.

My observations on both of these species scarcely permit me to doubt that their larvæ feed in some way on the Honey Locust (*Gleditschia tricanthos*), though neither of them has been bred from the larva. I have, however, met with a larva from which I have not succeeded in breeding the imago, and which I believe to be the larva of one of these species. It is a *Gelechia*-like larva, about half an inch long, with sixteen feet, and feeds inside the seed-pods of the *Gleditschia*, on the honey-like substance found in them, and not, so far as I have observed, on the seed. Its head is very pale ferruginous, the other segments being of a pale apple green, with very indistinct darker spots. I have met with it in September and October, but have never found it in the old pods in the spring, wherefore I think it probable that it leaves the pods to pupate. It is most probably the larva of *H. pallidochrella*. This species will be considered—and is—a *Gelechia* in the wide sense—the sense in which it is a convenient receptacle for every species that cannot be better disposed of.

And as I had previously described a very different species as *G. pallidochrella*, I suggest for this species the specific name of *gleditschiacella*.

While upon the subject of species feeding on *Gleditschia*, I wish to call the attention of Coleopterists to two species of Buprestidæ which feed upon this tree. I have never bred either, and have met with each only once, one of them in the larval, the other in the pupal condition. The larva, which resembles that of a *Brachys* more closely than it does that of any other genus known to me, feeds inside the thorns, and is about $1\frac{1}{4}$ lines long. It is depressed and narrows rapidly from the third segment back to the tenth, the remaining segments being again dilated.

The other species feeds *in* the seed. The only specimen that I have met with was a dead pupa found in a seed in May. The entire contents of the seed had been consumed, and the pupa fitted the pericarp so accurately that it looked as if the contents had been metamorphosed into the pupa—as in a sense they had—while the pericarp itself was intact. In breaking open the seed the pupa was somewhat crushed, and it may prove not to be that of a species of Buprestidæ, but I think it belongs to that family. The pupa having so nearly the shape and size of the bean or seed of the *Gleditschia* is about three lines long by two wide, and depressed. There is no danger of mistaking the larva of *Laverna gleditschiacella* Cham. for that of either of these species.

In this connection I wish also to refer again to the very singular larva mentioned in the CAN. ENT., v. 8, p. 137, and to add to the account there given of it that the maxillæ are enormously developed and are used as aids to progression—not exactly as legs, perhaps,—but they are applied to the surface as if the insect was feeling its way with them. Their eyes are reduced to the merest points—indeed I am not sure that these points are eyes—and enclosed in the darkness of the thorn it has more use for “feelers” than for eyes. *Laverna gleditschiacella*, however, which likewise feeds in the thorns, has the eyes well developed. The other larva tumbles about helplessly on a plain surface, being unable to walk on it. It requires a tubular place or cavity like the inside of the thorn, where by arching its body the dorsal tubercles can be brought to bear on one surface, while its ventral legs bear on the opposite one, and then it progresses easily enough. Using what is called the live-box or animalcule cage by microscopists, placing the larva between the glass and its brass setting, it courses around actively, using its dorsal tubercles as legs. I have never succeeded in rearing it, and do not know to what order it should be referred.

Laverna gleditschiælla Cham. is much subject to the attacks of hymenopterous parasites in its larval condition. Yet it is difficult to understand how this is possible under the conditions of its larval life. The first traces of the larva are always found *in the pith* of the stem or branch of the tree, about an inch from the base of the thorn. I have never been able to understand how the larva gets to the pith without leaving some trace of its path from the outside of the stem. The egg must be deposited on the outside of the stem, because the ovipositor of the ♀ is too soft to be able to penetrate the bark and wood to the pith. It would seem that the eggs of the little chalcid parasites must be deposited on the microscopic larva of the moth as soon as it emerges from the egg, and before it has eaten its way into the branch, because it is impossible to understand how it can be done afterwards, as these little parasites are themselves so small that two of them placed end to end would not extend from the outer surface of the bark of the twig to the central pith, and their ovipositors are very short and not exerted. By some means, however, they do manage to reach the larva, and frequently in place of the lepidopterous larva one finds only its shrivelled integument and a dozen or more minute chalcid pupæ, looking as if they were plaited together so as to form a chain as long as the larva of the moth. Sometimes, too, one finds the imagines which have not been able to effect their egress, however they may have effected their ingress to the thorn. There are two other species of Chalcididæ sometimes found in a similar predicament, dead in the prison in which they were hatched. One of these in the imago state is about two lines long. I do not know whether these feed on the larva of the *Laverna* or on one of the other larvæ above mentioned. The *Laverna* larva eats its way to the base of the nearest thorn, usually about an inch distant, then up through its pith a short distance, frequently turning off into the nearest branch. It eats through nearly to the outer surface, leaving only the thin cuticle of the thorn, reaching this point in May, the egg having been deposited on the twig about July or August of the previous year. Here it enters the pupa state, and in ten days or two weeks the imago makes its appearance, the empty pupa skin being left projecting from the little circular hole where it has burst through the cuticle of the thorn. The imago is almost unicolorous, but it ranges from deep glossy brown very faintly bronzed, to a bright bronze or almost golden brown.

Dr. Schweinfurth mentions (*Heart of Africa*, v. 1, p. 98) and figures the thorns of an African Acacia which have a large swelling at the base

produced by some insect, with the little orifice from which it had emerged very much like that made by *Laverna gleditschiælla* in the thorns of the Honey Locust. The *Laverna*, however, produces no swelling of the thorn. On a journey previous to that detailed in the *Heart of Africa*, Dr. S. had planted in Cairo seeds of an Acacia which he had gathered in equatorial Africa. On his later journey these seeds had produced trees which bore thorns in which were the same swellings and the hole by which the insect had emerged, and the Dr. suggests the query whether the insect had survived in the seed!! or "how did it contrive to get to its tree in Cairo?" The idea is novel enough that the insect was carried in the seed which survived its ravages, and in spite of them produced a tree, while the insect having been planted in the seed, managed to make its way through all the stages of the growth of the tree for so many years, and finally emerged from its thorn. As Dr. S. states that "it also occurred in several other situations" beside that at which he planted seed, a more reasonable theory is that the insect was there before he planted the seed. He does not inform us what sort of an insect it was. He mentions also a musical sound produced by the wind blowing into the holes in the thorns from which the insects had emerged. No sound, however, is produced by this cause in the thorns of the *Gleditschia*.

I have been informed that thorns of various species of Acacia (in a large sense) in Texas, New Mexico and Arizona are perforated by insect borings similar to those of *Laverna gleditschiælla* in the Honey Locust, but I have not been able to procure specimens of the insect architect. Prof. Sumichrast mentions similar borings in Acacias in Mexico (referred to in a volume of the *American Naturalist*—I write from recollection and cannot refer to the volume or page). These, however, like those of which Mr. Belt gives such an entertaining account in "The Naturalist in Nicaragua," were tenanted by ants, and according to Mr. Belt, the excavations in the Nicaragua Acacias were made by the ants, which in return for the home and shelter afforded by the thorns, furnished a standing army for the tree, protecting it from depredations by other animals. Two species of ants—a *Myrmica* very near *M. molesta* Say, and a *Formica* (*F. dislocata*? Say) also inhabit the thorns of *Gleditschia triacanthos*; but I have not been able to learn that they render any sort of service to the tree, and certainly they do not excavate their own dwellings, but only appropriate dead thorns that have already been excavated by the larva referred to in the preceding pages—just as they might take advantage

of any other crevice or opening which promised the requisite shelter. The colonies of the *Formica* are much more numerous than those of the *Myrmica*, and the species varies so in color—from those in which the workers are of a dull dead black to those in which the thorax is of a honey yellow—that I at first thought there were three species. I became convinced, however, that there is but the one species. Each formicarium contained one ♀ and a number of larvæ, while the number of workers in some was less than a dozen; in others it rose to more than a hundred.

ON THE GENERA *NOLA* AND *ARGYROPHYES*.

BY A. R. GROTE,

Director of the Museum, Buffalo Society Natural Sciences.

I have received from Canada (London, Mr. Saunders) a new and easily recognizable species of *Nola*, larger than *ovilla*, and in describing it, I have again gone over the characters of *Argyrophyes*, which I find to be allied to *Nola*, and not to belong to the *Geometridæ*. I have corrected my former observations on *Argyrophyes*, which I find to have been largely erroneous.

Nola sexmaculata, n. s.

♂ ♀. Fore wings with the apices produced, gray, like *ovilla* in color, crossed by three oblique dentate and very fine black lines. Costa at base marked with brown. Immediately beyond, at basal third, is a second brown mark, widening inferiorly on the cell. A third and larger, subquadrate, at the middle of the wing. These two last spots are seen to be very finely edged with white on the outside. Hind wings gray with white fringes and discal dot. Beneath sub-irrorate, fore wings gray, hind wings white with discal dot. *Expanse* 19 mil. Two specimens; in the male the antennæ are broken off; from what remains they do not appear to have been pectinate.

Argyrophyes Grote (Bull. B. S. N. S., 1, Plate v.)

The enlarged figures of the neuration (3, 2) I have given are incorrect and may mislead. I have made a fresh preparation of the wings according to Mr. Dimmock's method. The primaries are like Zeller's figure of *Nola confusalis* (fig. 43, a) except that the base of 6 is opposite 5 from the cross vein, as I have figured it. My diagnosis is correct except that for "9 from upper and outer angle of the cell to costa" it should read "just before the upper, etc.," and here my figure and description, which agree, are both wrong. Also 7 touches the costa just before the apex, not at apex. The hind wings differ from Zeller's fig. b, and agree with mine in that vein 4 is joined at right angles by a true vein to vein 3, and is nearer 3 than 6, as I have drawn it. My vein 4 is probably vein 5 of Heineman (1, 273). There is also one accessory internal vein on hind wings. I have referred the single species to the *Geometridæ*, but it should be evidently placed near *Roeselia* among the Lithosians. The neuration is so very variable among the European species that it might not be held generically distinct, but vein 5 is not thrown off from the middle of the cross-vein as given by Heineman for *Roeselia*, but is nearer 3 (4 wanting) than it is 6, and joined by a true transverse vein to the submedian, which is thus 3-branched, not as Zeller figures *confusalis*, 2-branched with 5 independent from the middle of the cell without a true connection with the submedian vein itself. I cannot now account for my errors in drawing the enlarged figures of *Argyrophyes*, except that the wings, which are very frail, were insufficiently cleared of scales, preventing me from getting an accurate view of the venation. The diagnosis given by me (l. c. 175) should be amended to read as follows:

Argyrophyes, n. g.

Ocelli wanting. Maxillæ short, concealed by the prominently long, very thickly scaled palpi, which exceed the front, their third article directed forwards. Wings full; primaries large with evenly arcuate costa, straight external, and consequently long internal margin; 10-veined; cell long, incompletely closed; 2 to 5 at decreasing intervals; 5 from the cross-vein near 4; 6 from the cross-vein near 4 and opposite 5; between 5 and 6 the cell is incompletely closed by an angulated fold; 7 to costa just behind apex; 8 out of 7 to costa; 9 just before the upper and outer angle of the cell to costa; 10 and 11 wanting. Hind wings rounded, 7-veined; cell incompletely closed; two internal veins counted as one;

median 3-branched; vein 4 wanting; 5 joined to median at right angles from a true vein, the commencement of the cross-vein; 6 and 7 together from a point beyond the closure of the cell; 8 out of 7 near the base. ♂ antennæ simple, scaled, ciliate beneath.

Argyrophytes cilicoides is chalk white; the basal half of primaries white; on the outer half of the wing the terminal portion of the median space is shaded with smoky, enclosing a raised blotch of black metallic scales at the extremity of cell. A wavy smoky subterminal line dividing the white terminal field and very near the margin. Beneath the primaries are smoky except along internal margin at base. Hind wings white with a smoky shading within the fringes; beneath with a faint dot. Body white. *Expanse* 16 m. m. New Jersey. I find that my two specimens were males.

Very near to *cilicoides* is *Nola nigrofasciata* of Zeller, Taf. 2, fig. 1, but it is impossible that it is the same. The color of the band is "brown" and it occupies the middle of the wing, and is well defined in Zeller's figure. In *cilicoides* there is no middle band or median space, but the smoky shading is limited to the outer part of the median space without the usual place for the median shade line. The narrow exterior line is evenly arcuate to submedian fold. The white terminal fields are narrower than in *nigrofasciata*.

But I have a species received from Mr. Goodell, Amherst, Mass., the specimen numbered 602, which closely agrees with Zeller's figure and description except that it is a little larger (19 mil.). The median band is not quite separated at its submedian constriction, but this is an ordinary varietal character. Else it agrees perfectly. There is the dot on median vein at base and costal shade (entirely wanting in *cilicoides*), and the faint mark before the inception of the subterminal line. No doubt can remain on my mind that I have Zeller's species before me. Now this species has been evidently re-described by Mr. Morrison, Boston Proc., 154, 1874, as *Eustrotia obaurata*! But the palpi are the palpi of *Nola* and not of *Eustrotia*. They are rather the palpi of *Argyrophytes*, being longer than in *Nola* and with a more pronounced upward curve. The vestiture is wholly scaly and not like that of *Eustrotia*. And the ocelli are wanting. All doubt fades when we come to examine the neuration. *It agrees precisely with Argyrophytes*, and just in those points, accordingly, where *cilicoides* differs from *centonalis*. The median vein of secondaries is 3-branched, vein 4 wanting, vein 5 joined at right angles by a true vein.

and nearer 3 than 6; vein 8 is thrown off near the base of the wing. A second species of the genus *Argyrophytes* will then be:

Argyrophytes nigrofasciata Zeller, Beitr., I, 8, Tab. II, fig. I (*Nola*), 1872.

Eustrotia obaurata Morr., Proc. Bost. Soc. N. H., 154, 1874.

My specimen is a female. Zeller describes and figures the male, which seems to differ unimportantly.

We have here two white species which seem to differ from all known species of the group in the squarer primaries, longer palpi, more rounded secondaries, and in the details of the venation. The ornamentation is remarkable for the metallic scales accompanying the discal spots.

In a forthcoming paper I hope to be able to give corrected drawings of the venation of *Argyrophytes*.

In describing *obaurata* Mr. Morrison does not mention the black dot at base of primaries, and he calls the median space "blackish gray"; Zeller calls it "brown." In the specimen before me it seems to have an olive cast; it would be described as "obscure olive-brown." The scattered metallic scales are very obvious. In Mr. Morrison's description I find no mention of the ante-marginal shade line. But the rest of the description is accurate, and I recognized this species from it in Mr. von Meske's collection at Albany.

ENTOMOLOGICAL PINS SEIZED FOR DUTIES.

For some years past our Society has kept a small stock of Entomological pins, not for the purpose of gain, but for the convenience of our members, many of whom, in the United States as well as in Canada, have obtained their supplies from us in small packages transmitted through the mail. Recently the custom house officer at Detroit seized several packages of these pins, and demanded for their release charges amounting to more than their value. This action, it appears, was prompted by a special circular from the Treasury Department at Washington to the collectors, requiring increased vigilance in regard to packages transmitted by mail—to prevent loss of revenue to the Department.

On being informed of the seizures, we wrote to the Secretary of the Treasury, explaining the objects of our Society in this matter, referring to past usage and also to the fact that these pins were only used for scientific purposes. In reply the Secretary holds that Entomological pins must take their place alongside of other pins and pay a duty of 35 per cent., and that the transmission of such packages by mail is contrary to law. At the same time he kindly instructed the collector at Detroit to waive the usual charges on seized goods and deliver the pins in his possession on payment of duties only. We shall hence in future be prevented from supplying our members in the U. S. with pins by parcel post.

On enquiring from the collector as to whether small quantities of pins might be sent by letter postage, we received in reply a copy of the circular sent from the Treasury Department. As this circular speaks only of *packages*, we presume that pins in small quantities enclosed in letters, covered by the usual letter postage, will not be interfered with.

Sheet cork, which is liable to a duty of 30 per cent., will also, we understand, be subject to seizure, but since the packages we send seldom exceed fifty cents in value, we do not know whether they would be regarded as of sufficient importance to warrant the trouble of the correspondence attending such seizures. On this point we have applied for information, but have failed to obtain it. Any packages of this sort sent in future will be at the risk of the parties ordering them. Either pins or cork can be safely sent in any quantities by express, subject to the duties mentioned.

CORRESPONDENCE.

CATOCALA MARMORATA.

Catocala marmorata may now safely be put down as one of the regularly settled species of this locality. An intimate friend and fellow hunter, in company with myself, took five examples this season, which, with four I took last year, makes nine in all, which is a pretty good showing for a single locality of an insect which, though seemingly diffused over a large territory, is nevertheless one of the rarest of the genus it so royally represents. Mr. Charles Dury, who took one last year, reports another

this year at Cincinnatti; and Mr. Geo. W. Peck took one this season in New Jersey. This makes twelve in all that have been taken in the United States, besides the original one in the Collection of the Entomological Society of Philadelphia, that I am aware of. If others have taken it in other localities, I hope they will report. Some who have not seen the examples taken here and elsewhere, have hesitated to believe that they were the true *marmorata* of Edwards, but a glance at them is enough to convince any one of their identity. I have not seen the original type, but our examples tally exactly with the published description. It is a large, showy and uniformly defined species, entirely distinct, and cannot well be mistaken for or confounded with any other species.

JAMES ANGUS, West Farms, N. Y.

SPHINGIDÆ AT SUGAR.

I have taken the following Sphingidæ at sugar at Center, this season:

| | |
|-------------------|---------------|
| Sphinx choerilus. | Sphinx myron. |
| “ kalmiæ. | “ sordida. |
| “ gordius. | “ cinerea. |
| “ hylaus. | “ Harrisii. |
| “ Abbotti. | “ lineata. |
| “ drupiferarum. | “ luscitiosa. |

JAMES S. BAILEY, M. D., Albany, N. Y.

DONATION TO ENTOMOLOGICAL SOCIETY OF ONTARIO.—We tender our sincere thanks to our esteemed correspondent, Mr. V. T. Chambers, of Covington, Ky., for a collection of named Micro-Ledidoptera kindly presented to our Society. This collection, which reached us in very fair order, consists of 66 species, and is a most welcome and valuable addition to the Society's cabinet.

The Locust Plague in the United States, by C. V. Riley, M. A., Ph. D.

This is an octavo volume of 236 pages, with 45 illustrations, including several maps; published by Rand, McNally & Co., Chicago. It is handsomely got up and contains much valuable information on this important subject; it is, in fact, a digest or reproduction in a compact form of the material contained in the author's several valuable reports on this insect to the Legislature of the State of Missouri. Price, in paper, \$1; cloth, \$1.25. Sent by mail by the publishers, prepaid, on receipt of price.

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