

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured covers/
Couverture de couleur
- Covers damaged/
Couverture endommagée
- Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- Cover title missing/
Le titre de couverture manque
- Coloured maps/
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- Bound with other material/
Relié avec d'autres documents
- Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure
- Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.
- Additional comments:/
Commentaires supplémentaires:

- Coloured pages/
Pages de couleur
- Pages damaged/
Pages endommagées
- Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- Pages detached/
Pages détachées
- Showthrough/
Transparence
- Quality of print varies/
Qualité inégale de l'impression
- Continuous pagination/
Pagination continue
- Includes index(es)/
Comprend un (des) index
- Title on header taken from: /
Le titre de l'en-tête provient:
- Title page of issue/
Page de titre de la livraison
- Caption of issue/
Titre de départ de la livraison
- Masthead/
Générique (périodiques) de la livraison

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
						J					

The Canadian Entomologist.

VOL. I.

TORONTO, APRIL 15, 1869.

No. 9.

ENTOMOLOGICAL NOTES.

PAPER NO. V.

BY W. SAUNDERS, LONDON, ONT.

In my last paper were concluded all the observations I have at present to publish regarding the rearing of butterflies from the egg. Before passing on to relate some experiments of a similar character with moths, I propose to give what further notes I have made in this family from captured larvæ, partially or fully grown.

Papilio Troilus.— Found feeding on spice bush (*Laurus Benzoin*), August 3rd, full grown. The larva, as its habit is, had drawn together with silken threads one of the leaves, constructing thus a rude case in which it secreted itself during the day.

Length $1\frac{1}{2}$ inches, body thickest from third to fifth segment.

Head rather small, flat in front, slightly bilobed, dull flesh color with a faint tinge of brown.

Body above bright green, a yellow stripe across anterior part of second segment, edged behind with dull black. On fourth segment are two prominent eye like spots of dull yellow or yellowish buff, encircled with a narrow ring of black, and a large pupil of black filling most of the lower portion. The posterior part of this pupil is surrounded by a shining bluish black ring, the anterior portion of which reaches a little beyond the middle of the pupil. There is also a line of black in front, extending nearly across the yellow, and a pale pinkish spot above, margined with a slightly darker shade. On fifth segment are two large irregular spots of the same color, pale buff, encircled with a faint ring of black, and having a dull pink spot on the anterior portion of each. These latter spots are nearer to each other than those on fourth segment, a portion of the space between fifth and sixth segments is deep black; each segment from sixth to eleventh inclusive has four blue dots margined with black, those on seventh, eighth and ninth segments being largest. On each side, close to under surface, is a wide yellow stripe, gradually softening into the green above and edged below with blackish brown.

Immediately below the spiracles is a row of blue dots, margined with black, one on each segment from sixth to twelfth inclusive.

Under surface dull pale greenish or yellowish white, having a decided reddish tinge as it approaches towards the yellow stripe on sides. Feet and prolegs partake of the general color.

Papilio Turnus. - Larvæ found feeding on cherry, July 14th. Length $1\frac{1}{2}$ inches.

Head rather large, slightly bilobed, reddish brown sprinkled with very short white hairs.

Body above green, of a slightly darker shade on anterior segments, paler on sides of body, on which there is a whitish bloom produced by minute white dots with small short hairs of the same color issuing from them. Anterior segments of body wrinkled. On the anterior edge of second segment is a raised yellow fold, slightly overhanging the head, and on each side of fourth segment is an eyelike spot nearly oval in shape, yellow enclosed by a ring of black, centered with a small elongated blue dot, which is also set in black and has above it on each side a black line, nearly crossing the yellow spot. On posterior portion of fifth segment is a raised yellow fold, bordered behind with rich velvety black, the latter visible only when the larva is in motion; on the terminal segment is a similar fold, flattened above, with a slight protuberance on each side. On fifth segment in front of the yellow fold, are two blue dots, one on each side the dorsal line; there are also faint traces on hinder segments of a continuation of these dots in longitudinal rows.

Under surface of a paler green than upper, with a whitish bloom, prolegs of the same color, feet tipped with brown.

As the larva approaches maturity and is about to change, the color of body grows much darker, becoming dark reddish brown, the sides nearly black. The minute whitish granulations and the blue dots become more distinctly visible, giving the larva a very different appearance.

Both *Troilus* and *Turnus* winter in the chrysalis state. The first specimens of *Troilus* appear with us about the middle of June, becoming more abundant early in July. I think there is only one brood, but in this may be mistaken. *Turnus* I have taken on the wing from the middle to the latter end of May, but it becomes much more plentiful during July, and I incline to the opinion that there are two broods during the season.

Danais Archippus. - Larva taken full grown, July 18th, feeding on different species of *Asclepias*.

Length one inch and three quarters.

Head yellow with a triangular black stripe in front and another of a similar shape above.

Body above striped transversely with alternate black, yellow and white stripes—the white occupying the body of each segment, with a wide black stripe down the centre—the yellow chiefly between segments. On the third segment are two long black fleshy horns, and on the twelfth two others of a similar character, but shorter and not quite so robust.

Under surface black with a greenish flesh color between most of the segments, feet black, tipped with greenish, all excepting the posterior pair having a large white spot at their base outside.

The chrysalis is about an inch long, cylindrical, bright green, with two oval gold spots in front, one on each side the antennæ. A row of eleven gold dots, varying in size, encircles the lower portion; and a second row above of closely set gold spots, almost a continuous line edged anteriorly with black, is situated about the base of the moveable segments. Base of chrysalis black with several black dots about it.

I have never met with the larva of any *Argynnis* or *Melitæa* at large, although diligent search has often been made for them. The larva of *A. aphrodite* has been found by my esteemed friend, D. W. Beadle, of St. Catharines, feeding on the wild violet in the early part of June. On the 30th of June, I once found attached to the under side of a log, a pupa of *A. cybele*, which produced the imago in two or three days afterwards. The full grown larva of *aphrodite* and *cybele* may be looked for between the 5th and 15th of June. According to Mr. Beadle, they secrete themselves during the day under pieces of chip or rubbish.

Vanessa Antiopa.—Larva taken full grown June 20th, feeding on willow.

Length two inches. Head medium size, strongly bilobed, black with a few whitish hairs and roughened with small black tubercles. Body above black, thickly covered with small white dots, from each of which arises a fine whitish hair. A dorsal row of eight irregular spots or patches of a bright brick-red color, with two faint blackish dots on each. Spines black, rather long and slightly branching, four each on second and third segments, six on fourth and fifth, and seven on each from sixth to twelfth inclusive—the seventh spine on sixth segment is very small. Terminal segment with two pairs of short spines, one pair behind the other. Under surface similar to upper, with rather fewer white dots and hairs—feet black, lighter colored at base—prolegs dull red, with two small black dots and a few whitish hairs on the outside of each, excepting the terminal pair, which are black, tipped with red.

This species passes the winter in the imago state; they appear with the first warm sunny days of spring, hovering in numbers about the sappy stumps of recently cut trees. About the middle of June the imago becomes

very scarce, then disappears until the advent of the second brood early in August. I have several times kept the chrysalis of this insect over the winter, but they have invariably produced ichneumons in the spring.

Vanessa Milberti.—A description of the larva of this species was first published by myself in the second volume of the *Proceedings of the Entomological Society of Philadelphia*, page 28, but as this was unsatisfactory from its brevity and incompleteness, I have re-described it with fuller details.

Larva taken nearly full grown July 26th, feeding on nettle.

Length one to one and a quarter inches, cylindrical.

Head black, thickly covered with fine brownish white hairs, and sprinkled with many minute whitish dots.

Body above nearly black, thickly sprinkled with small white dots and fine whitish hairs, giving it a greyish appearance. Each segment, excepting the second, has a transverse row of branching spines—on the third and fourth segments, four—fifth segment six, and from fifth to terminal segments, seven. Terminal segment with two pairs, one pair behind the other. A greenish yellow lateral line, close to under surface, and above this a second broken line of a brighter orange yellow shade. All the spines and their branches are black, excepting the lower rows on each side from fifth to twelfth segments, these springing from the greenish yellow line are of a greenish yellow color.

Under surface dull greenish, with minute whitish dots. A wide central blackish stripe covering nearly the whole under surface of anterior segments—feet black and shining, prolegs green.

This insect I believe passes the winter in the imago state. I have taken it on the wing as early as the 24th April. It is double brooded; the first brood of larvæ reaching maturity about the middle of June, appearing in the imago state about ten or twelve days afterwards. The second brood of larvæ are full grown during the last week of July, and appear in the perfect state early in August.

Vanessa interrogationis.—Larvæ of this species full grown and partially grown were found together on the 7th August, feeding on the hop.

Description of young larva. Length half an inch. Head black. Body above black, with transverse rows of branching spines, those on third, fourth and terminal segments black, with a row of the same color along each side close to under surface. All the other spines pale whitish.

Under surface nearly black with dots of a pale hue.

Full grown larva. Length one and a quarter inches. Head reddish black, flat in front, somewhat bilobed, each lobe tipped with a tubercle, emitting five simple black pointed spines. Head covered with many small white tubercles mixed with a few blackish ones.

Body above black, thickly covered with streaks and dots of yellowish white. Second segment without spines, but with a row of yellowish tubercles in their place. Third segment with four branching spines all black, with a spot of dark yellow at their base. The fourth segment has also four spines; but all the others have seven excepting the terminal which has two pairs, one situated behind the other. Spines yellow, with blackish branches, excepting the terminal pair, which are black, and a row along each side near under surface of a reddish color.

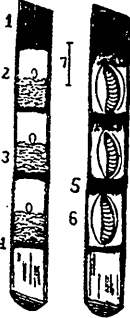
Under surface yellowish grey, darker on the anterior segments, with a dark central line and many small black dots. Feet black and shining, ringed with dull whitish. Prolegs with a dull reddish tint.

This larva feeds also on the Elm. Two broods of the perfect insect appear during the season; the first late in June, the second in August. I think the winter is passed in the imago state, although I have never met with the larva early in the season.

NEST OF CRABRO SEXMACULATUS, SAY.

BY WILLIAM COWPER, OTTAWA, ONT.

To your readers who study HYMENOPTERA, it may be interesting to learn something of the economy of a little Bee which was found at Quebec, by Mr. N. H. Cowdry, on the 11th April, 1865. The wood cut represents tops of raspberry canes, the pith of which was bored into, and emptied out by the parent Bee.



1. Orifice which was closed with some kind of vegetable substance. 2. Egg* of Bee attached to Pollen. 3. Pollen, all of which, under the microscope, appeared to have the same form and color (yellow), evidently mixed with honey. 4. Vegetable partition † on which the pollen rests, dividing one cell from another. 5. Ejectamenta of larva. 6. Larva. 7. Length of larva prior to change. As soon as the larva consume the equal quantity of food provided by the parent, each about the same time transforms into a pupa—but before this change, the force of nature constrains it to be further secured within the walls of its cell, and the final work of the larva, is to spin a thin silken

* On splitting open one of the cases on the 11th April, five cells contained pollen, and a flesh-colored egg rested in a sub-vertical position on the surface of each cell.

† "It is necessary for the proper growth of her progeny, that each should be separated from the other, and be provided with adequate food. She knows exactly the amount of food which each grub (*larva*) will require during its growth; and she therefore does not hesitate to cut it off from any additional supply."—*Insect Architecture*, vol. I. p. 52.

cocoon wherein the pupa remains until it attains the parent form, about the end of June. Rennie informs us that the Carpenter Bee (*Xylocopa violacea*) of Europe "occupies several weeks in these complicated labors," and that as each egg "is separated from the other by a laborious process—the egg which is first laid will be the earliest hatched; and that the first perfect insect being older than its fellows in the same tunnel, will strive to make its escape sooner, and so on of the rest. The careful mother provides for this contingency. She makes a lateral opening at the bottom of the cells. Reaumur observed these holes in several cases, and he further noticed another external opening opposite to the middle cell, which he supposed was formed, in the first instance, to shorten the distance for the removal of the fragments of wood in the lower half of the building." It is apparent that this mode of exit does not occur in the raspberry canes occupied by the Canadian species—and the fact that all the eggs examined in a series of cells, on the 11th of April, were of equal freshness, induces me to state that I am not satisfied with Rennie's statement as to its being obvious that Bees occupying the lower cells will be hatched before those in the upper. There may be, in some species a short lapse of time between the perfection of each individual in a series of cells, but it is of little consequence, and does not incommode them. It appears to me that they make little effort to escape until the uppermost cells are vacated. I have seen a species of *Megachile* two days cutting through its cocoon, and it seemed in no hurry to leave its cell; while during this time other specimens that occupied the same group of cocoons, came forth, one after another.

I sent this raspberry boring Bee to Dr. Packard, and I quote from his letter dated May 8th, 1866, as follows:—"I am glad to trace the habits of this species (*Crabro sexmaculatus*, Say). I only wish I had a larva and pupa. They build often in the empty hollow stems of elders and raspberries, occupying and refitting the holes-excavated by *Agerians* and other borers." It will be seen from my description of the nest and larva food of this species that it does not agree with the usual habits of *Crabronidæ*, the food of the larvæ of our genera of the latter family, as hitherto recorded, consists of *Articulata*. The Bee obtained from the raspberry canes, is a small obscure insect, a little over two fifths of an inch long, and the only specimen in my possession is now broken, having lost the abdomen. I do not remember noticing spots on any of the specimens, and I am satisfied that the one in my cabinet is a duplicate of that sent to Dr. Packard. Not having Say's description, I am at a loss to understand his reason for naming this insect *sexmaculatus*. Is the male spotted, or is it possible that there are two kinds of females, as occur among the *Apidæ*. If the latter is the case, has our *Crabro* one with six spots, and the other spotless? These questions are not penned with a view of disputing its identity. The words previously quoted are conclusive that I communicated to Dr. Packard what I then knew of its history. Thus, then, we have discovered another species of the Parasitic Genus *Crabro*, generally known as Sand

Wasps, imitating the habits of *Prosopis** and *Sphecodes* among the *Andrenadæ* and *Ceratinæ*, *Xylocopa*, and other wood-boring or what are termed Carpenter Bees among the *Apidæ*. With increased knowledge, I have no doubt, but that other species, hitherto classed among the Parasitic Hymenoptera, will be found making nests in similar situations, and provisioning the cells with vegetable substances.

NOTE BY ED. C. E.—Say (Ent. Works i. p. 230) describes the female *C. 6-maculatus* as "Black, tergum with three yellow spots on each side."

MISCELLANEOUS NOTES.

MR. COUPER'S THORN LEAF GALL.—In No. 8 of the CANADIAN ENTOMOLOGIST, Mr. Couper requests additional information respecting a Gall found by him on *Cratægus crus-galli*, which is said by him to be a "European thorn." The common European white thorn, by the way, is *Cr. oxyacantha*, and *Cr. crus-galli* is an American species, according to Gray; so that I scarcely know what thorn he refers to.

As to the Gall briefly described by him, I think it must be identical with a Cecidomyidous leaf-gall, which grows very sparingly near Rock Island, Ills., U. S., on *Cr. tomentosa*. That Mr. Couper may judge for himself, I copy the description of my gall from my Journal.

"GALL CRATÆGI BEDEGUAR.—A sub-globular gall, about 0.50 inch in diameter, growing on the main rib of the leaf of *Cratægus tomentosa*, generally below, but sometimes above. It branches out into long slender sprangling filaments, which are green and very often tipped with rosy, resembling those of

* "*Prosopis*, though destitute of the usual apparatus for collecting honey, has been recently proved a honey producer nevertheless. Its nest has been discovered in tubes formed in the main stems of the bramble, and in the nest, filmy cells, containing liquid honey. *Sphecodes*, though without the usual polleniferous organs, and consequently thought to be Parasitic, has been watched by that indefatigable entomological observer, Mr F. Smith of the British Museum, while in the act of forming its burrow; an act which appears to afford conclusive evidence in favor of the non-parasitic habits of this genus of Bees.—*Humphrys*, in "*The Intellectual Observer*," May, 1862.

† Spinola tells us "that one evening he perceived a female *Ceratina* alight on the branch of a bramble, partly withered, and of which the extremity had been broken; and after resting a moment suddenly disappear. On detaching the branch he found that it was perforated, and that the insect was in the very act of excavating a nidus for her eggs. He forthwith gathered a bundle of branches, both of bramble and wild rose, similarly perforated, and took them home to examine them at leisure. Upon inspection he found that the nests were furnished, like those of the same tribe, with balls of pollen kneaded with honey, as a provision for the grubs."—*Annales du Museum d'Historie Naturelle* x. 336.

the "bedeguar" gall, common on the Rose in England. The larva is cecidomyidous, of an orange color, with a dark Y-shaped breast-bone, and as usual inhabits a cell with smooth internal walls to it, in the middle of the gall. Occurred July 19th."

I am acquainted with three other Cecidomyidous leaf-galls on *Crataegus*, one of which (*Crataegi plica*, Walsh M. S.) grows on *Cr. crus-galli*, and two (*Cr. limbus*, Walsh M. S. and *Cr. globulus*, Walsh M. S.) on *Cr. tomentosa*, besides a singular Acaridous leaf-gall, which looks like a slender pale-green worm, wriggling through the crinkled parenchyma of the dark green leaf, and which is found locally, but in profuse abundance, both on *Cr. tomentosa* and on *Cr. crus-galli*. The mite-larvæ of this last, to which I have given the M. S. name of *Cr. vermiculus*, are remarkable for being of a beautiful rosy color.

It was from the above-named gall *Cr. plica*, that I obtained great numbers of the larvæ and imagos of *Anthonomus crataegi*, Walsh, which is inquilineous in this gall, as I have stated in my paper on Willow-galls, *Pro. Ent. Soc Phil.* VI. p. 226.—BEN. D. WALSH, Rock Island, Illinois, March 22, 1869.

MELITÆA PHAETON.—Mr. W. H. Edwards, (Coalburgh, West Va.), writes "I should like to know from Mr. Billings, what are the plants which he says might be common to the Ottawa district and to this, and on which I might find the larva of *M. phaeton*. The figure of the larva of Phaeton in Packard's *Guide* does not represent the species, or the genus, but something of the Arctian type."

Mr. B. Billings (Ottawa, Ont.), replies as follows:—"The plants referred to by Mr. Edwards, are *Thalictrum cornuti*, *Chelone glabra*, *Cypripedium pubescens*, and *C. spectabile*. They are all northern, but range southward, and the last may be rare. *Myrica gale* (a shrub), ranges along the mountains in Virginia, and it is not impossible that *Cornus stolonifera* may be found similarly situated.

"THE CANADIAN ENTOMOLOGIST, No. 7, recites a note by Dr. Packard, in which he states that the larva of *M. phaeton* feeds upon the Aster, Hazel, and *Viburnum dentatum*. The *Viburnum* specified is common here in swamps, and six other species of the same genus are common in the neighborhood. I saw none of them, however, in the enclosure where I met with *M. phaeton*, but on the outskirts of the thicket, about forty rods from the swamp, I saw several plants of *V. Lentago*.

"As for Asters and Hazel, I do not recollect having seen them. I am confident that they do not grow in the swamps, but no doubt they occupy the high land, or intervening thicket, at no great distance from it. Our only species of Hazel is *Corylus rostrata*; the species of Aster are numerous, and as they are everywhere abundant in thickets, they must surely grow here.

"Whatever the larva feeds upon, it will not have much to eat for the next six weeks, as the whole country is covered with snow yet (April 5), two to three feet deep, and I do not expect to see the last of it in the swamps till the end of May!"

SNOW FLIES.—The first mild days, about the beginning of March, every winter, bring out, on the banks of the River Credit, an immense number of neuropterous insects, called in this neighborhood "Snow Flies," from their habit of crawling over the surface of the snow, and appearing when it is even two or three feet deep. Their proper name is, I think, *Capnia Pygmaea*, Burm. (*Perla Nivivola*, Fitch, "Winter insects of E. New York"—a work that I have not seen); a technical description of them is given in Hagen's "Synopsis of N. American Neuroptera," p. 32. They are of a shining black color, with dusky black-veined wings, which are rudimentary in the male, but rather ample in the female; the antennae are rather long, with numerous articulations; the abdomen is terminated by two long setae; the female is usually about double the size of the male, but the individuals of each sex vary very much in size, some males being under a-fifth of an inch in length, while some females are over half an inch. I once found a few individuals crawling on the deep snow near a stream back of Cobourg, on March 1, 1865; but in this neighborhood they literally swarm for some weeks on the bridges, trees, &c., and on the snow about the river, even coming into houses some seventy feet above the water. In 1867, the first specimens appeared on the 26th of February; in 1868, on March 8th. This year I saw the first specimen on March 2nd, a bright, mild, thawing day, snow about two feet deep on the level; March 7th, a few more were seen; March 21st, quite numerous; April 10th, still plentiful. Their early appearance, long before the departure of the snow, must afford a welcome supply of food to the small birds that anticipate the advent of spring.—C. J. S. B., Credit, Ont.

THE ALDER-BUD GALL.—Another gall is common at Quebec on the Alder (*Alnus incana*, Willd). These galls are formed by the insect early in June, when the young buds are springing from the branches. I have counted from three to six orange-colored larvæ in each of these galls. They occupy separate cells between the thick young leaves, which are thus deformed by the puncture of the insect, forming a gall either round or semi-conical. One of these galls, about twelve months in my possession, was lately opened. It contained four orange-colored larvæ, one pupa of the latter, and one Inquiline of a brilliant green color. I sent this gall to Mr. Armistead, who informed me that although larger, it is similar to one on the European Hazel. I intended to have traced out the insect that produced them, but having to go to Labrador during the summer of 1867, I had not another opportunity to obtain specimens. In order to further investigation, I may mention that this gall will be found in June, in a wood north-west of Spencerwood.—W. COUPER, Ottawa.

HAWTHORN FRUIT MINER.—About the end of June, 1867, I attempted to rear a species of *Micro-Lep.*, which I discovered mining the fruit of an uncultivated Hawthorn, growing on the Island of Orleans, opposite Quebec. A lot of the Haws were collected, and carelessly thrown into a box containing the pith of a plant. Some days afterwards, on examining the Haws, I noticed that they had become dry, and several larvæ were dead. A few that were larger and better fed, took to the pith, into which they bored, and changed. The insect came forth, but there was something wrong; not one expanded its wings. As the chrysalis of this little moth is different from any form that I have ever seen, I give as perfect a description of it as could be obtained at the time:—Flesh-colored, excepting the fore part of the head, which is reddish. A longitudinal black line on the dorsal region. Body consists of about nine rings. The antennæ extend to the apex of wing sheaths, terminating in sharp prominent divergent points. Directly behind the points of the latter, are two conspicuous appendages, having bur-like tops, and by which I found the exuvia attached to the wall of its hiding-place. Length 5-20th inch. Can any of your correspondents inform me to what genus this *Lep.* belongs?—W. M. COUPER, Ottawa.

NEW WORK ON THE BUTTERFLIES OF NEW ENGLAND.—Can I find a place in your valuable little sheet to announce an illustrated work on the Butterflies of New England, and to ask the aid of Entomologists in its preparation? It will include not only the New England species but all those of the adjacent regions, and, as it is to appear *within a year*, I shall need the assistance of all collectors and working Entomologists in obtaining eggs, larvæ, and pupæ for description, and as material for colored illustrations. One person may find what will escape another, and the admirable method of obtaining eggs and raising larvæ recounted by Mr. Saunders in your Journal, opens a ready field for recreation and instruction. I am anxious to obtain living specimens in every stage, and will give the amplest credit to all original contributions. All specimens sent may be forwarded to my address below, and should also be marked "Insects" that they may receive immediate attention on their reception. I shall be happy to correspond with any one wishing to help me.—SAMUEL H. SCUDDER, Boston Society of Natural History, Berkeley St., Boston, Mass.

BOOKS RECEIVED.

Revision of the Mole Crickets. By S. H. Scudder. Being the first memoir of the Peabody Academy of Science, Salem, Mass. (Price \$1.25.) An admirable memoir on this curious family of insects by one of the best American authorities on the order to which they belong. The press of the Essex Institute certainly deserves the highest commendation for the remarkably beautiful specimens of typography that it issues; the work before us is a marvel of excellence, both as regards the paper and printing. The large plate with which it is illustrated is also exceedingly well done.

A Guide to the Study of Insects. By A. S. Packard, Jr., M. D. Part vi., March, 1869. (50 cents.) This part completes the account of the Moths, and begins the description of the Diptera. It is illustrated with a handsome new steel plate, figuring the transformation of Moths, and about fifty woodcuts. The author now announces that four more parts will complete the work.

Le Naturaliste Canadien. Nos. 3 and 4, Feb. and March, 1869. Quebec, P. Q. (\$2 per annum).

The Canadian Naturalist and Geologist with the Proceedings of the Natural History Society of Montreal. New series, Vol. iii., Nos. 4, 5, and 6, Jan to Dec., 1868. (\$3 per vol.)

Proceedings of the Boston Soc. Nat. Hist. Vol. xii., March, 1869.

The American Naturalist. Salem, Mass., Vol. iii., Nos. 1 and 2, March and April, 1869. (\$4 per annum.)

The Weekly N. Y. Sun. New York, March 3, 10, 17, 24, 31, 1869. (\$1.)

The Canada Farmer. Toronto, March, 1869. (\$1 per annum.)

The American Entomologist. St. Louis, Mo., March and April, 1869. (\$1.)

The American Agriculturist. Orange, Judd & Co., 254 Broadway, New York, March and April, 1869. A very handsomely illustrated publication for farmers and gardeners. (\$1.50 per annum.)

The Cynthia Silk-worm. By W. V. Andrews.

An Essay on Entozoa, Observations on the Building Stone of the Ottawa Country, and An Essay on the native compounds and metallurgy of Iron. By Dr. E. Van-Cortlandt, Ottawa, Ont.

History and Condition of the Portland Society of Natural History from 1866 to 1869. We know of no scientific society that has been so singularly unfortunate as that of Portland, Maine; twice its hall and cabinets have been destroyed by fire. In 1854 it lost every species of property that belonged to it by the burning of the Custom House, and in the fearful conflagration of

1866 it lost its commodious building, splendid collections, everything indeed except its library, which was only saved by the exertion of a few of the members and at the peril of their lives. It now appeals for help from Naturalists everywhere, in the shape of books, specimens, and money, for which returns of native specimens will be made as far as practicable. We shall be happy to receive and forward any specimens that our Canadian readers may send us for the purpose.

The Record of American Entomology, 1869 We are glad to learn that a sufficient number of subscriptions has been received to warrant the issue of this annual, the prospectus of which we published in No. 7. As the book will be larger than at first imagined, the price to new subscribers is raised to \$1. Subscriptions to be sent to W. S. West, Peabody Academy of Science, Salem, Mass.

TO CORRESPONDENTS.

SUBSCRIPTIONS RECEIVED.—To Vol. i, from W. V. A., New York; H. S. S., Buffalo; Prof. A. J. C., and Agricult. College Lib., Lansing, Mich., (per G. T. F.); C. S. M., Boston, (per R. P. Studley & Co.); E. B., Boston; 10 subscriptions per *American Naturalist's* Book Agency.

W. V. A., New York.—Notices of specimens *for sale* can only be inserted as advertisements, the rate for which is ten cents per line; ditto *for exchange*, gratis to subscribers. The *Ailanthus* grows very well in this part of Canada.

E. H. C., New York.—Your note of January 28, we chanced to receive at the Toronto P. O. the other day—our address is "Credit, Ont." Specimen numbers sent.

POSTAGE FROM THE UNITED STATES.—We would respectfully remind our correspondents that the postage on letters from the United States to Canada, is *six cents*; a three cent stamp on such letters is merely thrown away, as we are then charged the unpaid rate of ten cents; it is rather aggravating to find thirteen cents paid between us, when six cents are all that are necessary.

EXCHANGE OF LEPIDOPTERA.—I should be glad to get up an exchange of Lepidoptera with some Canadian collector.—W. V. ANDREWS, 130 Charlton Street, New York.

ERRATA.—No. 3, page 18, 4th line from bottom, for *Callimorpha* read *Callimorpha*.

No. 6, page 48, 4th line from bottom, for *President* read *Press*.

No 7, page 60, third line from top, for *larval* read *chrysalid*.

No. 7, page 68, fourteenth line, for *Mr. Cresson of Philadelphia* read *Mr. Scudder of Boston*.

The *American Entomologist* (\$1) and the *Canadian Entomologist* (56 cents) will be furnished post paid, for one dollar and twenty-five cents (\$1.25) per annum. All communications, remittances and exchanges, should be addressed to

"THE REV. C. J. S. BETHUNE, *Credit, Ont., Canada.*"