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The Canadian Entomologist.

VOL. II.

TORONTO, OCTOBER 1, 1869.

No. 2.

TO THE READER.

In order to enable future volumes of the CANADIAN ENTOMOLOGIST to date their commencement from a less awkward time than the middle of a year, as well as for other reasons that it is needless to specify, we have resolved upon spreading the publication of the current volume over the remainder of this year, and the whole of the following one; we shall thus issue a number about every six weeks instead of monthly, and begin volume three in January, 1871. The following will be the dates of issue of the remaining numbers of this volume, so far as they can be decided upon beforehand:—No. 3 on November 15, 1859; No. 4 on January 1, 1870; No. 5, February 15; No. 6, April 1; No. 7, May 16; No. 8, July 1; No. 9, August 15; No. 10, October 1; No. 11, November 1; No. 12, December 1. In accordance with this arrangement, we have delayed the issue of the present number, as will have been observed, from September 15 to October 1. Contributions for publication should be in the hands of the Editor about ten days before the date of issue of a number, in order to secure insertion in it.

ON A SPECIES OF HEMITELES (*Ichneumonidae*),

Ascertained by the Editor to be parasitic in Canada on the Imported Currant Worm Fly (*Nematus ventricosus*, Klug.)

BY BENJ. D. WALSH, M. A.

Not a single American species of *Hemiteles*, so far as I am aware, has as yet been described under that generic name as occurring north of the West India Islands. Two of Say's *Cryptus*, indeed, namely *Cr. orbis*, found in Indiana, and *Cr. tenellus*, found in Pennsylvania, manifestly belong to this genus; and the latter may not improbably be identical with our insect, though his description is insufficient to identify it, and scarcely separates it from *Hemiteles thoracicus*, Cresson, an inhabitant of Cuba. In my own cabinet, besides the species that we now have to do with, I have no less than nine undescribed species of this genus that were captured or bred in Illinois. The genus may be conveniently divided into two principal groups, according to the presence or

absence of metathoracic thorns; and of my undescribed species but two belong to the latter category. In fact it would seem from the following table, that a thorned metathorax is rather a S. A. than a N. A. character.

GENUS HEMITELES.

GROUP A: *Two thorns more or less distinct, one on each side of the metathorax, and directed backwards and outwards.* *H. tricolor*, Brulle, Brazil. *H. fasciipennis*, Br., Brazil. *H. xanthogaster*, Br., Brazil. *H. rufiventris*, Br., S. M. *H. striatus*, Br., Columbia. *H. lepidus*, Br., Brazil. *H. pulchellus*, Br., Brazil. *H. fuscipennis*, Br., Hayti. *H. incertus*, Cresson, Cuba, and two undescribed species from Illinois, U. S. In all 7 S. A., 4 N. A. sp.

GROUP B.—*Metathorax unarmed.* In all 13 N. A. sp., and none at all from S. A.

a. *Wings not banded with fuscous.* *H. amenus*, Cress., Cuba. *H. bicinctus*, Cress., Cuba. *H. subflavescens*, Cress., Cuba. *H. [Cryptus] orbis*, Say, and six undescribed species from Illinois, U. S.*

b. *Wings with one fuscous band.* One undescribed species from Illinois, U. S.

c. *Wings with two fuscous bands.* *H. [Cryptus] tenellus*, Say, Penna., U. S. *H. thoracicus*, Cresson, Cuba. *H. nemativorus*, n. sp.

Through the kindness of the Editor, my cabinet has been enriched by a fine female specimen of *H. nemativorus*, of which I had previously possessed but three females, captured at large in Illinois. His account of its larval and pupal history is as follows: "On June 29th I observed to my surprise a Saw-fly cocoon (*Nematus ventricosus*, Klug.) attached to a leaf high up on a gooseberry bush, instead of on or under the surface of the ground as usual. Thinking that the unwonted situation might be the effect of a parasitic attack upon the larva, I brought the specimen in, and a few days afterwards found that there had emerged from it the Hymenopteron that I now send you!" Now, as I know that this very same species of *Hemiteles* occurs near Rock Island, in Illinois, where as yet *Nematus ventricosus* has not been introduced, it follows that it could not have been imported from Europe along with this pestilent Saw-fly, but must be in all probability an indigenous species. Hence we may draw the further conclusion, that a native American parasite can and sometimes does acquire the habit of preying upon a vegetable-feeding insect imported among us from Europe. The same conclusion, indeed, follows from a fact which I pub-

* In 1860 and 1861, as I have stated in a paper on the Injurious Insects of Illinois (Trans. Ill. St. Agr. Soc. IV., p. 349), I bred from 50 to 70 male and female individuals of an undescribed *Pezomachus* (*P. Heteropterus*, Walsh, MS.), a genus which is normally aptereous and has an aborted thorax like that of a worker ant. Out of this large number there were produced four males, which had the complete wings of a *Hemiteles*, and all the other characters of that genus, including of course the fully-developed thorax. Hence I infer that a *Pezomachus* is nothing but a degraded *Hemiteles*. I may add that this species—as well as two other *Pezomachus* in my collection, including *P. minimus*, Walsh—has no metathoracic thorns, and that the winged males belonged to B a. of this table.

lished in 1866 (*Pract. Entom.* I. p. 120), namely, that this very same Imported Saw-fly is preyed upon by another indigenous Ichneumon-fly, the *Brachypterus* [*Cryptus*] *micropterus* of Say, which was described in 1836, or twenty years before the Saw fly, which it now infests, had crossed the Atlantic. But on a question such as this, which is not only of great scientific interest, but of high practical importance, it is as well to make assurance doubly sure.

It may be remarked here that—as we shall have occasion to state also in a forthcoming illustrated Paper on “Currant and Gooseberry worms” in the *American Entomologist*—we have recently heard from Mr. Wm. Saunders, of London, Ontario, that *Nematus ventricosus* very commonly with him spins up above ground on the bushes, as in the case referred to above. This fact is of especial interest, because it has not hitherto been observed in the States, and because European authors noticed it long ago as the habit of this same species on the other side of the Atlantic. Indeed Dahlbom was absurd enough to manufacture two species out of this one—although he says himself the perfect insects are as like each other as one egg is like another egg—basing his specific distinction solely upon this slight difference in the habits of his two so-called species. To be consistent he ought to have ground out a third species from those individuals that spin up, not under the earth, but on the surface of the earth. (See on this subject *Pract. Entom.* I. p. 125.)

HEMITELES NEMATIVORUS, n. sp.—Female rufous and almost microscopically punctate and subopaque. *Head* with the ocelli, and sometimes the space enclosed by them, black. *Antennæ* with joints 3 and 4 equal in length, and each four times as long as wide, joint 5 a trifle shorter than 4, joint 6 and the following gradually shorter and shorter; brown-black, their basal $\frac{1}{2}$ or $\frac{2}{3}$ rufous beneath with the incisures brown-black. *Thorax* with the parapsidal grooves obsolete, and the normal metathoracic carinæ strongly and fully developed. The suture at the base of the scutellum, a narrow vitta on each side of the mesonotum abbreviated more or less in front or sometimes entirely absent, the extreme tip of the metathorax, and more or less of its basal part, or sometimes the entire metathorax except a lateral rufous spot at tip, all brown-black. *Abdomen* with joint 1 two and a half times as long as wide, and fully twice as wide at tip as at base; joints 2-8 forming a depressed oval mass $2\frac{1}{2}$ or $2\frac{1}{2}$ times as long as wide and expanding in its middle to nearly twice the extreme width of joint 1. Joint 1, 2, and usually the base of 3, rufous, joint 1 sometimes clouded with brown-black, and in the Canada female entirely brown-black; the rest of the abdomen brown-black. Sheaths of the ovipositor brown-black, projecting from the tip of the abdomen by nearly half its length. *Legs* dull rufous. The 4 front legs with the femora superiorly and the tibiæ exteriorly, and the entire tarsi, all brown—black, the dark color most extensive in the Canada female. Hind legs with the tip, and in the Canada female the whole, of the femur, the entire tibiæ except their basal, 1-5 which is whitish, and also the entire tarsi, all brown black. All the coxæ and trochanters sometimes, especially in Canada female, a little varied with brown-black, more so (as is usual in *Ichneumonidæ*) in each successive pair of legs. *Wings* hyaline; veins black; stigma twice as long as wide, triangular, black, its basal $\frac{1}{2}$ or $\frac{1}{3}$ white. A fuscous band straddling the basal cross-veins of the front wing, and a much wider fuscous band

extending across the wing from the base of the stigma to the tip of the marginal cell, but always leaving a more or less extensive hyaline spot at the tip of the stigma. Length female (exclusive of ovipositor) 0.12-0.19 inch, the Canada female and one Illinois female attaining the largest dimensions. Two females from Illinois, one female from Canada; male unknown.

Variety *fuscatus* —Female differs in being smaller, and in being still darker even than the Canada female, and may possibly, but I think not, be distinct. The black spot inclosing the ocelli extends on to the upper posterior orbits; the entire upper surface of the thorax, including the scutellum, is brown-black, except a narrow rufous vitta on each side of the mesothorax; and as in the Canada female, the entire abdomen, except joint 2, is brown-black. Legs as in the Canada female. Wings normal. Length female 0.10 inch. One female from Illinois; male unknown.

The ground-color of *tenellus*, Say, is said to be "honey-yellow," not rufous as in *nemativorus*; he says nothing of the conspicuous basal white spot on the stigma; and he described the abdomen as "honey-yellow, blackish at tip," whereas in my palest specimen by far the largest part of the abdomen is dark-colored. About the legs he says not a single word; whence, as he gives "honey-yellow" as the general color, it is to be inferred that they were honey-yellow immaculate. Neither does he tell us whether he described from one specimen or from fifty; so that we are left entirely in the dark as to how far the few characters which he gives may be considered as reliable specific characters, and how far as mere individual variations. On the whole we must consider the question whether *Cryptus tenellus*, Say, be identical with *Hemiteles nemativorus*, Walsh, as one of those unimportant scientific enigmas which—as Say's entire collection has perished—can never now be solved with any degree of certainty, and about which it is therefore useless to bother our brains any further.

This species comes very near to *H. thoracicus*, Cresson, from Cuba, described from a single female, but may be distinguished as follows: 1st. The ground color is rufous, not "clay-yellow." 2nd. The dorsal lines of the thorax, or parapsidal grooves, are entirely obsolete, not "deeply impressed." 3rd. The pleura is never "brown." 4th. The basal dark band of the front wing straddles the basal cross-veins, instead of being "at the base of the first sub-marginal cell." 5th. the abdomen always has joint 2 rufous and is never "brown with the apical margins of the segments somewhat pale."—I may remark here that in *Pimpla* [*Cryptus*] *conquisitor*, Say (equals *Cr. plurivinctus*, Say), and especially in *Pimpla annulipes*, Brulle; the size of the largest female is double that of the smallest female, as I know from examining some 50 or 60 specimens of each species. So that the discrepancy in size between the largest *H. nemativorus* female (0.19 inch), and what I take to be a variety of this female (*fuscus* female, 0.10 inch, is by no means unparalleled in this family.

NOTES AND EXPERIMENTS ON CURRANT WORMS.

BY W. SAUNDERS, LONDON, ONT.

The larva of *Nematus ventricosus*, alas, too well known under the popular designation of "currant worm," has been very abundant in this neighbourhood during the present season. In my own garden it has been a continual fight as to who should have the currant and gooseberry bushes, the worms or their rightful owner. During the early part of summer, anticipating their attack, I was on the look out for them and by timely doses of hellebore preserved the foliage with but little damage. In about a fortnight later, having omitted inspection for a few days, I was surprised to find the bushes being stripped again; and this time the enemy had got so far ahead as to damage their appearance considerably. Another prompt dosing of hellebore brought relief. After this I hardly ever found all the bushes entirely free from them; a walk around the garden would reveal a few here and a few there, and I was perpetually hand-killing and brushing off these smaller detachments. Four times during the season I found it necessary to apply hellebore freely, for the oes were a legion.

During the middle of August, being occupied with other matters, the garden was neglected for a few days, when on visiting it again on the 19th, I found many of the bushes entirely leafless, and the foliage remaining on the others was rapidly disappearing. I felt discouraged and began to have some misgiving as to whether hellebore was after all such an unfailing panacea for this almost universal pest, as we had supposed. I resolved if possible to satisfy myself fully on this point, and having mixed about 1½ oz. of powdered hellebore with a pail of water, was ready to proceed. I selected a leaf from two bushes, marked them and counted the number of their inhabitants—one was occupied by *forty four* worms of different sizes, crowding it above and below, and it was about half eaten; the other leaf had twelve nearly full grown on it. Having transferred the mixture of hellebore and water to a watering pot, the bushes were sprinkled with it. I returned to examine the result in three-quarters of an hour, and the leaf which at first had forty-four on it, had now only two, and these were so far exhausted that they were unable to eat and could scarcely crawl, while on the other leaf out of the twelve there remained three, but in the same enfeebled condition. All around under the bushes, the ground was strewn with the fallen foe, and I felt perfectly satisfied that entire reliance might be placed on this means of defence.

I did not anticipate such speedy action on the part of the hellebore or should have returned to the examination sooner, and the bushes were so entirely cleared, that excepting on one I had reserved for another experiment, I had no means of repeating the dose.

There was one thing that struck me as somewhat remarkable, the portion of leaf on which the greatest number were feeding appeared to be the same size as before the hellebore was applied; if smaller I could not perceive it. When the leaves dry, which have been sprinkled with liquid, a very thin coating of the powder, more or less regular, is found over them, and I had always supposed that death resulted from eating a portion of the leaf thus coated. Such is undoubtedly the case when the hellebore is applied dry, but in this case a meal however small made by *forty-four caterpillars* on half a leaf, must have materially diminished it. I am disposed to believe then that the death of most of these must have resulted from their imbibing or absorbing some of the liquid as soon as applied. Many of them showed symptoms of the violent cathartic action of the remedy, having a mass of soft exuvia hanging to the extremity of their dead bodies.

I had reserved one bush, on which were a good number, for another experiment. It sometimes happens, especially with those who live in the country, that hellebore is not at hand when the worms are first observed at work, and a few days' delay in procuring it is perhaps unavoidable. In such cases the bushes may be entirely leafless before the remedy can be applied. Hot water suggested itself to my mind as likely to be of some service, and being also an article readily procurable in every home. It is well known that many plants will bear such an application without injury, provided the heat is not too great. Taking some in a watering pot a little hotter than one could bear the hand in, I showered it plentifully on the affected bush, and it was amusing to see how the caterpillars wriggled and twisted and quickly letting go their hold, fell to the ground, which was soon strewn with them. After the first excitement produced by the sudden heat was over, they remained as if wishing to "cool off" before commencing work again. A few did not recover from the application, but most of them were soon as active as ever.

Now what I would suggest is this, that where hellebore cannot be at once procured, no time should be lost in applying the hot water, and when once on the ground the creatures may have the life trodden out of them by the foot, or beaten out with the spade or some other implement. In any case many of them would never reach the bush again, for enemies beset them on every side. I was amused to see how busy a colony of ants were who had a home at the base of a tree near by, lugging these large caterpillars along, a single one of which would take three or four to manage. The worms were twisting and jumping about as if they wondered whose hands they had got into, and the ants were hanging on with their sharp jaws, and slowly dragging the bodies along. By and by they had quite a little pile accumulated, which would no doubt furnish them or their progeny with a feast of fat things for some time to come. Then there are the tiger beetles (*Cicindelidæ*), with a host of others ever running about, looking for stray objects of this sort on which to make a dainty meal.

I had observed on one of the bushes, before applying the hellebore, some friends at work on these worms. They were immature specimens of a true bug belonging to the order *Hemiptera*, and probably the young of *Strietus fimbriatus*. These creatures are nearly round, about the size of a common lady-bird having the head, thorax and legs black, and the abdomen red with an elongated black spot in the centre, divided across by a whitish line. Approaching a caterpillar, they thrust their proboscis into it and quietly suck its juices until it becomes so weak and exhausted that it shrivels up and dies. With a view of testing the probable amount of good these friends were thus capable of accomplishing, I shut up two of them in a small box, with a dozen nearly full-grown caterpillars, and at the end of three days found that they had consumed them all; also six in another box with one bug, and in this instance the rate of consumption was about the same, two caterpillars a day for each of these little creatures. The second time I fed them they did not get through their work quite so quickly; possibly they may have overfed themselves at first.

While turning up the branches of some of my gooseberry bushes, I observed a number of whitish eggs on some of the leaves, arranged lengthwise in regular rows at short distance apart, on the principal veins or ribs of the leaf. Usually they were placed singly in the rows, but here and there double. These were the eggs of the currant worm, they were about one-twentieth of an inch long, four times as long as broad, rounded at each end, with a whitish glossy surface. On the branch I was examining there were three leaves with these eggs on; two of them had their principal veins pretty well covered, while the third had but a few on it, as if this had been the work of a single insect who had exhausted her stock before the third leaf was covered. I counted these, and found there were 101 in all. Having just then caught one of the parent flies, a female who was hovering about as if looking for a place on which to deposit her eggs, I squeezed some eggs out of her body and comparing them with those on the leaf, found they were only about half the size, showing that the first must have grown considerably after being laid and that they were probably nearly ready to hatch. In about three hours afterwards, I observed that several of the young larvæ had come out of the eggs, and placing the leaf under a microscope had the good fortune to see some of them escape. The egg consisted of a thin, elastic membrane sufficiently transparent to give a dim view of the enclosed larva. The black spot which is placed on each side of the head in this species, enabled me to determine the position the creature occupied. It was somewhat coiled up and resting on its side with its jaws against the side of the egg not far from its extremity. I could not perceive that it had any other means of rupturing the egg than by its mandibles, which were working visibly within. In a short time the egg was ruptured and the head of the larva protruded from the orifice. Withdrawing its two front feet from the egg, it seized the leaf on which it was placed, and by raising up its back and working itself from side to side, it soon worked itself out. The time occupied in thus extracting itself

from the first appearance of the head, varied from six to ten minutes, for I watched several of them through the process. The egg was so thin and elastic that it yielded readily to the motions of the body, and adhered very closely to it, contracting and shrivelling up as the body was withdrawn.

After the larva comes out it does not consume the egg or any portion of it, as is the case with most lepidoptera, but sets to work at once eating the leaf on which its considerate mother placed it. When just hatched the worms are about one-twelfth of an inch long; head large, dull whitish with a round dark spot on each side, and a few minute short hairs; mandibles pale brown. Body above and below, whitish, semi-transparent, sometimes with a slight greenish tinge. From this time it rapidly increases in size, becoming green, then changing to green with many black dots, and finally reverting to plain green again, tinged with yellow at the extremities, just before it becomes a chrysalis.

I have a fact to communicate regarding the winter history of this insect. It has been universally held that the larvæ, when they leave the bushes in the fall, at once construct their cocoons, either at the surface of the ground or just below the surface, and change to a chrysalis either then or sometime before early spring. Possibly as a rule this may be the case, if so I have an interesting exception to record. On the 22nd of May I was trying some experiments in crossing gooseberries, fertilizing the flowers of the Houghton's Seedling with some of the large English varieties, and having operated on several branches, tied them up in new paper bags to prevent interference with the work, either from insects or otherwise. The particular bag I am about to refer to, was attached so an upright branch on the summit of the bush, about 18 inches from the ground. While examining it on May 31st, nine days afterwards, to ascertain the result of my work, I found in one of the folds of the bag a cocoon of *Nematus ventricosus* firmly attached to the surface of the paper. In this instance the larva must have remained unchanged during the winter, then crawled from the ground, attaching itself as related, and constructing its cocoon after the 22nd of May. A few days later, I found a similar cocoon attached to the bush, which from its fresh appearance I inferred had been constructed about the same time, although I am unable to advance any positive statement regarding it. During the summer I have found a considerable number of such cocoons fastened to the underside of the leaves of the bushes on which the larvæ have been, and these have been observed in all positions from near the base to the summit of the bushes, showing that it is not the invariable practice of the larva to undergo its change to chrysalis, either at the surface or under the surface of the ground.

LIST OF COLEOPTERA,

TAKEN AT GRIMSBY, ONTARIO, BY J. PETTIT.

(Continued from page 7.)

CARABIDÆ

- PTEROSTICHUS (*cont'd*). BADISTER, *Clariv.*
 Rejectus, *Lec.* Pulchellus, *Lec.*
 Adoxus, *Say.* DICÆLUS, *Bon.*
 Rostratus, *Newm.* *Simplex, *Dej.*
 Chalcites, *Say.* Elongatus, *Dej.*
 Lucublandus, *Say.* Teter, *Bon.*
 Erythropus, *Dej.* Politus, *Dej.*
 Caudicalis, *Say.* DIPLOCHILA, *Brul.*
 Corvinus, *Dej.* Laticollis, *Lec.*
 Patruelis, *Dej.* Major, *Lec.*
 *Femoralis, *Kirby.* Impressicollis, *Dej.*
 Mutus, *Say.* ANOMOGLOSSUS, *Ch.*
 Adstrictus, *Germ.* Emarginatus, *Say.*
 Luczottii, *Dej.* CHLÆNIUS, *Bon.*
 Coracinus, *Newm.* Lithophilus, *Say.*
 Adjunctus, *Lec.* Sericeus, *Forst.*
 Stygius, *Say.* *Solitarius, *Say.*
 Protensus, *Lec.* Chlorophanus, *Dej.*
 Honestus, *Say.* Pensylvanicus, *Say.*
 AMARA, *Bon.* Tricolor, *Dej.*
 Avida, *Say.* Impunctifrons, *Say.*
 Angustata, *Say.* Niger, *Rand.*
 Impuncticollis, *Say.* Tomentosus, *Say.*
 Fallax, *Lec.* ATRANUS, *Lec.*
 *Erratica, *Zim.* *Pubescens, *Dej.*
 Interstitialis, *Zim.* OODES, *Bon.*
 Obesa, *Say.* Fluvialis, *Lec.*
 Subaenea, *Lec.* HAPLOCHILE, *Lec.*
 LOPHOGLOSSUS, *Lec.* Pygmæa, *Dej.*
 Scrutator, *Lec.*
- GEOPINUS, *Lec.*
 *Incrassatus, *Dej.*
 AGONDERUS, *Dej.*
 Lineola, *Fab.*
 Pallipes, *Fab.*
 ANISODACTYLUS, *Dej.*
 Rusticus, *Dej.*
 Carbonarius, *Say.*
 *Punctulatus, *Lec.*
 Harrisii, *Lec.*
 Melanopus, *Hald.*
 Nigrita, *Dej.*
 Discoideus, *Dej.*
 Baltimorensis, *Say.*
 *Sericeus, *Harris.*
 AMPHASIA, *Newm.*
 Interstitialis, *Say.*
 EURYTRICHUS, *Lec.*
 *Picæus, *Lec.*
 Terminatus, *Say.*
 *Agilis, *Dej.*
 BRADYCELLUS, *Er.*
 *Vulpeculus, *Say.*
 *Autumnalis, *Say.*
 *Arenarius, *Lec.*
 *Badiipennis, *Hald.*
 Lugubris, *Lec.*
 Rupestris, *Say.*
 HARPALUS, *Latr.*
 Caliginosus, *Fab.*

HARPALUS (<i>continued</i>).	PATROBUS , <i>Dej.</i>	BEMBIDIUM (<i>continued</i>).
Erraticus, <i>Say.</i>	Longicornis, <i>Say.</i>	Variegatum.
Amputatus, <i>Say.</i>	BEMBIDIUM , <i>Latr.</i>	Versicolor, <i>Lec.</i>
Faunus, <i>Say.</i>	Inæquale, <i>Say.</i>	*Frontale, <i>Lec.</i>
Pennsylvanicus, <i>Degeer.</i>	Nitidum, <i>Kirb.</i>	Quadrinaculatum, <i>Linn.</i>
Erythropus, <i>Dej.</i>	Dilatatum, <i>Lec.</i> 2	*Garinula, <i>Chaud.</i>
Pleuriticus, <i>Kirb.</i>	Chalceum, <i>Dej.</i> 2	*Wingatii, <i>Bland.</i>
Herbivagus, <i>Say.</i>	*Fugax, <i>Lec.</i>	TACHYS , <i>Zie.</i>
Varicornis, <i>Lec.</i>	Planum, <i>Hald.</i>	*Scitulus, <i>Lec.</i>
*Vagans, <i>Lec.</i>	Lucidum, <i>Lec.</i>	*Lævum, <i>Say.</i>
STENOZOPHUS , <i>Dej.</i>	Picipes, <i>Kirb.</i>	Nanus, <i>Schaum.</i>
Fuliginosus, <i>Dej.</i>	Gelidum, <i>Lec.</i>	Flavicauda, <i>Say.</i>
Conjunctus, <i>Say.</i>	*Nitens, <i>Lec.</i>	Incurvus, <i>Say.</i>
Ochropezus, <i>Say.</i>	Dorsale, <i>Say.</i>	*Pulchellus, <i>Ferte.</i>
*Dissimilis, <i>Dej.</i>	Patruale, <i>Dej.</i>	
Partiarius, <i>Say.</i>		

DYTISCIDÆ.

HALIPUS , <i>Latr.</i>	LACCOPHILUS , <i>Leach.</i>	COLYMBETES , <i>Clairv.</i>
Triopis, <i>Say.</i>	Maculosus, <i>Say.</i>	(<i>continued</i>).
Immaculicollis, <i>Harris.</i>	COPTOTOMUS , <i>Say.</i>	Quadrinaculatus,
CNEMIDOTUS , <i>Ill.</i>	Interrogatus, <i>Aube.</i>	(<i>Aube.</i>)
12-Punctatus, <i>Aube.</i>	MATUS , <i>Aube.</i>	Picipes, <i>Kirby.</i>
HYDROPHORUS , <i>Clairv.</i>	*Biacrinatus, <i>Aube.</i>	*Sinuatus, <i>Lec.</i>
Punctatus, <i>Aube.</i>	COPELATUS , <i>Er.</i>	Sculptilis, <i>Harris.</i>
Affinis, <i>Say.</i>	*Glyphicus, <i>Lec.</i>	Binotatus, <i>Harris.</i>
*Granarius, <i>Aube.</i>	AGABUS , <i>Leach.</i>	HYDATICUS , <i>Leach.</i>
*Consimilis, <i>Lec.</i>	*Parallelus, <i>Lec.</i>	*Basillaris, <i>Lec.</i>
*Lineolatus, <i>Lec.</i>	Punctulatus, <i>Aube.</i>	ACILIUS , <i>Leach.</i>
Catascopium, <i>Say.</i>	*Tæniolatus, <i>Lec.</i>	Fraternus, <i>Lec.</i>
Modestus, <i>Aube.</i>	*Semipunctatus, <i>Lec.</i>	DYTISCUS , <i>Linn.</i>
*Varians, <i>Lec.</i> 1	*Stagninus, <i>Lec.</i>	Confluens, <i>Say.</i>
Tenebrosus, <i>Lec.</i>	*Obtusatus, <i>Lec.</i>	*Anxius, <i>Mann.</i>
*Oblitus, <i>Aube.</i>	*Scapularis, <i>Mann.</i>	Cordieri, <i>Aube.</i>
*Collaris, <i>Lec.</i>	Fimbriatus, <i>Lec.</i>	Fasciventris, <i>Say.</i>
*Concinus, <i>Lec.</i>	Ambiguus, <i>Lec.</i>	Harrisii, <i>Kirby.</i>
*Patruellis, <i>Lec.</i>	COLYMBETES , <i>Clairv.</i>	*Verticalis, <i>Say.</i>
*Nubilus, <i>Lec.</i>	Biguttulus, <i>Lec.</i>	Hybridus, <i>Aube.</i>

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

1 Taken last year in Bosanquet, but mentioned here as it has not been before included in the list of Canadian species.

2 Taken at Goderich.

MISCELLANEOUS NOTES.

PARSNIP LARVA.—Mr. James Angus, of West Farms, N. Y., writes as follows respecting our notice of this insect in the last number of the *Canadian Entomologist*. "I am pleased with your description of the Parsnip Depressaria; it is an old acquaintance of mine. I have raised the larvæ and noticed their habits for many years. It seems to be very closely allied to, if not identical with a British species, *D. heracliana*, an abdomenless specimen of which I have in my collection." On again comparing our specimens with the brief descriptions in Stainton's *Manual*, we notice a great resemblance to that of *D. heracliana*, which had not struck us before. It is not at all unlikely that our species is an imported insect, like a great many more of the farmers' and gardeners' worst pests. We shall take an early opportunity of sending some of our specimens to England in order to have the question settled, and should the insect prove to be a British species we shall gladly withdraw the name that we have given it. We have no desire to multiply names or synonyms, which are becoming such a nuisance to Entomologists, but being unable to identify our insects from any description that we had access to, we determined—with some hesitation—to give it a name which could easily be withdrawn if the species proved not to be a new one.

LARVA OF HYPERCHIRIA VARIA, Walk.—On the 25th of July last, I found closely huddled together on the under side of a locust leaf (*Robinia pseudacacia*, L.) a cluster of fifteen small bristly caterpillars of a dark brown color. On opening the chip box in which they were confined, some hours after their capture, I found them ranged in a single line obliquely up and down its sides; when disturbed they set off in a procession round and round the box, following their leader in a most grotesque manner. After this whenever I looked at them, till they became very large, they were always either ranged in a single column, or very closely huddled together. By and by they became so large that the line of fifteen exactly measured the inner circumference of the box, and then, by dint of a little persuasion, I got them to form an endless procession around the inside of the box, each one following closely the individual before him. They went on in this way for upwards of half an hour, and looked as if they would have gone on for ever, till I thought they had had exercise enough, and broke up the column. At this time their length was 0.35 inch; their general color black; body entirely covered with long sharp compound black spines, so thickly branched on every side as to form a complete *cheveux de frise*—the terminal spinelets ended in a fine hair, the main stem being jet black, the side branches white tipped with black; along the sides there was a reddish-white line, and another of the same color through the spiracles. In other specimens the two lateral lines and the space between them formed together a band of reddish-white.

Up to the 16th of August I did not recognise the species of these caterpillars, though I fancied they belonged to the *Saturniadae*, but on my return on the 23th, from the meeting of the American Association at Salem, I found rather to my surprise, that they had grown to be about two and a half inches long, and were of a delicate yellowish-green colour with an abbreviated reddish lateral band. They had proved to be the very familiar larvæ of what is commonly known as the Io Emperor-moth of Harris (*Hyperchiria varia*, Walk.) One of them began to form his cocoon on the 7th of September, the rest are still feeding, and a prodigious quantity they eat. I have reared these larvæ before, though never from their infancy, and found them to feed on the leaves of Willow and Elm. Dr. Harris (Ius. Mass., p. 393), states that they "live on the balsam poplar and the elm, and, according to Mr. Abbot, on the dogwood or cornel and the sassafras; they feed well also on the leaves of clover and Indian corn." In his 'Entomological Correspondence,' p. 295, he states that a brood of these larvæ fed on *Robinia viscosa*. Dr. Fitch (4th Report, p. 81), gives the cherry as the food plant, and also (5th Report, p. 52), the locust. Mrs H. C. Freeman (Amer. Ent. i. 39), states that she found it feeding on the hop vine. It thus appears that they are by no means particular as to their diet. The imago usually appears between the 1st and 20th of June; those I bred last year and kept in the house came out in April.—C. J. S. B.

NOTES ON A FEW BEETLES.—Perhaps it may interest some of the readers of the ENTOMOLOGIST to mention that that rare beetle, *Necrophilus subterraneus*, Fab., may be found during the last of September and in the early part of October in decomposing fungus, particularly the "toadstool" species growing in clusters on decaying logs. My earliest specimen was taken on the 27th of September, the latest on October 13th. It is probably well known to all who have taken *Haplochile pygmaea*, Dej., that it emits when handled a most unpleasant and powerful odor, exceeding that of *Chrysopa*, and requiring repeated applications of soap and water to remove it from the fingers - *Trichodesma (Anobium) gibbosum*, Say; of this species I dug three specimens out of a dead maple tree in Oxford, January, 1867, and early in July of the present year I obtained a number by beating the limbs of trees. J. PETTIT, Grimsby, Ontario.

SCUDDER'S "BUTTERFLIES OF NEW ENGLAND."—I am very desirous of seeing collections of Insects from every part of New England, New York, New Jersey and the Dominion of Canada, and repeat the promise made in the spring, of naming any collection of butterflies from these districts sent by express to the address below, early in October. I beg those who can do so to send not one specimen only of a species, but as many as possible, especially among the Hesperidæ and the genera *Lycæna*, *Thecla*, *Limenitis*, *Argynnis*, *Militæa* and *Grapta*, where some species have for a long time been confounded. The insects

should be numbered—at least with one number for a species—and where any specimen is sent, not obtained from the immediate vicinity of the sender, it should invariably be labelled with the locality where it was taken. If the collection is accompanied by the dates of capture of the different specimens, or a general table of the exact times of appearance and disappearance of the butterflies in the region where they were captured, the collection would have a double value. Specimens of the parasites of butterflies are also desired when it is known what species they attack—or the chrysalids from which the parasites have been bred can be sent; these also will be named and can probably be returned with the others.

Specimens in all cases should be pinned *strongly* in small light boxes, lined on the bottom with cork, pith, or soft wood; these boxes should then be wrapped in paper and packed in a larger box with an abundance of dry stuffing, such as crumpled paper, shavings, or coarse straw—not too tightly crowded, but so arranged as to leave from one and a half to two inches of stuffing around the *whole* interior of the outer box. If these directions are regarded little danger need be feared.

Collections sent to me by the first or middle of October next will be returned by the first or middle of the following January; for the safety, however, of my own collection, and of others entrusted to me, it will be necessary to return at once and unnamed, any collection showing traces of having been attacked by Museum pests.—SAMUEL H. SCUDDER, Boston Society of Natural History, Berkeley Street, Boston, Mass.

BOOKS RECEIVED.

Record of American Entomology for the Year 1868. Edited by A. S. Packard, jr., M.D., Salem. Naturalist's Book Agency. (8vo. pp. 60. Price, \$1.)

Every American Entomologist must have felt from time to time the want of some ready means of "keeping track" of what his fellows have published in the various scientific periodicals of the day. He need now be troubled no more, as the "Record" before us is intended to supply the want year by year, and to afford a convenient index to all that is written about American insects. This first volume of, we trust, a long series, contains references to four hundred and two new species of insects from North America, and four new false scorpions, and to articles and notices by forty-five different writers. This is certainly a gratifying record, especially when it is observed that, with two exceptions, no notices are included of papers published in European journals, copies of them not having been obtained in time. In future it is intended to refer to all American papers of the current year, and to European publications of the preceding year, in order to make the "Record" as complete and useful as possible. The

Editor, Dr. Packard, has been assisted in his work by some of the leading Entomologists of the day; while he records the notices of the Hymenoptera, Lepidoptera (Heterocera) and Arachnida, Mr. Schuder takes the Lepidoptera (Rhopalocera) and Orthoptera; Baron Osten Sacken the Diptera; Dr. LeConte the Coleoptera; Mr. Uhler the Hemiptera and Neuroptera, and Dr. Hagen the Pseudo-Scorpions.

A Guide to the Study of Insects. By A. S. Packard, jun., M. D. Parts viii., June, and ix., August, 1869. Salem: Naturalists' Book Agency. (50 cents per Part.)

These two parts contain the conclusion of the Coleoptera, the whole of the Hemiptera, and the beginning of the Orthoptera. They are, as usual, copiously illustrated, containing between them nearly two hundred excellent wood cuts. It is announced that one more part will complete the work.

First Annual Report of the Trustees of the Peabody Academy of Science. Salem, Mass., 1869. 8vo. pp. 103.

Through the munificence of Mr. Peabody, of wide-world celebrity, who gave the sum of \$140,000 for the "promotion of science and useful knowledge in his native County of Essex," the Peabody Academy of Science has been founded at Salem by the amalgamation of the Essex Institute and the old East India Marine Society. The new Academy was inaugurated in a befitting manner during the recent meeting of the American Association at Salem, and has now entered upon, we trust, a long career of usefulness and prosperity. The report before us sets forth all the particulars respecting the foundation of the Academy and the formation of its admirable museum, and includes interesting and valuable reports by the Director (F. W. Putnam) and the Curators, who are widely known as the joint Editors of the *American Naturalist*. Dr. Packard adds a list, with descriptions of new species, of the Hymenopterous and Lepidopterous insects collected by the Smithsonian Expedition to South America under Prof. Orton; and Mr. Morse, a description of a new shell (*Actinobolus*) taken in Essex County. The "proposed plan of operations" submitted by the Director and Curators is well worthy the consideration of all connected with similar institutions, and might be advantageously followed by our own "Canadian Institute" at Toronto. Would that some of our men of wealth could be induced to take an interest in this institution, and place it in a permanent and efficient condition, so as to enable it to accomplish for this Province what the Peabody Academy is now doing for its own County of Essex.

The Canadian Naturalist. New Series, Vol. iv., No. 2, June 1869. Montreal: Dawson Brothers. (\$3 per vol.)

We are glad to hear that this long-established Journal has now been placed upon a new footing, and is likely to be issued with regularity. Instead of appearing bi-monthly as before, it is now to be issued quarterly, though with the same amount of matter as formerly in the volume; it is to be conducted by an editing committee of members of the Natural History Society of Montreal, and is to

include a larger field of popular science than before. The number before us contains many interesting articles in various departments of science, including one in our branch of Natural History, viz, "The Toad as an Entomologist," by A. S. Ritchie. The writer advocates the slaughter of toads in the early morning for the purpose of obtaining the specimens of insects they had swallowed during the night! This appears to us a horrible mode of collecting, and judging from the few rarities obtained a most needless cruel operation. The results derived from the murder of the poor toad do not tend so much to the advancement of science as to justify the shedding of their innocent blood. We hardly fancy the example will be widely followed—the very thought of ripping up some wretched toads before breakfast in the morning to get at the beetles inside, makes one's blood run cold!

The American Entomologist. An illustrated Magazine devoted to practical and popular Entomology. St. Louis, Mo., Vol. i., No. 12, August, 1869.

This excellent publication has now come to the end of the first volume, and is to appear henceforth in a new and improved style, with an ornamental wrapper, on better paper, with an increased number of pages, and at a doubled price. The August number, which contains a splendid coloured plate of *Ceratomyza regalis*, affords a sample of the new dress and other improvements.

The American Naturalist. Salem, Mass. Vol. iii., No. 7, September, 1869.

As interesting and attractive as ever.

Le Naturaliste Canadien. Quebec, August, 1869. Contains a description and figure of a new Hemipteron, *Nabis Canadensis*, Provancher.

The American Agriculturist. New York, September, 1869.

Newman's Entomologist. London, Eng., Nos. 67 and 68. From Mr. Reeks.

The former number contains an interesting account of an undescribed light-giving Coleopterous larva from Brazil.

Hardwicke's Science-Gossip. London, Eng., August 1, 1869.

The Canada Farmer. Toronto, August 15, 1869.

The New York Sun. New York.

The Maine Farmer. Augusta, Me.

The Orthoptera of the State of Maine, and Notes on American Cancaroid Crustacea. By Sidney I. Smith.

Contributions to Zoology from the Museum of Yale College. No. 1, by A. E. Verrill, and No. 2, by S. I. Smith.

Entomological Notes. Part II. By S. H. Scudder. 48 pages, 8vo. Boston, 1869. These notes contain a number of valuable papers on Orthoptera, and an account of some diurnal Lepidoptera from Alaska.

TO CORRESPONDENTS.

SUBSCRIPTIONS RECEIVED.—To Vol. II.: From J. A., Brooklyn; J. A., West Farms; G. W. P., New York (with *Am. Ent.*); A. J. C., Lausing (Ditto); E. B., Boston; W. W. B., Indianapolis; Rev. Dr. D., Baltimore (Vols. I. and II. and *Am. Ent.*); J. G. M., Baltimore (Vols. I. and II.); C. E. H., Waterville, Me.

REV. F. O. MORRIS.—Dr. Butterfield, who has returned from California to his former address, writes that several months ago he received a letter from you stating that a box of insects had been sent to him, but he has never heard anything further respecting them. He will make enquiries in the proper quarter.

F. W., Wanstead, Eng.—C. B. M., Lep. Heteroc., Part xx., *Geometrites*, received; also, per Smiths. Inst., a copy of your "Catalogue of the Homopterous Insects collected in the Indian Archipelago, etc.," and two boxes of specimens. For all of which please accept our best thanks.

SUBSCRIBERS are respectfully reminded that their subscriptions to Vol. II. of the CANADIAN ENTOMOLOGIST are now due.

LEPIDOPTERA.—I have obtained from pupæ of last season a good supply of *Cerotocampa regalis*, *Eacles imperialis*, and that rarity *Sphinx jasminarum*. There are several species of *Sphinx* and *Catocala* that I am anxious to obtain, especially a good male *C. relicta*.—JAMES ANGUS, West Farms, N. Y.

ARCTIA PARTHENOS is very much enquired after; any collector who has obtained duplicates of this rare species will do well to communicate the fact.

LEPIDOPTERA FOR SALE.—A friend has a very fine collection of N. American Lepidoptera, including rare Sphingidæ, which he wishes to dispose of. They are in perfect condition, and many of them rare. For particulars apply to GEO. W. PECK, 129 Maiden Lane, New York. (*Adv.*)

ENTOMOLOGICAL PINS.—The long expected supply of pins has at length arrived; they were delayed, it appears, by the illness of M. Klaeger, the manufacturer. By some, at present, unaccountable mistake, only half the order has been filled, and we have received to our great disappointment merely the coarser sizes. We have thus plenty of Nos. 4, 5 and 6, but none of 1, 2 or 3. The price is \$1 per thousand (\$1.25 in U. S. currency). No. 4, in packets of 500, at 50c. each; Nos. 5 and 6, in packets of 250, at 25c. each. Parties ordering will please state whether they wish them sent by mail or express.

CLUB RATES.—We beg to direct the attention of our readers, who are now renewing their subscriptions, to the following advantageous club rates that we are enabled to offer them:

THE AMERICAN NATURALIST (\$4) and the CANADIAN ENTOMOLOGIST (\$1) for three dollars and a half per volume (\$4.50 in U. S. currency).

THE AMERICAN ENTOMOLOGIST (\$2) and the CANADIAN ENTOMOLOGIST (\$1) for two dollars per volume (\$2.50 in U. S. currency).

Those who desire to take advantage of these terms will please inform us as soon as possible, that we may be enabled to complete our lists.