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NOTES ON BUTTERFLIES, WITH DIRECTIONS FOR BREEDING THEM FROM THE EGG.

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

I am asked to write for the CAN. ENT. a paper on breeding butterflies, and on taking observations of the larval stages, and I comply with pleasure, hoping that what I shall say may be the means of inducing some collectors to cultivate this field. There are many local collections of butterflies in Canada and the United States, and a few general North American collections, more or less complete. But their owners are mostly satisfied with mere collecting and accumulating specimens of the imago. Very few know anything of the larval and other stages of the butterflies, unless of some of the common species. And where anything is known, very little is given to the world. Some collectors, however, have also been breeders of butterflies, sphinges and moths on a large scale. As for example, our friends, John Akhurst and Professor Julius E. Meyer, of Brooklyn, each of whom could fill a good-sized volume, if they would relate one half of what they know on these subjects. Such an one was the late William Newman, of Philadelphia, who lived to a good old age, and had spent his spare hours for many years in collecting and breeding lepidoptera. But none of these gentlemen have published a line that I am aware of, and the entomological world is not much the wiser for their private experience. So that practically here is a great field almost unworked. Even in Europe, very little systematic work has been done in this department with the butterflies. Apart from mere collecting, I do not see that anything of consequence remains to be done, either in North America or Europe, with the butterflies, except to study their life-histories. Both continents have been well explored, and only now and then can a new species be found. One collection is pretty much the same as another. To be sure, there is the anatomy of the butterfly or of the larva, but to study that requires special training, and this few have the inclination or the facilities for acquiring. But the study of the life history requires no

special training. Any one can take it up and follow it with a pleasure that rapidly becomes absorbing. Especially to dwellers in the country, or to those who spend some weeks in summer in the country, is this to be commended. And to any one who needs a hobby, the collecting of butterflies and breeding them from the egg, will give the physical and mental exercise they seek. A few days ago, a wealthy man, retired from business, in one of our cities, driven to despair from mere inaction, shot himself, in the fear that he would go mad. And one of the daily papers improved the occasion to preach the importance of hobbies, whether it be the raising of cabbages, or collecting pictures or china, or the study of archæology or of natural history. A man mounted on his hobby "does not suffer from vain regrets of his past career. He has found something more absorbing, more elevating, more pleasing. His hobby suffices him, gives him an interest in life, and prevents his nerves from preying on his health." I knew of a lawyer who at sixty was ordered by his physician to find some employment out of doors which would occupy his time and thoughts, unless he wished to be speedily gathered to his fathers; and he conceived the idea of making a collection of limestone fossils, as they were abundant in the region in which he lived, though hitherto he had known nothing of fossils or of natural history. And this he followed with delight for years, chiselling out the beautiful fossils as laboriously and skillfully as if stone-cutting had been his trade, studying them and arranging them in cabinet. He lived twenty happy years after that change of base, and left a collection which is famous for its magnitude and value. And, on the other hand, we have all known men who in the prime of their mental and physical strength have retired from active business, and have died from sheer vacuity of mind, after twiddling their thumbs in an arm-chair a few years, who might have reached four score if they had some hobby to ride. So I commend butterflies to elderly gentlemen or retired gentlemen in need of an occupation. The young need no recommendation. It is always enough to show them the way in any branch of natural history, and they follow it with ever increasing enthusiasm. Studies of this description keep young people out of mischief and old people out of the grave, and that is one good reason for cultivating natural history.

And now to our subject. Most female butterflies lay eggs readily in confinement, if shut up with their natural food plant. What that is cannot always be known, but it is well to try plants which allied species feed on. In most cases allied species feed on the same group of plants. Thus

Phyciodes *Tharos* eats any sort of Aster, and so will *Melitæa Harrisii*. I had larvæ of *Eresia Texana* sent me from Texas, and offering them Aster, they took to it forthwith. *Mel. Chalcedon*, in California, feeds on *Penstemon*, *Scrophularia*, etc., but larvæ sent me readily eat the leaves of *Chelone glabra*, on which *M. Phaeton* feeds here. So, in case of doubt, it is best to try such plants as allied species feed on. What these are may be learned from the books, in many cases. Mr. Scudder, in 1869, drew up a list of food plants of butterflies, for the *American Naturalist*, and I have very often had occasion to refer to it. So, the same author, in "Butterflies," 1881, gives a list. Scattered through the volumes of the *CAN. ENT.* is much information of the same character.* Sometimes there is no clue, and more or less experimenting is necessary. In *CAN. ENT.*, vii., 161, 1875, Mr. Mead relates his discovery of the food-plant of *P. Tharos*, "which had baffled all my endeavors for the past four or five years, during which I have tried a great number of plants without avail." He relates that he prepared a large box by filling it partly with earth, and transplanting into it specimens of all the common compositæ he could find. The box was covered with gauze and about a dozen females of this butterfly were introduced. "In a few days I examined the leaves and found six patches of eggs upon one of the plants. The plant proved to be a species of Aster." Then he transferred some of the females to a box containing Asters only, and further eggs were obtained. After that, I bred *Tharos* by hundreds, one season after another, and got at its complete life-history.

In 1881, I received from Arizona several eggs and just hatched larvæ of *Lemonias Nais*. The eggs had been laid on Mesquit, and I had no idea what they would eat here. But quite a number of sorts of leaves were given them, among them peach, cherry, wild plum, and after nearly all the larvæ had died from starvation, it was found that the survivors were eating the plum. So of the larvæ received I was able to get one example to pupa and imago on plum. Mr. Scudder wrote me: "You have filled one of the greatest voids in our knowledge of the biology of butterflies," as little or nothing had till now been known of the history of any species of the *Lemoniadae*.

Some species eat but a single plant, or sub-group of plants, as *P. ajax*,

* As soon as I can find time, I will draw up a new list of the food-plants of butterflies, and send to the *CAN. ENT.*, and I should be glad to receive information from any one who has any knowledge of this matter.

the Pawpaw, Asimina; *P. Philenor*, species of *Aristolochia* (though, according to Scudder, *Polygonum convolvulus*, or knot Bindweed). On the other hand, some species are almost omnivorous, as *P. Turnus*, which is credited with eating plants in a score of genera. *P. Asterias*, and its allies, *Brevicauda*, *Machaon*, etc., feed exclusively on Umbelliferæ, carrots, fennel, parsley, etc. The Pieridæ feed on Cruciferæ, cabbage, turnip, radish, horse-radish. The Coliadæ on clover, pea, lupine, astragalus. Callidryas and Terias on Cassia. Danais on Asclepias. Argynnis on Violet, though *A. Idalia* also on a species of Aster. The Graptas on nettle, elm, hackberry (*Celtis*), currant, gooseberry, false nettle (*Boehmeria*); *Apatura* on *Celtis*; *Limenitis* on willow, hawthorn, aspen and poplars.

Our species of *Lycaena*, so far as known, on a variety of flowers, as *Pseudargiolus*, in its several forms, on dogwood, rattle-weed (*Cimicifuga*) and *Actinomeris*; *Scudderii* on lupine and on Jersey tea (*Ceanothus*). *Comyntas* on clover, blossoms and leaves. *Melissa* on Astragalus. Thecla larvæ I know very little about, the only one I ever saw being that of *Henrici*, which feeds on the inside of plums, wild plums, excavating the whole interior of the fruit. But many species are said to feed on leaves of oak: *Melinus* on hop, thorn, etc., *F. Tarquinius* on hawthorn. The Satyrids all feed on grasses and sedges. So *Pamphila* feeds on grasses and sedges; *Nisoniades* on herbaceous plants and shrubs.

Wherever I have lived in the country, as at Newburgh, New York, for several years, and later, at Coalburgh, W. Va., I have brought into my grounds all trees, shrubs and plants, on which larvæ of butterflies are known to feed, so far as I could get them. So that I am pretty certain to have food of almost any species close at hand. Thus, in addition to plants from the region around Coalburgh, I have Astragalus, *Amorpha* and *Scrophularia* from California, aspens from the Catskill Mountains, and even a particular nettle from the north, for *V. Milbertii*, which I found last year starved to death on our native nettles, *Milbertii* being an exotic species here.

Now, the plant supposed to be known, we wish to get eggs of butterflies laid on it. If a tree or shrub, I use a bag or bags of Swiss muslin, but mosquito netting often, especially for large butterflies, as *Papilios*. For *Papilios*, the bag is about 30 x 18 inches. For medium sized species, as Graptas, say 18 x 10; for *Lycaenæ*, 10 x 6, having always on hand several sizes. If there is any reason for keeping a particular female

separate, of course, put but one in the bag; otherwise several, as half a dozen *Turnus*, for example. One can judge pretty well, either by the size of the abdomen, or by the worn state of the wings, whether the eggs are mature. If the wings are worn, even though the abdomen be not swollen, it is probable the butterfly has already laid most of her eggs. Species differ in regard to the time required after impregnation for laying. Several have been known to lay within a few hours after the two sexes had been taken in copulation, but others require several days. In these last cases the eggs are not fully formed when the butterfly comes from chrysalis, in the other they are. In *Argynnis Myrina* and *A. Bellona*, also in *P. Tharos*, the eggs are mature in the new butterfly; in *Mel. Phaeton* they are wholly unformed. In the larger *Argynnis* about two weeks elapse after emergence from chrysalis before the eggs are mature. In many species copulation takes place as soon as the female comes forth, often before the wings are expanded or dried. Indeed, in *Heliconia Charitonia*, the males have been observed by Dr. Wittfeld to hang in clusters of four or five upon the female chrysalis, and when the shell bursts open from their weight, one of them is sure to make connection before the shell is fully removed. I have seen old males of *P. Ajax* coursing up and down a bit of woods in which these butterflies were coming from chrysalis, and ready to pounce upon any limp-winged female that came within their vision. In *CAN. ENT.*, viii., 161-2, I related that I turned loose at Coalburgh a dozen examples, male and female, of *A. Myrina*, the larvæ of which I had brought from the Catskills, and about three hours later found a pair of them in copulation in the grass. These I got into the house and into a box, and next day set the female on a plant of violet under a bag. Within an hour she had begun to lay eggs, and within two days laid 93.

In August, 1877, I took a pair of *Arg. Atlantis* in copulation, in the Catskills, in the forest, several miles from home, and doubting if I could get them home in this condition, I tied up my net and suspended it to a branch. The next day I returned and brought in the female, which laid fertile eggs at two days and later.

Some species, however, do not seem to lay so readily as *Argynnis*, and have to be kept alive artificially in the manner to be described hereafter. Often, and especially for species which lay on small plants, as violet or grasses, I set the plants in pots, or even tin fruit cans, and over the tops tie bags, which are high enough to clear the plant by a few inches. To

keep the bag upright and well expanded, put three sticks in the earth at an angle. *Argynnis* readily lays so ; also all species of *Satyridae* which I have tried ; so *Pamphila*. The eggs will be laid on the plants, or on the bag, and more or less on the ground. A good method also is to confine the butterflies in a large box, which is covered with a cloth. In the box either plants in pots may be set, or the plants may be rooted in earth. I prefer the former way, however, as when eggs are dropped on the earth in such circumstances, it is almost impossible to find them. *Arg. Diana* and *Cybele* lay freely in this sort of confinement, and I have generally used the box with them. They lay a good deal on the sides of the box, as well as on the cloth, but many eggs will be found on the leaves and stems of the violet. Mr. Mead varied this mode with *Limenitis Arthemis*, with excellent results, as he relates, CAN. ENT., vii., 162: "A notch is cut in the side of any empty wooden box, through which a branch of willow or other appropriate food-plant is passed, care being taken to select a leafy spray, so as to partially fill the box with foliage ; it is then covered with gauze, tacked fast on one side, and part way down on the adjoining sides, that on the fourth side being held down by a piece of wood fastened to the remaining flap of gauze. This renders easy the examination of the contents at any time. Now a saucer of raw dried apples, sugared, and partly filled with water, is put in, and the cage is complete. Butterflies like *L. Arthemis* will live in such a vivarium for two weeks and more after their capture, and appear to enjoy the food provided immensely, laying many more eggs than if enclosed in a bag and allowed to perish of hunger and thirst." Mr. Mead says that in such a box 15 females laid over 500 eggs. I saw this lot at the time, and eggs were all over the willow leaves and the cloth. The limbs of willow were turned down as they grew, and into the box, this being placed on the ground by the brook. So where butterflies are confined in boxes with plants in pots, sugared fruit of any sort may be given. Or when a bag is tied over a pot, a small tin box with similar food may be set on the earth within the bag, and the butterflies very soon discover it.

So a glass jar may be used for small species, and I have often obtained eggs of *Pamphila* by this means, setting a stem of grass with its root in the jar. Mr. H. W. Nash obtains the eggs of *Colias Hagenii* in this manner ; also *L. Melissa*, without trouble. All that would seem to be necessary is that the plant should be apparently a growing one, to induce the butterfly to entrust her eggs to it.

I have often obtained eggs from *Lycaena Comyntas*, which lays on clover, or from *Colias Philodice*, on same plant, by tying a bag over the stem as it grew when in blossom, setting a stick in the earth to hold the bag upright. It is here necessary to shade from the sun, as a very short exposure to the direct rays of the sun will kill the butterflies. So in all cases where bags are tied to branches, care must be taken in this respect. It is well to pin paper over the bag, in the direction of the sun, or a piece of cotton cloth. But on account of ants, it is better to have the plant in pot, rather than in ground, and at all events, the eggs should not be left out over night where ants can get access to them. Spiders perhaps are more destructive than ants. Better bring the butterfly into the house, and tie it out again next day.

Many butterflies lay their eggs in clusters, as do the Melitaeas, from a dozen to an hundred in one patch; or *Apatura* to two hundred and more. The Graptas lay their eggs in strings, or singly; in the former case as many as 7 or 8 standing in a vertical column. *G. Interrogationis* often lays many eggs on one leaf, but not exactly in cluster, and the young larvæ gather into a loose colony. *P. Atalanta* lays a single egg on the topmost leaf of a nettle, or *Boehmeria*, and the young larva, as soon as out of egg, makes itself a shelter by weaving together the edges of the leaf. *P. Huntera* lays single eggs on species of Everlasting, and the young larva protects itself very much as does the larva of *Atalanta*. According to Mr. Scudder, *Am. Nat.* x., 611, *P. Cardui* lays single eggs on thistle leaves, and the young larva makes a sort of nest of bits of leaf woven together. *Vanessa Antiopa* lays its eggs in cluster around the small stem of a willow, and the larvæ are gregarious to the last. But most butterflies lay their eggs singly, one egg on a leaf, and often but one egg to the plant. Of all our Papilios, *Philenor* alone lays in a cluster, a dozen or 20 eggs in rows touching each other, and the larvæ feed in rows around the edges of their plant till at least half grown.

Certain species in larval stage are highly gregarious, as *Antiopa* already mentioned. So are the *Apaturas*. The fall brood of *A. Clyton* and *A. Celtis* hibernate after 3rd moult, and gather in a dense cluster on the under side of a leaf of their plant, heads and tails, as close as they can pack. On 21st Sept., I found 165 larvæ of *Clyton* so collected on one leaf. These *Apaturas* are unprotected by web. *Limnitis Disippus* and other species spend the winter in cases cut out of the leaves they feed on, one larva to one case, and fitted as nicely as a tailor would fit a coat

to his customer. Several of the Melitæas, as *Phaeton*, *Harrisii*, etc., live in colonies within a close web of their own construction, enlarging as their growth makes it necessary; and when the time for hibernation approaches, the web is made doubly strong. So they pass the winter, and come forth in early spring to separate somewhat, and henceforth live without shelter. So the species of each genus differ in their larval habits, and sometimes species of the same genus differ materially.

Eggs of some species hatch in three and four days, as *Grapta*, *Colias*, *Pieris*, and in many cases the entire period from the laying of the egg to pupation is not over a fortnight, and to imago not over three weeks. I received eggs of *Agraulis Vanilla* from Georgia, and from hatching to chrysalis, 4 moults being passed, the period in some cases was 10, in others 12 days, the pupal period 5. Probably the egg stage was not over 4 days, which would make the entire round from laying egg to imago, 19 to 21 days. The *Papilios* hatch in from 4 to 6 days; *D. Archippus* the same; *M. Phaeton* about 20; *P. Tharos* 4 to 7; *P. Nycteis* about 12; *Limenitis Disippus* 5 to 8; *Arg. Diana* 15; *Cybele*, *Aphrodite*, *Alcestis*, *Atlantis* 15 to 20; *A. Myrina*, *Bellona* about 6; the large *Satyrids*, 14 to 28 days; the *Neonymphæ*, about 8 days; *Libythea Bachmani*, 4; *Lycaenæ*, 4 to 8; *Lemonias Nais*, about 12; *Pamphila Huron*, 4; *N. Lycidas*, 4.

The only butterflies known to me to hibernate in the egg stage are the *Parnassians*. The eggs are laid on *Sedum* in July and August, and probably the larvae come forth in the spring. At any rate, eggs of *P. Smintheus* and *Clodius*, obtained by Mr. Mead and kept in the house, gave larvae in mid-winter, or late in the winter. But the larvae of *P. Apollo*, in Switzerland, are said to come from egg late in the fall, and the larval stage to be the hibernating one. Certainly the larvae of the American species have a different habit, and the hibernation is in the egg. By keeping *Smintheus* eggs on ice through early winter of '83-'84, I retarded their hatching till 30th Jan. The eggs had been kept in an ice house at Dayton, O., but in January, as my own ice house was now filled, I sent for them. After their arrival, there being no sign of hatching, I left them on a shelf out of doors, in the shade, and forgot them. Some days after, the mercury being 55° at noon, I looked at the eggs and found some hatching. I put them at once on ice, and a few days later, the weather being pleasant, I brought them out again, and in less than a week the larvae were all hatched. I fed them on *Sedum* (abundant here on rocks),

and succeeded in getting several larvae past 1st moult, and one past 2nd, but all died. The stages were very tedious, and the longest lived larva reached about 40 days from egg. I think if I had let the eggs stay in Ohio two months longer, I might have got some of the larvae to imago.

It will be seen then that eggs may in many cases be sent on long journeys. Even the eggs of such species as hatch in 3 to 5 days may be sent from Maine to Coalburgh, or from Florida, or from Colorado. But if placed in glass tubes or bottles, or in tin boxes, and sent by mail, with leaves of the food plant, a journey of 6 to 12 days may be ventured on. The eggs of *L. Nais*, from Arizona, were 12 days in the mail and the larvae were in part just hatched when they reached me. I had 60 young larvae of *C. Eurydice* come last month from San Bernardino, Cal., corked up in a 2 oz. morphine bottle, which was inside a tin case. The plant, *Amorpha Californica*, in the bottle was perfectly fresh, and the larvae, as hatched, had fed on it. So Dr. Wittfeld, from Indian River, Fla., has repeatedly sent me eggs in tin, which have been out 6 to 10 days. Generally the larvae have hatched on the way, but the plant has kept fresh. The only trouble I remember has been with cruciferous plants, mustard, radish, etc., or with passion-vine. These do not bear the journey, but are apt to come decayed. But experiment has proved that such plants keep well in a corked bottle, even in the hottest weather. Eggs ought never to be sent in a wooden or paper box. Apart from the danger of a crush in the mail bag, the plants dry up and larvae will starve. Nor should cotton ever be laid with the eggs or among the leaves. The young larvae get entangled in the cotton, and the leaves will dry up the sooner for the presence of the cotton. There are several species of eggs of Canada butterflies that I should exceedingly like to get, as *Grapta J-album*, *Grapta Faunus*, *Argynnis Atlantis*, *Lyc. Scudderii*, *L. Couperi*, *Pieris Virginiensis*, *Colias* of any species, except *Philodice*, *F. Tarquinius*; and I shall be very much obliged to any person who will send me these or any of them.

MIMICRY—I recently observed an interesting instance of mimicry in the Phalænid moth, *Tetracis lorata* Grote. While examining the flowers of a bed of May apples (*Podophyllum peltatum*) I found one of these white moths adhering to the stamens of a flower, its head towards the center and the wings being easily mistaken for the petals. By a little search another was discovered in exactly the same position.

CLARENCE M. WEED, Lansing, Mich.

THE ENTOMOLOGY OF VANCOUVER ISLAND.

*Notes on Eighty Species of Hymenoptera Collected near Victoria,
Vancouver Island, in 1882.*

BY GEORGE W. TAYLOR, VICTORIA, B. C.

(Continued from page 80.)

Sphegidæ.

29. *Sphex apicalis* Harr. Very common on flowers, especially in July.
 30. " *elegans* Smith. " " "
 31. *Ammophila communis* Cress. Also very common later in the year.
 32. " *conditor* Smith. " " "

Formicidæ.

We have seven or eight species of *Formica*, but only the three following have been examined by Mr. B, and so I will insert no others in the present list. They are all abundant.

33. *Formica herculanea* Linn. The winged form is to-day (May 12) flying in countless numbers in the sunshine.
 34. " *Pennsylvanica* De Geer. Very common.
 35. " *fusca* Linn. Very common.
 36. *Myrmica incompleta* Prov. I have taken but one or two specimens of this insect.

Chrysidæ.

37. *Chrysis cærulans* Lepell. Only one specimen.
 38. *Hedychrum violaceum* Lepell. Very abundant.

Chalcidæ and Cynipidæ.

I have entirely neglected these families so far.

Braconidæ.

39. *Bracon obliquus* Prov. Two males in June.
 40. *Macrocentrus nullipes* Prov. Rare, July.
 41. *Phylax pacificus* Prov. Very common in the early spring.
 42. " *niger* Prov. " "
 43. *Platysoma tibialis* Prov. One specimen only in July.

Ichneumonida.

Very numerous. I have nearly 40 kinds in all. The following are those already determined.

44. *Ichneumon cæruleus*, Cress. One only, flying in August.
 45. " *otiosus* Say. My only specimen was unfortunately destroyed during the process of examination.
 46. " *insolens* Cress. One specimen bred from chrysalis of *Vanessa cardui*.
 47. " *seminiger* Cress. A few only.
 48. " *segnax* Cress. Very common; one specimen was bred from the chrysalis of a *Lycæna*.
 49. " *longulus* Cress. Very common; most of mine were taken at rest on apple trees in October and November.
 50. " *varietus* Cress. Also common.
 51. " *Vancouverensis* Prov. This fine insect is abundant, and I have bred it in some numbers from the pupa of a *Bombyx*.
 52. *Amblyteles suturalis* Say. One only.

Cryptidæ.

53. *Phygadeuon crassipes* Prov. Several specimens during July and Aug.
 54. " *subspinus* Prov. " " "
 55. " *attenuatus* Prov. " " "
 56. *Hemiteles crassus* Prov. Common, July and August.
 57. *Cryptus rufoannulatus* Prov. One female in May.
 58. " *robustus* Cress. Not uncommon.

Ophionidæ.

59. *Ophion bilineatus* Say. Very common during summer and autumn, frequently taken flying to light.
 60. " *nigrovarius* Prov. A single specimen returned with this name has unfortunately been destroyed.
 61. *Anomalon nigrum* Prov. Several bred from pupæ of Noctuæ.
 62. *Limneria valida* Cress. July.
 63. " *genuina* Say. Common. A few bred from small cocoons found on bracken.
 64. " *flaviricta* Cress. Common in spring.
 65. " *compacta* Prov. One or two, May and June.

Tryphonidæ.

66. *Mesoleptus fasciatus* Prov. Several in July.
 67. *Tryphon communis* Cress. Several, July and August.

Pimplidæ.

68. *Coleocentrus rufus* Prov. One female at rest on a fence, 31, 7, 82.
 69. *Pimpla indagatrix* Walsh. Not rare. June.
 70. " *conquisitor* Say. Not rare. Spring.
 71. *Theronia rufescens* Cress. Numerous. Several bred from pupæ of *Orgyia*, in September.
 72. *Ephialtes occidentalis* Cress. A few flying in sunshine, June and July.

Uroceridæ.

I have six species of these splendid insects. Two have been determined as follows :

73. *Urocerus flavicornis* Fab. Common in autumn.
 74. " *caudatus* Cress. A single female only of this small species.

*Tenthredinidæ.**Cimbicinæ.*

75. *Trichiosoma triangulum* Kirby. Tolerably common, as are also its cocoons.

Tenthredininæ.

Samples very numerous. Some kinds sadly too numerous, but I have not yet collected very many species.

76. *Dolerus sericeus* Say. Exceedingly abundant, particularly in June, on flowers of Dog Daisy.
 77. *Scandria halcyon* Harr. One or two only.
 78. *Euura albitarsis*. One or two only. This is apparently absent from the check list.
 79. *Allantus originalis* Nort. Exceedingly abundant with *Dolerus sericeus*, on Dog Daisy flowers.
 80. *Tenthredo mellina* Harr. Common in spring.
 81. " *rufopedibus* Nort. Common in spring.

THECLA NIPHON.

BY JAMES FLETCHER, OTTAWA, ONT.

About the middle of May, 1883, Mr. A. W. Hanham took a ♀ *T. Niphon* a few miles from the City of Ottawa. This was the only specimen at that time seen.

On the 4th May last, when walking along the Chelsea Road, near the village of Chelsea, P. Q., with Mr. Harrington, he called my attention to

a small butterfly which had just alighted on the bare road in front of us. This I was delighted to recognise as *Niphon*. Having no nets with us, a too near approach was only rewarded with the mortification of seeing the coveted prize flit lightly up to the top of some high pine trees. Subsequent to this date the weather was cold and wet for some time, and I had no opportunity to visit the locality until the 22nd of the month. On this date the Ottawa Field Naturalists' Club organized an excursion to the Chelsea Mountains for the purpose of entertaining the Fellows and Delegates of the Royal Society of Canada, and consequently we were honored with the presence of our worthy President, Prof. Saunders, who happened to be in Ottawa attending the annual meeting of the Royal Society. As we passed the locality for *Niphon* on the way, the attention of all was directed to the pines as we passed. It was the President's experienced eye which detected the first examples; three beautiful tempting specimens were seen flying round the top of a white pine about 30 feet from the ground and well up out of reach; but none were obtained.

Two days later, however, Mr. Harrington, Mr. Ami and I went out again armed with a net attached to a long bamboo. Fortune favored us at last. On the way out one female which had settled on the road was taken. When we reached the grove of white pines (*Pinus strobus*) where the three specimens had been seen two days earlier, Mr. Harrington climbed up to the top of the same tree and took two more, all in good condition. Bordering the pine grove was a field in which a great deal of the herbage was made up of *Antennaria plantaginifolia* in flower, and along the edge of this field, close to the trees, nine more were taken and two others seen. Highly elated at our success, we turned our steps homeward with twelve perfect specimens, eight ♀ and four ♂. Two days later I again re-visited the locality and met with a great disappointment. The day was intensely hot and butterflies were very plentiful. On arriving at the field I saw with delight *Niphon* three or four at a time in every direction, but my chagrin was great when on taking them one after another, I found there was hardly a presentable specimen amongst them. The locality is on the top of a hill, and for the past two days high and boisterous winds had prevailed, and this must have been the cause of their tattered state. Altogether, although a hundred could have been taken with ease, not a dozen were found worth collecting. Nevertheless, I boxed some females alive with the object of getting the eggs, and have succeeded in getting thirteen. Under the microscope they are objects of

great beauty. The shape is round with a deep depression at the summit, almost half the depth of the egg. The general color is pale green, and the surface is beautifully reticulated, the lines of the coarse netting being much raised above the surface and almost white. This gives the egg the appearance of having a white bloom on it. One egg laid on 26th May gave the larva to-day, June 5th.

The larva has already been described by Mr. Saunders, CAN. ENT., I., p. 95, and is also figured by Townend Glover in his plates of Lepidoptera, Plate B, fig. 8.

Among the specimens of the perfect insect I captured, I found there was considerable difference in the marking and beauty of the upper surface, particularly among the females. I imagine the typical colors of this sex to be a rich ruddy bronze with a green sheen, and having a black border running round the margins of the wings. This border varied much in depth; it was sometimes almost restricted to the fringe of the wings, while in others it covered about one-fourth of the surface. These dark specimens are very handsome. There is also much difference in the size of the white bars in the fringe. The under side of both sexes is very similar and varies very little. The general color of the ♂ is slaty black with in some specimens the green sheen seen on the females. A few specimens of the male had a reddish tint in the black, and a few examples had indistinct bronze eye marks where the tails are found in other species of this interesting genus. The flight of this insect is very quick and jerky, and when disturbed it often flies off to the tops of trees. When visiting the flowers of *Antennaria* for honey, it has a curious habit of slowly moving its lower wings while closed alternately up and down. The tails found in other species are represented in this one by a curve in the margin by which the long fringe gives the appearance of a little tuft of down when the wings are closed. I have about a dozen specimens to spare, which I shall be glad to give to any members of the Society who will send me a box for their transmission.

ENTOMOLOGICAL CLUB OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The annual meeting of the Entomological Club of the American Association for the Advancement of Science will be held in a parlor of the Hotel Lafayette, Philadelphia, commencing at 2 p.m. Wednesday,

September 3rd, 1884. The entomologists in attendance at the Montreal meeting, 1882, authorized Mr. J. A. Lintner, should he think best to do so, to call a meeting at Minneapolis, 1883, to consider the advisability of reviving the Entomological Club. The meeting was held pursuant to Mr. Lintner's call, and after discussion it was decided to continue the meetings of the Club under the rules previously adopted. Officers were elected, and several profitable sessions were held during the continuance of the American Association meeting. In accordance with the rules the Club is called to meet the day before the opening of the general meeting. Entomologists who desire to read communications are requested to notify one of the undersigned as early as August 15th.

O. S. WESTCOTT, Secretary,
Maywood, Ill.

D. S. KELLICOTT, President,
Buffalo, N. Y.

PRIONUS BREVICORNIS, FABR.

BY FREDERICK CLARKSON, NEW YORK CITY.

These beetles were very abundant at Oak Hill, Columbia Co., New York, during the months of July and August, in the several years of 1875 to 1882. Harris states that the larvæ feed on the trunks and roots of the Balm of Gilead and Lombardy Poplar. Oak Hill is a part of the old Manor of Livingston, and is notable for the variety and age of its oaks. Upon the lawn immediately in front of the dwelling are two ancient trees of the black oak variety, one of which is supposed to be two hundred years old. From the roots of these old trees these beetles would emerge during the first two weeks in July, usually appearing just after sun-down, or in the darkness preceding a shower. During the sun-light, the closest observation of the short cut lawn skirting the trees, would not reveal a beetle, but so soon as the sun rested behind the towering Catskills, these revellers of the twilight and the darkness would come forth. Their presence is quickly realized by the odor of the ♀, which is very powerful, and can readily be detected twenty feet distant. I placed a ♀ immediately after emergence in an uncovered jar, and wherever I positioned it, on the piazza or elsewhere, the ♂'s were attracted from every direction. I captured twenty ♂'s in a very few minutes. Oak Hill cannot boast of a Balm of Gilead or a Lombardy Poplar, but it is famous for its oaks, and while it is admitted that the former trees, as mentioned by Harris, serve as food for the larvæ, my observations indisputably prove that they feed also upon the roots of the oak.

CHANGE OF ADDRESS.

Our old friend, and much esteemed correspondent, Wm. Couper, late editor of the *Canadian Sportsman and Naturalist*, has removed to Troy, New York. His address is 114 Fourth street, Troy, N. Y. His many friends and correspondents will please note the change. Mr. Couper was one of the earliest observers and writers on insects in Canada, and has added much to our knowledge of insects and their habits. We are sorry to lose from among us so old and faithful a worker, and wish him much prosperity. He carries with him his love for insects and his long acquired habits of observation to his new field of labor. In the letter announcing his removal, written May 12th, he says: "The weather has been very cold for some days past and I have not seen many insects on that account, I have, however, noticed that *Hyperchiria Io* Fab. is extremely abundant on the lilac. I could have collected three or four thousand cocoons from bushes in one garden in this city."

ADDITIONS TO CANADIAN LISTS OF COLEOPTERA.

BY W. HAGUE HARRINGTON, OTTAWA.

(Continued from page 73.)

CHRYSOMELIDÆ.

My collections in this extensive family contain over ninety species, of which several are yet undetermined. The great similarity of the species in some genera and the variation in form and color of individuals in other groups render their determination difficult.

Donacia pubescens Lec. This species is readily distinguished by the dense pubescence of the upper surface, which in our other species is of metallic lustre. It was described from a specimen taken by Dr. Le Conte at Smoky Hill river, while on the W. Pac. Ry. survey between Kansas and New Mexico in 1867, (Trans. Am. Ent. Soc. Vol. II, pg. 55.) It has since been recorded from Michigan and Buffalo. Four or five specimens taken by Mr. Fletcher in a small swamp near the city, in 1878.

jucunda Lec. This beetle is apparently not rare—it is given in the Lake Superior and Michigan lists.

Zeugophora abnormis Lec. One specimen; 14th June.

Cryptocephalus badius Suffr. One specimen on foliage of *Carya amara*,
24th July. Middle and Southern States.

Pachybrachys femoratus Oliv. Taken on young pines, about the end of
July, near Hull.

Galeruca 6-vittata Lec. Two specimens in June. Has been found at
Buffalo.

Disonycha caroliniana Fabr. This species is apparently rare in the im-
mediate vicinity as I have only found two ; one under a stone in
May, where it had probably hibernated, the other taken on a beat-
ing net on 28th July. At the South Nation river, however, near
Casselman, about thirty miles southward, I found it quite abund-
ant last summer (23rd June), feeding upon the narrow leaf dock
(*Rumex verticillatis*.) There appears to be some confusion, this
(or another) beetle in Canada, as in the lists of the Entomological
Society a label is given for "*D. Caroliniana* Oliv.," while the re-
cent lists of the Toronto Nat. Hist. Soc., do not contain the
species.

BRUCHIDÆ.

Bruchus cruentatus Horn. One captured and another seen. A pretty
and very active little beetle, having a wide but more southerly
range, and stated to be everywhere rare.

TENEBRIONIDÆ.

Strongylium terminatum Say. Two specimens.

MELANDRYIDÆ.

The species of this family, unlike those of the preceding one, are well
represented in Canada, and the individuals of some are among the most
common of our fungus-eating beetles.

Hypulus n. sp.? Among some beetles given to Dr. Le Conte, was one
which he indicated in a list afterwards sent to me, as a new species.
"with deep thoracic impressions." The specimen having been
incorporated in his large collections it will be now impossible to
identify it or to say whether it was a new species.

*(*Mystaxis*) *simulator* Newm. Two specimens.

MORDELLIDÆ.

Mordella irrorata Lec. Rare. Recorded from Michigan but belongs
rather to the middle and Southern States, and is given as not rare
in Florida.

Mordellistina aspersa Mels. Several specimens taken on flowering plants, such as Spiræa, about the end of July. This beetle is stated by Mr. John B. Smith (Trans. Am. Ent. Soc., Vol. x.,) to be "the most common of our species." It cannot, however, be very abundant northerly, as it has never apparently been recorded from Canada, nor is it in Lake Superior, Michigan or Buffalo lists.

Comata Lec. Two or three specimens; varying in color of head and thorax to the forms *picicornis* and *cervicalis* Lec., now included by Mr. Smith in this species. Recorded from Michigan under the latter names, and Buffalo under the last one.

pectoralis Lec. Rare. A prettily marked species taken by Leconte on the north shore of Lake Superior (Agassiz Lake Superior Expedition.) Evidently rare, as Mr. Smith, in his remarks on the species, states that he had seen only one specimen and that the type, nor can I find mention of its capture elsewhere. This is one of many instances in which a marked resemblance of the fauna of Ottawa to that of Lake Superior is evident.

ambusta Lec. *Var.* Two specimens. Recorded from Michigan, but is more abundant in the Middle and Southern States.

ENTOMOLOGICAL NOTES.

BY A. W. HANHAM, PARIS, ONT.

I have to record the capture of some Coleoptera in rather an unusual manner. Last week while out in the woods on one of my collecting tramps, I was attracted to an old stump by the glittering of something in the sun. Closer acquaintance did not at first solve the mystery; the bright object seemed to be buried among some debris. Further examination revealed the dried and withered remains of a small toad, the glitter being that of some Buprestidæ partly exposed in what was once the stomach of the defunct batrachian.

I carried the remains home, and with no little trouble excavated in a perfect state the following:—

Calosoma frigidum Lec.

Platynus placidus Say. Several.

Dicerca ? A pair.

A small weevil unknown to me.

Portions of *Cicindela repanda* Dej., other Coleoptera and some Diptera.

From the above list it would seem that toads can hardly be called useful, seeing that such a large proportion of their food—if we take this one for a standard—consists of decidedly beneficial insects. I will allow that they are very desirable tenants for the owners of gardens, but in the woods they must be formidable rivals to the entomologist. This year they have been unusually abundant, and the rarity of many of our beetles is no doubt caused by their rapacious appetites.

I have not taken *C. frigidum* before; the *Dicerca* is also new to me. I find it very difficult to determine my captures, and a serious obstacle to taking satisfactory notes. I am indebted to W. H. Harrington, of Ottawa, for the naming of a considerable number last winter. *C. calidum* Fabr. also seems to be quite rare here; I made special search for it this spring and found but one specimen. I took another on October 27th last year, from the heart of a decaying log. Is it double brooded in this part of Ontario? Or would it be possible for one attaining the perfect state in June to live through the summer and survive the winter? The specimen I captured in October had evidently prepared to hibernate. On June 15th, I found under stones on dry ground a pair of *Calosomas* which are entirely new to me. I expect though I could name them from the Society's collection in London.

I should have been surprised to find so large and active a beetle as *C. frigidum* falling a prey even to the biggest of toads. The Buprestidæ must also be rather tough morsels for them to digest. It will ever remain an open question as to whether "our departed friend" lost its life through its own greediness, or met a violent death at the hands of one of its many foes. I have read of some ardent collectors who secured many rare beetles by capturing and killing the toads they found in their rambles.

CORRESPONDENCE.

Dear Sir: As I am working out the *Phycidæ* and *Galleridæ* of the whole world, with the view of publishing a monograph of these families, I shall be very happy to receive boxes of Canadian and any other *Phycidæ* and *Galleridæ* to name for any of your correspondents. I only desire that when possible two or three specimens of each species may be joined to the consignment in case I should not possess the species. I will send European *Microlepidoptera* in return if desired. My monograph will comprise twelve plates, containing upwards of two

hundred and sixty species (eight are already prepared), besides two or three plates with details of neurulation, etc.

E. L. RAGONOT, Banker, 12 quai de la Rapée.

Vice-President of the Société Entomologique de France.

Paris, France, June 4, 1884.

INSECTS SWARMING ABOUT IULUS.

Dear Sir:—The following observation may have a bearing on the facts communicated by Mr. J. A. Lintner to a late number of your paper. (See Can. Entom., April 1884, v. 16, p. 80.) Several years ago I found a large living *Iulus* surrounded by a swarm of minute Diptera, apparently similar to the species that often breeds abundantly in stale lemonade and similar mixtures. Whether the Diptera I observed were really *Drosophilidæ* or not I cannot say, because I did not examine them carefully. I saved specimens of the flies, but they have been lost. At the time that I saw them I supposed that they were attracted to the *Iulus* by the odorous fluid secreted by its lateral glands—a fluid that is quite acid—and I afterwards thought that it would be an interesting experiment to expose a specimen of *Iulus*, after irritating it thoroughly to cause it to pour out some of its secretion, in a cage out of doors, to see if these flies would not be attracted by its acid fluid. The *Iulus* which I saw in the midst of these flies did not appear disturbed by them, although they darted up and down about him, often lighting in numbers upon his back.

GEORGE DIMMOCK, Cambridge, Mass.

Dear Sir: While walking along the New Jersey shore of the Delaware River, near the village of Delanes, last July, I was startled by hearing some small bodies falling through the foliage of an oak tree, and as they struck the leaves it sounded as if it were raining, but as the sky was perfectly clear, my curiosity was aroused. I turned around to see what the noise was, and saw some black larvæ falling to the ground, and further investigations showed that quite a number of these larvæ had fallen to the ground from the tree, and here and there I saw several Tachina flies, I believe a species of *Exorista*, hovering around the larvae trying to deposit their eggs. From this I suppose that these Tachina flies had flown to the tree in search of victims, and most probably the larvae had dropped from the tree to escape their enemies. Perhaps many larvae take this method of trying to escape from their Hymenopterous and Dipterous parasites?

EUGENE L. KEEN, Philadelphia, Pa.