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The Canadian Entomologist.

VOL. VI. LONDON, ONT., SEPTEMBER, 1874. No. 9

THE AMERICAN ASSOCIATION.

At the recent gathering of this scientific body, in Hartford, Conn., there were brought together an unusual number of Entomologists. This was owing partly, no doubt, to the kind invitation extended by the Association to the American and Canadian Entomological Societies, to appoint special meetings of their members to be held at that time and place, with the view of having these important Societies fully represented. In response to this invitation, a number of members of the American Entomological Society were present, while our Canadian Entomologists were represented by the worthy President of our Society, Rev. C. J. S. Bethune, M. A., and the Editor of the ENTOMOLOGIST. Several evenings were occupied by these "brethren of the net" in interesting and profitable discussions on the habits and peculiarities of various insects, the time passing so pleasantly that the midnight hours were reached ere a separation could be effected. After mature deliberation it was resolved to organize under the name of "The Entomological Club of the A. A. A. S," and the following constitution was adopted:

TITLE.

I. The name of the association shall be "The Entomological Club of the American Association for the Advancement of Science."

OBJECTS.

II. The annual reunion of the Entomologists of America, the advancement of entomology, and the consideration of all general questions relating to the science that may from time to time arise.

MEMBERSHIP.

III. All members of the American Association for the Advancement of Science who are interested in Entomology, shall *ipso facto* be members of the club.

OFFICERS.

IV. The officers of the club shall be a President, a Vice-President, and a Secretary, to be elected annually by vote of the members.

DUTIES OF THE OFFICERS.

V. The President, or in his absence, the Vice-President, shall preside at all meetings; the Secretary shall perform all the usual duties of a recording and corresponding secretary.

MEETINGS.

VI. A meeting shall be held in each year at the place of meeting appointed by the American Association for the Advancement of Science; it shall commence at 2 : 30 p. m. on the day before the meeting of the American Association for the Advancement of Science, and be continued throughout that evening; further meetings may be held as time will permit during the week following.

The following resolutions were also unanimously passed:

Resolved, That the members of the American Entomological Society and the Entomological Society of Ontario, together with all other persons interested in entomological science, be cordially invited to attend and take part in the proceedings.

Resolved, That the secretary be requested to publish notices of the meeting in such periodicals devoted to natural history, and especially in those devoted to entomology as are published on the continent; and further, that the members be requested to bring with them at the annual reunions specimens for exchange and exhibition, and especially types of species that they may have described during the year.

At a subsequent meeting of the Club, the following officers were elected: President, Dr. John L. LeConte, Philadelphia, Pa.; Vice President, Samuel H. Scudder, Cambridge, Mass.; Secretary, Chas. V. Riley, St. Louis, Mo. We feel sure that under such able direction, the Entomological Club of the A. A. A. S. will prosper, and be the means of stimulating many to increased effort, and thus greatly advance the interests of our favorite study.

As it may interest many to know who were present at these meetings, we furnish the following list: Dr. John L. LeConte, Philadelphia, Pa.; Dr. J. G. Morris, Baltimore, Md.; Prof. S. S. Haldeman, Chickis, Pa.; Dr. H. A. Hagen, Cambridge, Mass.; S. H. Scudder, Cambridge, Mass.;

A. R. Grote, Buffalo, N. Y.; Dr. G. M. Levette, Indianapolis, Ind.; C. V. Riley, St. Louis, Mo.; O. S. Westcott, Chicago, Ill.; J. A. Lintner, Albany, N. Y.; H. F. Bassett, Waterbury, Conn.; George Dimmock, Springfield, Mass.; B. Pickman Mann, Cambridge, Mass.; E. P. Austin, Cambridge, Mass.; Dr. R. King, Kalamazoo, Mich.; Chas. P. Dodge, Washington, D. C.; Mr. Patton, Waterbury, Conn.; Rev. C. J. S. Bethune, M. A., Port Hope, Ont.; W. Saunders, London, Ont. During the meetings of the Association several interesting and valuable papers on Entomological subjects were read by Dr. LeConte and Messrs. Scudder, Riley and Grote.

THE LINNEAN SIGNIFICATION OF THE GENERIC TERM PAPILIO.

BY H. HAGEN, CAMBRIDGE, MASS.

In a recent issue of the CANADIAN ENTOMOLOGIST, No. viii, Vol. vi, there appears from the pen of Mr. Scudder a paper on "The Linnean Signification of the Generic Term Papilio," containing some statements on which I propose to offer a few remarks.

The data given by Scudder from Linné's works are—save some minor typographical errors—correct, excepting in two important points. On p. 144 he says "in the year 1846 the first edition of the Fauna Suecica was published, *in which Linne for the first time treats of species, giving to them names in the language of the country.*" (The italics are mine.)

In the first place, Linné did never give either to animals or insects names in the language of his country. This is important in view of Mr. Scudder's proposition in "Psyche" to give such names for the convenience of non-entomologists. The names quoted by Scudder, viz., morio, polychloros, &c., are never given by Linné as *names of the species*, but just *at the end of the synonyms, quoted as synonyms*, always in this form, *vulgo* morio. These names were *never invented* by Linné, but were used by former naturalists; some are to be found in Petiver's Museum, viz., Oculus pavonis (not Oculis), Bella Donna, Ammiralis (the Admiral) Argus, in Rajus Hist. Ins. and in Albin. Engl. Insects, Brassicaria, Urticaria, etc.—the others in different other authors. Even Linné used some of them before, in his Elenchus, viz., Bella Donna, Oculus pavonis, and always in this manner:

Bella Donna *dictus*, Oculus pavonis *dictus*, showing clearly that the names were not given by himself. Such names as are quoted with *vulgo* are not numerous, although in much larger proportion in Lepidoptera than in any other order. I find 25 such among 37 Papilio, and 14 Phalenæ only among the 114! described; in other orders the proportion is much less. There is not in the whole Fauna Suecica one name given by Linne. In the rare cases where Linne quotes Swedish names he has never given these himself, but quoted them as synonyms, as in Phal. mori.

Vulgo Bombyx.

Suecis Silkesmask.

In the end of the last and in the beginning of the present century there was a general tendency to give to every insect a name in the language of the country in which it was found. In this work labored Donovan for England, Fourcroy and Geoffroy for France, Sepp for Holland, Isert for Sweden, Bruennich for Denmark, Panzer and Sturm for Germany; but very soon it was seen that this business was a difficult one, often the names were not appropriate, some were foolish, and others even ridiculous, while it was apparent to all that such names, instead of being a benefit to science, were only a burden, and soon the matter was dropped entirely.

Even in the case of injurious insects it is seldom necessary to invent common names, for where species are really destructive the people almost always have a name for such just at hand.

With regard to the *second* point in the paragraph quoted, Linne treats of species first in a paper published in 1736, in Acta literaria et Scientiarum Sueciæ Upsala, T. iv, p. 97–138, *Animalia per Sueciam observata.* This paper is reprinted Lugduni Batav. 1743 in 8vo., *Elenchus animalium per Sueciam observatorum, p. 37–94.* Linne himself quotes this paper later always "Acta Upsal, 1736," and states in the preface of Fauna Suecica, 1st edition, "quum ad patriam Academiam Upsaliensem 1729 degerem, conquirendis insectis primam dedi operam, nec prius destiti, quam visendæ mihi essent 1735 aestivæ regiones. Eorum quæ reperi, catalogum a me exhibitum. Regia Scient. Soc. Upsal. actis suis pro anno 1736 inseruit."*

* When I studied in 1729 at my native Academy of Upsala, I collected chiefly insects, nor did I desist until I started to visit other countries in 1735. Of those which I found, the Royal Scientific Society of Upsala published in their proceedings for the year 1736 a catalogue prepared by me.

The Elenchus (just as the first edition of the Fauna Suecica) has *no names of the species* (I say purposely so, as Linne called NOMINA TRIVIALIA what to-day is called SPECIES NAME, and Linne called NOMEN SPECIFICUM what to-day is called DIAGNOSIS) but always a diagnosis, and where it was possible, quotations of former authors, viz., Petiver Museum and Gazophylacium, Rajus, Albin, &c. The species given in the Elenchus are just as easily recognized as those in the Fauna Suecica, Ed. 1, by comparing the quoted authors and the diagnosis. It follows, therefore, that if the first edition of the Fauna be recognized to have right of priority, the Elenchus must be recognized to have the same right.

Now, the genus Papilio is established in Syst. Nat. Ed. 1, 1735. The Elenchus *is the first publication with species* (1736) after it, and the first Papilio is *P. Rhamni*, quoted as Papilio sulphureus Petiv. Mus. 1. Comparing Petiver's words and Linne's Fauna Suec., Ed. 1, No. 795, the identity of this Papilio sulphureus with P. Rhamni is sure.

I give here the list of the species of the Elenchus and of the first edition of the Fauna Suec., i and ii :

Elenchus.	*Faun. Succ., Ed. i.*	*Ed. ii.*
1. Rhamni mas.	1. Antiopa.	1. Machaon.
2. Rhamni fem.	2. Polychloros.	2. Apollo.
3. Brassicæ.	3. Urticæ.	3. Mnemosyne.
4. Rapæ.	4. C. album.	4. Cratægi.
5. Napi.	5. Io.	5. Brassicæ.
6. Cratægi.	6. Atalanta.	6. Rapæ.
7. Apollo.	7. Cardui & follow	7. Napi & follow
	24. Rhamni.	12. Rhamni.
10. Antiopa.	25. Cratægi.	21. Antiopa.
11. Polychloros.	26. Napi.	22. Polychloros.
12. Urticæ.	27. Rapæ.	23. Urticæ.
13. C. album.	28. Brassicæ.	24. C. album.
14. Io.	31. Apollo.	25. Atalanta.

Follow ; Linne first (1736) places P. Rhamni at the head of the genus Papilio ; second, 1746–48 (the later editions until 1756 are only reprints) P. antiopa at the head, and third, 1758, and following, the swallow-tails at the head, beginning with P. priamus in Ed. x, Syst. Nat., and with P. machaon in Ed. 4, Fauna Suecica.

In the Fundamenta Entomologiæ, 1767, 4to p. 32, Linne speaks about the division of Papilio into five classes, devoting more than a page

to this subject, and says strictly that his *Equites* form the first class, *Heliconii* the second, *Danaii* the third, *Nymphales* the fourth, *Plebeii* the fifth.

The closing lines in Mr. Scudder's paper should therefore be amended so as to read thus: "In Linne's mind which was a typical Papilio—Rhamni, or Antiopa, or Machaon? The answer is simply that Linne in his study arrived at the conclusion that the first class of his Papilio should be formed by the Equites. I would remark, however, that Linne *never speaks*, as far as I know, *of any particular species being the type of its class*, and *this idea that his first species is the type* is of very recent date.

The fact that so few Entomologists have the opportunity of consulting Linne's older works, induced me to publish these statements.

MICRO-LEPIDOPTERA.

BY V. T. CHAMBERS, COVINGTON, KENTUCKY.

(Continued from page 153.)

ANTISPILA.

A. cornifoliella ? Clem.

Can there be two Antispila miners of the Dog-wood? Either there must be, and my specimens are specifically distinct from this species, or Dr. Clemens' description is strangely erroneous in at least one particular, viz., the color of the fascia and streaks, which he says are golden in *cornifoliella*, but which are silvery white in my specimens, all of which—six in number—agree exactly in ornamentation, and all but one of which are bred specimens. The species of the genus generally resemble each other very closely, and some recognized species do not differ from each other more than my specimens do from Dr. Clemens' description. Neither is it improbable that two species mine the leaves of the Dogwood, for the same thing occurs in Europe, where *A. Pfeifferella* and *A. Treitschkiella* both mine the leaves of *Cornus sanguinea*. *A. cornifoliella* and my specimens both mine the leaves of *Cornus florida*. I subjoin Dr.

Clemens' description for the purpose of comparison with my own specimens:

"*Head, face, labial palpi and fore feet dark brown.* Antennae dark brown; basal joint somewhat ochreous. Forewings rather dull dark brown, with a coppery hue. Near the base is a rather narrow, golden band, *not constricted on the fold, and rather indistinct toward the costa.* where it is somewhat suffused with a coppery hue, and nearest the base on the inner margin. At the apical third of the wing is a small golden spot, and nearly opposite, on the inner margin, another of the same hue, with the hinder portion of the wing tinged with a bright reddish coppery hue; ciliae dark grayish. Hind wings purplish brown; ciliae somewhat paler, with a coppery hue."

The italics are Dr. Clemens'. The following description is drawn from the six bred specimens above mentioned:

Head and face dark brown or brilliant metallic, according to the light; labial palpi yellowish white; tarsi all yellowish white, with each joint tipped with dark brown on its anterior margin. Antennae dark brown, with the two or three joints nearest the base ochreous, and *the extreme tip white.* Fore wings and thorax dark brown, blackish, bronzed or tinged with purple, according to the light; before the middle of the wing is a slightly curved fascia, which is widest and nearest to the base on the dorsal margin, *not constricted on the fold, but quite distinct throughout.* A costal and dorsal streak just before the ciliae, the costal streak a little behind the dorsal one. In fresh specimens this fascia and these streaks are silvery white; in old specimens they have a faint golden hue in some lights. (Clemens describes them as golden.) *Basal half of the ciliæ purplish; apical half grayish silvery. Al. ex.* scarcely ¼ inch.

Dr. Clemens suggests that *cornifoliella* may be a variety of his *Nysæ foliella.* I have never succeeded in breeding the latter species.

A. isabella, Clem.

I find nearly the same differences between my specimens (bred) of this and Dr. Clemens' description, that I have noted above as to *cornifoliella.* Dr. Clemens says that the fore wings have no greenish or violet reflections, which is certainly incorrect. The fascia is wider than in *cornifoliella*, the thorax more shining metallic, the purple hinder marginal line is less distinct, and the entire wing is less purplish, and the species is a little larger. Nevertheless, they resemble each other very closely. The

costal and dorsal spots in both are of nearly equal size, or the costal one is a little the largest.

A. viticordifoliella. N. sp?

Dr. Clemens mentions a mine and larva in grape leaves to which he gives this name, but he was not acquainted with the imago. Though it sometimes happens that more than one species of a genus mines leaves of the same plant, and it is therefore possible that the species described below may not be the same referred to by Clemens, yet from his description of the mine and larva, I feel confident that it is, and have therefore given it the name suggested by him.

Dark brown, inclining to blue black, with a purplish tinge in some lights, and in some lights bronzy brown or greenish; thorax and base of the wings with pink, purple or topaz red reflections, according to the light. A nearly straight silvery white fascia before the middle of the wings, not constricted on the fold, widest on the dorsal margin, where it is also a little nearer to the base; a large triangular silvery white dorsal streak just before the beginning of the ciliae, and a smaller one at the beginning of the costal ciliae. Ciliae white. Tarsi yellowish white, each joint tipped in front with dark brown. Face yellowish white; antennae dark brown, with about six terminal joints silvery white, and the six preceding ones alternately white and dark brown. It is a little smaller than *A. cornifoliella.* The mine, larva and case are smaller than those of *A. isabella,* and the case is elliptical in shape, whilst in *cornifoliella* and *isabella* it is nearly circular.

A. ampelopsifoliella. N. sp.

This species is known only in the larval state, unless the species described, but not named below, may be the same. The mine, larva and case are very small, smaller than any other known species. It mines the leaves of *Ampelopsis quinquefolia,* and the mine is elliptical in outline. I find that I have mislaid my notes upon the larva. I have never succeeded in breeding it.

Can not something be done towards determining the original of some cultivated plants by a knowledge of the habits of insects which feed upon them? A great majority of herbivorous insects are doubtless polyphagous, but many are confined to a single group of plants, and some to a single species. When an insect known to feed only on a single wild species, if found feeding on an allied cultivated plant, is it not a fair

deduction that the cultivated one is derived from the wild stock? Dr. Clemens states that he bred his species *A. isabella* from the cultivated grape Isabella, which, if I am rightly informed, is supposed to be derived from *Vitis labrusca.* I have bred it from at least a dozen cultivated varieties, including Catawba, Hartford Prolific and Concord, but I have also bred it from the wild *Vitis cordifolia*, so that this instance proves nothing. But Dr. C. records the larva of *A. viticordifoliella* from the leaves of *V. cordifolia* only, and I have never found its mine in any other species or variety. Would there not be a presumption—if it should now be found mining any cultivated variety—that that variety sprang from the *cordifolia* stock? So Dr. C. records *Phyllocnistis vitigenella* from the leaves of *V. cordifolia* only, whilst I have found it in the leaves of a great many cultivated varieties, including those above named, so that it proves no more than *A. isabella;* but *P. vitifoliella* I have never found elsewhere than in the leaves of *V. cordifoliella*, and one or two cultivated vines of which I find I have kept no memorandum.

Some years ago I bought from the gardener of the late N. Longworth, of Cincinnatti, a grape vine of a variety but little cultivated, called "Longworth's Seedling, No. 20," the origin of which the gardener refused to tell me. The foliage is unlike that of any other grape known to me, and is still less like that of *Ampelopsis quinquefolia*, and approaches *V. cordifolia.* Last summer I. found its leaves mined by a larva closely resembling that of *A. ampelopsifoliella*, *supra*, and which I suspect to be the same. I have never found it in the leaves of any other plant, though over a dozen other varieties of grapes grow within a few feet of the Longworth vine. From it I bred the species described below, which I do not now name, as it may prove to be identical with *A. ampelopsifoliella.* The single specimen was a little injured, and the description is therefore in one or two respects imperfect.

Palpi pale yellowish? Head and face bright but pale golden, in some lights silvery, tinged with golden. Antennae brown, *faintly* annulate with whitish. Thorax and primaries rich purplish brown, in some lights strongly purple or bronzed; before the middle of the primaries is a somewhat oblique fascia, which is silvery, or bright but pale golden according to the light, widest and nearer to the base of the wing on the dorsal margin, and not constricted on the fold; a silvery or pale bright golden spot on the dorsal margin, just before the ciliae, and a smaller costal one nearly opposite, *and a spot of the same hue at the apex.* Ciliae a little

paler than the wings, but I can not discover any hinder marginal line. *Al. ex.* $\frac{1}{3}$ inch.

The larva is white, without maculae, but with the anterior margin of the first segment brown.

A. hydrangœella. N. sp.

The mine and larva only of this species is known, and I have never succeeded in rearing the imago. The mine, larva and case resemble those of *A. viticordifoliella*, but are perhaps a little smaller. It mines the leaves of the wild *Hydrangea (H. nivea.)*

Dr. Clemens states that the species described by him mine the leaves of the various plants in the latter part of August and in September, from which I infer that he found them only at that time. But the mines of all the species may be found as early as the first of July, and in increasing numbers from that time until the fall of the leaves. I have reared *A. cornifoliella* in the latter part of July, from leaves gathered in that month, and have found the mines and larvae of all the other species, though I have only succeeded in rearing the other species in the spring from mines gathered in the fall.

NOTES ON THE "LIST" OF 1868.

BY AUG. R. GROTE,

Curator of Articulata, Buffalo Soc. of Natural Sciences.

Preparatory to a fresh edition of the "List of Lep.," of 1868, a few memoranda of the necessary changes will be published.

Sesia uniformis, p iii. This species is distinct from *thysbe*, and has been noticed by Mr. Lintner in his valuable "Entomological Contributions." Mr. Couper found it on Anticosti. This can not be *Sesia ruficaudis* Kirby, the description of which is given on p. 27 of the "Synonymical Catalogue" of 1865. Kirby says: two first segments of the body yellow olive, two next black, the rest ferruginous with yellow olive spots. *Uniformis* has the first segments yellow olive, the next deep ferruginous, the next again olive, and the anal hairs black, with ferruginous central tuft. In fact, Kirby's description rather resembles *diffinis* in the body parts. And from his comparison with *fuciformis*, we should think

at once of *diffinis*. But the terminal segments in *diffinis* are not "ferruginous" any more than in *uniformis*, and so Kirby may have had a boreal species we do not yet know before him. From his description there is no more correspondence with *uniformis* than with *thysbe;* rather does his description agree with *fuscicaudis* as to the abdomen terminally.

Cressonia juglandis, p. iv. To this species must be cited *Sm. pallens* of Mr. Strecker, whose figure represents a pale ♀ specimen of *C. juglandis*, without the median shade on the forewings. Belfrage has sent *C. juglandis* from Texas.

Dysodea || p. vi. This generic name is preoccupied and must give way to that of *Platythyris*. Mr. Walker's type of *Varnia* appears distinct. We have probably but one species which should be known as *Platythyris oculatana*. Boisduval's figure and description of *Vitrina* do not agree with our species, and probably *vitrina* represents *oculatana* in Europe. Much confusion has occurred through Dr. Clemens having described the species figured by us, Am. Lyc. Nat. Hist., N. Y., vol. viii, pl. 13, figs. 4–5, as one of the Tortricidæ, and without referring to Boisduval's original illustration of the genus. A second species is afterwards described by Dr. Clemens under the name of *Dysodia margaritana*, which I have never seen. Consult Am. Soc. Belge, T. 7, Pl. 1, for an illustration ot the embryonic stages of *Thyris*. They seem to correspond generally very well with Dr. Clemens' characters of the larva of *Dysodea*.

NOTES ON MEGACHILE CENTUNCULARIS.

BY THOS. G. GENTRY. GERMANTOWN, PA.

Since so much has been written upon the habits of our ordinary Leaf-cutting Bee, it would seem presumptuous for me to offer anything further in connection therewith. But a few facts which came to my notice recently are sufficiently interesting and important to merit publication.

During the latter part of June, 1873, several cells, a half a dozen in number, were sent to me by a friend, who had accidentally brought them to light while digging underneath the shade of a *Spiræa corymbosa*. They were found in close proximity to each other, arranged in a nearly horizontal position, at a depth of three inches below the surface of the

ground. The soil was comparatively solid. From the freshness of the leaves which composed the cells it would seem that the work had but lately been accomplished, but after the examination of a few, it was evident that some time had elapsed, since the larvae had attained to considerable dimensions.

The cells were nearly three-quarters of an inch in length, with a diameter of one-fourth of an inch. They were constructed of nearly perfect leaves of *Spiraea corymbosa*, instead of those of the various species of Rose. The outermost circle of leaves, three in number, had their margins slightly overlapping on the exterior, each piece forming an arc of a circle of 120 degrees. Within these were other three, arranged alternately with them; others, again, alternating with the latter, and so on until there were no less than six circles, having eighteen pieces in all. Each succeeding individual layer from without inwardly projected but slightly beyond its predecessor, having but a slight resemblance "to a long sleeve with folds upon it," as has been affirmed by writers. The mouth of each cell was closed by six circular pieces of leaves, nipped from the same plants. These were a trifle larger than the mouth of the cell, and when in position presented a concave surface facing outwardly. It is obvious that the whole structure is a striking proof of adaptation to an end. If the cell had been arranged vertically, its structure would doubtless have afforded water a ready access to the larva and its food, and thus have defeated the object which nature had in view. In the horizontal position the tile-like arrangement in the exterior, acts as a sort of roof by which the water is turned off. The concave arrangement of the circular pieces subserves a similar purpose. The freshness of the leaves was due, no doubt, to the protection which the enveloping earth afforded. The chemical rays of sunlight, which act upon the parenchymatous material of the leaf, when deprived of its vitality, converting the green and granular chlorophyl into others of a brownish hue, operate with less intensity at the depth of three inches. The comparative absence of moisture in the ground, no doubt, prevents oxidation; there being ample moisture at the same time to insure softness and prevent rigidity.

During the early part of last April (1874), several cells were brought to me by one of my pupils, which, on a superficial examination, appeared to be the mud cells of our ordinary *Pelopæus*, the mud-dauber. They were found adherent to the rafters of an unplastered attic. The cells were arranged side by side in numbers of three. On the exterior there

were no shallow grooves, denoting lines of demarcation. With this unimportant difference, the general outline of the mud mass, with its combination of pellets, was exactly similar to that constructed by the mud-dauber. Had the lines of separation existed, I should have had no hesitancy in characterizing it as a case either of usurpation of instinct upon the part of the *Megachile*, or one of confiscation of property.

Within, exposed to view by detachment from the aforesaid rafters, were what I supposed to be the leafy cells of *Megachile*. The length of these and the peculiar disposition of their parts, materially different from what I had always observed, operated upon my mind to such an extent that I was almost constrained to believe that I had met with something altogether new to science, or else that I had been fortunate enough to discover a species of *Pelopœus* with *Megachile*-like habits.

Each cell was one and one-eighth inches in length, with a diameter slightly exceeding one-fourth of an inch. It was built of elliptical pieces snipped from the leaves of a species of *Spiræa* (*S. corymbosa*, it seemed to me.) The pieces were of less dimensions than those before alluded to, and arranged somewhat on a similar plan, except that there was a strong appearance of a double cell, as if the inferior concavity of one cell had been deposited in the superior concavity or mouth of the other. This resemblance held true to a certain extent, but the absence of a clear line of division between the two seemed to militate against the idea of a double arrangement.

Having kept a few of the cells a reasonable length of time, until all hope of seeing insects emerge therefrom had vanished, I began the work of destruction by carefully pulling some of them to pieces. While engaged in my labor I was led to notice the comparative ease with which each relative structure separated in the middle. Within the aperture of one cell was a cylindrical pouch, composed of pure silk, glazed within by an oily secretion from the larva. This containsd a perfect, but dead bee, which was readily identified as *Megachile centuncularis*. The lower half of the same enclosed a similar silken sack, with fragments of legs, wings, antennæ and complete body segments, with a mass of debris which showed the clearest evidence of the ravages of some ruthless destroyer. Under a glass of moderate power, I had little difficulty in recognizing the fragments as parts of a *Megachile* similar to the above.

This last fact impressed me as peculiarly interesting and novel, as showing the economy which exists and is practiced among certain

individuals of this species. To construct the inner leafy cells, with their numerous parts, is a labor of little moment when contrasted with the hours that must be spent in moulding the clay for the outer side into small pellets, and then adjusting them to their proper positions. The existence of two bees in separate cases of silk, one above the other, in the same earthy apartment, seems to imply the existence of a double leafy cell, even though a partition between the two should be wanting.

It would appear that the deposition of one cell upon another would defeat the object which the mother *Megachile* had in view. On the supposition that oviposition in the upper cell took place subsequently to that in the lower, the time of leaving the egg would be earlier in the latter, the larva would sooner mature, and the perfect insect would be prepared to leave its prison-house anterior to its associate, and, unable to effect its exit by reason of the narrowness of its domicile, would perish. This, doubtless, would be the upshot of the affair if similar cells in like situations should be built in the summer season. But as far as I have had any experience in the matter, the summer abodes of *Megachile* are single, a few inches below the surface of the ground, and generally under the shelter of some protecting shrub, where the warm rays of the sun can not effect any mischief. This site is doubtless well selected for the reasons above adduced.

There are usually two broods of this species in a season; a summer brood, which makes its appearance early in July, and a spring brood which has survived the winter in its double cell of earth and leaves. It is possible that the larva, after having exhausted its stock of honey and pollen, its natural food early in the fall, passes into the condition of a pupa, and thus remains until awakened from its sleep by the genial warmth of spring.

In the cells designed for the winter accommodation of the species, the double arrangement of the inner cells will not materially affect the original purpose, since both insects will have passed through the cycle of transformations, and when the suitable time shall have arrived for their departure, the one occupying the upper cell will have made its way out and thus left a clear passage for the one below.

The absence of a line of separation between the two cells appears to indicate that the food had been deposited in the lower cell, and two eggs instead of one had been left in mistake. Where it is the custom of the insect to deposit but one egg, instinct teaches it to collect just enough

food to provide for the sustenance of the larva to which it gives birth; the two eggs in the present cases were deposited through some inadvertence upon the part of the insect, and it does not seem wise to conclude that a similar inadvertency had led to an accumulation of a double portion of food. If this double brood had been the result of mistake, it is not possible that several mistakes of a similar kind would have occurred, since it was my good fortune to meet with unoccupied cells that showed evidence of being once occupied.

If two eggs are deposited within the same cell, there must be collected a double quantity of pollen and honey for the nourishment of the larvæ. The one which attained to full growth first would, no doubt, seek a clear space in which to spin its covering, and this would be afforded by the upper part of the tube or upper cell. The other, after having made a sufficient space for this essential operation by the consumption of the remaining food, would accomplish the task therein.

Some cells, which it was my privilege to examine, exhibited faint tracings of a partition-like arrangement between them. A portion of the debris in the lower cell, to which reference has been previously made, may have been due to the comminution of the leaves forming the separating layers, through some cause or other. But this I am unable to substantiate. If such should prove to be the case by future observations, there is no doubt that there will be found to exist a separate accumulation of pollen and honey in each cell.

After a little reflection, there seems to be an offset to a portion of this argument. May it not be possible that after the two larvæ had matured into perfect insects, the more powerful one overcame the weaker, and that the fragments of wings, legs, body segments, &c., are the sad trophies of such a conflict? This point would be worthy of acceptance if every cell which was examined had betrayed similar evidences. But it was not the case. It only remains, then, to assume one of two opinions—either that the two ova were deposited upon a double allowance of food, so that the larvæ, when hatched, should find ample sustenance to reach maturity, and subsequently had constructed their silken cocoons in their respective positions, said positions being determined upon by priority of growth; or, that a double cell was built, one on the top of the other, each properly victualled and provided with an ovum.

STRAY NOTES ON CANADIAN DIPTERA.

BY BEVERLEY R. MORRIS, M. D., NOTTINGHAM, ENGLAND.

The following fragmentary notes are submitted to the readers of the CANADIAN ENTOMOLOGIST in the hope that they may assist in even a small measure in determining the numbers of this order occurring in the Dominion.

When in Canada I only incidentally captured Diptera, and the number I possess is very limited. I am indebted to F. Smith, Esq., of the British Museum, for the names of those given below. There are some other species as yet undetermined, and which on some future occasion I may succeed in getting named. The localities and dates given may be relied upon, as I numbered every insect taken, and recorded the date and locality at the time. I have included a few taken in New Hampshire and Maine, as it is probable they may also be found in Canada. Apologizing for the imperfection of the list, I send it in hope of assisting any one who may take up the Diptera of Canada. For the labels being lost off some I am indebted to the gross carelessness of one of our railways, over which the cabinet containing my insects was sent. I found great numbers loose, some ground to powder, others more or less injured, and many with the tickets shaken off. This prevents my being certatn of the localities, &c., in some cases, but I *believe* all were taken in or near Toronto.

Anthrax fuscipennis, Say.

I took this fly in considerable numbers on the carriage drive in front of the Rev. W. Ritchie's, at Georgina, on the 8th of August, 1863. They were hovering over holes in the gravel.

Anthrax analis, Say.

Taken at the same time and place, and along with the last. Habits the same.

Anthrax bastardi, Macq.

One was taken at Orillia in August, 1863. I also took one at Gorham, in New Hampshire, on August 19th, 1861.

Anthrax terminipennis, Say.

Labels lost, but taken, I believe, at Toronto.

Anthrax fulvina, Say.

Taken at Orilia the end of July, 1863; also at Cape Cottage, Portland, Maine, July 29th, 1861, and up to August 8th.

Stratiomis ischiaca, Harris.

At Cape Cottage, Portland, August 2nd, 1861.

Syritta proxima, Say.

Taken at Cape Cottage, Portland, on August 3rd, 1861.

Syrphus Ribesii, Fab.

Label lost, but I believe taken at Toronto.

Syrphus agnon, Walk.

At Toronto, in our garden, Nov. 10, 1861.

Eristalis inflexus, Walk.

Cape Cottage, Portland, July 22nd, 1861.

Eristalis sincerus, Harris.

At Toronto in 1860.

Eristalis nebulosus, Walk.

Label lost.

Conops sagittaria, Say.

Near Cape Cottage, Portland, July 24th, 1861. Two specimens.

Tachina finitima, Walk.

Cape Cottage, Portland, August 7th, 1861. Common.

Tachina apicifera, Walk.

College Avenue, Toronto, June 3rd, 1858. Cape Cottage, Portland, July 27th, 1861.

Tachina iterans, Walk.

Label lost. Probably Toronto.

——— ———? Sp.

At Orilia in August, 1863. Same size as *T. finitima*. Abdomen black, with a white spot at the side of each segment.

——— ———? Sp.

Bred from a chrysalis of some moth at Toronto, April 2nd, 1862. Rather smaller than the last species. Abdomen black, with somewhat obsolete white spots on side of each segment. Eyes reddish.

——— ———? Sp.

Somewhat like the last, but only half the size. Label lost.

——— ———? Sp.

Label lost. Same size as last. Wings iridescent; body black; eyes brownish red.

Chrysops carbonarius, Walk.

Taken at the Humber, Toronto, June 13th, 1863.

Asilus ——— ? Sp.

Cape Cottage, Portland, August 16th, 1861. A large species, measuring an inch and a quarter in length, and nearly an inch and a half in expanse of wings.

CORRESPONDENCE.

EXPLANATORY.

DEAR SIR,—

The following considerations have suggested themselves to me in reference to Mr. Herman Strecker's recent personal attacks. For myself I do not think that either Mr. Strecker's style or language can be defended on any ground. As to the matter, this is furnished by certain synonyms in my writings on North American moths. To those conversant with the subject, it is not necessary to point out the fewness of such mistakes, but it may have escaped notice that in nearly every instance I have been the first to correct the mistake, and thus Mr. Strecker's abuse has come *ex post facto* and proves itself wholly personal and unscientific. I take pleasure in referring here to words used in my earliest paper (Proc. Acad. Nat. Sci. Phil., 1862, p. 59). I think I have always lived up to my first statement, and where I have made a synonym, both "willingly and gladly" acknowledged it. And although I am charged by Mr. Strecker with allowing one mistake to remain "nineteen months" before correction, I can assure him that I still corrected it the moment I became aware that it existed. Certain of these mistakes have occurred in describing American species under distinct names. Sometimes these species have turned out to be the same with European forms, and a synonym has been the result. I do not think this the great misfortune which Mr. Strecker pretends, the less when we remember that in many instances the American specimens may be distinguished, and I have suggested that we shall lose a knowledge of these distinguishing points unless we use distinguishing names. Certainly these are occasions for quiet scientific observation, not in any case for unscientific vituperation. The difficulty of avoiding a giving of too great weight to a remote locality is even instanced by Mr. Strecker, who has re-described a ♀ *Cressonia juglandis* as a new species of *Smerinthus* from "Texas." The pale specimen, merely wanting the

median shade on the primaries, would, if caught, say in Reading, have hardly furnished one of Mr. Strecker's "coveted" novelties. Again, instances are on record where naturalists have first considered the American species the same as the European, and then changed their views and described them as distinct. An instance of this is offered by *Brephos infans*, first described as the same as the European *Brephos parthenias*. The amount of error is no greater in the one case than the other.

At the time that I commenced my labors, the difficulty of determining our species of moths was very great, certainly much greater than it is now. That this change is in part due to my work I think is true, equally so that Mr. Strecker is both unjust and ungrateful to omit the consideration from his mind. How much he himself is indebted to my labors may be seen by comparing my work on the genus *Catocala* with his own on the same subject. His figures and determinations are taken from the collection I studied and the paper I published; and, in reality, his figures merely supplement my original work. That Mr. Strecker has so generally coincided with me in his specific discriminations in the genus *Catocala*, is, I think, less a compliment to my correctness than a proof of Mr. Strecker's ready acceptance of assistance.

I have a few special remarks with which to conclude. I am blamed for retaining the name *C. ponderosa* instead of the earlier *C. nebulosa* || for a species of *Catocala*. From Linnæus to Lederer it has been customary to avoid the repetition of names in the same family of moths, and Guenée has changed the name of a species of *Catocala* on account of an *Anarta* bearing the same specific title. I have never changed the name of another author on this account; my opinion (as, indeed, cited by Mr. Strecker) being that a fresh name is unnecessary. I have merely, where two names were attached to the same species, preferred the later when the earlier had been previously used. Whether my descriptions in the genus *Catocala* are the best, I will not dispute with Mr. Strecker; in his comments on *C. ponderosa* Mr. Strecker forgets that we figured the species, in justice to Mr. Wiest, the artist, I think very acceptably. Nor will I allow Mr. Strecker the proper authority to discuss the value of structural characters in the Lepidoptera, seeing that he has shown no experience in the matter, and is unable to discriminate even between the sexes of *Catocala* when the abdomen is wanting.

A. R. GROTE.

SYNONYMICAL NOTE.

Dr. Boisduval has recently re-described *Eudryas grata* (Fabr.) from Georgia under the name *Eudryas assimilis*, with the remark: Cette belle espece n'a pas encore ete figuree. It is manifestly unimportant to Dr. Boisduval that the science of Entomology is pursued in America. In this same paper (Revue et Magasin de Zoologie, 1874) the genus *Alypia* is erroneously attributed to Kirby, and a citation is given: "*Sphinx octomaculata* Hubn. Zut., 119, 120." which does not exist, the proper citation being "*Alypia octomaculalis* Hubn., Zutr., No. 60, fig. 119, 120."

Dr. Boisduval separates Drury's figure of *Urania rhipheus* (1773) from Cramer's (1782), under the new name of *Urania Druryi*. This is, however, a simple synonym in any event, since Drury's species must retain the name of *Rhipheus* as originally proposed. Cramer himself says, when describing his *Rhipheus*, T. 3, p. 193, "Ce beau Papillon et qui est tres rare, ressemble beaucoup a' celui qui a ete annonce par Mr. Drury dans ses Illustrations of Natural History, Vol. 2, pl. 23, figs. 1, 2, *sous le nom que nous lui donnons ci-dessus.*" Guenée, in 1857, also draws attention to this mistake of Dr. Boisduval's, then only proposed to be committed. It has been generally conceded that Drury's species is the same as Cramer's, and that the differences in the figures arose from an intentional mutilation of Drury's original specimen. Dr. Boisduval's quotation from Lacordaire would hardly cover such a case as this, in which a pair of scissors very probably effected "la creation." To find another "taille sur le meme patron," would argue, then, a lack of conscience somewhere, as well as the sacrifice of a specimen. But Dr. Boisduval insists on other characters to separate the two species than the absence of the tails, i. e., the large size and the ornamentation of the fore wings of *Rhipheus* Drury. So in this case we should have two species, i. e., *Chrysiridia Rhipheus* (Drury) nec Hubn. (= *Urania Druryi* Boisd.) and *Chrysiridia Orientalis* (Swains) (= *Rhipheus* Cramer 385, A. B.; *Chrysiridia Rhiphearia* Hubn.)

A. R. GROTE.

Our usual acknowledgements of books received have been omitted for want of space, they will appear in our next.—ED. C. E.