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THE CANADIAN
ENTOMOLOGIST

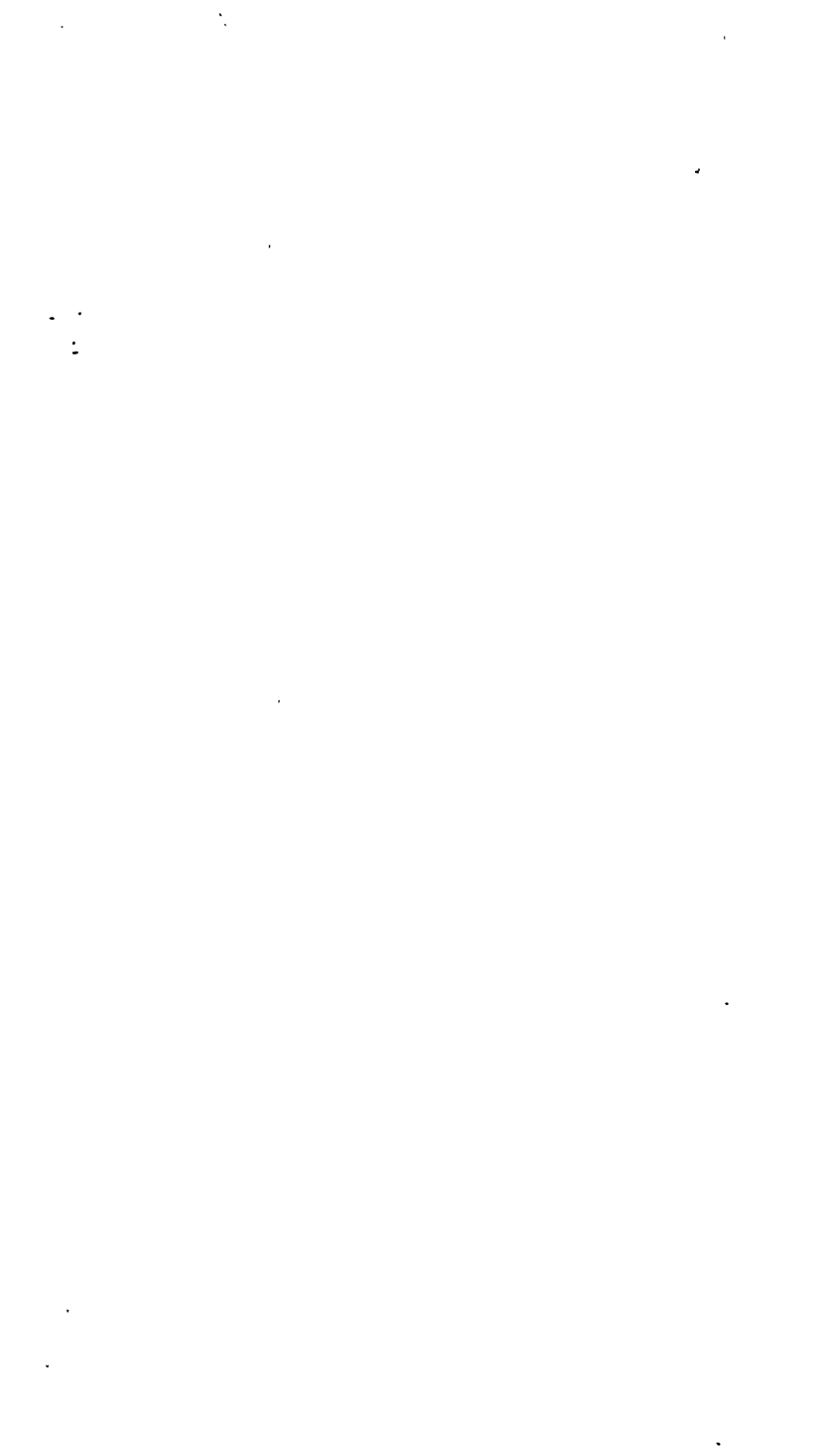
VOLUME I.

EDITED BY

THE REV. C. J. S. BETHUNE, M.A.,

SECRETARY TO THE ENTOMOLOGICAL SOCIETY OF CANADA.

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INDEX TO VOLUME I.

- Acronycta superans*, 85.
Aellopos tantalus, 10.
Agrotis murenula, 86.
 Alder-bud gall, 81, 89.
 American Entomological Society, Transactions of
 the, 63.
American Entomologist, 14, 49.
American Entomology, Record of, 61, 84.
American Naturalist, 50.
 Amherstburg, Visit to, 19.
Amphion nessus, 48.
Anarta luteola, 17.
 ——— *Acadiensis*, 87.
Anchylopera fragariae, 89.
Anisopteryx vernata, 88.
Anomis grandipuncta, 87.
Arctia parthenos, 5.
 ——— *phalerata*, 27.
 ——— *Saundersii*, 27.
Arenetra Canadensis, *Cresson*, 30.
Argynnis Aphrodite, 75.
 ——— *Atlantis*, 9.
 ——— *Bellona*, 57.
 ——— *Myrina*, 55.
Arotis Amoenus, *Cresson*, 34.
 ——— *formosus*, *Cresson*, 31.
Banchus borealis, *Cresson*, 33.
 ——— *Canadensis*, *Cresson*, 31.
 ——— *Flavescens*, *Cresson*, 33.
 Bethune, Rev. C. J. S., Articles by, 2, 9, 17, 45, 47,
 81, 85.
 Billings, B., Articles by, 28, 47, 60, 80.
 Book Notices, 14, 22, 30, 62, 83, 90, 108.
 Books Received, 15, 31, 43, 49, 63, 72, 83, 91, 102,
 109.
Callimorpha Lecontei, 20.
Calpe Canadensis, 71.
Capnia pygmaea, 81.
 Captures, 107.
Caradrina multifera, 85.
Carpocapsa pomonella, 89.
Catocala cara, 19.
Chaerocampa tersa, 19.
Chionobas jutta, 9.
Cicindela limbalis, 13.
 ——— *longilabris*, 13, 68.
 Clementi, Rev. V., Articles by, 29, 62.
Coleocentrus Pettiti, *Cresson*, 35.
Coleoptera of London, 69.
 ——— of Grimshy, 106.
Colias philodice, 54.
 Correspondents, to, 15, 23, 32, 42, 61, 72, 81, 92,
 109.
 Couper, W., Articles by, 57, 61, 67, 68, 77.
Crabro 6 maculatus, Nest of, 77.
Cresson, E. T., on Canadian Ichneumonidae, 33
 103.
Cressonia juglandis, 48.
Cucullia convexipennis, 86.
Curculio new to Canada, 89.
Danaus archippus, 19, 74.
Darapsa or Otus, 21.
Darapsa pampinatrix, 27.
Daremma undulosa, 17, 31.
Datana Angusii, 46.
 ——— *Contracta*, 46.
Deilephila lineata, 42.
 Donations, 50, 70, 72, 109.
 Double broods, 41.
Drasteria erectha, 4.
Dryopteris irrorata, 46.
 ——— *rosea*, 46.
Echthrus abdominalis, *Cresson*, 37.
 ——— *niger*, *Cresson*, 37.
 Edwards, W. H., Articles by, 22, 59, 80, 102.
 ——— "Butterflies of N. America", 22, 43, 91.
Entomological Notes, 3, 25, 53, 65, 73, 93.
 Entomological Society of Canada, Meetings of, 7,
 27, 70.
Ephialtes macer, *Cresson*, 35.
Erebos odora, 32, 88.
Euceros hurrus, *Cresson*, 104.
 ——— *Canadensis*, *Cresson*, 103.
 ——— *Couperii*, *Cresson*, 104.
 ——— Synopsis of species of, 104.
 Exchanges, 8, 23, 30, 42, 50, 90, 110.
 Figuer's Insect World, 31.
 Fluid for Preserving Larvae, 6.
 Grape-seed, Larva infesting, 20.
Graphiphora Dahlii, 8.
 ——— *triangulum*, 8.
 Grote and Robinson's list of Lepidoptera, 39.
Haemorrhagia gracilis, 10.
 ——— *rhysbc*, 10.
 Hager, Hair Snakes, 69.
 Hair Snakes, 62, 69.
 Hardwicke's Science Gossip, 91.
 Hawthorn fruit miner, 82.
Hesperia hubenok, 66.
 ——— *mystic*, 65.
 ——— *thanaos*, 109.
 ——— *wamsutta*, 69.
Hyphantria textor, 46.
 Ichneumonidae, Canadian, 33, 103.
Ichthyura inversa, 46.
 Introductory, 1.
 Knaggs' Lepidopterist's Guide, 108.
Larentia geminata, 89.
 Larvae, Luminous, 2, 14, 29, 38.
 ——— Musical, 49, 47, 58.
 ——— New Fluid for Preserving, 6.
 Larva infesting Grape-seed, 20.
 Last moth of season, 47.
 Le Naturaliste Canadien, 49, 63, 72.
Lepidoptera, Journal of Ottawa, 47.
 ——— Notes on Canadian, 9, 17, 45, 70, 85.
Lepisesia favo-fasciata, 10.
Libythea Bachmani, 25.
Limenitis arthemis, 55.
 ——— *disippus*, 91.
Lissonota brunnea, *Cresson*, 37.
 ——— *frigida*, *Cresson*, 36.
 ——— *rufipes*, *Cresson*, 35.
Lixus concavus, 89.

- London Branch, 39, 103.
 Luminous Larvæ, 2, 14, 29, 38.
Lycæna neglecta, 100.
 ———— *peubina*, 10, 12.
 ———— *violacea*, 26.
- Mead, T. L., on Musical Larvæ, 47.
 Melanactes, 38.
Melitæa phæton, 28, 41, 59, 60, 80, 102.
Meniscus Bethunei, *Cresson*, 105.
 Musical Larvæ, 40, 47, 48.
- Nenia typica*, 87.
 Northern Insects, 67.
 Nova Scotia Institute, Proceedings of, 109.
- Oregia Nova, 46.
 Osten Sacken, Baron R., Articles by, 38, 89.
- Packard's Guide to the Study of Insects, 22, 48, 63, 83.
Papilio machaon, 22.
 ———— *thoas*, 19.
 ———— *troilus*, 73.
 ———— *turmus*, 53, 74.
 Parasites of *Vespa Maculata*, 61.
Parthenos nubilus, 88, 107.
Pempela grossulariæ, 89.
Perithous pleuralis, *Cresson*, 36.
 Pettit, J., Articles by, 47, 106.
Philampelus pandorus, 11, 26.
Photuris pensylvanica, 39.
Pieris rapæ, 11, 21.
Plataretia borealis, 45.
Platysamia Columbia, 46.
Plusia mappa, 87.
Polyommatus Americana, 4.
 ———— *Epixanthe*, 8, 57.
 ———— *thoe*, 57.
Pyrameis cardui, 93.
 ———— *huntera*, 105.
- Record of American Entomology, 64, 84.
 Reed, E. B., Articles by, 19, 21, 40, 69, 107.
Rhyssia latipes, 88.
Rhyssia Canadensis, *Cresson*, 35.
 Riley's First Report on Insects of Missouri, 99.
- Ritchie's Coleoptera of Montreal, 102.
- Saguenay, Ent. Notes During Trip to, 11.
 Sanborn, F. G., on Musical Larvæ, 48.
Saperda crenata, 19.
 Saunders, W., Articles by, 3, 11, 20, 53, 65, 73, 105.
 Science Gossip, Hardwicke's, 91.
 Scudder's Butterflies of New England, 82, 101.
 ———— Orthoptera of N. America, 62.
 ———— Revision of Mole Crickets, 83.
Smerinthus excaecatus, 48.
 Snow-flies, 81.
Sphinx cinerea, 27.
 ———— depraved taste of, 47.
 ———— *quinque-maculata*, 27, 41.
 Spider's nests, 57.
Spilosoma Isabella, 26.
 Sprague, P. S., Articles by, 21, 41.
Syneca hudsonica, 87.
- Thecla Acadica*, 95.
 ———— A new, 21.
 ———— *calanus*, 10, 98.
 ———— *falacer*, 10, 98.
 ———— *inorata*, 10, 57, 99.
 ———— *mopsus*, 96.
 ———— *niphon*, 95.
 ———— *strigosa*, 10, 99.
 Theridion, Nests of, 58.
 Thorn leaf gall, 68, 97.
Thyreus Abbottii, 10.
Tremex Columba, 29.
Trochilium caudatum, 18.
- Vanessa Antiope*, 75.
 ———— *interrogationis*, 76.
 ———— *milberti*, 76.
Vespa maculata, parasites on, 61.
 Volume, our new, 103.
- Wallace's *Bombyx Yama-mai*, 91.
 Walsh, B. D., on Thorn-leaf gall, 79.
 Winter collecting, 47.
- Xanthia ferrugineoides*, 47, 86.
Xorides vittifrons, *Cresson*, 57.
Xylinia Bethunei, 86.

ERRATA.

- Page 19, 7th line from bottom, for *Aretia*, read *Arctia*.
 " 6th " " *Coleopetra*, read *Coleoptera*.
 " 45, 10th " top *constantly*, read *constant*.
 " 87, 16th " " *Phesia*, read *Plusia*.
 " 92, 2nd " " *tata*, read *lata*.
 " 3rd " " *Acadia*, read *Acadica*.

For other Errata, see page 84. Pages 44 to 50 are numbered improperly; they should be 46 to 52, respectively.

The Canadian Entomologist.

VOL. 1.

TORONTO, AUGUST 1, 1868.

No. 1.

INTRODUCTORY.

For a long time, the wielders of the Butterfly-net and Beetle-bottle in Canada have been longing for some medium of intercommunication—some mode of telling one another what they have taken, how and where they have taken it, and what they are in want of. This desire the Entomological Society purpose now to satisfy to some extent by the publication of the *Canadian Entomologist*. It is but a few years since the Society itself began as a little germ with a few members, and now we find it rapidly growing into a goodly tree with its main trunk in Toronto, its thriving branches in London and Quebec, and its scattered adherents all over the country. We trust that the success of this publication may be somewhat similar; it begins now with a few pages, a limited circulation, and a very small supply of the necessary funds, but we hope and believe, too confidently, perhaps, it may be—that it will by and by grow and increase, and acquire goodly dimensions, and become a handsome and valuable exponent of the progress of Entomological Science in this Dominion. May we beg, then, that all zealous Entomologists around us will come forward and assist the enterprise with at any rate their pens, if not always with their purses too.

And now for a word as to the proposed character and contents of the work. The *Canadian Entomologist* is intended to contain original papers on the classification, description, habits, and general history of Insects; the transactions of the Entomological Society of Canada; short notices of new works on Entomology; accounts of the capture of new or rare species in Canada; lists of specimens for exchange, and *desiderata*, by members; correspondence, answers to correspondents; notices to members, and suitable advertisements. It will be published not oftener than once a month, and only when there is a sufficiency of suitable matter for publication; its terms are gratis to members of the Society; 50 cents per volume of 12 numbers to non-members; extra copies will be sold at the rate of five cents each, or fifty cents per dozen. Any contributions to the publication fund will be thankfully received and gratefully acknowledged.

All communications and remittances should be addressed to the Secretary-Treasurer of the Entomological Society of Canada—"THE REV. C. J. S. BETHUNE, CREDIT, ONTARIO, CANADA."

A LUMINOUS LARVA.

BY THE REV. C. J. S. BETHUNE, M.A.

On the 5th of July, a friend brought me a very remarkable Larva that he found in a field the previous evening, and which had attracted his attention by the light it emitted. When alive it was about an inch and a half in length, and 0.25 inch in width across the middle, its general appearance being long and narrow; it is flattened above, and composed of twelve segments (exclusive of the head); each segment is broad and cut squarely, and overlaps the following one, the posterior angles being a little acute; the anterior segment is gradually narrowed in front and rectilineally truncate, forming a shield to the head which is retractile within it; each of the first three segments has a pair of claw-like legs attached to it beneath. The general colour of the insect was a dark drab, the posterior angles of each segment, the softer connecting portion between the segments, and the under side of the body being very much paler, and of a somewhat dirty yellow hue; on each side there is a deeply impressed line in which the spiracles are situated. When seen in the dark the insect presented a very beautiful appearance, being apparently ringed and dotted with greenish fire. Each spiracle appeared to be a point of bright greenish light, and the division between each segment a line of the same colour; it looked, indeed, as if the whole insect were filled with fire, which shone out wherever it was not concealed by the dark shelly integument. When coiled up on its side it looked like a lovely Ammonite whose striae emitted a green light, and with a point of green fire in each interspace.

The morning after receiving the insect, I left home in order to attend the Annual Meeting of the Entomological Society at London, where the specimen attracted much attention; unfortunately I was unable to find out its proper food) which I now fancy must have been snails and slugs), and when I reached home, ten days afterwards, the worm, to my great regret, was dead, and I have failed in rearing it. On comparing, however, Westwood's description and figure of the larva of the English Glow-worm (*Lampyris noctiluca*), I cannot but think that my specimen is a closely allied species, and belongs at any rate to the family Lampyridae. At the London Meeting it was mentioned that a similar luminous larva had been captured in that neighbourhood some years ago, but that nothing had been determined respecting it.

The chief point of interest in this case is the luminosity of a *Larva*. Everyone in this country is well acquainted with the light-giving powers of our common winged "Fire-flies," and most of us have seen specimens of the female apterous "Glow-worm" found in England; but that a larva should possess this singular property is a novelty to us all. On looking up various authorities I find that Westwood mentions that the males, pupæ, larvæ, and even the eggs of the English Glow-worm are slightly luminous; and Kirby and Spence refer to a few similar instances. The last mentioned authors (Letter xxv.) also give an account of the various theories respecting the origin of this light, to which we would refer our readers. Professor Croft, who examined my specimen at London, has since written to me as follows:—"Burmeister found the larva of *Lampyrus splendidula* phosphorescent—he does not say how. Treviranus seems to have found that the light-giving substance (whatever it is) is diffused throughout the whole body of the insect, and that the appearance of the light in the thorax of *Elater noctilucus*, and in the abdomen of the different species of *Lampyrus* is due to these special portions being composed of a fatty matter which allows the light to pass through. It is generally believed that the light-giving substance is Phosphorus or some compound thereof, the light being caused by the air supplied by the breathing apparatus. Now, if we allow this to be true, *i.e.*, that the whole of the body of the insect becomes luminous under peculiar conditions, then, as your larva was composed of dark brown segments separated by lighter partitions, which apparently expanded as the heart moved, we can account for the very beautiful appearance it exhibited—the light shining through the paler or fatty-covered portions. It may perhaps be the larva of a *Lampyrus*."

Should any of our readers have met with similar larvæ, or be able to afford us any information on this interesting subject, we shall be very glad indeed to hear from them.

ENTOMOLOGICAL NOTES.

PAPER No. 1.

BY W. SAUNDERS, LONDON, ONTARIO.

On the morning of the 12th May, while rambling about on the edge of a wood near London, I happened to observe some chips from a newly felled tree strewn the ground. While turning them over in search of insects, the sight of an object I had never seen before excited my curiosity. It was the full grown larva of a butterfly—a *Polyommatus* or *Thecla*—I was not sure which. It had just stretched a silken thread across its body to aid in securing it to the spot selected in which to pass the chrysalis stage of its existence.

As soon as possible, with the help of a magnifying glass, I took the following description :—

Length, 0.45 in., greatest width, 0.20 in.—onisciform.

Body, above, dull rosy red, with a diffused yellowish tint on the sides, most distinct along the middle segments, and a dorsal line of a deeper shade of red. Body downy, with minute yellowish and brownish hair, scarcely visible without a magnifier.

On the 16th of May it changed to a chrysalis, and on the 28th the following description of it was taken :—

Length, 0.40 in., greatest width, nearly 0.20 in.

Color, pale, dull brownish red, with many black dots; a ventral streak of brown, dotted with black, with two diverging branches on anterior portion of body; a band of the same color across the base of the head, and a short cross line about midway between these. On each side of the body are three rows of black dots, one dot on each segment in each of the rows, the two upper ones extending from the 6th to the 11th segment inclusive—the lower one the whole length of body. Below these are a few additional black dots, very minute. Body thickly covered with very small brownish dots, and roughened with minute pale tubercles.

On the 3rd of June the chrysalis began to grow darker, and soon a reddish lustre shone through the thin membrane covering the wings; on the 5th the imago was produced, which proved to be *Polygonmatus Americana*.

These observations seem to establish this point: that the insect passes the winter in the larva state, probably nearly full grown. The chrysalis period was no doubt prolonged in the present instance by being kept in a cool room.

Drasteria erecthea is one of our commonest moths—common almost everywhere. It is one of the earliest on the wing in spring, and specimens of the second brood may be found up to quite a late period in the autumn. It frequents open places on the grassy sides of railway tracks, in fields and meadows, suddenly starting up before you and, after a short but rapid flight, as suddenly alighting.

About the middle of August I captured a female specimen and confined it in a pill-box, where, a few days afterwards, I found it had deposited a number of eggs. These, in a short time, hatched, and from a number of different kinds of leaves, put in for the larva to feed on, they selected clover, on which they were easily reared. By the 21st of September they were full grown, in fact several specimens had already entered the chrysalis state. On that date the following description was taken :—

Length, 1.25 in. Body thickest along the middle segments, somewhat smaller towards head, but tapering much more towards posterior segments. Head medium sized, flattened in front, pale brown, with darker longitudinal lines.

Body, above, reddish brown, with many longitudinal lines and stripes of a somewhat darker shade. A double, whitish dorsal line, with a stripe on each side of the darker shade of brown; another stripe of the same hue close to stigmata, and between these are faint longitudinal lines. Spaces between segments from fifth to eighth, nearly black above; this, however, is only seen when the body is coiled up, which the larva readily does when disturbed.

Under surface slightly darker than upper, with many longitudinal lines of a still deeper shade, and a central stripe of blackish green from 6th to 9th segments; feet and prolegs greenish, semi-transparent, with faint lines, and dots of a darker shade.

This larva has only three pairs of prolegs, and in its movements resembles the true Geometer's. Early the following spring the chrysalides produced the imago.

During the summer of 1866, late in July or early in August, a female specimen of that very rare moth, *Actia parthenos*, was captured by Mr. B. Billings, of Ottawa. While confined in a box it deposited a number of eggs, which, a few days afterwards, produced the young larva. These fed readily on lettuce and other herbaceous plants, so that they were reared without difficulty until they were about half or two-thirds grown. The season was now advanced, and they refused to eat any more. At this period of their growth it appears they hibernate for the winter, hiding in crevices, and under loose pieces of bark on trees, &c., and finish their growth the following spring. For want of circumstances favorable to their preservation many of them shrivelled up and died. Several specimens were sent to me to see if I could winter them, and from one of these the following description was taken:—

Length, 1.25 in., cylindrical. Head medium sized, bilobed, black and shining, with a few brownish hairs. Body, above, black, with transverse rows of shining tubercles, rather large, and of a dull, brownish-white color, excepting a few on anterior segments, which are black. From each tubercle arises a tuft of brown hair. The hairs on anterior segments and around the base of body are rather short, the others long, silky, of a slightly paler shade of brown, and extending backwards, overhanging the segments behind them. Stigmata elongated, and of a yellowish orange color.

Under surface black, with a slight brownish tinge; 5th, 6th, 11th and 12th segments, with a transverse row of black tubercles in continuation of those above, each emitting several short, dark brown hairs. Feet black, banded with whitish brown; prolegs black without, tipped with greenish brown.

I was unfortunate with my specimens; Mr. Billings was equally so. Mine were buried in a box, under the ground, thinking this would preserve them in a uniform state of moisture. When taken up in the spring two of them

showed signs of life, but they soon dried up and died. By confining female specimens (especially such as are in a damaged condition) of our rarer moths in boxes eggs may often be obtained; and from these, with attention and care, the whole history of the species may be worked out.

NEW FLUID FOR PRESERVING LARVÆ, &c.

A cheap fluid for the satisfactory preservation of larvæ and other soft animal forms has long been a desideratum among naturalists. The following solutions, prepared by Professor Verrill, and published by him in *Silliman's Journal*, have been found satisfactory for the preservation of both the colour and form, as well as the structure of larvæ, fishes, mollusks and leaves of plants:—

SOLUTION A. I.; (which may be kept in wooden casks.)

Rock salt.....	40 oz.
Nitre (nitrate of potassa).....	4 oz.
Soft water.....	1 gallon.

This is the final solution in which all invertebrate animals must be preserved. A solution with double the amount of water may be kept, and called A. II.; another, with three gallons of water, will be A. III.

SOLUTION B. I.

Soft water.....	1 gallon.
Solution A. I.....	1 quart.
Arsenate of potassa.....	1 oz.

Another solution, with double the amount of water, may be made, and called solution B. II.

To preserve insects with these solutions, they are placed first in solution B. I., but if the weather be cool it would be better to first employ B. II. If the specimens rise to the surface they should be kept under by mechanical means. After remaining for several hours, or a day (varying according to the size and the weather), in the B. I. solution, they may be transferred to A. III., and then successively to A. II. and A. I., and when thus fully preserved they may be transferred to a fresh portion of the last solution, which has been filtered clean and bright, and put up in a cabinet, when no further change will be necessary, if the bottle or other vessel be properly secured to prevent the escape of the fluid by crystallization around the opening. To prevent this, the stopper, whether of cork or glass, together with the neck of the bottle, may be covered with a solution of paraffine, or wax in turpentine, or benzole, which should be applied only when the surfaces are quite dry and clean. The length of time that any specimen should remain in each of the solutions is usually indicated by their sinking to the bottom when saturated with it. In many cases but two solutions below A. I. will be effectual.

ANNUAL GENERAL MEETING OF THE ENTOMOLOGICAL
SOCIETY OF CANADA.

The Annual General Meeting of the Society was held, by invitation of the London Branch, in their Rooms, City Hall, London, Ontario, on the 7th of July, at 3 p.m. The President, Professor Croft, occupied the chair, and the following members were present:—From Toronto, Messrs. Sangster, Clementi, Bethune, and Osler; from London, Messrs. Saunders, Reed, Barber, Griffiths, Puddicombe, Denton, Chapman, Waterman, and Simpson.

The Secretary-Treasurer read the minutes of the last meeting, the Financial Report, and the Reports of the Quebec and Toronto Branches; on motion, they were adopted as read. Letters of apology for non-attendance at the meeting were read from various members who were unable to be present, and a communication respecting the 17th Annual Meeting of the American Association, to be held at Chicago, in August.

The meeting then proceeded to the election of officers for the year 1868-9, with the following result:—

President—Professor Croft, D.C.L., University of Toronto.

Vice-President—Johnson Pettit, Esq., Grimsby; William Saunders, Esq., London.

Ex-officio Vice-Presidents—Rev. O. Brunet, President, Quebec Branch; J. M. Denton, Esq., President, London Branch.

Secretary-Treasurer—Rev. C. J. S. Bethune, M.A., Credit, Ontario.

Curator—W. H. Ellis, Esq., B.A., Toronto.

Council—G. J. Bowles, Esq., Secretary, Quebec Branch; E. Baynes Reed, Esq., Secretary, London Branch; J. H. Sangster, Esq., M.D., Normal School, Toronto.

Several American Entomologists of note were then nominated for election as Honorary Members at the next meeting.

After some discussion, a resolution was unanimously passed respecting the publication by the Society of a small periodical to be called the "CANADIAN ENTOMOLOGIST," under the editorial management of the present Secretary of the Society.

At six o'clock the meeting adjourned till 8 o'clock p.m., when the members proceeded to the examination, comparison, and discussion of Longicorn Coleoptera. Large and interesting collections of this family of insects were exhibited by Messrs. Saunders, Croft, Bethune, Reed, Sangster, and Clementi, representing nearly all the species enumerated in the Society's list as Canadian, and also a few not before taken in this country. A few Lepidoptera new to Canada, an interesting collection of Larvæ prepared by Mr. Saunders, many beautiful works on Entomology, including Dr. Glover's unpublished plates of Lepidoptera, and other objects of interest were also exhibited; these, together

with the microscope, pleasantly occupied the members for a few hours, when the meeting adjourned.

The following morning, Wednesday, July 8, the members met at 8.30, and drove a few miles into the country for an entomological field day and picnic. On arriving at the selected place all betook themselves to the woods, fields and river side, and spent a few hours in the capture of insects of various orders; many rare and interesting specimens were taken, and fair success was attained by all. At mid-day they re-assembled for lunch, which was kindly provided by the London members; and, after it had been duly discussed and enjoyed, another sally was made upon the insects of the neighbourhood, till the time of departure arrived. Two photographs of the members, in a group, were taken by Mr. Griffiths, as a memento of this first pleasant gathering under the new constitution.

In the evening, the members re-assembled at the residence of Mr. Saunders, and spent a few hours very agreeably with the microscope and in the examination of his large and beautiful collection.

The next day, Thursday, a few of the members made an excursion to "The Ponds," a few miles south of London, and captured a number of very interesting specimens, including several of *Polyommatus epixanthe*, which abounds in that particular locality. This brought to a close a most agreeable re-union of the members of the Society, which will long be remembered by all who took part in it. The members from a distance all expressed themselves highly delighted with the unbounded hospitality and kindness of their London friends.

EXCHANGES.

I have about 160 good specimens of *Melitaea phastor*, which I wish to exchange for any of the species of *Papilio*, *Pieris protodice*, *Grapta interrogationis*, any of the *Lycænidæ* (except *phleas*) and *Deiopeia bella*. I have an abundance of many of our common butterflies, mostly good specimens, collected in season, and by the end of August I hope to have a pretty heavy stock on hand for exchange.—E. BILLINGS, Ottawa, Ont.

Mr. PECK, of New York, desires to obtain good specimens of the following: *Pieris rapæ*, *Melitaea Harrisii* and *Nycteis*, *Chionobas balder*, *Thecla mopisus*, *argustus*, *acadica*, and *læta*, *Polygon*, *porsonna*, and *lucia*, *Lycæna Chlotilde*, *Hesperia* (various species), *Arctia*, *Catocala*, &c.; for these, good specimens of U. States *Lepidoptera* will be given.—Apply to the Rev. C. J. S. BETHUNE, Credit, Ont.