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The Canadian Entomologist.

VOL. X. LONDON, ONT., SEPTEMBER, 1878. [No. 9

ON THE NEW CARPET BUG.

BY DR. H. HAGEN, CAMBRIDGE, MASS.

Perhaps a few additions to Mr. J. A. Lintner's very interesting article will not be out of place. In 1872 the late Mrs. W. P. L. Garrison came to visit the Museum, and told me about an insect destroying the carpets in Buffalo, N. Y., and named there "the Buffalo pest." I had not then heard anything about the insect, and Mrs. Garrison, after her departure, was kind enough to send me some living specimens from Buffalo. I bred them here in the Museum, and determined them as *Anthrenus scrophulariæ* L. The following years I had numerous inquiries from Cambridge and Boston in relation to this carpet pest, and I traced about three-fourths of all cases to a large carpet store in Washington St. in Boston, where the carpets were bought, and what ought not to have been done, they were directly laid in the rooms, without beating them before strongly and disinfecting them in some way.

Mr. Lintner was unable to find any record of its preying upon carpets or other woollens in the Old World. But there exists enough in the literature. Dr. H. Noerdlinger, in his well-known book, "Die kleinen Feinde der Landwirthschaft," etc., 1855, Sto., p. 90, states as follows:

"The common flower-beetle, *Anthrenus scrophulariæ*, is from April common on many flowers, especially on fruit trees and roses. It is common also in houses, etc., where it can become very obnoxious by the destruction of furs, clothes, animal collections, and even leather and dried plants. The obnoxious larva, which naturalists should take care to avoid, is common in closets and rooms in the attic, where it finds dead flies and from whence it likes to enter the other rooms."

I have taken Noerdlinger's book at random, but it would not be diffi-

cult to find such notices in similar books. To show that this pest is not a new one, I add two older authors taken at random.

F. W. Herbst, *Coleoptera*, vol. 7, 1797, p. 328, says: "This beetle is everywhere very common in rooms, on buds, and especially common on tulips. It destroys, as well as its relatives, collections of insects and plants. The larva lives in the houses, like the *Dermestes*, and destroys all kinds of collections of natural objects, cloths, furs, leather and victuals." The variety of *A. scrophulariæ-sutura grisea*—is described from Europe by Illiger, 1798, p. 398. F. Wiegmann, *Handbook der Zoologie*, 1832, p. 308: "The larva lives on animal matters, and is sometimes very injurious to hides."

I have ascertained this summer that the carpet bug eats of a piece of cloth consisting half of worsted, half of cotton, only the worsted threads, and left the cotton threads uninjured.

I may add some words concerning the list of the obnoxious insects introduced from Europe into America. It is, as I believe, overlooked that about three-fourths of the insects enumerated are surely not originally European insects. They were introduced into Europe from the East by the advancement and progress of culture, and in the same way by the advancement of culture from Europe to America. The same is the case with the common weeds, and some years ago, by carefully comparing the list of European weeds in Prof. Ratzeburg's work with the lists of the described American plants, I found out that two-thirds of all European weeds are common in the United States, and perhaps a-part of the last third, of which I was not able to make certain. I myself was at first much surprised to find in the middle of the prairie, near the railway to St. Paul, Minn., common European weeds. I should state that I share entirely in the wishes of the inhabitants of N. America to receive and enjoy progress and advancement of culture, without the accompanying drawbacks which nature seems to have so closely united with them.

After all, I should state that it is remarkable that such pests as the Colorado beetles emigrate very exceptionally from the west to the east; so the locust tree is even now entirely free from pests in Europe, though imported a century ago and very common everywhere. There are some American insects imported into Europe which have been overlooked. *Blatta Americana* is common in all sugar refineries to Archangel, and everywhere in large cities in store-houses. *Termes flavipes* is probably also imported from this continent. *Blatta orientalis* was imported

from Asia to the west of Europe, and made from there a well ascertained migration to the east again and through Siberia. All insects finding it easier to live in the company of man, or by articles used and needed by man, will of course follow him as well as dogs and rats.

Mr. Lintner has not mentioned *Phylloxera*, which has in Europe done more injury and has caused more losses than almost all the other pests together.

THE GENERA OF THE HESPERIDÆ OF THE EUROPEAN FAUNAL-REGION.

BY DR. A. SPEYER.

(Translated from the Stettiner Entomologische Zeitung for 1878, pp. 167-193.)

(Concluded from August No., p. 154.)

CATODAULIS.*

♂. Antennæ much longer than half the costal margin of the forewings, nearly three-fourths as long as the body, uniform black, at two-thirds of their length expanding into a slender fusiform club, the last third of which is suddenly bent at a right angle; from this point forwards it is rapidly narrowed, but not very acute, nor curved into a hook. Locklet of hair of medium length and of the usual structure. Palpi projecting the full length of the eyes beyond the front, the first joint thickly hair-scaled, the end joint moderately short, conical, almost horizontal. Tibiæ unarmed, the hind ones with four spurs, the outer one of each pair much shorter than the inner one. The tuft of hair begins on the base of the tibiæ and reaches (on the inside running downwards) to their end. Body not very robust, the head and thorax united equal to the abdomen, the latter not reaching the inner angle of the hind wings, and destitute of the

[* Dr. Speyer writes that this genus must give way to *DAIMIA* Murry, 1874.—L.]

ventral excavation. Wings large and broad; hind wings undulate, with a deep sinus at the end of vein 5, their basal third of the underside covered with long matted whitish hair between the inner margin and the middle cell; the remaining surface with prostrate scales. No costal fold. (2 ♂ from the Amur, and 1 from Yokohama, Staudinger.)

That *Pyrgus Tethys* Ménétries (*Enum. Corp. anim. Musei Petropolit.*, p. 126, Tab. x. fig. 8) neither belongs to the genus *Pyrgus*, nor to either of the other genera of European Hesperides, nor even shows close relations with them, is apparent upon a very slight examination. For that reason I am also less sure with regard to *Catodaulis*, whether it does not coincide with described exotic genera which are otherwise unknown to me, and consequently if the synonymy be not thereby unnecessarily increased. Herrich-Schäffer's Table of the genera does not indicate to me any genus corresponding with it. Kirby places *Tethys* in his genus *Erynnis* (= *Spilothyris* Bdv.), from which it is certainly to be inferred that he was not acquainted with this butterfly, whose *habitus* decidedly contrasts with that of every other European Hesperian. In *Pyrgus* A. we notice prominently the transparent spots of the fore-wings and the waved border of the hind-wings. With *Seclotrix*, *Tethys* has nothing but the tibial tuft in common.

The latter character is undoubtedly absent from the female, which is unknown to me; and still further I do not know whether the shaggy hairiness of the hind-wings (which was the occasion for the adoption of the name) pertains to this sex. These hairs seem moreover not to adhere very firmly, for not a vestige of them appears in a male example which has been long on the wing, and is besides not everywhere present in equal completeness.

PYRGUS.

Club of the antennæ ovate or elongated, feebly compressed, straight, or not quite regularly falcate, rounded off at the end (except in *Poggei*). Lock of hair long. Palpi projecting more than the length of the eyes beyond the front, the middle joint bristly, the apical joint thick, bluntly conical, horizontal or directed obliquely forwards. Tibiæ unarmed (except in *cribrellum*), destitute of the tuft. Abdomen as long as the head and thorax united, reaching as far as to the posterior angle of the hind-wings. Fringe checkered.

- A. ♂ With costal fold.
- a. Stoutly built species, with deeply waved-toothed (tief wellenzahnigen) hind-wings, and with transparent spots on the fore-wings.
 - b. Hind-wings more deeply dentated, or with the margins entire; fore-wings without transparent spots.
- B. ♂ Without costal fold. Hind-wings slightly dentated.
- a. Club of antennæ longer than in the other species, bent behind the middle, and thence to tip much reduced. Male with a trace of the costal fold.
 - b. Club of the antennæ straight or only slightly bent, rounded at tip.

This is, after *Pamphila*, the least homogeneous genus, including species either with or without the costal fold, and which show some differences in the form of the club of the antennæ. The Division A. a. differs besides somewhat in *habitus*, and has therefore been regarded as a distinct genus. Essential differences I have not been able to find; moreover *Proto*, in its *habitus* and expanse of wings, forms a connecting link between it and the other species. If it should be thought proper to give them generic distinction, the older name *Carcharodus* of Hübner would be confirmed, and under which he had correctly assembled the species and had sufficiently characterized them. Kirby places here (besides *Tethys* Mén.) one other species from America (*Carcharodus mazans* Reak.) which is unknown to me.

Alcæ Esp. differs in the form of the club of the antennæ from the two next related, and in general from the other species of the genus. The last fifth of the very thick club is (nearly as in *Pamph. Alcides*) remarkably reduced and bent backward, and also rounded at the end. *Althææ* ♂ has a bunch of hair on the underside of the fore-wings; *Lavateræ* has none of these marks, but instead, particularly large hyaline spots. In the Division A. b. stands the only species of *Pyrgus* whose tibiæ (the middle and posterior) are armed with spines, and those moderately short (e. g. *cribrellum*). I have already mentioned this species as illustrating the small value for systematic purposes of the tibial spines in this family. But they offer a convenient mark for separating *cribrellum* and *tessellum*, which are sometimes confounded. *Proto* connects the group A. a. to B., especially to *Poggei*, and would, if it had no costal fold, be more naturally placed

next to it. In fact the costal fold is a little shorter and narrower than in the other species. This, and the circumstance that in *Poggei* there is the first intimation of a fold as a narrow seam in the membrane, militates against the generic separation of Divisions A. and B.

Poggei, in the form of its antennæ, recalls *Nisoniades*, but the bending of the club does not really begin in the middle, but a little behind it, and it is not so regularly falcate as in that genus. *Poggei* approaches so near to *phlomidis* and *Proto* in all other respects that a separation from them would only be justified if a number of agreeing species could be united to it.

SCELOTHRIX.

Club of antennæ elongate ovate, somewhat compressed, feebly falcate, rounded on the end. Locklet, palpi and fringe as in *Pyrgus*. Hind tibiæ without spines. Male with much developed costal fold; two membranous, sheath-formed appendages on the metasternum, and a long hair-tuft on the hind tibiæ. The appendages start from the base of the hind legs and project more or less convergingly, occasionally being bent apart (feebly x-shaped) for nearly one-third the length of the abdomen, over the very deep and long ventral cavity. They are a pair of almost linear, rather flat, membranous, apparently hollow structures, at first sight to be compared with a short, broad sabre-sheath, thickly scaled, and on the front edge and particularly at the tip with longer hairs. Their form, clothing and color present some differences, which probably (but which I have not proven) will afford useful specific characters.

The tuft of the tibiæ, composed of long, fine pencil-like hairs, arises close under the knee of the hind tibiæ on the inner side. It is at least as long as the tibiæ, often considerably longer, and appears in captured specimens, generally, spread apart. When drawn in, it is placed under the sheath-like appendages—at least this is so in several specimens in my collection. Its color varies from pale yellow to black in various degrees of mixture.

This genus approaches so near to the preceding one (several of its species agreeing with it fully in *habitus*, color and marking) that the separation requires special justification, because the differences become conspicuous only in the male sex. But in this sex the differences are so highly developed and easy to detect,—the forms united thereby so homogeneous—that it seemed to me more reasonable to establish a new genus

than to add to the subdivisions of *Pyrgus* still another. Should transition forms exist, *Scotothrix* must certainly be absorbed, but no such forms are known to me:—the tibial tuft and the appendages are either completely developed, or entirely absent.

Maculata is characterized by very acute fore-wings, by the particular color and marking of their undersides, and above all by the white fringe being marked with black only on the upper side, and not both above and below as in the other species. Appendages of the pectus and tuft of the tibiae in the male well developed, the latter extending to the end of the first tarsal joint. The other species stand very close together, and it happens here again, as in other very natural groups, that the genera which are easiest to define, are those in which the species are the most difficult—declaring distinctly that if the genus should be easy to define, the parts of which it consists must be very homogeneous. Here are chiefly those species or varieties nearest to *alveus*: *fritillum*, *serratula*, *cacalia*, *andromeda* (and quite independent of the Ramburian *cersii*, *carlinae* and *onopordi*, concerning which nobody has accurate knowledge), which difficult in themselves to separate by fixed characters, become in the mass still more difficult to separate from their originals, the more that the number of specimens compared increases, and their localities widen. The reason for this may be that these forms have not begun until recent times (geologically speaking) to separate themselves from their common originals; and as species (in a systematic sense), have not yet become perfect, the intermediate forms still existing as such in many localities, while in others they have disappeared. The evidence for this last position appears to me to be given in the following observation. The two forms of the *alveus*-group, which occur here in Rhoden, are *fritillum* (H. 464-5, HS.) and *serratula* (HS. fig. 18-20); the supposed stem-species, *alveus* (H. 461-3) is entirely absent. The first two fly in the same locality (upon the Muschelkalk formation), which I visit diligently every year, and where I find my richest source for Diurnals and many other Lepidoptera. *Fritillum*, and also *serratula*, appear here in quite typical form, and I have not yet met with an example which has raised a doubt as to which of the two forms it should be referred, nor which had assumed the characteristics of *alveus*.

I found *fritillum* on this spot during the whole of June, and again at the end of August, and in September; also, during several years, singly, in the last half of July. In former years this butterfly appeared sometimes in large numbers, but recently it has become much more scarce.

Serratulæ, as well as I remember, for many years, had only once fallen into my hands in this place, where I found it in the evening, sleeping with two specimens of *fritillum* upon a flower. For the past ten years, however, I have annually (possibly as the result of more careful searching) found this species, but only in small numbers, between the end of May and the middle of June; but lately only in single badly weathered specimens. In Midsummer and Autumn I have never seen it here. This cannot be the spring brood of *fritillum*, as the time of flight of *fritillum* begins with the first of June, and only a little later than that of *serratulæ*. The latter flies also in the Alps, at the same time as the other related forms, in July and August.

Were I to base my judgment upon the occurrence of the two species in this vicinity, I would unhesitatingly pronounce them specifically distinct and easy to separate. But I am made very uncertain by specimens which I have found in Wildungen, only a little more than five miles distant from this place. There I found (on clay slates) the typical *alveus* and *serratulæ* moderately common, but *fritillum* only singly. Among the few specimens that I have yet in the collection is at least one *fritillum* ♂ with a strong inclination towards *alveus*, and a *serratulæ* ♀ of uncommon size, which might almost as well be referred to *alveus*. Besides, if I were to endeavor to distribute among the known types the numerous examples found in the different parts of the Alps, multifariously varying in their size, in the cut of wings, in color and markings, the uncertainty would rise to such a degree that it might easily be conceived how Meyer-Dür (*Tagfalter d. Schweiz*, page 218, fig.) draws together as forms of a single species all three of them and *caclivæ*; yes, and even *carthami*. In the fact that the usually specified separative characters will not throughout stand the test, he is certainly correct.

Local and climatic influences, which are so productive of various modifications, particularly in restricted localities of high mountains, undoubtedly play a great part here; and it is naturally to be expected that, in places where the different forms live in large numbers in close proximity, the close limits among themselves would be obliterated by continual crossings.

At a former time specimens were sent to me under the name *cersii* Ramb., said to be from the vicinity of Paris, which had much white upon the upper side of the hind-wings and brick-red on the under side. They appeared to me at that time not to be specifically distinct from *fritillum*.

As *carlinae* Ramb., Staudinger has sent a pair of the small *Scelothrix* from the Southern Tyrol, which are nearly related to *alveus* and *serratulae*, but may be distinguished from them particularly in having narrower and more acute wings and less expanded hind margin (their fore and hind angles the more prominent on that account.) Three males taken upon the Gemmi well accord therewith. I would only regard them as a somewhat degenerated mountain variety of *alveus*.

NISONIADES.

Antennæ half as long as the fore-wings, their club somewhat compressed, slender, gradually dilated and then narrowed and more or less acutely produced, regularly curved, lunate-falcate. Locklet long. Palpi projecting upon the front to nearly twice the length of the eyes, with long and thick hairs, but less coarse than in *Pyrgus* and *Scelothrix*; the apical joint thick, bluntly conical, somewhat bent. Tibiæ unarmed, and without the tuft,* but with long hairs. Fore-wings triangular, outer margin not toothed, fringe unicolorous. Male with longer costal fold.

The peculiarly native country of this genus, scarcely more than represented in Europe, is North America. Scudder enumerates sixteen species, based chiefly upon differences in the form of the abdominal appendages, several of which, however, Edwards will not acknowledge to be good species. The characteristic feature is the form of the club of the antennæ, which is fusiform when stretched out, but which takes the form of a narrow crescent when in its regularly curved condition. This fundamental form is constant; the stoutness of the club and its degree of acuteness differs according to the species. In some American species it is very slender and finely pointed; in others, as in our *Tages*, it is thicker and more blunt, but never so suddenly rounded as in the preceding and following genera.

* In a letter received from Dr. Speyer as this is passing through the press, he desires to make the following correction in this diagnostic feature. The tibial tuft (see also foot of page 126) is not reliable for generic separation. A critical examination made by him of some of the species of *Nisoniades*, has shown its presence in *Persius* and *Icelus*; in the latter, quite strong. *Brizo*, although so closely related to *Icelus*, is without the tuft. The detection of this marked difference in these two allied species, establishes their specific value, which has been questioned, and also shows that the presence or absence of the tuft is only of specific importance.—L.

Montanus Brem. is distinguished from the others above, which accord with it pretty well in *habitus*, by the particularly large hind-wings with expanded margin, also by the difference of color and marking; but it has all the essential characters of the genus. Its club is somewhat thicker than in *Tages*, but is otherwise of the same shape.

THANAOS.

Club of antennæ elongated, curved, shorter than in *Nisoniades*, suddenly swollen, and scarcely contracted at the well rounded tip. Forewings more elongate than triangular, the front margin more steeply arched above the base, the hind margin shorter. Male destitute of the costal fold. All the other characters as in *Nisoniades*.

The erection of a separate genus for *Marloyi* is more difficult to justify than even the somewhat artificial separation of the genus *Scelothrix* from *Pyrgus*. For the absence of a costal fold, their principal character, as has already been shown in *Pyrgus*, is insufficient to establish a generic value; the antennal club differs only in its shortness and stoutness, and no importance can be attached to the slight difference in the cut of the wings. All three of these features taken together induce me to consider it more proper, for strict systemization, to set apart this element which disturbs the establishment of a generic character for *Nisoniades*. In order to avoid constructing a new generic name, I have used that which Boisduval selected to include *Tages* and *Marloyi*.

May 20th, 1877.

ANNUAL MEETING OF THE ENTOMOLOGICAL CLUB OF THE AMERICAN ASSOCIATION FOR THE ADVANCE- MENT OF SCIENCE.

The Club met pursuant to notice, at 2:30 on Tuesday afternoon, August 20, 1878, at room 17, The Lindell Hotel, St. Louis, Missouri.

The President, Mr. J. A. Lintner, of Albany, in the chair. In the absence of the Secretary, Mr. B. Pickman Mann, Prof. A. G. Wetherby, of Cincinnati, was appointed Secretary *pro tem*.

The President then delivered his

ANNUAL ADDRESS.

Gentlemen of the Entomological Club:

For the honor which you were pleased to confer upon me, at your last meeting, when I was unable to be with you, in calling me to preside over you, I am fully appreciative, and would return my grateful acknowledgments. While I well know that there are several among you who far better deserved the honor of succeeding to the chair vacated by my illustrious predecessor, yet I would interpret your selection as a tribute to my devotion to our loved science, and to my earnest desire to aid in its progress to the extent of my humble ability.

On these annual gatherings, marking the lapse of a period signalized by progress equaling, even surpassing that of a decade but a few years ago, it would seem fitting and proper that a comprehensive view of that progress should be given. But this has been so ably done by one of our number, and you have had it presented to you in the pages of *Psyche*, that whatever I might say, in this direction, would be but repetition.

Permit me then, instead, to refer to some evidences of progress in American Entomology, shown within the recollection of several of us here present. Going back forty years, very little was known of our abundant insect fauna, except of the Coleoptera, an order which enjoyed the good fortune of being an attractive one, easy to collect in and prepare for the cabinet, and which early enlisted in its study earnest students, who have since lent honored names to the annals of American science. Thus, in 1835, in Harris' List of the Insects of Massachusetts, the names of 994 Coleoptera are given, and but 140 Lepidoptera. Of the latter, 34 are butterflies, four of which are erroneously referred to European species: among these only three species of Hesperidæ are mentioned. Seventeen species of Noctuidæ are recorded, with the additional note of "96 unnamed species." There are also the names of 7 Geometers, 1 Pyralid, 1 Tortrix, and 6 Tineids. How great an advance upon this in our knowledge of forms is shown in the Crotch Check List of 7,450 species of Coleoptera, in the Grote Check List of 1,132 species of Noctuids (already quite incomplete from the species subsequently made known), and in the the Edwards Catalogue of 506 species of Butterflies (110 of which are Hesperidæ). I often recall, as I am reminded of past progress, a request

of Dr. Fitch, soon after the commencement of his Reports, for my careful attention to the Catocalas, for the authorities of the British Museum were, he thought unnecessarily, multiplying species. He did not believe that we really had over a-half dozen species. To-day we number over 90 accepted species.

At the time to which I have referred, very few—perhaps not over a score (my limited knowledge of the Coleoptera must be my excuse if I err) of the histories of our insects were known; now, we may count by the hundred those of which we know the transformations and the life histories more or less complete. Some of these, thanks to the labors of Edwards, Riley, Scudder, Walsh and others, have been charmingly wrought out, and are honorable contributions to science.

The list of working Entomologists is rapidly enlarging, and with the consequent diffusion of a knowledge of their purposes and their results, we have reason to believe that the day is not far distant when the opprobrious prefix of "crazy" will not invariably be associated with "bug-hunter." In the last edition of the Naturalists' Directory, the names of 281 persons are recorded who are making Entomology their study in North America. It is probable that a full list would be increased by at least 25 per cent., extending the number to 350.

With so large a number of working Entomologists, we would be justified in expecting larger annual contributions to our literature. It would seem to me but a moderate estimate that one-third of the number should possess the ability of making such careful observations and of collating them in such a form that they would prove acceptable and valuable contributions to our knowledge: While we know so little of the transformations of our species, the habits of their larvæ and imagines, their geographical distribution—in short, the numerous details entering into and composing their life histories, there is scarcely a new fact relating to these particulars which is not worthy of being placed on record in the pages of our Entomological journals, which will gladly give them place. It has been stated that there are but about thirty Entomologists in the United States and the Dominion of Canada who are in the habit of publishing the results of their observations and studies. The last volume of the CANADIAN ENTOMOLOGIST presents a list of forty-five contributors; and Mr. Scudder, in his review of the work done during the year 1877, to which reference has been made, gives an account of the publications of

forty-one writers, seven of whom have discussed injurious insects only. We wish that this latter number had been much larger.

A marked improvement has been shown in the number, extent and character of Entomological collections, both in public institutions and in private hands. It is most earnestly to be hoped that the growing appreciation of the value of these collections may demand and ensure their proper care and future preservation. To this end it is very important that each individual possessing a valuable private collection (and there are now a respectable number distributed through the several States which contain 5,000 examples) should make such arrangements for its disposition and preservation after his decease as may, within a reasonable extent, ensure its perpetuity. The authoritative statement which has been made, that the extremely valuable collections of Drs. LeConte and Horn will at some future day be added to the collection which the ability and zeal of Dr. Hagen has built up at the Cambridge Museum, is highly gratifying intelligence. And in this connexion, let me endeavor to impress upon each one of you the service which you may render to science by availing yourself of every opportunity to urge upon those who have voice in the erection of buildings devoted to scientific collections, that a primary consideration be that they be made fire-proof.

The literature of our science has already become quite respectable, and its collection on our shelves forms no inconsiderable a library. The eleven volumes of the American Entomological Society represent a large amount of earnest and thorough work. The nine volumes of the CANADIAN ENTOMOLOGIST are replete with interest and instruction. The numerous papers scattered through the pages of the Reports of the Peabody Academy of Science, Proceedings of the Boston Society of Natural History, Annals of the Lyceum of Natural History of New York, Proceedings of the Philadelphia Academy of Natural Science, Bulletin of the Buffalo Society of Natural Sciences, Proceedings of the California Academy of Natural Sciences, and others, fully illustrate the earnestness with which Entomological study is being prosecuted, and give large promise of a brilliant future. The exquisite illustrations of the "Butterflies of North America" are a credit to our country, being fully equal to the best work of the class in Europe. The publications of LeConte have given him high place among the honored names of the fathers of American Entomology, while the writings of Hagen, Grote, Scudder, Packard, Horn, Cresson and Uhler represent no inconsiderable portion of the progress

upon which we are congratulating ourselves. Nor can I omit reference to our European friends — to Loew, Osten Sacken, de Saussure, Speyer, Zeller, Mœschler, Butler and others, who are freely lending us their valued aid in the descriptions of forms too numerous for our few hands, and in the solution of problems which require for their determination the study of the entire insect fauna of the eastern hemisphere in connection with our own.

The most gratifying feature, perhaps, in the report of progress which I am able to present to you, is the aid which the General Government is now extending to Entomological explorations and investigations, in placing scientists in the field and in the publication of their results. Two years ago, the occupant of this chair felt called upon to express to you his sorrow, disappointment, indignation, that Congress had declined to accede to the memorials presented it, asking its recognition and acceptance of the service which applied Entomology was in a condition to render. Now, it is a cause of congratulation that the Department of Agriculture has selected as its Entomologist one whose training in the school of economic Entomology for the past ten years has specially qualified him for the responsible position he occupies; and we have the additional gratifying assurance that the Secretary of the Department is in full sympathy with our aims.

In conformity with a precedent long since established in Europe, our Government has honored itself while honoring science, in seeking to add to the productive wealth of the country through a control of the insect deprivations inflicted upon our people, to the extent of enormous annual losses, and, at times, poverty and starvation. The two special Commissions which have been already appointed, it is understood are, ere long, to be followed by others. The published results of one year's labor of the Locust Commission is in our hands. An inspection of the matter crowding its 772 pages will, I am sure, convince any one competent to judge, of the wisdom of the appropriation made for its support. The Cotton-worm Commission has already actively entered upon its work.

To Government aid we owe the publication of Packard's Monograph of the Phalænidæ—a beautiful quarto of attractive typography and ample and excellent illustration; Thomas' Acrididæ of North America, with 260 quarto pages and illustrations; the Reports on Hymenoptera, Lepidoptera, Coleoptera, Hemiptera and Orthoptera in Lieut. Wheeler's Surveys West of the 100th Meridian, of 331 quarto pages and several

chromo-lithographic plates; and to Reports on several orders of insects by Chambers, Grote, Hagen, Osten-Sacken, Packard, Scudder, Thomas and Uhler, in the Annual Reports and the Bulletins of the Hayden Survey of the Territories.

The liberality displayed by our Government in the publication and gratuitous distribution to those whose scientific labors render them worthy recipients, of investigations in other departments of Natural Science—in Geology, Palæontology, Mammalogy, Ornithology, Ichthyology, Botany, etc., deserves our most earnest commendation. The facility of publication thus afforded to meritorious work almost evokes the envy of some of our European friends.

In conclusion, permit me to commend to the members of the Club the biological study of our insect forms. It is attractive, it is simple in many of its phases, it is of great practical utility, it is a field where all can find abundant work, and one in which some of those questions which are engaging the attention of zoologists in other departments, may best find their most ready answer. Let no one be satisfied with the simple possession of a large and well arranged cabinet of insects. If to collect and own it be a source of pleasure, often beyond expression, then science may demand at his hands that he should aid in extending its boundaries in return; and in no better way can this be done than in working out the life histories of our species, beginning with those with which we hold the more intimate relationship. Let descriptions of forms remain, except in exceptional cases, for those who have special fitness and opportunity for the work; and systemization for him who, like the poet, *nascitur non fit*, that kaleidoscopic manipulation of genera and the higher groups may cease to bewilder, perplex and dismay.

In illustration of what may be done in the study that I commend to you, I would refer to the labors of Mr. W. H. Edwards in working out the histories of some of those butterflies which appear under different forms at different seasons of the year. Some of the results are known to you, and I am sure that you regard them as among the most valuable recent contributions to Entomology. The untiring zeal with which the work has been prosecuted and is being continued, deserves the commendation which it has received from the most eminent European Entomologists, and the success with which it has been crowned.

Gentlemen, I trust that our assemblage at this time may not only conduce to the interests of our science, but also render its pursuit more

pleasant to us, through the privilege it affords of personal acquaintance, comparison of observations, interchange of opinion, and the strengthening of those bonds of sympathy which should (they do not always) unite those who labor in a common cause.

On the motion of Mr. A. R. Grote, of Buffalo, a resolution was passed requesting THE CANADIAN ENTOMOLOGIST to publish the President's Address and the proceedings of this meeting.

Mr. E. B. Reed, of London, Canada, associate Editor of the CAN. ENT., apologized for the unavoidable absence of the Vice-President, Mr. Wm. Saunders, and stated that the Editor of the CAN. ENT. would be most happy to comply with the wishes of the Club respecting the publication of the proceedings of the meeting.

Mr. A. R. Grote exhibited some insects from Georgia—*Callosamia angulifera*, *Eacles didyma*, *Lagoa pyxidifera*, *Heterocampa obliqua*. In the South he had found that *Actias luna*, *Samia cecropia*, *Telea polyphemus* and *Saturnia io* were double-brooded, while on the contrary, *Citheronia regalis* was only single-brooded.

Prof. Wetherby stated that in his section, and in other parts also of the North-Western States, many of the above-named moths were also double-brooded.

Miss Emily A. Smith, of the Scientific Association of Peoria, Ill., submitted to the meeting a most interesting account of *Lecanium aceris-corticis* Fitch, a bark-louse that had seriously damaged the Maple trees, both hard and soft, in Illinois and adjoining States. The whole life history of this pest had been most carefully worked out by Miss Smith, who also exhibited a very complete set of microscopical preparations of the insect in its various stages, and also of a parasitic *Chalcid* discovered by her. One important point noted was the migration of the bark-lice on the approach of the fall from the leaves to the trunk of the tree, on which, however numerous they might be found together, their position was always lengthwise with the trunk. In the South the insect was doubtless double-brooded. Dr. Fitch had briefly described the insect many years ago, but Miss Smith had been enabled to work out many hitherto unknown points in its history.

Various experiments had been tried to destroy the lice, but Miss Smith had found the best success in using a Babcock or Chambers Fire

Extinguisher, charged in the usual way, with the addition of a little crude carbolic acid, in the proportion of about one large spoonful to six gallons of water. By means of the Extinguisher she was able to reach even large trees, the cost being about 20 cents per tree. The remedy should be applied before the insects become too old, otherwise a stronger preparation of carbolic acid was necessary, and in consequence the trees might possibly suffer somewhat.

Mr. Thos. Bassnett, of Jacksonville, Florida, had listened to the admirable account with very great interest, inasmuch as in the South the culture of the Orange tree, in which he was largely interested, was seriously threatened with extermination by the ravages of a bark-louse similar to that described by Miss Smith, and he was glad to hear that a remedy could be so successfully applied.

Prof. C. V. Riley, of Washington, D. C., spoke, thanking the lady for bringing this subject before the meeting, and complimenting her on the discoveries she had effected. He fully corroborated the statements made as to the extent of damage caused by bark-lice, especially those affecting the Orange in the South. He strongly advocated the use of the "Extinguisher" in similar cases, but recommended that kerosene should be tried instead of carbolic acid; it would, he thought, be found of less injury to the trees, and would destroy the insect for some time after the formation of the scale, which the carbolic acid would not do. It should not be applied in excess; the ordinary proportion should be about one part kerosene to twenty of water.

The whole topic was very fruitful of discussion, and Miss Smith was much thanked for her paper and for the drawings and microscopical preparations that accompanied it.

On motion of Prof. Riley, seconded by Mr. Reed, a resolution was carried that a committee be appointed to prepare a report and submit to the next session of the Club, in regard to the quorum of members necessary to transact business.

The Chairman appointed the mover and seconder and Prof. A. G. Wetherby as the committee.

Prof. Riley gave a brief abstract of some of the Entomological papers he proposed to read to the Association.

(1) Notes on the life history of the blister beetles, and on the structure and development of the genus *Hornia* Riley.

- (2) On the larval growth of *Corydalís* and *Chauliodes*.
- (3) On the means by which Silk-worms issue from their cocoons.

Hornia was parasitic on the common humble-bee, and had been successfully identified by careful study, although in several important points it differed from the *Meloidæ* to which it belonged.

The further larval history of *Corydalís cornutus* was given by Mr. Riley, and was most interesting, especially to those members who had listened to Mr. Riley's first descriptions of this curious insect at the Detroit meeting. Mr. Riley had been very successful in elaborating the various points of difference between *Corydalís* and *Chauliodes*.

In discussion it was stated that the somewhat peculiar name of the "Hellgrammite Fly" for the *Corydalís* had been for many years in common use both on the Upper and Lower Mississippi; and that the equally curious name of "Dobson" was given to its larva, which was largely used for bait by the river fishermen.

On the paper relating to Silk-worms reference was made to Dr. Packard's recent theory on certain spines on the wings of Bombycidae, which he stated were of service in assisting the exit of the insect from the cocoon.

Mr. Riley, in combatting this idea, showed how in almost every case the silk was spun in figures of 8, which would easily yield to pressure, especially as in most cases a fluid (wrongly termed bombyc acid) was emitted, and the silk thus rendered more pliable. His idea was that the peculiar make up of the cocoon rendered it more yielding for the exit, and that though the insect usually emerged at the end of the cocoon, there seemed to be no reason why, if it chose, it could not find an egress equally well at the side of the cocoon.

Several minor matters were discussed, and the Club adjourned at the call of the chairman.

(To be Concluded in October No.)

BOOK NOTICES.

Entomological Contributions, No. iv., by J. A. Lintner.

We tender our sincere thanks to the author for an early copy of this fourth part of his admirable work, which appears in form similar to the previous issues, and occupies 144 pages.

It opens with a chapter on *Mermis acuminata*, a parasite on the larva of *Carpocapsa pomonella*; then an admirable account of the life history of the new Carpet Bug, *Anthrenus scrophulariæ*, with magnified illustrations of the insect in its several stages; following which are chapters on *Isosoma vitis*, the Lepidoptera of the Adirondack region of New York, Collections of Noctuidæ at sugar at Schenectady, on some Lepidoptera common to the United States and Patagonia, on *Lycæna neglecta*, new species of Californian Butterflies, on some species of *Nisoniades*; descriptions of new species of *Cerura*, *Xylina*, *Hypocata*, *Acidalia*, *Cidaria*, besides a number of valuable notes on Lepidoptera illustrative of their life history and habits and geographical distribution. Every subject is treated in the author's usual thorough and systematic manner, and the work forms a valuable addition to our constantly increasing Entomological literature.

On the Tongue (Lingua) of some Hymenoptera, by V. T. Chambers. From the Journal of the Cincinnati Society of Natural History, April 1878—8vo., pp. 13.

This paper is very interesting and instructive, and is intended as a reply to the questions—What do bees eat? and How do they eat it? An illustration of a transverse section of a bee's tongue accompanies the text.

Manuscript Notes from My Journal: Cotton and the principal insects, &c., frequenting or injuring the plant in the United States, by Townend Glover.

This excellent contribution to economic Entomology is published uniformly with the previous portions of "Manuscript Notes from My Journal," reviewed in earlier numbers of the CAN. ENT., that is, in quarto form, the text written and etched by the author, and afterwards printed from stone. The admirable plates, 22 in number, constitute in this instance the most considerable portion of the work and illustrate not only the insects which injure the cotton crop, but also certain forms of fungoid disease to which the plant is subject. A work so instructive and useful as this would be to those engaged in this important branch of Southern agriculture should be widely circulated. The small edition published has been got up at the author's own expense, who has distributed the copies with the most liberal hand, free of any charge, among the libraries of the various scientific societies in the country; they are not, however, access-

ible to the general public. The untiring industry of this talented Entomologist is a marvel to all those who know of his work. It affords us great pleasure to find that he has so far recovered from his late severe illness as to enable him to resume those Entomological studies in which he has so long taken a prominent part.

Butterflies and Moths of North America, by Herman Strecker, Reading, Pa.

We are indebted to the author for a copy of this work, which is in large octavo form, in paper cover, containing 283 pages.

Following the preface, which partakes somewhat of the character of an advertisement relating to the sale and purchase of insects, the reader will find a series of short but very instructive chapters on breeding, collecting, mounting, preserving, transporting and classifying specimens, occupying some 26 pages in all, in which the author's long practical experience and thorough knowledge of the subject is presented in a plain and practical manner. He proceeds on the very admirable plan of explaining everything down to the minutest details, so that a reader who knows nothing of the subject when he takes the work up, has, after a careful perusal, a very fair knowledge of the whole matter. This part is illustrated by one plate; a second plate is devoted to illustrating the structure of butterflies and moths. The author's style is peculiar, but interesting and racy; we sincerely regret that this otherwise highly useful portion of his work is marred somewhat by the occasional treatment in a flippant manner of subjects which others deem sacred.

There is a very complete list of the terms and abbreviations used in works on Lepidoptera, with plain and full explanations, following which is an alphabetical list of localities of which something of the Lepidopterous fauna inhabiting them is known. Next we have a very full synonymical catalogue of American butterflies north of Mexico, with localities in the form of marginal notes, which, with appendix, occupies the larger portion of the work. A Bibliographical chapter of 75 pages closes the volume, in which is found an alphabetical list of authors who have written on Lepidoptera, with full details of their writings.

On the whole, we regard this work as very convenient and useful. The preparation of it must have involved an immense amount of labor, which has been performed in such a manner as to reflect credit on the author.