

The Canadian Entomologist.

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No. 11

ENTOMOLOGICAL SOCIETY OF ONTARIO.

The forty-third annual meeting of the Society was held in its new quarters at the Ontario Agricultural College, Guelph, on Wednesday and Thursday, October 10th and 11th. The chair was taken by the Vice-President, Dr. James Fletcher, Entomologist and Botanist of the Dominion Experimental Farms. Among those present were Mr. John D. Evans, Trenton, the retiring President; Mr. Henry H. Lyman, Montreal; Mr. Arthur Gibson, Central Experimental Farm, Ottawa; Mr. C. H. Young, Hurdman's Bridge; Dr. Brodie, and Messrs. C. W. Nash, J. B. Williams and Paul Hahn, Toronto; Mr. G. E. Fisher, Burlington; Mr. J. Fred. Smith, San José Scale Inspector for Ontario; President Creelman, Professors Hutt, McCready and Bethune, Messrs. Jarvis, Eastham, Howitt, Zavitz and Peart, of the Ontario Agricultural College, and a large number of students from both the College and the Macdonald Institute. Owing to the lateness of the train from the east, there was only time for a very brief business meeting of the Council.

In the afternoon the proceedings began with a discussion on the Codling-worm, and, owing to the large attendance, over a hundred being present, the meeting was held in the spacious Massey Hall. Dr. Fletcher, the chairman, opened the debate by giving an outline of the life-history of the insect, the extent of its ravages and the ordinary methods of dealing with it. Dr. Brodie read a paper, in which he recounted the early history of the insect in Ontario, and described his efforts to rear its parasites and the difficulties he had to encounter in studying them and their host. The discussion was participated in by Prof. Hutt, Messrs. Nash, Fisher, Jarvis, Peart, Zavitz, Crow, Cæsar, and Prof. Bethune. The remainder of the afternoon was occupied with the reading of the reports of the Directors on the Insects of the Year in their respective districts.

In the evening, notwithstanding the inclemency of the weather, Massey Hall was nearly filled with an appreciative audience. The chairman, in opening the proceedings, spoke of the new home the Society had acquired, and congratulated the members on the excellent arrangements that have been made for its library and collections by the authorities of the Ontario Agricultural College. President Creelman gave a

warm and hearty welcome to the Society, and expressed the pleasure that he and all connected with the College felt in having its headquarters in their midst; he was especially gratified that the chairman had described their new quarters as "home," and trusted that it would be their home for many a year to come; he also placed at their disposal everything that the College could offer for their comfort and convenience. Mr. Evans then read his annual presidential address, and Prof. McCready read a paper by Prof. Lochhead, of the new Macdonald College at Ste. Anne de Bellevue, who was unavoidably prevented from being present, on "What the Entomological Society can do for the Ontario Agricultural College." These were followed by a description of a canoe trip for entomological purposes in the Algonquin Park, illustrated with lantern slides from original photographs, by Mr. Paul Hahn, of Toronto. The proceedings were much enlivened by musical selections, both vocal and instrumental, furnished by the College Philharmonic Society.

During the second day, Thursday, Oct. 11th, meetings were held both morning and afternoon in the Entomological Lecture-room in the Biological Building, and were largely attended by students and others. Papers were read by Dr. Brodie, on "A Snout-beetle (*Balaninus nasicus*)"; by Mr. T. D. Jarvis, on "Gall Insects," illustrated with lantern pictures and an immense number of specimens; by Mr. Lyman, on "A hunt for a borer (*Gortyna*)"; by Mr. Zavitz, on "Forest Insects," and were discussed by many of the members present. The reports of the Council, Officers and Branches were also presented and read. During the afternoon an important discussion, opened by Mr. J. Fred. Smith, took place on the question whether restrictive measures should be taken to prevent the sale of fruit attacked by the San José scale. A good deal of difference of opinion was expressed regarding the danger of introducing the scale into new districts by the agency of infested fruit, but the unanimous conclusion was that no restrictions ought to be imposed upon such an important industry until it could be fully established that the danger really existed. During the meetings a large number of beautiful and interesting specimens were exhibited by the members, those brought by Mr. Young being especially noteworthy. A full account of the discussions and the papers presented will be published in the forthcoming annual report to the Legislature of Ontario.

The election of officers for the ensuing year resulted as follows:

President—Dr. James Fletcher, LL.D., F.R.S.C., F.L.S., Ottawa.
Vice-President—Tennyson D. Jarvis, B.S.A., Ontario Agricultural College, Guelph.

Secretary—E. J. Zavitz, B.S.A., O. A. College, Guelph.

Treasurer—Prof. S. B. McCready, B.A., O. A. College and Macdonald Institute, Guelph.

Librarian—Rev. Prof. C. J. S. Bethune, M.A., D.C.L., F.R.S.C., O. A. College, Guelph.

Curator—J. E. Howitt, B.S.A., O. A. College, Guelph.

Directors: Division 1, Ottawa—C. H. Young, Hurdman's Bridge.

“ 2, Midland—C. E. Grant, Orillia.

“ 3, Toronto—J. B. Williams, Toronto.

“ 4, York—C. W. Nash, Toronto.

“ 5, Niagara—G. E. Fisher, Burlington.

“ 6, London—J. A. Balkwill, London.

Ex-officio Directors—All the ex-presidents of the Society.

Delegate to the Royal Society—A. F. Winn, Montreal.

Editor of THE CANADIAN ENTOMOLOGIST—Rev. Prof. Bethune.

Auditors—B. Barlow and H. S. Peart, O. A. College, Guelph.

TO ALL INTERESTED IN ENTOMOLOGY.

The initial meeting of the Entomological Society of America will be held in New York City in connection with the midwinter meetings of the American Association for the Advancement of Science.

This Society has been organized to meet the need of a national entomological society, which shall represent all departments of entomology, and which shall hold a place in American entomology similar to that held in their respective countries by the great foreign entomological societies.

It is hoped that this movement will have the co-operation of all the existing entomological societies in this country, and that it will in no way interfere with the success of any of them. It is believed that a strong national society, which shall bring together workers in all fields of entomology, will tend to broaden the interests of each, and to strengthen the more special or local societies.

The amount of entomological work that is being done in the United States and Canada is great compared with what is being done in any other country; it is fitting, therefore, that the workers in this field should be united in a national society.

On another page there is given the report of the committee on organization; and an invitation is hereby extended to every one interested in entomology to join the society. Applications for membership may be addressed to Prof. J. H. Comstock, Ithaca, New York.

THE ENTOMOLOGICAL SOCIETY OF AMERICA.

A meeting of the committee to organize a national entomological society, for which provision was made at the Philadelphia meeting of the Entomological Club of the A. A. A. S., was held June 28, 1906, in the Entomological Laboratory of Cornell University. The New York Entomological Society was represented by Mr. Carl Schæffer, the Chicago Entomological Society by Dr. James G. Needham, the Jugatæ (the Ithaca Society) by Professor J. H. Comstock, the Newark Entomological Society by Mr. J. A. Grossbeck, the Entomological Society of Ontario by Rev. Professor C. J. S. Bethune, and the American Entomological Society by Mr. J. Chester Bradley. At an adjourned meeting the Washington Entomological Society was represented by Mr. E. S. G. Titus.

The committee was organized by the appointment of Professor Comstock as chairman and Mr. Bradley as secretary.

The secretary then stated in brief the history of the present movement for the organization of a national entomological society. The parts of Mr. Lyman's two presidential addresses dealing with the organization of an entomological union were read and discussed. Discussion then followed as to the purpose for which such a society should exist, and as to whether there was need for one. The opinion that there was such a need seemed to prevail, but it was urged that if the society be formed it should be based on broad and comprehensive grounds. It was then moved that it is the sense of this committee that the organization of a national entomological society is desirable. Every member in turn was called upon for an expression of opinion, and every one spoke in favour of the organization; but it was the feeling of the committee that the success of such a society would depend on the securing of co-operation of other societies, as the Association of Economic Entomologists and the Entomological Club of the A. A. A. S.

It was suggested that provision might advantageously be made for committees on policy, as on education, on legislation, on museum methods, and on nomenclature.

Strong opposition was made to the formation of any independent code for entomologists ; but it was believed that a committee on nomenclature might have legitimate ground for existence in voicing the peculiar needs of entomology in matters of nomenclature and in securing their adequate representation in the International Zoological Congress.

A sub-committee was appointed to draft a constitution and by-laws, which should embody the decisions reached by the committee, and to report them at an adjourned meeting.

The committee then discussed membership, dues, officers, elections and other matters. The decisions concerning these were subsequently embodied in the constitution and by-laws. The committee then adjourned until the following day.

At an adjourned meeting, held June 29, 1906, the report of the sub-committee on constitution and by-laws was read and discussed. After the making of some changes, the report was adopted, and the sub-committee was authorized to prepare and have printed a report of the committee, together with the constitution and by-laws, and to send them, with an invitation to be present at the initial meeting of the society, to every entomologist in the country whose address could be learned, and to have them published in the entomological journals. The sub-committee was also authorized to call an initial meeting in New York City in connection with the midwinter meetings of the A. A. A. S., to make arrangements for that meeting, and to transact such other business as may be necessary.

At a second adjourned meeting, held June 30, 1906, it was decided to apply at once for affiliation with the American Association for the Advancement of Science, and such application was subsequently made.

J. CHESTER BRADLEY, Secretary.

THE ENTOMOLOGICAL SOCIETY OF AMERICA.

CONSTITUTION.

ARTICLE I.

NAME.

SECTION 1. This organization shall be known as The Entomological Society of America.

ARTICLE II.

OBJECTS.

SECTION 1. It shall be the purpose of this society to promote the science of entomology in all its branches, to secure co-operation in all

measures tending to that end, and to facilitate personal intercourse between entomologists.

ARTICLE III.
MEMBERSHIP.

SECTION 1. The active membership of this society shall consist of two classes: *Members* and *Fellows*.

SECTION 2. All persons interested in entomology shall be eligible to membership.

SECTION 3. Members who have contributed to the science of entomology in some important way may be elected Fellows of the society. The number of Fellows shall not exceed fifty at any time.

ARTICLE IV.
OFFICERS.

SECTION 1. The officers of the society shall be a president, two vice-presidents and a secretary-treasurer. The duties of these officers shall be those usually pertaining to their respective offices.

SECTION 2. The business of the society not otherwise provided for shall be in the hands of an executive committee, consisting of the officers named in Section 1 and six additional members, who shall be elected by the society. Four members of the committee shall constitute a quorum.

SECTION 3. The president shall represent the society upon the Council of the American Association for the Advancement of Science.*

ARTICLE V.
ELECTIONS.

SECTION 1. Election of Members. Nominations for membership may be made by any two members, and election shall be by the Executive Committee.

SECTION 2. Election of Fellows. All nominations for fellows shall be signed by three or more members or fellows, and each nomination shall be accompanied by the following information concerning the nominee: Name, address, occupation, branches of entomology engaged in, positions held involving entomological experience, entomological work done, and list of publications.

Election shall be by ballot at the annual meeting, upon nominations approved by the Executive Committee. Ballot may also be taken upon such other nominations, previously sent to the Executive Committee, as may be demanded by any five members or fellows. All elections of fellows shall require a two-thirds vote of the members present.

*This section was adopted provisionally; it is to be included if affiliation with A. A. A. S. be granted.

SECTION 3. All officers shall be elected by ballot at the annual meeting, for a term of one year, and shall be eligible for re-election.

ARTICLE VI.

MEETINGS.

SECTION 1. An annual meeting shall be held at such time and place as the Executive Committee each year may select.

ARTICLE VII.

AMENDMENTS.

SECTION 1. This constitution may be altered or amended at any annual meeting by a two-thirds vote of the members present, a copy of each amendment proposed having been sent to members and fellows at least one month in advance of the meeting.

BY-LAWS.

1. The annual dues for members and fellows shall be one dollar.
2. A majority of the members present at an annual meeting shall constitute a quorum for the transaction of business.
3. Notice of all meetings of the society shall be sent to members at least one month in advance.
4. The Executive Committee shall provide a programme for all meetings, including at the annual meeting, a popular lecture, and a technical entomological exhibit of material and methods.
5. The time of the business meeting shall be published prior to the opening session of the annual meeting.

ENTOMOLOGICAL SOCIETY OF ONTARIO.

The first regular meeting of the autumn and winter season was held in the Biological lecture room of the Ontario Agricultural College on Wednesday evening, October 17th. Mr. T. D. Jarvis, Vice-President, occupied the chair. The proceedings began with notes and observations made by members during the past summer.

Prof. Bethune exhibited mounted specimens, showing the life-history and work of the two Asparagus beetles, *Crioceris asparagi* and *12-punctatus*, the former of which feeds on the foliage, and the latter on the seeds of the plant. He described the steady advance of these insects in a westerly direction. *C. asparagi*, the blue species, he had never seen alive till this year, though it is now very abundant in the College garden; the spotted species has been familiar about London for three or four years, and seems to be a few years in advance of its companion in its spread

over the country. Spraying with a mixture of lime and Paris green is an effective remedy ; when the shoots are being cut for table use lime alone should be used.

Mr. E. J. Zavitz, Secretary of the Society, gave some interesting notes on a rare species of forest insect belonging to the Ptinidæ, *Dinoderus substriatus*, Payk., which he had found injuring the bark of Hemlock trees.

Mr. J. Eaton Howitt related his observations of a beetle attacking the fruit of an almond, which had been furnished by a grocer in Guelph. The insect is probably a Southern importation brought with the nuts. Further examination will be made, and the results reported at a future meeting.

Mr. H. Groh gave an account of the depredations of the gray Blister-beetle, *Epicauta cinerea*, which he had found feeding upon alfalfa and other leguminous plants. The insect appeared in very large numbers, and disappeared very suddenly.

Mr. L. Caesar gave an interesting account of the work of Aphis-lions, *Chrysopa*, and Assassin-bugs, *Reduviidæ*, in reducing the numbers of the Pear-tree Psylla, which was doing much damage in an orchard in the Niagara district. What at first portended a serious injury to the trees was entirely got rid of through the friendly aid of these carnivorous insects.

After these observations had been discussed, Prof. Bethune read a paper by Mr. J. Chester Bradley, of Cornell University, on "An Entomological Trip to the Selkirk Mountains of British Columbia," illustrated with a series of original lantern pictures. This paper was intended for the annual meeting, but the slides, unfortunately, did not arrive in time for its presentation then.

There were thirty-four present during the evening, including some of the lady teachers belonging to the Nature-study class at the Macdonald Institute. Meetings will be regularly held on each alternate Wednesday evening, the Wellington Field Naturalists' Club holding its meetings on the intervening Wednesdays.

ENTOMOLOGICAL MEETINGS AT BATON ROUGE, LA.

The Association of Official Entomologists of the Cotton Belt will meet at Baton Rouge, Louisiana, Nov. 13 and 14, 1906.

The Association of Farmers' Institute Workers will meet at Baton Rouge, Nov. 12 and 13 ; the Association of Official Horticultural Inspectors, Nov. 14, 15 and 16, and the Association of Agricultural Colleges and Experiment Stations, Nov. 14, 15 and 16.

The above date is, therefore, a most convenient time at which to hold a meeting of the Southern entomologists, owing to the interesting programme offered by the various other societies meeting at Baton Rouge during the same week, and owing to the low rates which will then be in effect on all railroads.

The unprecedented advance into new territory made by the boll weevil in its migrations this year, the modifications of quarantines made by several of the Southern States, and the new developments with reference to the boll weevil situation, notably the results of investigations by the Bureau of Entomology with reference to the parasitism of this pest by native parasites, insure an interesting and highly instructive session. A recapitulation of the situation and of recent investigations cannot prove other than of value to every Southern entomologist.

A problem of even greater importance to Southern agriculture than that of the boll weevil, is the problem of eradicating the Texas fever Cattle-tick. Preparations are gradually being made by the Southern States, in co-operation with the U. S. Dept. of Agriculture, to presently commence the entire eradication of this pest from the United States. The Cattle-tick presents what is undoubtedly the first case in which total eradication of a pest appears both possible and feasible, and its consideration is therefore of peculiar interest. Prof. H. A. Morgan, whose studies of the life-history of the Cattle-tick made possible the practical development of eradication methods, is expected to be present at the meeting of Cotton Belt entomologists, and give a comprehensive resume of this line of entomological work. Officials of various Southern States, as well as representatives of the U. S. Dept. of Agriculture, will be present to discuss various phases of this problem, and an interesting symposium upon the tick work is fully assured.

Several excursions to local points of interest are being planned, including excursions to the extensive sugar-cane plantations, sugar house and refineries surrounding the city.

Members of the Association of Economic Entomologists, as well as others who may be interested in entomological work in the South, are cordially invited to attend and participate in these meetings.

Kindly advise Mr. Wilmon Newell, Baton Rouge, La., at an early date, as to whether or not you will be in attendance, in order that provision may be made for the ample accommodation of all visitors.

A. W. MORRILL, Secretary,
Association of Official Entomologists of the Cotton Belt.

A NEW RETINIA ATTACKING AUSTRIAN PINE.

BY A. COSENS, JAMIESON AVE. COLLEGIATE INSTITUTE, TORONTO.

Retinia Austriana, n. sp.—The Austrian Pine (*Pinus laricio Austriaca*) in the vicinity of Toronto is badly infested by the larvæ of a moth which is apparently an undescribed species of the genus *Retinia*. It resembles in certain particulars the form *Retinia Comstockiana*. This species was described in the CANADIAN ENTOMOLOGIST of Aug., 1879, by Prof. C. H. Fernald, State College, Orono, Me. The specimens, however, were obtained at Ithaca, N. Y., where they were found boring in the small branches of *Pinus rigida*.

The Toronto species burrows in the cortical layer of the Austrian Pine. The tunnels formed pierce the resin ducts, the gum exudes and hardens into masses on the bark of the trees. The point of attack appears to be usually beneath the origin of a limb. The larvæ work on a more or less horizontal plane, and in consequence of this the trees have been, in some cases, almost girdled.

This form also resembles *R. Comstockiana* in its life-history. The larva when mature burrows into the lump of resin that has hardened over the entrance to its tunnel, and there pupates. The thin covering of gum left over the burrow is broken through by the imago when it emerges.

The larva prepares its burrow in the lump of resin in a very characteristic manner. Two larvæ were placed on a mass of the gum, and in a remarkably short time they had sheltered themselves in it. Their mode of operation was as follows: Selecting an accidental crevice in the resin, they crawled into it, and immediately began to weave threads of silk across the opening. The burrow was then enlarged by biting off pieces of the gum. The little masses broken off were disposed of by being forced against the covering of silk threads until they adhered to it. This very soon so effectually closed the burrow as to make it a matter of some difficulty to find its location. This closing of the burrow, when done under natural conditions, may be a means of preventing further exudation of resin. In all the cases examined the tunnel appeared to be quite open for some distance behind the pupa.

In High Park, Toronto, nearly all the Austrian Pines are infested. In all cases the trees are being materially injured, and in some cases have been killed. Trees of the same species in other Toronto localities have been found to be infested.

The ravages of this moth are checked by parasitic agency to a certain extent, as an Ichneumon Fly emerged from a mass of resin collected by the writer.

Retinia Austriana, n. sp.—Larva: Length, 15–16 mm. Whitish, with a slightly silvery lustre. The last segment marked with dark spots on the dorsal surface. A few fine hairs on each segment of the body. Body wall very transparent.

Pupa: Length, 13–15 mm. Light brown in colour.

Imago: ♀.—Expanse, 20–22 mm.

Head: Brown, flecked with a few white silvery scales. Antennæ brown, each joint marked above with the silvery-white scales. Basal joints silvery-white above. Palpi dark brown, mottled with a few white scales. Eyes a lighter brown than the head. The scales project in the form of a ruff at the origin of the head. This is especially well marked on the dorsal surface.

Thorax: Above dark brown, shading into a lighter silvery-brown anteriorly. Beneath a mottled white and brown, with a silvery lustre, the white slightly predominating.

Abdomen: Above light brown, with a silvery lustre, each segment ending with a narrow band of silvery white scales. Beneath the white and brownish scales are about equally mixed. Towards the posterior end of the segments the white scales are slightly predominant. Anal tuft light brown.

Legs: The femora and tibiæ of the two anterior pairs dark brown, mottled with silvery-white scales. Tarsi dark brown, each segment ending in a ring of silvery-white. The femora and tibiæ of the posterior pair are silvery-white, flecked with a few brownish scales. Tarsi lighter in colour than in the two anterior pairs.

Wings: Fore wings above light silvery brown, mottled with silvery white. A wide irregular band of dark brown, interspersed with a few white scales, runs along the entire costal edge, while a narrow edging of dark brown bounds the outer margin. Two wavy bands of whitish silvery scales pass across each wing at nearly right angles to the costa, and divide the wing into three nearly equal parts. These bands are margined with dark brown. The distal third of the wing shades off into whitish, where it is bounded by the dark band on the outer margin of the wing. Beneath these wings are a light silvery-brown, shading into a little darker at the costal and outer margins. The markings of the upper surface do not show through. The fringe of these wings is a light brown, with a silvery lustre. The colour is slightly lighter at the tips.

Hind Wings: Above white, with a decided silvery lustre. An irregular band of light brown along the costal margin, while a narrow line

of silvery light brown bounds the outer margin. Beneath as above, but the brown edgings are not so pronounced. The fringe is silvery-white, shading into light brown along the line of attachment opposite the brown line on the outer margin of the wing. The fringe on the distal margin is light brown.

SOME CARPENTER-BEES FROM AFRICA.

BY T. D. A. COCKERELL, BOULDER, COLO.

I am indebted to Dr. F. Creighton Wellman for specimens of two little-known species of Xylocopidae, collected by himself in Angola. Although they are not new species, they suggest a few observations.

Mesotrichia mixta (Radoszkowski, 1881).

Two females, Chyaka, Angola, July, 1906, on mountain side, 6,000 feet. Dr. Wellman says: "Seen at several flowers. These taken at a species of *Millettia*, of which they are very fond."

The genus *Mesotrichia* seems sufficiently distinct from *Xylocopa* to be maintained, but I think *Koptorthosoma*, Gribodo, is only a subgenus of it. Ashmead separates *Mesotrichia* from *Koptorthosoma* by the characters, "second cubital cell, along the cubitus, much longer than the first; mandibles tridentate," as well as certain peculiarities of the males. *M. mixta*, however, has the venation of *Mesotrichia*, with the bidentate mandibles of *Koptorthosoma*. Vachal suggests that *M. mixta* may be a variety of *Mesotrichia flavorufa* (*Apis flavorufa*, De Geer, 1778), but the true *flavorufa* appears to be confined to the eastern side of the continent, and I think *mixta* is certainly a valid species.

Xylocopa tarsata, Smith, 1854. var. *Wellmani*, v. nov., Bailundo, Angola, Feb.-March, 1906, 4,700 feet. "Taken at various Malvaceæ, principally *Gossypium* spp." Both sexes sent. The insect agrees with Smith's brief description, except that it is a little longer, and the hind tibiae are covered with red hair on the outside (Smith speaks of it as being confined to the apex). The male, not hitherto described, has the clypeus (except the lower margin), a broad supraclypeal mark, and lateral face-marks filling in the space between eyes and clypeus, and ending abruptly at level of antennæ, all bright chrome-yellow. The labrum is black, with a central tubercle. The hind femora are much swollen, and have a large basal tooth, directed downwards, and apicad beneath; the hind trochanters have a large tooth directed backwards over the coxa. The insect is nearly 18 mm. long. Vachal has suggested that *X. albifrons*, Lep., is the male of *tarsata*, but it is quite distinct from the Angola male. Since the Angola insect is not quite the same as true *tarsata* (from the Cape of Good Hope) in the female, and the male is like nothing yet seen in the original locality of *tarsata*, I propose to call Dr. Wellman's insect *X. tarsata Wellmani*.

November, 1906

POPULAR AND PRACTICAL ENTOMOLOGY.—No. 18.

THE BEAN WEEVIL (*Bruchus obtectus*, Say).

BY ARTHUR GIBSON, ASSISTANT ENTOMOLOGIST, CENTRAL EXPERIMENTAL FARM, OTTAWA.

An insect which, fortunately, has only been reported on a few occasions as doing damage in Canada, is the Bean Weevil, *Bruchus obtectus*, Say. Authentic instances of injury by this insect have been received from one locality in Ontario, and from two in Quebec. The injury in all cases was to seed beans.

The Bean Weevil (Fig. 48) is a small, hard-shelled beetle, one-tenth of an inch long, oval in form, with the head bent down and more or less concealed, as seen from above, and prolonged into a squarely-cut snout, or beak. Its antennæ are distinctly jointed and enlarged at the tip, the first four joints and the last one reddish. The wing-covers are marked with ten impressed and dotted longitudinal lines, and the whole body is covered with short, silky hairs. The lines on the wing-covers are broken up into pale



FIG. 48.

yellowish dashes and dark brown spots. The tip of the abdomen extends beyond the wing-covers, and is of the same reddish tinge as the tips of the antennæ and the legs, but is covered more or less with short, silky hairs, and bears a central white line, but there is no appearance of the two black spots so conspicuous in the Pea Weevil, which it resembles in shape and movements. Compared more closely with this latter well-known insect, the Bean Weevil is not one-half so large, is more soberly coloured, having less white on the wing covers, and lacks the white spot on the middle of the hinder part of the thorax, and the two oval black spots mentioned above, which are present on the exposed tip of the abdomen of the Pea Weevil.

"The life-history of the Bean Weevil differs in some important points from that of the Pea Weevil. The eggs of both are laid upon the pods while these are young and tender. On hatching, the young grub of the Bean Weevil eats its way inside and penetrates one of the forming beans, several grubs entering a single bean, each one forming for itself a distinct cell. They become full-grown, and change to pupæ in the autumn, and a little later to the perfect beetles. The date of emergence

from the seed depends very much, as in the case of the Pea Weevil, on the temperature in the autumn months ; it may be in the late autumn or not until spring ; when the seed beans are stored in a warm building, the beetles may emerge at any time through the winter. One of the important differences between the life-histories of the Pea and Bean Weevils is that, whereas in the case of the former the young grubs can only enter the soft green seeds, those of the Bean Weevil can propagate for three or four generations in the dry stored seeds. This fact renders the well-known domestic remedy for the Pea Weevil, of holding over the seed for two years, quite ineffective in the case of the Bean Weevil ; that is, if a bag of peas infested with the Pea Weevil were put away for two years, the Pea Weevils would emerge the first spring and die in the bags. But, in the case of a bag of beans infested by the Bean Weevil kept in the same way, the beetles on emerging would at once set to work to lay eggs on the beans. The young grubs when hatched would penetrate the dry seeds and go through all their stages, and this breeding might be repeated as long as the supply of beans lasted. Curiously enough, the Pea Weevil does not bore holes through the paper or cotton bags in which infested seed has been stored, but in the case of the Bean Weevil, such bags are readily perforated and the beetles escape,—frequently, when this happens in houses, as is sometimes the case, to the great consternation of the inhabitants." (Fletcher, Bull. 52, Cent. Exp. Farm, Ottawa.)

In the United States the Bean Weevil has been known for a great many years. It was first found injuring cultivated beans in America in 1860, near Providence, Rhode Island. Since then it has become wide-spread in distribution in that country, and has done a considerable amount of damage. At first it was considered to be a native species, but it is now thought that the original home of the insect was in Asia, and that it was introduced into America through commerce. The first record of injury done by the Bean Weevil in Canada was in 1898, in Middlesex County, Ontario, and since then two further instances of loss from the ravages of this insect have been reported from Quebec Province. Quite recently the writer heard of the presence of the Bean Weevil at Guelph, Ont., in beans imported for seed from the United States. [It has also been reported from Aurora, Ont.—ED. C. E.]

The Bean Weevil shown herewith is only about half the size of the Pea Weevil, but resembles it in general appearance. The best remedy

for both of these insects is fumigation with bisulphide of carbon. The most convenient way to fumigate is to place the seed in an ordinary coal-oil barrel, and pour on to it one ounce of the bisulphide of carbon for every 100 pounds of grain, then close the barrel tightly, first with a wet canvas or cloth, and on the top of this boards, which should be left undisturbed for at least two days.

MOSQUITO NOTES.—No. 5.

BY C. S. LUDLOW, M. SC.,

Laboratory of the Office of the Surgeon-General, U. S. Army, Washington, D. C.

From the Island of Mindanao, P. I., comes a very pretty mosquito.

Toxorhynchites argenteotarsis, n. sp.—♀. Head densely covered with very dark brown flat scales, with bronze-blue iridescence, a light blue-white band around the eyes, and a few brown bristles; antennæ dark brown, the basal joint densely covered with flat white scales; palpi with very dark brown, almost black, scales, bronze-blue iridescence, the penultimate and antepenultimate joints with narrow violet apical bands; proboscis very dark, practically black, with bright bronze-blue iridescence; eyes black, clypeus black.

Thorax brown; prothoracic lobes well covered with flat spatulate light greenish-blue, almost white, scales, and a row of brown bristles; mesothorax with bronze-brown spindle-shaped scales on the centre of the dorsum, and a broad border of light blue-green flat spatulate scales running nearly all the way around the mesothorax, the scales just cephalad of the scutellum being also of this character; a bunch of deep orange, or orange-brown bristles over the wing joint, a bare space just dorsad of the pleura extending from the prothoracic lobes to the wing joint; scutellum covered with small flat and long spatulate green-blue scales, and long dark orange-coloured bristles; pleura brown, rather well covered with white scales; metanotum dark brown.

Abdomen dark brown, covered for the most part with blue-green iridescent flat scales. First segment with blue green median line, and light yellow scales laterally; second, third and fifth segments with large light yellow lateral spots extending well up on the dorsum; on the fourth the lateral spot is not noticeable from a dorsal view; sixth and seventh are more blue than green, and darker than the preceding segments; the sixth with orange, the seventh with black tufts; the eighth segment is

nearly purple, and has an orange tuft; venter with light yellow scales laterally, and an irregular median dark blue stripe extending the whole length of the abdomen.

Legs: Coxæ and trochanters dark, with brilliant light yellow scales; femora of fore legs light-scaled at base, with dark iridescent scales on the dorsal aspect for the distal two-thirds of its length; femora of mid-legs dark; femora of hind legs light for the proximal two-thirds, all a yellowish white ventrally; tibiæ of fore legs dark dorsally and light ventrally, except the very base and apex, which are a brilliant golden yellow; tibiæ of mid-legs mostly golden yellow, darker near the base, and a band of dark scales at the apex; tibiæ of hind legs dark blue, with green iridescence; metatarsi of fore legs nearly white, except a small basal spot of dark blue on the ventral aspect; of mid-leg nearly white, except a rather large dark spot on the dorsal surface; of hind legs dark blue, except a light basal band; 1st tarsal of fore leg is white, except an apical dark band, all the remaining joints dark; 1st tarsal on mid-leg and all the following are light yellow to white, except the last, which has a brown tip; 1st tarsal of hind legs is light, with a tiny dark apex, all the rest of the joints dark. Ungues simple and equal. In some lights there is a very narrow apical band of violet on all the femora, and on the mid and hind tibiæ reddish.

Wing clear reddish brown, sparsely scaled with brown, broadly truncate scales; 1st submarginal cell very short, very little more than half the length of 2nd posterior, and much narrower; mid and posterior cross-veins meet, and are about the same length; supernumerary cross-vein about half the length of mid, and three times its own length exterior to mid. Halteres orange brown.

There is a strong fold near fifth long vein, so that it makes a curvature in the margin of the wing.

Length, 12 + mm.

Habitat, Margosatubig, Mindanao, Philippine Islands.

Taken June and July.

Described from five specimens sent by Dr. H Newton Kierulf, Cont. Surg. U. S. Army, and evidently lies near *speciosus*, Skuse, and *Marshallii*, Theob., and may easily be the female of a species in which only the male has been known, but at all events it is sufficiently unlike such descriptions as I have been able to find to warrant my assuming it to be new.

(To be continued.)

NOTES ON THE CLASSIFICATION AND NOMENCLATURE
OF THE HEMIPTEROUS SUPERFAMILY MIROIDEA.

BY G. W. KIRKALDY, HONOLULU, H. I.

Since the final impression of my "List of the genera of the Pagiopodous Hemiptera Heteroptera," etc. (a), I have received from my friend, Dr. O. M. Reuter, a very valuable summary of his most recent thoughts on the Classification of the Miridæ (b).

Dr. Reuter's polemic has been evoked by the Hemipterous work of Mr. Distant, particularly that dealing with the Miridæ (or "Capsidæ") in the *Biologia Centrali-Americana*, Heteroptera, Vol. I, and the *Fauna of British India*, Rhynchota, Vol. II. In the latter Mr. Distant avers that Reuter's classification of the Miridæ "is more reflective of personal opinion, and contrived for the purposes of entomological arrangement, than exhibiting an evolutionary or philosophical conception" (pp. 412-3), and thereupon divides the Miridæ into two subfamilies, characterized by the presence or absence of "a longitudinal incision or sulcation on the upper surface" of the head (!).

Reuter declares that this emphatic judgment is as unjustified as it is untrue, and that it is, at least, unseemly for an author whose studies on Hemipterous systematics are so superficial as are those of Mr. Distant, to pass so judicial a sentence.

The learned Finlander proceeds to refute Mr. Distant in great detail, first tracing the evolution of our knowledge of the classification, from Fieber, in 1858, onwards; he next discusses, at considerable length, various salient points in the characteristic structure of the family, and presents two new synopses, and a genealogical tree, of the divisions. This "Classification" is without doubt one of the most important of the Heteropterous memoirs that has appeared for a long time, and represents the almost mature fruits of Dr. Reuter's many years of assiduous devotion to his favourite family. It is impossible to summarize here the fifty-eight pages, further than to reproduce, in English, the analytical table of the accepted divisions; the form of the table has been altered, while preserving its matter. The tribe *Lygæoscytini* (c) and the genus

(a) *Tr. Amer. Ent. Soc.*, XXXII, 117-56 (1906).

(b) "Hemipterologische Spekulationen, I, Die Klassifikation der Capsiden," *Festschr. für Palmén*, No. 1, pp. 1-58, and a genealogical Table. [Dated 1905, at Helsingfors, but probably not issued till 1906.]

(c) I prefer the ending "*ini*" to "*aria*," as more in line with general nomenclature.

Oligobiella are not yet sufficiently studied. I have not at the moment any examples of *Sulamita* before me, and therefore cannot add to Reuter's remarks on the Sulamitini.

1. Third segment of tarsi linear (very rarely—in *Hypselacini*—slightly thickened towards the apex). Apical margin of pronotum neither hood-like nor cystiformly elevated 2.
- 1a. Third segment of tarsi thickened towards the apex, or apical margin of pronotum hood-like or cystiformly widened. First segment of tarsi deeply sulcate. Tibiæ always unarmed. Wing cell without hook. Prosternal-xyphus margined 14.
2. Prosternal-xyphus swollen, rarely with two impressions (*Boopidocorini*). Wing-cell usually with a hook. Pronotum without apical constriction. Loræ narrow, sharply separated above and below 3.
- 2a. Prosternal-xyphus margined (d) 6.
3. Arolia fused with the claws, sometimes very small or absent 4.
- 3a. Arolia free, inwardly arched. Genæ high. Wing-cell with hook 4, *Hypselacini*.
- 3b. Arolia wanting or very delicate. Wing-cell with or without hook. Apical margin of pronotum with an impressed, more or less wide (never swollen and smooth) margin . . 5, *Camptotylini* (*Exæretaria*).
4. Wing-cell with hook 5.
- 4a. Wing cell without hook 3, *Cremnorrhinini*.
5. Pronotum not, or very finely, punctured 1, *Chlamydatini* (*Plagiognatharia*).
- 5a. Pronotum coarsely punctured. Tarsi very long. Eyes very large. Vertical margin keeled 2, *Boopidocorini*.
6. Arolia fused with the claws, or at least approximate to these, sometimes rudimentary. Wing-cell with hook. Loræ narrow, above and below sharply separated. Pronotum without apical constriction 6, *Xenocorini* (*Oncotylaria*) and *Nasocorini*.
- 6a. Arolia free, converging towards the apex or parallel, sometimes absent (rarely in some *Macrolophini* fused with the claws) . . . 7.
- 6b. Arolia always present, free, diverging towards the apex, and slightly widened 12.

(d). Only in the aberrant *Stethoconus*, Flor. (*Campyloneurini*), and *Histricoris*, Reuter (*Capsini*), strongly convex.

7. Arolia free, converging towards the apex. Wing-cell without a hook. Pronotum without apical constriction. Genæ very rarely high. Loræ sometimes separated also beneath. Eyes inwardly mostly emarginate. Tibiæ slender, typically without punctures 7, *Heterotomini* (Cyllocoraria).
- 7a. Arolia free, converging towards the apex or wanting. Wing-cell very rarely without a hook. Pronotum with apical constriction (which is sometimes hidden under the posterior margin of the posteriorly-produced hind margin of the vertex). Loræ narrow, sharply separated above and beneath.....8, *Pilophorini*.
- 7b. Arolia very delicate, or absent (sometimes clearer in some *Macrolophini*, but fused with the short claws). [Wing cell without hook. Pronotum with apical constriction (e)].....8.
- 7c. Arolia free, converging towards the apex, or parallel. Wing-cell very rarely with hook. Pronotum without apical constriction. Vertex wide. Genæ high. Rostrum strong..... 11.
8. Head elongate, feebly declivous. Loræ sharply separated above and beneath, narrow. Tarsi very slender. Sides of pronotum acute, at least posteriorly.....9, *Fulvini*.
- 8a. Head vertical.....9.
9. Head not strongly elongate ventrally. Clypeus not humpily swollen in the middle.....10.
- 9a. Head ventrally strongly elongate. Clypeus humpily swollen in the middle. Genæ very high. Neck very short. Tarsi slender, first segment long.....14, *Cylopini*.
10. Arolia very delicate, or fused with the short claws. Loræ sharply separated above and below, narrow.....10, *Macrolophini* (Dicypharia).
- 10a. Arolia absent. Loræ only separated above, arched...11, *Garganini*.
11. Body generally robust, never constricted in the middle. Loræ generally separated above and below, but wide. Tibiæ often robust. Membrane with two cells... 12, *Halticini* (Laboparia).
- 11a. Body generally narrow, constricted in the middle. Loræ separated only above. Tegmina wings usually very rudimentary. Membrane of macropterous form without cells, with irregular nerves.....13, *Myrmecophyini*.

(e) Added in MS. by Dr. Reuter.

12. Wing-cell with or without a hook. Pronotum with thick apical constriction. Callosities limiting the constriction posteriorly, as long as the latter. Head vertical, genæ high 15, *Restheniini*.
- 12a. Wing-cell always without a hook. Pronotum without an apical constriction or with a "spurious stricture." Sides acute, at least anteriorly. First segment of antennæ and tarsi long . . . 16, *Mirini*.
- 12b. Wing-cell always without a hook. Pronotum with a true apical constriction (sometimes not clear in brachypterous forms), sides rarely acute anteriorly 13.
13. Body oval or parallel, very rarely narrow and constricted medially. Labrum narrow. Genæ rarely high. Loræ separated only above 17, *Capsini*.
- 13a. Body elongate, constricted medianly. Labrum very wide, crescentic. Genæ very high. Neck very long. Loræ wide, but also separated from below 18, *Myrmecorini*.
14. Third segment of tarsi linear or very little thickened. Arolia very delicate, free. Loræ above and below sharply separated, narrow. Apical margin of pronotum hood-shaped or strongly swollen 19, *Ambraciini* (*Clivinemaria*).
- 14a. Third segment of tarsi thickened towards the apex. Arolia large, very closely approximated to the claws, often fused with these. Loræ separated only above. Membrane mostly unicellular 20, *Bryocorini*.

II.

The following additions and emendations to my "List" are necessary. I regret that Reuter's "Classification" was not published earlier, but although some shifting of the group constituents of my list will take place, the references to type fixations will remain practically unchanged, so that its prime purpose is fulfilled. The chief disturbances are in tribe 13. in which Reuter leaves only *Cylapus* and *Vannius*, removing almost all the rest to the *Bryocorini*.

P. 119, gen. 1, for "*Dolichomerius*" read "—*merus*."

P. 120, gen. 15, is dated 1871.

P. 121; gen. 29, add "(*Odontobraxis*, Reuter, 1884, A. S. S. Fenn., xiv, 203").

P. 121, gen. 31, after "Mulsant" add "and Rey."

P. 122, for "*Plagiogastaria*" read "*Plagiognatharia*."

- P. 123, gen. 18, the correct citation is "Reuter, 1875, Bih. Vet. Ak. Handl., iii, 57, type *onustus* (Fieber), Reut., 1878, A. S. S. Fenn, xiii, pt. 1, Pl. 4, f. 3, and Pl. 1, f. 2."
- P. 124, gen. 32, make this a synonym of *Reuteroscopus*, Kirkaldy, 1905, Wien. Ent. Zeit., xxiv, 268.
- P. 124, gen. 36 belongs to the Capsini.
- P. 124, add "44" before "*Phylus*."
- P. 125, for "Oncotylini" read "Xencorini."
- P. 126, gen. 16, read "*Malthacosoma*."
- P. 127, gen. 11, add as synonym, No. 51, on p. 138.
- P. 128, gen. 24, for "Bull. Soc. Nat., Moscou (sep. ?)" read "Mel. Ent., ii p."
- P. 128, gen. 28, add as synonym "*Schistonotellus*, Reuter, 1905, Oefv. Vet. Förh., xlvii, No. 20, p. 32" (*dromedarius*, f. 15a).
- P. 128, gen. 32, remove to tribe 6 Cremnorhinini (p. 129).
- P. 129, for "Campyloneurini" read "Macrolophini," and for "Cremnorhini" read "Cremnorhinini."
- P. 130, add genera 17, 18 and 20, on pp. 136-7, to the Halticini.
- P. 130, note 5, line 4, for "260" read 206." N. B.—Pp. 1-190, or the second half, of Reuter's "Rev. Crit. Caps.," appear to be a reprint of the Hem. Gyna. Scand," without the Plate.
- P. 131, gen. 17, Reuter removes this to the Bryocorini.
- P. 132, line 14, for "*oschanti*" read "*oschannini*."
- P. 132, gen. 6, for "?" read 10," and delete "(separate?)."
- P. 133, gen. 11, Reuter considers that this is probably a Heterotomine.
- P. 133, gen. 26 and 28, remove to Capsini.
- P. 133, gen. 29, for *albofasciatus* read *unifasciatus*.
- P. 134, tribe Cylapini; Reuter removes 3 to the Capsini, retains 1 and 4 in the Cylapini, and most (or all) of the rest to the Bryocorini. I regret I cannot altogether follow him in that.
- P. 134, gen. 7, add as a synonym, gen. 24 (p. 146).
- P. 134, gen. 18. The following is appended to render valid the genus *Sahlbergella*: "Closely allied to *Deimatostoges*, Kuhlitz, but the pronotum and scutellum are not tuberculate, the head is more declivous, and the form of the pronotum and scutellum in profile is different."
- P. 134, gen. 19, for *Odoniella*, "Haglund," read "Reuter, 1905, Oefv. Finsk. Förh., xlvii, No. 10, p. 2, type *Reuteri* (Haglund), Reuter.

- P. 136, gen. 10, add ("Dyoncus, Fieber, 1860, Eur. Hem., 67").
- P. 136, gen. 13, read "*Resthenia*, Spin., etc., subgenus 1, *Platytylus*, Fieber, etc., = *Callichila*, Reuter, etc." Reuter forms a division (Resthenini) from this and *Mimoncopeltus* (= *Lygdus*).
- P. 136, gen. 5, to *Lopistus*, add as synonym, †"*Capsodes*, Dahlbom, 1851. K. Vet. Ak. Handl. (for 1850). 214 (not descr.)."
- Pp. 136-7, remove gen. 17, 18 and 20 to Halticini.
- P. 137, gen. 30. Reuter thinks this may belong to the Pilophorini.
- P. 137, gen. 31. Reuter forms a division (Garganini) from this.
- P. 138, gen. 44. According to Reuter (1905) *Pantiliodes* (p. 136, gen. 6) is a synonym of *Creontiades*.
- P. 139, add as 68a *Liozoridia*, Reuter, 1903, Oefv. Finsk. Vet. Förh., xlv, No. 16, p. 13 (= *Liozoridea*, Reuter, 1906, Yezh. Zool. Mus. Imp. Nauk., Peterb., X, 51), type *Mutabilis*, Reuter, Pl. 2, f. 4. = *Gismunda*, Distant, p. 140 (gen. 91).
- P. 140, gen. 80, read "*Charagochilus*."
- P. 141, gen. 101, remove to Macrolophini (p. 129).
- P. 141, gen. 98, for "n.n." read "1906 (June), T. N. Zealand Inst., xxxviii, 62." [The Tr. Am. Ent. Soc., xxxii, p. 141, is dated "May," but was not published till at least August.]
- P. 142, gen. 113, read "*Thyrillus*."
- P. 142, gen. 119 and 120, *Callicratides*, Distant, is a synonym of *Hyalopeplus*, Stal.
- P. 143, gen. 131, add "fig. 2."
- P. 143, gen. 139, read "Costa, 1841, A. S. E., France, X, 294, type *italicum*. Costa, 1855 (?), Atti Nap., 251, Pl. 2, f. 1 = *Gryllocoris*," etc.
- P. 145, add gen. 24, *Saturniomiris*, Kirkaldy, 1992, T. E. S., London, 268, type *tristis* (Walker), Kirk.
- P. 145, gen. 5. Reuter places this in the Pilophorini.
- P. 145, the date of "*Heidemannia*" is 1891.
- P. 146. Reuter places *Thaumastomiris* and *Perissobasis* in the Bryocorini.
- P. 146. *Ambrocius* is placed in the Clivinemini (p. 135) by Reuter, who incorrectly spells it *ambrocious* and *ambrosius*. *Opellus* (No. 7) belongs there also. Genus 8 should be deleted. The date of Stal's genera in K. Sv. Ak. Handl., 2, pl. 7, is 1860.
- P. 146, gen. 15, the preoccupied name *Lygdus* should be superseded by *Mimoncopeltus*, nov.

P. 146, gen. 16 and 17 are placed by Reuter in the Bryocorini, 18 and 19 in the Macrolophini.

P. 147, add " Family 3a, Polycetenidæ.

" Genus 1. *Polycetes*, Giglioli, 1864, Q. Journ. Micr. Sci., IV, 25, type *molossus*, Gigl., Pl. Ib., figs. 13-14.

" Genus 2. *Euroctenes*, gen. nov., type *lyra* (C. O. Waterh., 1879, T. E. S., London, Pl. IX, figs 1-2).

" Genus 3. *Eoctenes*, gen. nov., type *spasmæ* (C. O. W., op. c., figs. 3-4).

" Genus 4. *Hesperoctenes*, gen. nov., type *fumarius* (Westw., 1874, Thesaurus Ent. Oxon., Pl. 38)."

The characters of these four genera have been indicated by various authors, but only one, *Polycetes*, has been named:

1. Palæogæic forms; posterior legs comparatively short and stout, about half the length of the bug; the claws unequal, one nearly simple, the other large and bent, its basal tubercle nearly as long as the simple claw 2.
- 1a. Neogæic forms; posterior legs as long as the bug; claws nearly equal, with a small tooth at the base 1, *Hesperoctenes*, mihi.
2. Antennæ long, the third segment almost (or more than) as long as the fourth 3.
- 2a. Antennæ shorter, third and fourth segments about equally long 4, *Eoctenes*, mihi.
3. Head medianly wider than long. Pronotum transverse 3, *Polycetes*, Gigl.
- 3a. Head medianly longer than wider. Pronotum elongate 2, *Euroctenes*, mihi.

P. 147, delete entry (on p. 147 only) of Family 5. and read " Family 5, Dipsocoridæ (Monogr., as *Ceratocombidæ*, Reuter, 1891, Act. Soc. Sci., Fenn., XIX, No. 6, pp. 1-28, Pl.).

Subfamily 1, Dipsocorinæ.

" Genus 1. *Lichenobia*, Bærensprung, 1857, Berlin Ent. Zeit., I, 165 (= *Ceratocombus*, Fieber, 1860), Wien. Ent. Mon., IV, 267, type *muscorum*, Fall. (= *Coleoprata*, Zett.), type *ferruginea*, Baer. (= *Coleoprata*, Zett.), fig., Signoret, 1852, A. S. E., France (2) X. Pl. 16, f. 3, as *Astemma Mulsanti*."

N. B.—*Ceratocombus* was only named, not described, by Signoret.

P. 148, line 3, read "*Trichotonannus*."

P. 148, date of footnote 20 is 1836.

- P. 126, gen. 28, make this a synonym of *Lopus*, Hahn, 1833, Wanz. Ins., I, 143, Pl. 1, f. 4, type *Chrysanthemi*, Hahn (= *decolor*, Fall).
 P. 146 add Tribe 27, Lygaeoscytini.

Genus 1. *Zygaoscytus*, Reuter, 1893, E. M. M., xxix, 151, type *cimicoides*, Reuter, fig.

P. S.—I have just received the 3rd volume of Distant's "Fauna of British India, Rhynchota" (1906), wherein his doubtful Anthocorid genera are figured as follows:

Ostorodias, f. 1; *Arnulphus*, f. 2; *Amphiareus*, f. 3; *Lippomanus*, f. 4; *Sesellius*, f. 6. *Euspudaeus*, Reuter, is also figured (f. 5), also the following Water-bugs: *Cheirochela feana* (16), *Gastroiella* (17), *Helocoris strabus* (19), and *Ctenipocoris* (20). I find I omitted from my list the Naucorid *Thurselinus*, Distant, 1904, Entom., xxxvii, 259, type *Greeni* (figured F. B. L., f. 21).

QUEBEC BRANCH—ENTOMOLOGICAL SOCIETY OF ONTARIO.

The Ninth Annual Meeting of the Quebec Branch was held at the house of the President, Rev. Dr. Fyles, Levis, P. Q., on Oct. 12, 1906—twelve present.

Dr. Fyles described an excursion that he had made through the border townships which had been ravaged some years ago by the Larch Saw-fly, *Nematus Erichsonii*, Hart. He found that in all that section of the country there was not a first-growth tamarack left, and that most of those of a later growth were also destroyed; their places were now taken by a new growth of balsam, poplar, spruce and birch, varying with the nature of the soil. He also exhibited a fine nest of the wasp *Vespa arenaria*, Fab., which he had found in an open field, an inch or so from the ground, supported by some grass stems and that of an aster. It resembled a round stone or a large puff ball, and contained a surprisingly large number of cells. A female emerged from one of the cells on Sept. 9.

Miss Freeman exhibited a number of beautiful and interesting specimens taken at Lorette, P. Q., and mentioned having found about a dozen butterflies, *Eugonia f-album*, in an unoccupied room, where they evidently intended to pass the winter.

Lt.-Colonel Lindsay gave an interesting account of a Caddis-fly, frequenting lakes and streams, which he found very abundant in August. It is preyed upon by both trout and insectivorous birds, so that between the crop of the bird and the maw of the fish—its Scylla and Charybdis—the unlucky insect finds it difficult to steer its course.

The following officers were elected for the coming year: President, Rev. Dr. Fyles; Vice-President, Mrs. Richard Turner; Secretary-Treasurer, Lt.-Colonel Crawford Lindsay; Council, Hon. Richard Turner, Mr. J. H. Simmons, Miss Bickell, Miss Freeman, and Miss Hedge.

CONTRIBUTIONS TO THE ENTOMOLOGY OF THE
SELKIRK MOUNTAINS OF BRITISH COLUMBIA.—I.
INTRODUCTORY.

BY J. CHESTÉR BRADLEY, UNIVERSITY OF CALIFORNIA, BERKELEY, CAL.

In company with a party of botanists and others, the writer spent the summer of 1905 in the Selkirk Mountains of British Columbia, much of the time in scientifically unexplored parts of that beautiful range. The Selkirks occupy the major part of the Kootenay district of south-eastern British Columbia. It will be seen by reference to a map that they are bounded on practically all sides by the Columbia and Kootenay Rivers and the long and narrow Kootenay Lake. They form, especially in the northern part, an exceedingly rugged region of lofty peaks and ridges, cut by deep, densely-wooded valleys. The vegetation is said to be much denser than in the Rockies of corresponding latitude, and differs somewhat from it in the nature of its trees, etc. It certainly is almost impenetrable in many places, and to take a pack animal where there is no cut trail is out of the question.

The region is divided by the Canadian Pacific Railway into a northern and southern district, more or less differentiated in natural as well as other features. The southern part is a mining country, and in some of the valleys are occasional mining settlements, and even railroads and small towns. It contains a few large lakes, on one of the most beautiful of which is situated the little town of Kaslo, where Dr. Dyar and Messrs. Currie and Caudell made the headquarters of their expedition of the previous season, and where Mr. Cockle, an enthusiastic entomologist, has accumulated an extensive cabinet of local insects. Some distance north of this, on the shore of Howser Lake, our party spent two weeks, and considerable collecting was had. A little marl bog on the opposite shore furnished collecting grounds of a type not elsewhere met with.

The northern district is not penetrated more than a mile or two from the railroad by any evidence of civilization, excepting three or four small mining camps and the occasional hut of a trapper. Even the latter is very, very scarce. Although scientists have sometimes penetrated into the Rockies north of the railroad, they have not, so far as I am aware, entered here. Yet the region is attractive in the highest degree. The

richness of the vegetation only lends a greater charm. The lower slopes are covered with unbroken noble forests of evergreen, as yet but slightly touched by the destroying-hand of the lumberman. The trees often average 150 feet high, while heights of 200 feet and diameters from seven to nine feet are not uncommon. Hemlocks, *Arbor-vitæ* and Douglas spruce make up the bulk of the forest below 4,000 feet, above which they are replaced by fir. Deciduous trees are very sparingly represented by a few birch, poplars, and in the alpine meadows by willows. A distinct timber line is present at an altitude of about 6,000 feet, above which one may roam over vast stretches of alpine meadows, characterized by a luxuriant growth of grass and flowers, now stretching away over quiet slopes upon which the caribou love to graze, or again suddenly interrupted by more rugged topography, yawning chasms and steep rock walls. There are many beautiful glaciers and snow-fields of vast extent, and the rugged peaks where these are found are the homes of many a fine white mountain goat, and more rarely of bighorn sheep, of both of which we saw several. The glorious combination of harmonizing colours, the deep blue and white of the glaciers and snow, the light green of the alpine meadows, or in places white or red or yellow with flowers, all contrasted with the rich dark green background of the firs at timber line or growing in beautiful isolated groups above, is a sight which would alone well repay the most arduous journey and leave its imprint on the soul of the traveller forever.

We were encamped for two weeks at timber line, at a distance of over 60 miles north of the Canadian Pacific, in what is known as the Big Bend Country, because here the Columbia River makes its grand bend from a north-westerly to a south-westerly course. At this altitude the most evident insects were several species of *Bombus*, great numbers of *Vespa occidentalis*, two species of *Tabanidæ*, and a very abundant and exceedingly annoying *Leptid* of the genus *Symphoromyia*. *Labidia opimus* was fairly common, but no other Saw-flies, except a single specimen of *Lyda*, were found. Below 4,000 feet more species of *Bombus*, *Vespa* as before, several species of Saw-flies and of Longicorn beetles related to *Leptura*. Where Downie Creek flows into the Columbia, we were encamped for a week, and here shore and aquatic, woodland, and flower-loving species were in great abundance.

At our camp along the shore of the Columbia River, a few miles north of the town of Revelstoke, were found especially wood-inhabiting

species, Longicorns and Buprestids, *Sirex albicornis* and *abdominalis* and *Xeris caudatus*, Braconid parasites of wood-boring Coleoptera, and especially *Odontaulacus editus*, of which I took 26 specimens. Along moist spots on the trail and shore were large numbers of bees of many kinds and swarms of butterflies.

The botanical results of the expedition were more thorough and important than the zoological, and will prove invaluable to the student of the fauna as well as the flora. Over 20,000 sheets were brought home, and an additional 18,000 the previous season. These represent very fully the flora of the region. In addition to this, the party was equipped with registering thermometers, sling psychrometers, aneroid barometers, radiation thermometers, evaporimeters, photographic outfits, and other apparatus for studying the ecological and bionomical conditions that prevail, and which will, I hope, result in facts of no less importance to the zoologist than to the botanist. The leader of our expedition was Dr. Charles H. Shaw, Professor of Botany in the Medico-Chirurgical College of Philadelphia, an enthusiastic naturalist and a charming companion, to whom the author wishes to express his thanks for many courtesies and facilities provided for his work. Among other members of the party were Prof. Heinrich Peterson, of Ursinus College; two students from the Medico-Chirurgical College; Mr. Merkel Jacobs, of the University of Pennsylvania, and part of the time Miss Alberta Cory, of the Kansas City High School; Miss Ellen Runner, of Lake Forest College; Miss Mary T. Jobe, of the Cortland (New York) State Normal School, and others. Some of these were interested in botany, several of them devoting their entire attention to the collection of plants. I was the only member of the party interested in zoology.

II.—New Aculeate Hymenoptera.

I hope to be able to publish from time to time lists, notes and descriptions, which will be preliminary to a knowledge of the insects of the region. As a beginning, I here publish the descriptions of three Hymenoptera, one a Bethyloid of the genus *Gonatopus*, remarkable for its curious and ungainly appearance and for its rarity. Another is of the family Pemphredonidæ of the genus *Blepharipus*, which has heretofore been known in America from three female specimens representing two species. There is one European species.

Blepharipus columbiæ, n. sp. (Crabronidæ.)

♀.—Differs from *B. nigricornis* in having the posterior tarsi entirely black instead of yellow at the base; the abdomen is less elongate, and the propodeum has indistinct transverse ridges on the posterior face, and short longitudinal ridges on the base above joining the postscutellum.

Habitat.—Ground-hog Basin, Selkirk Mts., B. C. July 24, 1905.

Type.—One ♀ in the collection of Cornell University.

Spilomena alboclypeata, n. sp.

♂.—Head and dorsum without the scattered punctures of *Foxii*; antennæ fuzzy pubescent, the scape lemon-yellow, the pedicel yellowish; sides of the face, clypeus and mandibles white, tibiæ and tarsi pale, otherwise black.

Habitat.—Revelstoke, Selkirk Mts., B. C., July 1, 1905.

Type.—One male in the collection of Cornell University.

The male of this genus has not been heretofore known in America. There is a specimen of *pusilla* male in the collection of the American Entomological Society which differs from the female in having the clypeus and sides of the face yellow and the legs entirely honey-yellow.

Gonatopus cyphonotus, n. sp.

(*κρυφονοτος* = hump-backed.)

♀.—Black, except scape, pedicel, face, mandibles, trochanters, all coxæ beneath, knees, posterior and middle tibiæ in the middle, and anterior tibiæ and tarsi above, lemon-yellow, rest of legs beyond the swollen part of the femora reddish-yellow. Thorax above and abdomen smooth, polished and shining; thorax on the side, constriction between the mesothorax and propodeum above, head, and coxæ, finely-roughened; propodeum posteriorly a little more coarsely roughened; hump of thorax without a V-shaped emargination, with an ocellus-like tubercle on each side. Length, 2.5 mm.

Habitat.—Downie Creek, Big Bend Country, Selkirk Mts., British Columbia.

Type.—One female in the collection of Cornell University.

In the type of *contortulus*, Patton, the entire thorax is covered with a fine transverse striation, more prominent on the propodeum. This is entirely wanting in *cyphonotus*, and in the latter the constriction between the mesothorax and propodeum is less marked.