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The
Canadian Entomologist

VOLUME XXXVIII.



EDITED BY

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No. 1

A NORTH AMERICAN ENTOMOLOGISTS' UNION.*

BY HENRY H. LYMAN, M. A., MONTREAL.

When seven years ago I had the honour of occupying the Presidential chair of this Society, I ventured in my annual address, as some of you will doubtless remember, to suggest the formation of a North American Entomologists' Union on similar lines to those on which the American Ornithologists' Union has been so successfully carried on; and in my second address the following year I again returned to the subject. I hoped that the idea would be taken up by some of the leading entomologists of the continent, but though the matter has been, I believe, the subject of correspondence among a number of entomologists, nothing of a tangible nature has, apparently, resulted.

Last year when in New York I was told that a move had been made, and that I would soon receive a circular about it, but on a subsequent visit this year I was told that owing to certain local jealousies the matter had been, at least temporarily, abandoned.

It therefore appears to me opportune, as the original proposer of the scheme, to again bring it before our Society, and through it before the entomologists of the continent.

One thing which caused my thoughts to be again turned to this subject was the reading of the very admirable article on Entomological Literature by Mr. C. F. Baker, in the October number of "Entomological News." If all our writers would use the same restrained and courteous manner there would be no excuse for bickering and ill feeling among entomologists. I entirely agree with Mr. Baker that having so many publications devoted to general entomology, so that any student in any branch has to refer to all of them, is a great evil and a hindrance to the progress of original research in special lines; but while it is easy to see the evil, I fail to see how it can be remedied except by the co-operation of entomologists in a Union such as I have suggested.

*Read at the Annual Meeting of the Entomological Society of Ontario, Guelph, Oct. 19, 1905.

I therefore desire to put before you very briefly some ideas which have occurred to me on this subject, in the hope that they may prove of interest.

In the first place full membership must be limited, as in the case of the Royal Society of Canada, in order to make it a mark of distinction, and so a coveted reward for eminence. But how is the selection to be made without probable injustice to some and the certain wounding of the susceptibilities of many?

Do not attempt it. Begin with Associate Members only, which all North American entomologists should be invited to become, and when you have secured a goodly number, say not less than one hundred, have a ballot by mail for a certain number of full members, no one to be chosen as such unless he receives at least a majority of all the votes cast.

Fix a limit to the full membership, but do not try to fill the limit at once; let us feel our way and grow gradually, but once the limit has been reached do not elect any more full members, except to fill vacancies which may occur.

It would be well to set a moderate limit at first, as it would always be possible to vote to enlarge the limit should it be found too restricted, but it would be a very difficult matter to reduce the membership should it be found to have been made too large in the first instance.

On the other hand, it should not be made too small, lest the cry of "clique" be raised against it.

The happy mean should be aimed at in order that no one who had not attained to some eminence should be a full member, so that membership would be considered an honour.

I would also suggest having a limited number of honorary memberships to be voted to men of eminence in the science, but who through age or infirmity were no longer able to continue active scientific work.

No question of amateur or professional should enter into the matter. An amateur who attains to eminence in the science is, I claim, more entitled to honour than a man to whom it is a profession by which he earns his living.

When a sufficient number of members have been elected, they should come together in an Annual Meeting and organize the Union, electing the first officers, and at this point great care should be taken to secure officers who would be universally acceptable.

The initial stage of every undertaking is often the most critical, and in this case it is most important that there should be no appearance of the Union being especially identified with any one locality, but that all sections of the continent should be fairly represented.

More than that, however, is needed in order to render the scheme a success, and one of the things of most vital importance is a comparatively full attendance of members at the annual meetings or conventions. Failure to attend three consecutive annual meetings should be considered to constitute resignation of membership, and the seat of such member should be declared vacant and filled by election from among the Associate Members.

I have not yet touched upon the financial side of the question, although that is very important. Unfortunately, some entomologists of eminence are not very liberally paid, and have little or no private means, and yet unless the majority of members attended the annual meetings the Union would prove a failure. Most of the entomologists who would be members are, I suppose, in official positions, and we might reasonably expect that at least a portion of their expenses in attending the meetings would be borne by the institutions with which they are connected.

Whether it would be possible to secure some sort of endowment from one of the multi-millionaires of the continent I do not know, but it might be worth attempting.

I have not in this paper made any reference to the matters with which such a Union would deal. Some of these I suggested in my two presidential addresses, and many others will readily occur to any one giving the subject the slightest thought.

The great thing is to secure co-operation among the principal workers in the science, and to eliminate all things which tend to dissension and discord. If I could be of any assistance in the organization of such a Union, I should be happy to do all I could.

DR. WILLIAM SAUNDERS, C. M. G.

His many friends in Canada and elsewhere will join with us in offering very hearty congratulations to DR. WILLIAM SAUNDERS upon the distinguished honour that he has received from our gracious Sovereign KING EDWARD, in being made a Companion of the Order of St. Michael and St. George. This honour is conferred only upon those who have rendered eminent service to the Empire in some capacity or other. Few men assuredly have done more for Canada than the Director of the Experimental Farms of the Dominion in advancing and improving agriculture and fruit-growing in all their departments throughout the length and breadth of the land, and especially in the Northwest Provinces. We trust that Dr. Saunders will be preserved in health and strength for the performance of his varied and arduous labours for many a year to come.

SOME NEW SPECIES OF HALICTUS.

BY J. C. CRAWFORD, DALLAS, TEXAS.

In the following descriptions the term sericeous or sericeously roughened is applied to the silky lustre induced by the minute striation or roughening of the surface.

Halictus Fedorensis, n. sp., ♀.—Black, head and thorax closely, finely punctate, clothed with rather abundant whitish pubescence; facial quadrangle longer than broad; clypeus shiny, sparsely punctured; antennæ obscurely ferruginous beneath toward apex; mesothorax sericeously roughened, median and parapsidal grooves obscure; base of metathorax sericeously roughened, finely striate, the striæ not reaching apex medially; wings hyaline, nervures and stigma light testaceous; legs obscurely ferruginous, hind inner spur with four very oblique teeth; abdomen sparsely pubescent, base of segments two and three with lateral hair patches; segments closely, finely punctate; broad apical margins testaceous.

Length, 7 mm.

Two specimens from Fedor, Texas, June 1, 1898; Nov. 11, 1897. Rev. G. Birkmann collector.

In appearance most like *arcuatus*, *aberrans*, *galpinsie*, but differs from all of them by the closely-punctate first abdominal segment.

Halictus Robertsoni, n. sp., ♀.—Black, clothed with white pubescence, and appearing powdery; form narrow; head and thorax very closely, finely punctured, clypeus sparsely so; facial quadrangle longer than broad; flagellum obscurely ferruginous beneath; mesothorax sericeously roughened; disc of scutellum almost impunctate; truncation of metathorax heart-shaped, surrounded by a salient rim; from the upper lateral edges of this carina salient carinas run forward, making a triangular enclosure on the base of the metathorax; enclosure very shiny, rather coarsely irregularly rugose; all of metathorax except enclosure covered with close pubescence; tegulæ large, dark, with a light centre; wings smoky, nervures and stigma dark brown; legs black, hind inner spur with about six teeth, the basal three long; abdomen shiny, with short, rather thin whitish pubescence; segments, except apical margins, closely, finely punctured; bases of segments two to four with bands of white appressed pubescence, showing only as lateral hair patches if the abdomen is contracted.

Length, about 7 mm.

Type, Victoria, Texas, Febr. 24, 1904. Crawford collector.

January, 1906.

Most closely related to *nelumbonis* in the appearance of the metathorax, but is easily separated from that species by the much finer punctuation of the mesothorax.

Dedicated to Mr. Charles Robertson, whose excellent descriptions and notes on Illinois bees are of great value.

Halictus Birkmanni, n. sp., ♀.—Black, shiny, clothed with short, glittering, white pubescence; facial quadrangle about square; face above antennæ with close but well-separated fine punctures; clypeus and mandibles ferruginous; antennæ beneath, including scape, testaceous-ferruginous, above dusky ferruginous; mesothorax sericeously roughened, finely, sparsely punctured; metathorax finely irregularly rugulose, not reaching apex, behind this roughened, as are the pleura; tegulæ, tubercles and legs testaceous; hind inner spur with five long teeth; wings dusky, nervures and stigma dark brown; abdomen shiny, apical margins of segments narrowly testaceous; segment one impunctate, bases of others closely finely punctured, becoming impunctate apically, the depressed apical margins of segments transversely striatulate; bases of segments two and three with white lateral hair patches.

Length, 5 mm.

Fedor, Texas, March 24, 1902. Rev. G. Birkmann collector.

Easily distinguished from all the other black species by the testaceous legs.

This species is dedicated to the Rev. Mr. Birkmann, from whom it was received.

Halictus lineatulus, n. sp., ♀.—Head and thorax dark green or blue-green; face broad, above antennæ closely, deeply punctate, below antennæ, including clypeus, very sparsely and more coarsely so; clypeus anteriorly purple, supra-clypeal area coarsely lineolate; antennæ obscurely ferruginous beneath; cheeks very ample; mesothorax shiny, coarsely lineolate, lineolation very apparent, with scattered setigerous punctures; median groove well impressed, parapsidal grooves distinct; scutellum closely punctate, punctures irregular in size, with two smooth shiny spots on the disc; base of metathorax not enclosed, with strong, coarse, irregular longitudinal striæ reaching apex only laterally; medially not quite reaching apex, and the intervening space roughened; mesopleura coarsely roughened, metapleura finely so; truncation granulose, not surrounded by a salient rim; wings hyaline, nervures honey-colour, stigma at times more brownish; tegulæ shiny dark brown; legs brown, hind inner spur with

about four long teeth; abdomen green, disc of first segment occasionally showing brownish; apical margins of segments broadly testaceous; whole abdomen, except discs of 1 and 2, covered with close appressed brownish-white pubescence; segment 1 practically impunctate, 2 with base rather closely, finely punctate; lateral margins and venter with long brownish-white hairs; venter brownish-testaceous.

Length, 6-7 mm.

Ten specimens, Ag. Coll., Mich., Oct. 4-11, 1893 (R. H. Wolcott).

Most closely related to *zephyrus*, Sm., but differs in its larger size, stronger, more numerous rugæ of metathorax, more coarse apparent lineolation of mesothorax, much sparser punctuation of mesothorax, lighter nervures, dark tibiæ (not testaceous at base and apex), abdomen more densely pubescent and covering more of surface (confined to lateral patches on 2 and 3 in *zephyrus*).

Halictus Pecosensis, n. sp., ♀.—Black, head and thorax clothed with rather abundant griseous pubescence; facial quadrangle wider than long; clypeus shiny, with large scattered punctures; face sericeously roughened with scattered very shallow oblique punctures below antennæ, above antennæ becoming closely, finely punctate only in front of ocelli, but not reaching orbital margins; antennæ entirely dark; mesothorax sericeous, closely, rather coarsely punctate; median and parapsidal grooves obscure; base of metathorax with close, coarse, irregular striæ, not enclosed; truncation not entirely surrounded by a salient rim; legs black, hind inner spur with three or four oblique almost obsolete serrations; tegulæ dark, with a light centre; wings subhyaline, nervures and stigma testaceous; abdomen shiny, finely and sparsely punctate, segment one more sparsely so; bases of segments two and three with large lateral hair patches almost connected medially on three.

Length, 6½ mm.

Pecos, N. M., 7,200 feet, at flowers of *Holodiscus australis*, July 21. W. P. Cockerell collector.

This species comes near the *pectoralis* group, but differs from any of them in the much wider face; it also differs from *pectoralis* by its punctate first segment, hair patches on segments two and three, striæ of metathorax much finer; from *pectoraloides* by the obsolete parapsidal grooves, first segment punctate; from *pseudopectoralis* by the first segment punctate, closer punctures of mesothorax and the lighter nervures and stigma.

GUELPH BRANCH OF THE ENTOMOLOGICAL SOCIETY OF
ONTARIO.

The third regular meeting of the Guelph Branch was held in the Agricultural College on Wednesday evening, November 15th, 1905, with 20 members and 38 visitors in attendance.

Mr. E. J. Zavitz discussed the "Long-Horned Borers" (Cerambycidae), pointing out some of the more salient characters of the family, describing habits, methods of collecting, etc. Specimens of the work of Cerambycid larvæ in solid living wood were shown. His remarks were also supplemented by exhibiting the 94 species represented in his cabinet, nearly all of which were taken at Ridgeway, in Welland County, Ontario.

Mr. Douglas Weir presented notes on various species of insect-galls, and showed slides made from his own photographs, illustrating about 20 species collected during the autumn in the vicinity of Guelph.

A brief review of Kellogg's "American Insects" was given by Mr. Sherman.

Mr. C. Caesar discussed "Grasshoppers," with special reference to life-history and economy of the destructive species, natural enemies, remedial measures, etc.

Brief discussion followed each of these papers.

The fourth regular meeting was held in the Agricultural College on Wednesday evening, November 29th, 1905, with 21 members and 13 visitors in attendance.

Mr. B. Barlow discussed "Mosquitoes," giving his experiences in collecting, breeding and methods of eradication. Specimens of egg masses and larvæ were exhibited, and a lively discussion followed. Mr. T. D. Jarvis gave a few notes on the Pitcher-plant Mosquito. About the middle of November the larva of this mosquito was taken from the leaves of the Pitcher-plant in the Arkell swamp, a few miles from Guelph. The larvæ were living in the solid ice of the "pitcher," and when the ice melted they became quite active.

A brief review of the current literature was given by Prof. Sherman. Bulletins from Ohio, Washington, Maryland, and Central Experimental Farm, were discussed.

Mr. C. R. Klinck discussed granary insects. He made collections from granaries and mills around Guelph, and presented a large collection of granary pests in different stages of development. Some of the common species found were: Rice weevil, Granary weevil, Saw-toothed granary weevil, Bean weevil, Pea weevil, Cow-pea weevil, Meal worms, Angoumois grain moth, Indian meal moth, Indian snout moth and flour mite.

T. D. JARVIS, Secretary.

HALTICA RUFA, ILL., AT MOUNT ST. HILAIRE, QUE.

I was out collecting at Mount St. Hilaire, Que., on the 27th June, 1905. After a long and tiresome walk through the woods, I came to a small marshy piece of land in which several small willows were growing. I immediately went to these bushes, expecting to get some Chrysomelidæ, in which I was particularly interested. I shook several of the trees over my net, and then examined what had fallen into it. My efforts were greatly rewarded by the finding of one specimen of a reddish Chrysomelid, which I at once placed in the Halticini group. I had never seen it in any of my outings, and thought it was a good species. I brought my capture to Mr. Stevenson's attention, who was with me that day, and he made a good search for another specimen. I do not know whether he got some or not, but for my part I managed to get another specimen after hard labour.

When I returned home I mounted them on card points, with exact data, and placed them in a special box, for future study.

It was only a month later that I succeeded in determining them. I first consulted Mr. Wickham's descriptions of the Chrysomelidæ of Ontario and Quebec, in the CANADIAN ENTOMOLOGIST, Vol. XXIX. A rapid glance showed me that my insect was not described here, so I looked up Dr. Horn's Synopsis of the Halticini of North America, published 1889. It did not take me long to find that the name of my little beast was *Haltica rufa*, Ill., an odd-looking *Haltica* indeed, and Dr. Horn is certainly right in stating the following remarks in reference to it: "This insect seems to have some trouble in finding a permanent generic resting place. Following the 'Catalogus,' it is a *Disonycha*, while a species completely congeneric (and I think also specifically identical) has been described in the 'Biologia' as *Lactica scutellaris*. That it cannot be referred to *Lactica* is evident from the character of the basal impression of the thorax, and the choice is plainly between *Disonycha* and *Haltica*. The latter genus has been chosen because there is a well-marked ante-basal depression of the thorax, which is, however, said to occur in *Disonycha*, but is not present in any of our species."

Dr. Horn gives to this insect a wide range of distribution, being from Massachusetts to Illinois, Florida and Texas, extending through Mexico to South America. I do not think it was ever known to be found in Canada, and I thought, therefore, it would be of general interest to record its capture here.

G. CHAGNON, Montreal.

CATALOGUE OF THE GENERA OF THE HEMIPTEROUS
FAMILY APHIDÆ, WITH THEIR TYPICAL SPECIES,
TOGETHER WITH A LIST OF THE SPECIES
DESCRIBED AS NEW FROM 1885
TO 1905.

BY G. W. KIRKALDY, HONOLULU.

(Continued from Vol. xxxvii, page 420.)

57. Tychea, Koch, 1857, Pflanzenläuse, 296, t. *graminis*, Koch.*
58. Smynthurodes, Westwood, 1849, Gardener's Chron., 420, t. *beta*,
Westw.
59. Forda, Heyden, 1837, Mus. Senckenberg, II, 291, t. *formicaria*, Heyd.
= Rhizoterus, Hartig, 1841, Zeitschr. Ent., III, 363, t. *vacca*, Hartig,
= *formicaria*, Heyd.
60. Pentaphis, Horváth, 1896, Wien. Ent. Zeit., XV, 2, t. *marginata*
(Koch)* (o).
61. Hamamelistes, Shimer, 1867, Tr. Amer. Ent. Soc., I, 283, t. *spinusos*,
Shimer*.
= Tetraphis, Horváth, 1896, Wien. Ent. Zeit., XV, 6, t. *betulina*,
Horv.
62. Hamadryaphis, Kirkaldy, 1904, Entom., XXXVII, 279.
= ||† Kessleria, Lichtenstein, 1885, Mon. peupl., 16, t. *spirothece*
(Pass.)*.
63. Dryopeia, Kirkaldy, 1904, Entom., XXXVII, 279.
= || Endeis, Koch, 1857, Pflanzenläuse, 312, t. *bella*, Koch*.
= Eudeis, Ashmead, 1889, Ent. Amer., V, 189.
64. || Amycla, Koch, 1857, Pflanzenläuse, 301, t. *fuscifrons*, Koch* [apparently not a valid genus].
- Subfamily 5.—*Phylloxerina*.
65. Adelges, † Vallot, 1836, C. R. Ac. Dijon, 224, t. *laricis*.
= † Sacciphantes, Ruricola [= Curtis], 1844, Gardener's Chron., IV,
831, t. *abietis* (L.), Curtis.
= Agelges (!) Schaum, 1854, Bericht Ent. for 1852, 143.
= Anisophleba, Koch, 1857, Pflanzenläuse, 320, t. *hamadryas*.
= || Chermes, Passerini, 1860, Gli Afidi, 30, t. *abietis*, (L.), Pass.
= † Phlæophthiridium, Van der Høeven, 1849, Handb. Dierkunde, I,
509, type ?
= Pineus, Shimer, 1869, Tr. Amer. Ent. Soc., II, 383, t. *pinicorticis*,
Shimer.

(o) Kholodkovsky regards 59, 60 and 57 as synonyms.

- = †Chermaphis, Maskell, 1884, N. Zealand, J. Sci., II, 292, t. *pini*.
 = Kermaphis, Maskell, 1885, Tr. N. Zealand Inst, XVII, 16, t. *pini*.
 66. Astegopteryx, Karsch, 1890, Ber. deutsch. Botan. Ges., VIII, 51, t. *styracophila*, Karsch.
 67. Phylloxera (and Phylloxera), Boyer, 1834, Ann. France, III, 222, t. *quercus*.
 = Acanthohermes, Kollar, 1848, S. B. Akad. Wiss., Wien., I, heft 3, p. 18, t. *quercus*, Kollar.
 = †Peritymbia, Westwood, 1863, Gard. Chron., 584, t. *vitisana* (= *vastatrix*).
 = †Daktulosphaira, Shimer, 1866, Prairie Farmer, XXXIV, 365, t. *vitifolie*, Shimer.
 = †Viteus, Shimer, 1867, Tr. Ac. Nat. Sci., Philad., XIX, 2, t. *vitifolie*, Shimer.
 = Dactylosphæra, Shimer, 1867, op. c., t. *globosum*.
 = †Psylloptera, Ferrari, 1872, Ann. Mus. Genova, II, 85, t. *quercina*.
 = †Rhizaphis, Planchon and Lichtenstein, 1877, Ann. Belg., XIX, ? t. ?
 = Rhizocera, T. W. Kirk, 1897, New Zealand, Dept. Agr., Leaflets for Gardeners, 20, p. 3.

DCUBTFUL POSITION.

68. †Termitaphis, Wasmann, 1902, Tijdschr. Ent., XLV, 105, t. *circumvallata*, Wasm.
 69. †Polyocellaria, Imhof, 1900, Biol. Centralblatt, XX, 527 [no species named, according to Zool. Record] (a).
 70. Oregma, Buckton, 1893, Ind. Mus. Notes, III, No. 2: 87, t. *bambusæ*, Buckton.
 71. Atheroides, Haliday, 1839, Ann. Nat. Hist., II, 189, t. *serrulatus*, Hal.*
 72. †Pentalonia, Coquerel, 1860, Ann. France (3), VII, 239, t. *nigronervosa*, Coq.
 73. †Leptopteryx, Zetterstedt (?1838), Ins. Lapp., 625, t. *nivalis*, Zett. (p).

GENERA NOT DESCRIBED.

Toxares, T. A. Williams, 1891, Spec. Bull. Univ. Nebraska, 26.

Doralis and Phalaris [not *Phalaris*], Leach and Risso, in Risso, 1826, Hist. Nat. Eur. Mérid, V, 217.

(a) Described as allied to *Orthezia*, but placed in Zool. Record among Aphidæ.

(p) Sec. Bergtsson (1902, Wien. E. Zeit., 150), = probably †*Aphis punctipennis*, Zett., a species not recorded by Lichtenstein.

(B). "New species and varieties," 1885-1905.

Gen. 1.—*Macrosiphum*.

- Sp. 1. agrimoniella (Nectarophora), Cockerell, 1903, *Canad. Ent.*, XXXV, 168.
2. artemisiæ (N.), Cowen, 1895, *Colorado*, 123.
3. artocarpi (Siphonophora), Westwood, 1890, *T. E. S.*, London, 649.
4. asclepiadis (N.), Cowen, 1895, *Colorado*, 123.
5. avenivorum, Kirkaldy, 1905, *Entom.*, XXXVIII, 132 (n. n. for *granaria*, Buckton, nec Kirby).
6. baccharidis (N.), Clarke, 1903, *Canad. Ent.*, XXXV, 252.
7. californica (N.) Clarke, l. c.
8. caudata, † Pergande, 1900, *T. Ac.*, Washington, II, 513.
9. chrysanthemi (S.), Oestlund, 1886, *Report* 22.
10. corallorhizæ (N.), Cockerell, 1903, *Canad. Ent.*, XXXV, 167.
11. corydalis (S.), Oestlund, 1886, *Report* 25.
12. cynosbati (N.), Oestlund, 1887, *Bull.* 81.
13. destructor (N.), Johnson, 1900, *Canad. Ent.*, XXXII, 56.
14. epilobii, † Pergande, 1900, *T. Ac.*, Washington, II, 515.
15. frigidæ (S.), Oestlund, 1886, *Report* 20.
16. fulvæ (N.), Oestlund, 1887, *Bull.* 80.
17. funesta (S.), Macchiati, 1885, *Bull. Ital.*, 67.
18. geranii (N.), Oestlund, 1887, *Bull.* 80.
19. heleniella (N.), Cockerell, 1903, *Canad. Ent.*, XXXV, 169.
20. jasmini (N.), Clarke, 1903, *op. c.*, 252.
21. insularis, † Pergande, 1900, *T. Ac.*, Washington, II, 515.
22. ludoviciana (S.), Oestlund, 1886, *Report* 23.
23. lycopersici (N.), Clarke, 1903, *Canad. Ent.*, XXXV, 252.
24. Martini (N.), Cockerell, 1903, *op. c.*, 169.
25. pallida (N.), Oestlund, 1887, *Bull.* 84.
26. pœæ (S.), Macchiati, 1885, *Bull. Ital.*, 62.
27. potentillæ (N.), Oestlund, 1887, *Bull.* 83.
28. purpurascens (N.), Oestlund, 1887, *op. c.*, 81.
29. rhamni (N.), Clarke, 1903, *Canad. Ent.*, XXXV, 252.
30. rudbeckiarum (N.), Cockerell, 1903, *op. c.*, 168.
31. tabaci (N.), Pergande, 1898, *op. c.*, XXX, 300.
32. trifolii, Pergande, 1904, *Bull. U. S. Ent.*, 44 : 21.
33. valerianiae (N.), Clarke, 1903, *Canad. Ent.*, XXXV, 252.

Gen. 4.—*Nectarosiphum*.

34. rhananthi, Schouteden, 1903, Zool. Anz., XXVI, 687.
 35. rubicola (Macrosiphum), Oestlund, 1886, Report 27.

Gen. 6.—*Rhopalosiphum*.

36. Grabhami, Cockerell, 1903, Canad. Ent., XXXV, 342.
 37. nabali, Oestlund, 1886, Report 34.
 38. serotinae, Oestlund, 1887, Bull. 76.
 39. sonchi, Oestlund, 1886, Report 34 (=dianthi (Schrank)).
 40. violae, Pergande, 1900, Canad. Ent., XXII, 29.

Gen. 10.—*Myzus*.

41. ajugae, Schouteden, 1903, Ann. Belg., XLVII, 194.
 42. eloreagni, Guercio, 1894, † Nat. Sicil., XIII, 197.
 43. junackianus, Karsch, 1887, † Berlin Ent. Zeit., XXXI, Sitzb.,
 p. xxi.
 44. malvae, Oestlund, 1886, Report 30 (=achyrantes (Monell)).
 45. phenax, Cockerell, 1903, T. Amer. E. S., XXIX, 115.
 46. potentillae, Oestlund, 1886, Report 30 (=rosarum (Walker)).
 47. targionii, † Guercio, 1894, Nat. Sicil., XIII, 197.
 48. theaocola, Buckton, 1891, Ind. Mus. Notes, II, 33 (Ceylonia).

Gen. 11.—*Hyalopterus*.

49. phragmitidicola (Aphis), Oestlund, 1886, Report 44 (=arundinis, Fabr.)

Gen. 13.—*Aphis*.

50. adianti (Siphonophora), Oestlund, 1886, Report 26.
 51. adusta, Zehntner, 1897, Archief voor Java Suikerindustrie, V
 (No. 10), p. ?
 52. ageratoidis, Oestlund, 1886, Report 38.
 53. alamedensis, Clarke, 1903, Canad. Ent., XXXV, 249.
 54. albipes, Oestlund, 1887, Bull. 52.
 55. annuae, Oestlund, 1886, Report 43.
 56. atronitens, Cockerell, 1903, Tr. Amer. Ent. Soc., XXIX, 115.
 57. Bakeri, Cowen, 1895, Colorado, 118.
 58. brunnea, † Macchiati, 1885, Bull. Ital., 61.
 59. brunellae, Schouteden, 1903, Ann. Belg., XLVII, 194.
 60. ceanothi, Clarke, 1903, Canad. Ent., XXXV, 250.
 61. cephalicola, Cowen, 1895, Colorado, 118.
 62. chenopodii, Cowen, op. c., 119.
 63. crithmi, Buckton, 1886, T. Ent. S., London, 323.

64. *cymbalariae*, Schouteden, 1900, Ann. Belg., XLIV, 123.
 65. *erionomi*, Cowen, 1895, Colorado, 119.
 66. *eupatorii*, Oestlund, 1886, Report 39.
 67. *Forbesi*, Weed, 1889, Bull. Ohio Agr. Sta., II, No. 6 :148.
 68. *frigidae*, Oestlund, 1886, Report 46.
 69. *frondosae*, Oestlund, op. c., 38.
 70. *Gillettei*, Cowen, 1895, Colorado, 120.
 71. *heliotropii*, †Macchiati, 1885, Bull. Ital., 59.
 72. *heraclii*, Cowen, 1895, Colorado, 120.
 73. *leontopodii*, Schouteden, 1903, Ann. Belg., XLVII, 195.
 74. *maculatae*, Oestlund, 1887, Bull. 61.
 75. *maidiradicis*, Forbes, 1891, Rep. State Ent., Illinois, XVII. 64.
 76. *marutae*, Oestlund, 1886, Report 40.
 77. *menthaeradicis*, Cowen, 1895, Colorado, 121.
 78. *mimuli*, Oestlund, 1887, Bull. 57.
 79. *monardae*, Oestlund, op. c., 58.
 80. *mori*, Clarke, 1893, Canad. Ent., XXXV, 250.
 81. *neilliae*, Oestlund, 1887, Bull. 59.
 82. *ochrocentri*, Cockerell, 1903, Ent. News, XIV, 248.
 83. *œnotherae*, Oestlund, 1887, Bull. 62.
 84. *oxybaphi*, Oestlund, 1887, Bull. 62.
 85. *persicæniger*, E. F. Smith, 1890, Ent. Amer., VI, 101.
 86. *polygoni*, †Macchiati, 1885, Bull. Ital., 63.
 87. *ripariae*, Oestlund, 1886, Report 41.
 88. *robiniae*, †Macchiati, 1885, Bull. Ital., 65.
 89. *rociadae*, Cockerell, 1903, Tr. Amer. Ent. Soc., XXIX, 115.
 90. *rubicola*, Oestlund, 1887, Bull. 60.
 91. *sacchari*, Zehntner, 1897, Archief Java Suikerindustrie, V, No. 10, p. ?
 92. *spiræae*, Oestlund, 1887, Bull. 68.
 93. *||spiræae* (q), Schouteden, 1902, Zool. Anz., XXV, 656.
 94. *suberis*, †Tavares, 1903, An. Soc. Nat. Porto, VII, 83.
 95. *tetrapteralis*, †Cockerell, 1902, Bull. S. Calif. Ac. Sci., 140. (I have only seen an unpagged separate.)
 96. *tamaricis*, Lichtenstein, 1885, Bull. France (6), V, p. CLXXIX.
 97. *thaspis*, Oestlund, 1887, Bull. 58.
 98. *trifolii*, Oestlund, op. c., 55.

(q) = Schoutedeni, n. n.

99. valerianæ, Cowen, 1895, Colorado, 121.
 100. veratri, Cowen, op. c., 122.
 101. violæ, Schouteden, 1900, Ann. Belg., LXIV, 127.
 102. yuccæ, Cowen, 1895, Colorado, 122.
 Gen. 14.—*Hyadaphis*.
 103. archangelicæ (Siphocoryne), Oestlund, 1886, Report 36.
 Gen. 16.—*Aristaphis*.
 104. beulahensis (Cladobius), Cockerell, 1904, Canad. Ent., XXXVI,
 263.
 Gen. 17.—*Melanoxantherium*.
 105. bicolor (Melanoxanthus), Oestlund, 1887, Bull. 36.
 106. flocculosus (Melanoxanthus), Weed, 1891, Insect Life, III, 291.
 Gen. 18.—*Brachycolus*.
 107. Korotnewi, Mordvilko —?—.
 Gen. 19.—*Cryptosiphum*.
 108. nerii, †Perez, 1902, Nuov. Giorn. Bot. Ital., N. S., VIII, 441.
 Gen. 20.—*Pergandeida*.
 109. ononidis, Schouteden, 1903, Zool. Anz, XXVI, 686.
 Gen. 21.—*Microsiphum*.
 110. ptarmicæ, Kholodovsky, 1902, Isviestiya S. Peterb. Liesn. Inst.,
 53 (Sep. 5!).
 Gen. 22.—*Chaitophorus*.
 111. lyropictus, †Kessler, 1887, Nov. Act. Leop. Carol. Nat. Cur.,
 LI:171.
 112. maculatus, Buckton, 1899, Ind. Mus. Notes, IV, 277.
 113. nigrae, Oestlund, 1886, Report 49.
 114. spinosus, Oestlund, l. c.
 Gen. 24.—*Sipha*.
 115. Schoutedeni, Guercio, 1900, Ann. Belg., XLIV, 134.
 Gen. 26.—*Kallistaphis*.
 116. arundicolens (Callipterus), Clarke, 1903, Canad. Ent., XXXV,
 249.
 117. giganteus (Callipterus), Kholodovsky, 1899, Zool. Anz., XXII,
 474.
 Gen. 32.—*Stomaphis*.
 118. Graffii, Kholodovsky, †1894; Bull. Soc. Nat., Moscow, 401 [Sep.
 p. 2!].
 119. macrorhyncha, Kholodkovsky, op. c., 402 [Sep. 3!].

Gen. 33.—*Lachnus*.

120. abieticola, Kholodkovsky, 1899, Zool. Anz., XXII, 470.
 121. bogdanowi, Mordvilko, 1895, op. c., XVIII, 97.
 122. cembrae, Kholodkovsky, 1892, op. c., XV, 74 (as var. of pini).
 123. curtipilosa, Mordvilko, 1895, op. c., XVIII, 100 (as var. of pineus).
 124. farinosus, Kholodkovsky, 1891, Vistn. Yestyestv., No. 8, p. 5 [Sep.].
 125. flavus, Mordvilko, 1895, Zool. Anz., XVIII, 102.
 126. fuliginosus, Buckton, 1891, Ind. Mus. Notes, II, 41.
 127. juniperinus, Mordvilko, 1895, Zool. Anz., XVIII, 102.
 128. maculosus, Kholodkovsky, 1899, op. c., XXII, 469.
 129. persicae, Kholodkovsky, op. c., 472.
 130. piceicola, Kholodovsky, 1896, op. c., XIX, 148.
 131. pichtae Mordvilko, 1895, op. c., XVIII, 103.
 132. pineus, Mordvilko, op. c., 100 (var. of hyperophila, Koch).
 133. pinihabitans, Mordvilko, op. c., 98.
 134. pyri, Buckton, 1899, Ind. Mus. Notes, IV, 275.
 135. rosae, Kholodovsky, 1899, Zool. Anz., XXII, 471.
 136. viridescens, Kholodovsky, 1896, op. c., XIX, 509.

Gen. 36 and 37.—*Eriosoma* and *Schizoneura* (r).

137. crataegi, Oestlund, 1887, Bull. 27.
 138. glossulariae, †Taschenberg, 1887, Verh. blatt. deutsch. Pomol. Ver., 86.
 139. graminis, †Guercis, 1895, Nat. Sicil., XV, 84.
 140. Karschii, Lichtenstein, 1886, Entom. Nachr., 82.
 141. obliqua, Kholodovsky, 1896, Zool. Anz., XIX; 259.

Gen. 42.—*Colopha*.

142. rossica, Kholodkovsky, 1897, Zool. Anz., XX, 146.

Gen. 45.—*Geoica*.

143. cyperi, Schouteden, 1902, Zool. Anz., XXV, 656.
 144. squamosa, Hart, 1894, Rep. Ins. Illinois, XVIII, 95.

Gen. 46.—*Hormaphis*.

145. papyraceae, Oestlund, 1887, Bull. 19.

Gen. 47.—*Byrsocrypta*.

145. alni (Pemphigus), Provancher, 1890, †Faune Canad. Hém., 320.

(r) The following 5 were all described as *Schizoneura*, some may be *Eriosoma*.

147. *attenuatus* (P.), Osborn and Serrine, 1893, *Ins. Life*, V, 235 [also described as "new" in 1895, *P. Iowa Ac.*].
148. *betæ* (P.), Doane, 1900, *Ent. News*, XI, 391.
149. *coccus* (P.), Buckton, 1889, †*Tr. Linn. Soc., London* (2), V, 142.
150. *corrugatans* (P.), Serrine, 1894, *P. Iowa Ac.*, I, 129.
151. *edificator* (P.), Buckton, 1893, *Ind. Mus. Notes*, III, No. 1: 72.
152. *hederæ* (P.), Horváth, 1894, *Rev. Entom. Franc*, XIII, 188.
153. *immunis* (P.), Buckton, 1896, *Ind. Mus. Notes*, IV, 51.
154. *lucifuga* (*Tetraneura*), Zehntner, 1897, *Archief voor Java Suikerind*, V, No. 10, p. ?.
155. *napæus* (P.), Buckton, *op. c.*, 50.
156. *populi-conduplicifolius* (P.), Cowen, 1895, *Colorado*, 115.
157. *protospiræ*, Lichtenstein, 1885, †*Mon. peupl.*, 31.
158. *Riccobonii*, Stefani, 1899, †*Riv. Ital. Sci. Nat.*, XIX, p. 1.
159. *saccarata*, Guercio, 1895, †*Nat. Sicil.*, XIV, 88 (as var. of *fuscifrons*).
160. *spiriformis*, Lichtenstein, 1885, †*Mon. peupl.*, 25.
Gen. 51.—*Rhizobius*.
- [160a. *jujubæ*, Buckton, 1899, *Ind. Mus. Notes*, IV, 277 (s.).]
Gen. 52.—*Rhizoctonus*.
161. *ampelinus*, Mokrzehetsky, 1896, *Trudy Russk. Entom.*, XXX, 438.
Gen. 54.—*Vacuna*.
162. *betulina* (*Thelaxes*), Buckton, 1886, *T. E. S., London*, 326.
Gen. 56.—*Cerataphis*.
163. *lanigera* (*Ceratovacuna*), Zehntner, 1897, *Archief Java Suikerindustrie*, V, No. 10, p. ?.
Gen. 57.—*Tychea*.
164. *brevicornis*, Hart, 1894, *Rep. Ins. Illinois*, XVIII, 97.
165. *crassa*, W. P. Cockerell, 1903, *Psyche*, X, 218.
166. *groenlandica*, †Rübsaamen, 1898, *Bibl. Zool.*, XX, 115.
167. *lasii*, W. P. Cockerell, 1903, *Psyche*, X, 217.
168. *pallidula*, W. P. Cockerell, *l. c.*
169. *radicola*, Oestlund, 1886, *Report* 56.
Gen. 59.—*Forda*.
170. *interjecti*, W. P. Cockerell, 1903, *Psyche*, X, 217.
171. *Kingii*, W. P. Cockerell, *op. c.*, 216.

(s) Previously described in 1883 by same author in *Mon. Brit. Aph.*, IV, 181; is a Coccid Sec., Cockerell & Fernald.

172. *occidentalis*, Hart, 1894, Rep. Ins. Illinois, XVIII, 95.
Gen. 61.—*Hammamelistes*.
173. *betulina* (Tetraphis), Horváth, 1896, Wien. Ent. Zeit., XV :6.
Gen. 63.—*Adelges*. •
174. *bouvieri* (Chermes), Kholodkovsky, 1903, Zool. Anz., XXVI,
259 (as var. of *piceæ*).
175. *lapponicus* (C.), Kholodkovsky, 1889, op. c, XII, 390.
176. *pineoides* (C.), Kholodkovsky, 1903, op. c., XXVI, 263 (as var.
of *piceæ*).
177. *præcox* (C.) Kholodkovsky, 1896, Trudy Russk. Entom., XXXI,
p. ? [Sep. 52 !].
178. *sibiricus* (C.), Kholodkovsky, 1889, Zool. Anz., XII, 388.
179. *taxi* (C.), Buckton, 1886, T. E. S., London, 327.
180. *viridanus* (C.), Kholodkovsky, 1896, Zool. Anz., XIX, 39.
Gen. 66.—*Astegopteryx*.
181. *styracophila*, Karsch, 1891, Ber. deutsche Botan. Ges., VIII, 52.
Gen. 67.—*Phylloxera*.
182. *piri*, Kholodovsky, 1903, Zool. Anz., XXVII, 118.
183. *prolifera*, Oestlund, 1887, Bull. 16.
Gen. 68.—*Termitaphis*.
184. *circumvallata*, Wasmann, 1902, Tijdschr. Ent., XLV, 105.
Gen. 71.—*Oregma*.
185. *bambusæ*, Buckton, 1893, Ind. Mus. Notes, III, No. 2 : 87.
Accidentally omitted in foregoing list :
Gen. 3.—*Phorodon*.
186. *calaminthæ*, †Macchiati, 1885, Bull., Ital., 54.
Gen. 6.—*Rhopalosiphum*.
187. *acænæ*, Schouteden, 1904, Hamburg. Magalh. Sammlr. Aphiden,
p. 4 (t).
Gen. 9.—*Mastopoda*.
188. *pteridis*, Oestlund, 1887, Report 53.
Gen. 10.—*Myzus*.
189. *Michaelseni*, Schouteden, 1904, Hamb. Mag. Samm. Aph., 3.

(t) Doubtless a separate from some periodical, but no information is given in the paper.

Gen. 13.—*Aphis*.

190. *polanisiae*, Oestlund, 1886, Report 42.

P. S.—Since the above was in print, my friend, Dr. Horváth, has been so good as to reply to a letter of mine and furnish me with the following references:

CLAVIGERUS, Szépliget, 1883. *Rovarászati Lapok*, I, p. 4; type *salicis*, Kalt.

BRADYAPHIS, Mordvilko, 1894-5. *Faun. Anat. Aphid.*, p. 46; type *antennata*, Kalt.

SYMDOBIUS, Mordv., op. c., 54; type *oblongus*, Heyd.

Neither of these papers is mentioned in the "Zoological Record" or in the "Bericht der Entomologie," the one being in Russian and the other in Magyar. The now defunct "*Rovarászati Lapok*" existed for a single year only (1883) and should not be confused with the current "*Rovartani Lapok*." The title of the Russian work is given me by Dr. Horváth as "K. Faunÿe i Anatomii sem. Aphididæ Privilsiavskago Kraja. Varshava, 1894-5."

TWO NEW ONCIDERES, WITH NOTES ON SOME OTHER COLEOPTERA.

BY CHAS. SCHAEFFER, MUSEUM OF THE BROOKLYN INSTITUTE OF ARTS AND SCIENCES, BROOKLYN, N. Y.

A fine large *Oncideres*, which agrees very well with the description of Thomson's *tesselatus*, was sent me lately for identification by Prof. Snow, who collected this fine addition to our fauna in S. Arizona this year. The occurrence of this species in our fauna gives me the opportunity to make known another large *Oncideres* from Texas, apparently new, which belongs with *tesselatus* to the sub-genus *Lochmaecoles*. Following, I give a new synoptic table, as I never derived great satisfaction from the one given by Dr. Hamilton,* who suppresses *putator*, but allows *Texana* to remain. My material is not very extensive, but to me *putator* seems to be more distinct than *Texana*, though an extensive series from intermediate localities may show that they are only extreme forms of *cingulata*.

Thorax as wide behind the lateral tubercle as before, ♂ with antennal tubercles prolonged at apex into distinct porrect horns. (Sub-genus *Lochmaecoles*)..... I.

*Trans. Am. Ent. Soc., XXIII, p. 140.
January, 1906

- Thorax narrower behind the lateral tubercle than before, ♂ without porrect horns. (Sub-genus *Oncideres*).....2.
1. Light brown, not very densely clothed with uniform brownish cinereous hairs; elytra ornamented with a number of small rounded ochreous spots, base with from 4 to 6 small blackish granulations, the elytral punctures covered by the pubescence *cornuticeps*.
Black or piceous, more densely covered with white pubescence, especially the under side; elytra with a number of reddish yellow spots, at sides about middle, a more or less distinct oblique fascia of denser white hairs, the fascia without reddish-yellow spots, basal third of elytra with a number of black shining granules, the punctures below these glabrous, shining, not covered by pubescence *tesselatus*.
2. Large robust species, elytra with a number of round, slightly elevated, shining black spots, which are at base granuliform *putulatus*.
Smaller species, elytra without black denuded spots, but with a number of small, rounded, cinereous or yellowish spots, formed by denser pubescence 3.
3. The small pubescent spots at middle of elytra white, head base of elytra and legs densely covered with ochreous pubescence; form narrower and more elongate than *cingulata* *quercus*.
The small pubescent spots at middle of elytra yellow or ochreous, pubescence of head not dense, yellowish or luteous, legs not very densely pubescent with cinereous hairs and, if at all, very sparsely intermixed with yellow hairs 4.
4. Disk of thorax with 3 denuded shining spots, placed transversely, lateral spine small, though distinct; elytra coarsely, densely punctate, with a number of granules at base, colour black or blackish-brown *putator*.
Disk of thorax without 3 denuded spots, sometimes with a small glabrous median line; elytral punctuation more sparse, without or with at most very few granules at base 5.
5. Tubercles at sides of thorax distinct, colour dark brown, median fascia of elytra white (in fresh specimens) *Texana*.
Tubercles at sides of thorax absent or very feeble, colour reddish-brown or luteous, median fascia cinereous *cingulata*.

Oncideres cornuticeps, n. sp.—Short, robust, nearly of the same form as *pustulatus*; colour very light brown, pubescence fine, not coarse, permitting the shining surface of elytra to be seen, brownish-cinereous intermixed with denser ochreous pubescence above, forming numerous small spots on elytra and two on disk of thorax; the latter are situated on each side of the median glabrous space. Antennal tubercles prolonged at apex into distinct porrect spines. Thorax broader than long, as broad behind as before the distinct lateral spine; disk slightly uneven, with a few punctures at base and on side tubercles, at middle a small glabrous space, which is obsolete towards apex. Elytra slightly narrowing to apex from the shining humeral tubercle, which is situated at side, a little below the base; punctuation sparse and nearly uniform throughout, the punctures only slightly smaller towards apex, and are not glabrous, but covered by the pubescence, at base are about 4 or 6 small shining granules on each elytron. Abdomen shining, more densely clothed with longer hairs than the upper surface, each segment with two denuded round spots on each side. Length, including the frontal horns, 20 mm. One male labelled Texas in collection Dietz.

Lypsimena tigrina, Skinner, Ent. News, XVI, p. 291.—The description of this beetle is unsatisfactorily short and insufficient, and does not give any idea of the general form and other important characters, especially troublesome if the species is placed in a wrong genus, which I believe is the case here.

In Lepidoptera, where the species differ very little in shape, etc., colour and markings are considered important in separating species, but in Coleoptera, where, with very few exceptions, the species in a genus differ from each other either in general form, form of thorax and elytra, structure or sculpture of the under side, head, antennæ, legs, or some other character, colour and markings are considered secondary.

I cannot find among my Arizona material a *Lypsimena*, but have taken a few specimens of an *Estola*, which I think is the same as the Doctor's *L. tigrina*. It is a longer and less robust insect that the Lower Californian *sordida*, but agrees with it in all generic characters, except that the lower lobe of the eyes is longer, which we find in some Mexican species also. The armed thorax removes it from *Lypsimena* at once, besides other characters.

The linear black dashes on the elytra are subject to variation, they have a tendency to become longitudinally confluent, and the four post-

median ones also transversely confluent, forming in some specimens a black fascia of irregular outline.

The size and markings of my insect agree with the Doctor's description, and I have no doubt that this is the species, but in case it should prove different I propose the name of *Estola picta* for it.

Byrsopolis lanigera, Bates.—Dr. Skinner, l.c., records the occurrence of this species. I have taken several specimens of this species, but the description of *Byrsopolis Chihuahue* fits our insect better. *B. lanigera* has the clypeus "sinuatim angustato, apice quadratim sublobato, reflexo, truncato," anterior angles of thorax "nullo modo productis," basal margin subinterrupted, all characters which my specimens do not possess, while *B. Chihuahue* has the clypeus "triangularis, lateribus leviter sinuatis, apice medio acuminato-reflexo," anterior angles of thorax "subacutis," basal margin "omnino integro." Our insect has all these characters, and I had identified it as that species already.

Cymatodera tricolor, Skinner, l.c.—I have taken several specimens of this species, but in all my specimens the "head and outer third of the thorax" is not dark green, but black or blackish. The colour of the head and thorax is variable. I have one specimen which has the head and thorax reddish-testaceous, and another specimen has the head and the greater part of thorax black, with only the base narrowly reddish.

My specimens are mounted on cards yet, otherwise I would give here the abdominal, antennal and other characters, so important in this troublesome genus, which are passed in silence in the description.

Clerus bimaculatus, Skinner, l.c.—This species is variable in regard to colour. The abdomen is not brown as described, but red, very bright in fresh specimens, and the upper side and legs in some specimens black or piceous, with the apical part of thorax and base of elytra brownish. The under side is reddish, with the metasternum infusate at middle in some specimens. The spots on the elytra are bright yellow when alive, but changing after death in most specimens to reddish, only in two or three of my specimens the spots remained yellow, but not as bright. The apex of the elytra is clothed with cinereous pubescence, as in *moestus*, but having on each side a spot formed by black hairs.

Polycesta Arizonica, n. sp.—Similar to *velasco*, but smaller, thorax not as broad, and only the alternate elytral intervals costate. Head slightly convex, nearly flat in the clypeal region, coarsely and densely punctate, a short costiform smooth median line. Thorax transverse,

arcuately narrowing to apex, broadest at about basal third, base before the scutellum impressed; surface coarsely punctate, the punctures well separated on the disk, but denser and confluent in the apical region at sides, on the median line from apex to base is a narrow, smooth space, with a fine impressed line at middle, which is very distinct at base, gradually finer and disappearing entirely near apex. Elytra as wide as the thorax at base, nearly parallel to slightly behind the middle, then arcuately narrowing to apex, which is obtusely rounded and coarsely serrate; elytral intervals alternately elevated into distinct costæ on the disk, more feebly at sides, the costæ sparsely punctate; the intercostal space slightly convex at middle, very coarsely punctate, the punctures more or less transversely confluent, in addition there are at middle a row of smaller punctures, representing the punctures of the costate intervals. First ventral suture straight, last ventral segment of male broadly arcuate at apex, at middle produced into a lobe-like projection, which is carinate on its ventral surface, last ventral segment of female narrowing to apex, which is slightly truncate. Length of male, 15 mm.; of female, 20 mm.

Palmerlee, Cochise Co., Arizona. Beaten from branches of live oak.

This species is near *velasco*, but is smaller, has a narrower thorax and different elytral sculpture. The last ventral segment of the females is variable, in some the apex is subacute and has a well-defined costa, in others it is more broadly rounded, and the costa is hardly visible. The same can be said of the male, though there is never as much variation as in the female.

In Entomol. News, Vol. XVI., p. 73, Mr. Fall restores *elata* to specific standing on an apparent good character. This species is separated from *Californica* in the table given by the last ventral segment produced into a lobe at middle (angulate in *Californica*), and from the remarks the female does not differ much in this respect from the male. I have seen quite a number of specimens of *elata*, consisting of both sexes, and find that the lobed last ventral is only peculiar to the male, and not alone in this species, but also in *velasco* and *Arizonica*. Unfortunately, I have only three specimens of *Californica*, all female, but have no doubt that the male of *Californica* has the last ventral segment formed as in *elata*. The so-called median carina of thorax is in one of my specimens of *Californica* as distinct as in *elata*, in another specimen faintly seen, and cannot be relied upon for the separation of the two. If, as I suspect, the male of *Californica* has the same abdominal character as *elata*, there

remains only the difference in sculpture and the more or less distinct concave front. The last abdominal segment of the females in all of our species is variable, hardly two specimens of the same species are exactly alike, some have the apex subacute, others obtusely truncate, the ventral surface may or may not be carinate.

P. angulosa, Duv., which was overlooked by Mr. Fall in his table, has a peculiar male character, consisting of a densely-punctured and densely-pubescent oval spot on the first abdominal segment at middle, and is the only species (except *Californica* ?) which has the last segment simple, without lobe-like prolongation at middle. The species can be further distinguished from the rest of our species by the distinct rows of large rounded punctures on the elytra and the strongly-angulated thorax.

The description of *P. obtusa*, Lec.,* fits *angulosa* better than *velasco*; the finding of it in Philadelphia was undoubtedly accidental. Based on the characters mentioned above, the following synoptic table for our North American species of *Polycesta* is presented below :

- | | |
|---|----------------------|
| First ventral suture at sides strongly arcuated | 1. |
| First ventral suture straight throughout | 3. |
| 1. Thorax with broad median and smaller lateral impressions, sculpture of elytral intervals punctate, and more or less coarsely rugose, apex of last ventral of male produced at middle into a lobe-like projection, first ventral without pubescent spot | 2. |
| Thorax with broad median, but without lateral impressions, elytra with well-defined rows of relatively large punctures, apex of last ventral of male not produced at middle, but first ventral segment with a densely-punctured and densely-pubescent oval spot at middle | <i>angulosa</i> . |
| 2. Front flat near the clypeal region, the punctuation of elytral intervals more evident, not coarsely transversely confluent | <i>Californica</i> . |
| Front concave near the clypeal region, sculpture of elytral intervals coarsely transversely confluent | <i>elata</i> |
| 3. Elytral striae deeply impressed and somewhat coarsely punctate, all the intervals more or less distinctly costate, last ventral of male at apex prolonged at middle into a lobe-like projection | <i>velasco</i> . |
| Elytral striae not impressed, only the alternate intervals costate, the intercostal space coarsely and transversely confluent punctate ; last ventral of male at apex produced at middle | <i>Arizonica</i> . |

*Proc. Acad. Nat. Sciences, Phil., 1858, p. 68.

A REVIEW OF DR. WALTHER HORN'S "SYSTEMATISCHER INDEX DER CICINDELIDEN."

BY H. F. WICKHAM, IOWA CITY, IOWA.

The above-named paper, which has lately appeared in the *Deutsche Entomol. Zeitschrift* (1905, II, pp. 1-56), is of the highest value to American students of the Coleoptera, though in these days of minute subdivision and endless creation of genera and species upon the lightest pretext, it may come as a surprise to those who have consulted only our American publications on the subject. It represents the views of an investigator who has all the advantages of wide acquaintance with types of the described species and with the literature of the subject. Only about 20 of the many forms listed were unknown to the author, whose recent visit to the United States is still a pleasant memory to those fortunate enough to meet him.

Dr. Horn has made a number of changes in the hitherto accepted nomenclature of the family, especially in the direction of reduction of the number of generic and specific names. He recognizes as genera and species only those series of forms which can be delimited by characters at once weighty and constant. For aggregations of less than specific value, he uses the following terms:

1. Subspecies. Sharply defined geographical races, characterizable by features of importance.
2. Aberrations. Local forms definable only by relatively slight characters (colour, pattern, size) and all striking sporadically occurring forms.
3. Synonyms. A collective term for everything unnecessary, true synonyms, feebly differentiated forms separable only by minor features of colour and pattern, intergradations, and local and geographical races so ill developed as to require a locality label for certain recognition.

The Cicindelidæ (in broad sense) are arranged thus:

A. Alacosternaliæ, W. Horn.

I. Ctenostomidæ, Lac. (*Pogonostoma* and *Ctenostoma*.)

II. Collyridæ, Chaud. (*Collyris* and *Tricondyla*.)

B. Platysternaliæ, W. Horn.

III. Theratidæ, W. Horn. (*Therates*.)

IV. Cicindelidæ, Lac.

1. Eurodini, W. Horn. *Iresia*, *Langea*, *Euprosopus*, *Eucallia*, *Caledonica*, *Dystipsidera*, *Nickerlea*, *Caledonomorpha*, *Prothyma*, *Beckerium*, *Eurytarsa*.

2. Odontochilini, W. Horn. Heptodonta, Opisthencentrus, Oxygonia, Odontochila, Prepusa.
3. Cicindelini, W. Horn. Pentacornia, Cicindela, Eury-morpha, Apteroessa.
4. Dromicini, W. Horn. Dromica.
- V. Megacephalidæ, Lac. Pseudoxychila, Oxychila, Chiloxia, Megacephala (with Tetracha, Phæoxantha, etc., as synonyms or subgenera), Aniaria.
- VI. Neomantichoridæ, W. Horn. Pycnochila, Omus, Amblychila.
- VII. Paleomantichoridæ, W. Horn. Mantica, Mantichora.
- VIII. Platychilidæ, W. Horn. Platychila.

It is impossible, within the limits of a review of this nature, to discuss the system of classification in detail. The student of the American forms will be interested in noticing that the arrangement of our species of *Cicindela* is totally different from that now obtaining in our lists. This is due chiefly to the emphasis laid upon the characters drawn from the vestiture. The nearctic fauna is treated as a whole, the Mexican forms materially increasing the number.

When we analyze the list closely, a considerable number of minor changes in nomenclature becomes evident. Many of the forms that we have been accustomed to regard as specifically distinct, are degraded to the rank of subspecies or aberrations. One must confess to a feeling that the difficulty hitherto experienced by calling all the fairly well differentiated forms species, is not entirely overcome by their arrangement as subspecies and aberrations. Here the same trouble occurs as of old—the subspecies offer varying degrees of perfection of differentiation, and the same is true of the aberrations. It still remains largely a matter of opinion whether a given subspecies may not be well enough marked and sufficiently constant in its characters to deserve specific rank, and several instances occur in which it is equally uncertain whether a form were best considered a subspecies or an aberration. However, the relations between closely allied forms are often well brought out by Dr. Horn's arrangement, as for example in the group classed as *pustilla*, Say, including as subspecies *imperfecta*, *cinctipennis* and *tunalonga*, *cyarella* and *tuolumne* ranking only as aberrations. No one with a full series of the different forms can for a moment believe that each is of specific rank, though extremes are sufficiently readily separable. Specimens from the Great Basin grade perfectly from *cinctipennis* to *imperfecta*, and some of those from Colorado

connect the former equally well with *pusilla*. A number of our North American forms now appear as subspecies of Mexican type. In other cases the names we have been using are simply displaced by older ones, *vulgaris* going by the name *tranquebarica*, Hbst., *modesta* becoming *obscura*, Say. So many changes of one kind and another are made that the American student should by all means see the work in its entirety. To the reviewer, it appears that Dr. Horn has worked with a much clearer appreciation of the subject than any of his predecessors, and, while one may not agree with him in every detail, it is impossible to overlook the fact that the student of the family as a whole is much better fitted for classificatory work than the entomologist who confines himself to a limited fauna.

The arrangement of the subfamilies and genera is based upon phylogenetic theses, which are of sufficient interest to sketch out here. Briefly stated, the line of descent is indicated thus—the deductions being made upon structural and geographical grounds alone, the geological record being silent.

The first forms of a Cicindelide nature arose in the Ethiopian tropics from a Carabidous stem. These apterous primitive Cicindelidæ were allied to the recent types of Platychilidæ and Palæomantichoridæ, and to them the name Protomantichoridæ is applied. The Protomantichoridæ spread westward to America, their descendants later pushing out to the north and south. These forerunners of the Neomantichoridæ led to the development of the Prototetrachidæ, which were then distributed circumzonally along the equator.

Complicated characters of vestiture appeared later. Next, in part through partial decoloration and partly by irregular disposition of the hairs, false patterns were formed on the elytra, whose equivalents are to be seen in the now dominant pigmental patterns.

A further step led to the development of the Protoeuryodidæ, which likewise inhabited the entire tropics. Among these was first developed a high power of flight. Now appeared the arboreal forms. Types of the nature of *Tricondyla* and *Therates* led at last to the Protopogonostomidæ.

The species of the genus *Cicindela* are geologically the youngest of the Cicindelide forms. They are to be considered descendants of the Protoeuryodidæ, and in them first appears the highest development and greatest potential variation of vestiture and pattern. With respect to the

indirect descendants, the author has indicated several principal stems (not primitive forms). In respect to the North-stem and the South-stem in the groups occurring in the Holarctic region, he lays down the following hypotheses :

The two North stems developed, during a colder period, in what is now a warmer region of Africa. Later they separated, the smaller part going southward, seeking the cooler climate, the main body being meanwhile forced farther and farther to the north, returning later (split into North American and Eurasiatic branches) to the south. The home of the two so-called South-stems may be in the warmer part of America. Then follows a phenomenon analogous to the above, with the difference that here two equally great migrations took place, the forerunners of the *cuprascens* group going northwards, those of the *nivea-ritsemæ* group southwards. Both reached the Arctic or Antarctic land connections. The species of the *elegans-trisignata* group are then the posterity of the south-bound Arctic Eurasiatic branch, the *helmsi-dunedinensisætigera* group perhaps coming from the north-bound Antarctic Australasian branch. In spite, however, of these statements, neither the Arctic nor the Antarctic regions have produced indigenous Cicindelæ, their influence on the great influxes being only that of paths of a passing emigration. The true home of all the *Cicindela* stems is in the tropics or the subtropics.

NOTES ON *TÆNIORHYNCHUS SQUAMIGER*, COQ.

BY H. J. QUAYLE, AMES, IOWA.

Prof. Smith, of New Jersey, records *Tæniorhynchus (Culex) squamiger*, Coq., as being a strictly fresh-water form in that State, and it will be interesting to know that so far as my experience goes during the past season, it is exclusively a salt-marsh mosquito in the San Francisco Bay region of California. It may be possible that we have two different forms, but in a quantity of material which I have just examined they appear to agree in all essential particulars, both as regards larva and adult, with the descriptions given in Prof. Smith's report. There is one character, however, in the larva that is quite at variance, and that is the tracheal gills. In my specimens they are very short, in no case as long as the width of the 9th segment, while in Prof. Smith's report they are given as longer than the length of the segment, for the New Jersey *squamiger*. At any rate, if they are not the same mosquito, I believe my specimens are the

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typical *squamiger*, since they have been so determined by Mr. D. W. Coquillett, and were taken a few miles up the bay from where the original *squamiger* was obtained, and which was described by Mr. Coquillett.

However, it is the habits I wish to speak about here. Larvæ of this species were found without exception in the salt water pools, and almost invariably with *Curriei*, which is a strictly salt-marsh mosquito in this territory. Larvæ first appeared on February 20th, and none were seen later than April 20th. Adults from this brood made their way to the hills opposite, and while they were not found to have the migratory habit so well developed as *Curriei*, which was observed to migrate ten miles, they were found at least three or four miles from their breeding ground. No adults were seen to emerge after March 25th, due to our control work, and none were found flying about on the marsh after the middle of May, although adults were found in the hills up to July 2nd. We may infer, therefore, that the maximum adult life may be three months, and this agrees with the New Jersey observations. It was found there, however, that the species is single brooded, but in 1904 a brood was observed to emerge on the San Francisco Bay marsh in September, making at least two in this section, but, of course, climatic conditions may explain this difference.

Negative evidence points to the fact that this species passes the winter in the egg stage, the eggs hatching as already mentioned, very early in the following season. Since the adults were seen in the hills nearly two months after their disappearance on the marsh, it is evident that at least the majority do not make their way back to the marsh for egg-laying. Of those that migrated, three or four were found with eggs early in the season, but the great majority had no eggs developed. Further evidence, however, is necessary to establish or disprove the fact that the migratory forms are barren. Besides *Culex Curriei*, this is the only marsh species found in this territory, and because of the fact that it is fewer brooded it is not so abundant.

MR. A. F. WINN, Secretary of the Montreal Branch, has changed his address to: 32 Springfield Avenue, Westmount, P. Q.

Mailed January 6th, 1906.