



HAEMAPHYSALIS PUNCTATA.

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NOTE ON THE FINDING OF *HÆMAPHYSALIS PUNCTATA* AT WINNIPEG, MANITOBA.

BY SEYMOUR HADWEN,

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In August, 1909, I was given two female ticks (taken from a steer) which had been collected by Dr. Hobbs, of Winnipeg; these ticks proved to be identical with some females sent in a year previously to the Biological Laboratory by Dr. C. D. McGillivray, also from Winnipeg. At that time it was thought that they might prove to be *Boophilus annulatus*. After examining the ticks, I had no hesitation in deciding that they belonged to the genus *Hemaphysalis*, that probably the species was new to North America and might prove to be a carrier of Red-water. As far as I am aware only two species of *Hemaphysalis* have been described in North America, i.e.: *Hemaphysalis leporis palustris* and *H. chordeilis*. (Banks, Revision of the Ixodoidea of the U. S., 1908.)

On obtaining permission from the Veterinary Director General, I forwarded drawings, also specimens, together with a description, to Professor Nuttall, of Cambridge, who was kind enough to identify the specimens, and has replied, saying the tick is a female *Hemaphysalis punctata*.

According to Nuttall, *H. punctata* has only been recorded once before in America, by C. L. Koch, at Para, Brazil, in 1847. (?) He described it as *H. cinnabarina*.

I have no need to point out the importance of this finding, and to the possibility of this tick transmitting Red-water (*Piroplasmosis bovis*) to Canadian cattle, as it has been proved to do in England and elsewhere. As the tick is a three-host tick, its eradication will be a most difficult matter.

I append the description I sent to Professor Nuttall, and below it a condensed description taken for comparison from Parasitology, Vol. I, No. 2, June, 1903.

Hemaphysalis.—Description sent to Professor Nuttall: Female gorged; colour greenish-gray in fresh specimen, brown-red in alcohol. Scutum and legs brown; capitulum broader than long; hypostome,

5 rows of teeth on each side; porose areas round, widely-separated fossa between; palpi, second segment has 11 hairs, third segment has 2 stiff bristles at internal angle; scutum as wide as long, deep cervical grooves, coarsely punctate; coxæ 1, 2, 3 and 4, short spines about equal in size; coxa 1 with retrograde spine; stigmatal plate nearly round.

Described from 4 specimens found on cattle at Winnipeg, Man.

Abbreviated description for comparison with attached from Parasitology, Vol. I, No. 2, June, 1908. Article by Nuttall, Cooper and Robinson:

Hemaphysalis punctata.—Female: Colour reddish-brown (unfed), steel-gray or slate-gray (gorged). Scutum dark reddish-brown; capitulum, length, 770-880; hypostome, 5 files of teeth sharply pointed on each half (they state that a slight variation is found at times); porose areas, large, well separated, rather wider than long; palpi, usually 13 hairs in number, but subject to variation; scutum, length, 1.08-1.37 mm.; breadth, 1.05-1.31; cervical grooves deep anteriorly; punctations irregularly scattered, few in number; coxæ each bear a short wide spur at the posterior margin; spiracle nearly circular.

EXPLANATION OF PLATE 6.—*Hemaphysalis punctata*.

Fig. 1. Capitulum and scutum of female, ventral view from mounted specimen.

Fig. 2. Capitulum and scutum of female, dorsal view.

Fig. 3. Stigmatal plate.

Fig. 4. Coxa I.

Fig. 5. Tarsus I.

Fig. 6. Tarsus II.

TWO NEW SPECIES OF AFRICAN PARASITIC HYMENOPTERA.

BY J. C. CRAWFORD, WASHINGTON, D. C.

Family SCELIONIDÆ.

Scelio Howardi, n. sp.

Female.—Length about 4.5 mm. Black, the femora dusky-brownish, the tibiæ and tarsi brownish-yellow; head and thorax coarsely rugose, the parapsidal furrows not apparent; basal half of scape ferruginous; propodeum medially, coarsely rugose, laterally the surface covered with white pubescence; the whole insect with scattered, coarse and somewhat flattened, white pubescence, that on the mesonotum slightly yellowish;

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propleuræ rugose, mesopleuræ and metapleuræ finely rugoso-punctate; wings dusky, the marginal vein punctiform and with an infuscated spot; the stigmatal vein distinct, not longer than the infuscated spot at the marginal vein; segments 1-5 longitudinally striate, the apical margins of the segments smooth; basal two-thirds of segment 3 irregularly reticulately rugose, the longitudinal striæ the stronger; segments 4 and 5 with fine transverse striæ between the longitudinal ones; segment 6 rugose; segment 2 strongly depressed basally; venter longitudinally striate.

Male unknown.

Host: The eggs of *Cyrtacanthacris septemfasciata* Serville.

Type locality: Zambesi River, Africa.

Type No. 13143, U. S. N. M.

Described from eight specimens from material collected in December, 1908, by Mr. C. W. Howard, after whom the species is named.

The colour of the legs varies in some specimens, the femora and tibiæ being reddish, without any trace of dusky suffusion.

Family EULOPHIDÆ.

Tetrastichus periplanete, n. sp.

Female.—Length about 2 mm. Dark green, the extreme apex of femora, the tibiæ and the tarsi testaceous; antennæ dark brown, the scape testaceous; antennæ with one ring joint; pedicel somewhat more than half the length of the first joint of the funicle; first joint of funicle slightly longer than the second, this slightly longer than the third; club of antennæ distinctly three-jointed, almost as long as joints 2 plus 3 of funicle; head and thorax closely, finely lineolate, the vertex and pronotum with a few scattered punctures; median groove of mesonotum very distinct; mesonotum and propodeum with very fine shallow thimble-like punctures; median and lateral carinæ of propodeum very strong, the lateral ones bifurcate posteriorly, the outer branch of the carina running to the hind coxæ; propodeal spiracles large, oval, the area immediately surrounding them smooth; prepectus and metapleuræ with thimble-like punctures; lower two-thirds of mesepisternum reddish and with fine thimble-like punctures; rest of mesepisternum and mesepimerum almost without sculpture; wings hyaline, the veins almost colourless; hind coxæ on outer side rugose. Male unknown.

Host: Eggs of *Periplaneta americana* Linnæus.

Type locality: Lourenco Marquez, Africa.

Type No. 13144, U. S. N. M.

Three specimens reared by C. W. Howard, together with numerous specimens of *Tetrastichus Hagenowii* Ratzeburg.

BUTTERFLY COLLECTING NEAR HOPE, BRITISH COLUMBIA.

BY JOHN RUSSELL, HOPE STATION (C. P. R.), B. C.

Probably nothing more disgusts the ardent entomologist than to "wave" his net in a country where but a small variety of insects can be found, and mostly common things at that.

Through May and June I had collected near New Westminster, and at last, getting tired of that miserable country, with its huge stumps, thick underbrush and lack of butterflies worth catching, decided to take a trip into the mountains, and see what might be found there.

Three places I had in mind, the Pitt Mountains, the Fraser Canyon, and the trail between Hope and Princeton. The last seemed most alluring, and so was chosen.

Hope is a town on the south bank of the Fraser, about eighty miles above New Westminster. Princeton, on the Similkameen River, is in what is called the "Dry Belt." The two places are, by trail, sixty-five miles apart, all the way being through the mountains. There are two high points on the way, the first, which I shall call Hope Summit (or Lake House), is two thousand feet high, and fourteen miles from Hope; the other, Princeton Summit (or Summit City), is about 6,000 feet high, and forty miles from Hope. Between these two heights the trail descends into the valley of the Skaget River.

Arriving at Hope Station on the evening of July 4th, I crossed the river on the ferry boat (the mail-carriers' skiff, two bits per trip), and spent that night, because it was raining, at the hotel. Next day it rained on, but in spite of my own somewhat discouraged feelings (for when rain once commences on the Pacific Coast, one can never tell when it will end, a week, a fortnight, a month perhaps) and the advice of the good people to wait till the downpour stopped, I shouldered my pack at midday and began to walk.

That night was spent under the ten mile shelter, a lean-to of cedar bark, built against the side of a tree. It rained steadily. But by the next evening I had crossed the Hope Summit, and was at the bottom of the Skaget Valley, about twenty-seven miles from Hope. Here it did not rain, was only misty.

During the next day, July 7, I climbed the hardest part of the trail, to the Princeton Summit. The way led out of thick timbers into a country whose mountain sides had once been covered with fir and spruce, but a fire had at some time swept through there, and the bare trunks lay or

stood on every side. A new growth of these soft woods was very slowly taking the place of the dead, and meanwhile a great deal of low alder, willow and maple has grown up.

Mountain flowers in quantities, and generally of very bright colours, were everywhere, and when at about noon the sun shone out, butterflies, especially the blues, swarmed all around. On this up-climb I took my first specimens of *Erebia Vidleri*, and on a sandy flat a few miles below the big summit a Saturniid moth, *Pseudohazis Nuttalli* Strecker, was quite plentiful, as also a large dull green tiger beetle.

From this flat to the summit is the hardest part of the climb, as the trail rises in curves and zigzags innumerable. I soon became very warm indeed, but a tremendous thunder and hail storm soon wet me to the skin. It was unpleasantly cool. I caught no more butterflies after that, but hastened on to the summit shack, where I was able to make a fire and dry off.

The weather was fine there, so I camped for a day or two, and had very good luck among the butterflies. A species of *Melitaea*, which seems to answer only to *Taylori* Edw., as figured in Holland's Book, was plentiful.

From here the trail goes down by the side of Whipaw Creek to Princeton, about twenty-five miles. This took me, collecting many things by the way, a day and a half.

At the Princeton Summit the timber, what there is of it alive, is fir, but after you have descended a few miles, you enter a long stretch of small pines, growing closely together. Gradually this changes, till, in a few miles more, one is in the dry country, where the red-trunked pines stand far apart, and the green grass grows between, all decked with yellow and blue flowers. The trees and grass and flowers and the sky all combined to make very pleasing landscapes.

Collecting was good all the way, a moth, *Syneda hudsonica* G. & R., being common, and easily taken, as it flies in the sunlight.

At Princeton, where I camped by the side of the clear rushing Tulameen, quantities of butterflies and beetles were to be found. Almost every stone or log or piece of bark would have a beetle under it (some of them very large specimens), and the flowers were haunted by members of the same order. The hills rise from the river in a series of steps, or benches, the lowest of which usually has a dense growth of willows, cottonwood, etc.

Collecting at Princeton being so good, I was tempted to tramp down the Similkameen to the Okanagan, but was already so far from home that that idea was given up, to be realized later, I hope. After buying a new supply of rice, bacon, hardtack and coffee, I took the back trail, Princeton to Hope, going slowly and collecting by the wayside. The *Lycænidae* were plentiful everywhere, and *Erebia Vidleri* was rather common for about ten miles east of the Princeton Summit.

At the Summit two or three days were spent, and as I had no tent I slept in the shack, which had been built by a couple of trappers. It was a small log affair, with a sod roof, and a door large enough to crawl through; in one corner was a suspicious-looking bed, on which I slept not; in the opposite corner was a rough fireplace. It was better than no shelter at all, however, for at such high points the nights are very cold, and even then in July one's dish-cloth would be found frozen stiff in the morning.

A day or so was spent at the sandy flat below the summit, as also at Cayuse Flat, in the bottom of the Skaget Valley, in which latter spot many *Geometridæ* were taken.

My grub was almost gone then, so I made a day's journey to Hope. From there I came down the south bank of the Fraser to Mt. Cheam, which it was my intention to climb, but on account of wet weather I kept on to Chilliwack, from which place the steamer was taken to Westminster.

The following is a list of species taken during the trip, and if exception may be made to any of the kinds named (especially among the *Lycænidae*), my only excuse is that I was unable to send them to Victoria or Ottawa to be identified, and so had to do it myself, using Holland's Book for that purpose:

Parnassius clodius Manatries.—Quite common in the Fraser Valley.

Papilio zolicaon Boisd.—Cayuse Flat, on the Princeton trail.

Synchlœ sara Boisd.—Princeton trail, on a flat about 38 miles from Hope, July 17.

S. Realsirtii Edw.—At the same spot as *Synchlœ sara*, July 18.

Eurymus interior Scud.—Princeton trail, July 14.

Argynnis aphrodite Fabr.—If *aphrodite* is found in the far west, this must have been it, as it seemed identical with the eastern species, July 11.

Brenthis epithore Boisd.—This butterfly is very common on the coast, and even on the higher summits was abundant.

Lemonias Taylori Edw.—A strong, swift flier, but as it lit often on the ground and on flowers, it was easily taken. Very common at the Princeton Summit, appearing whenever the sun shone out.

L. Whitneyi Behr.—Princeton, July 12.

L. Hoffmani Behr.—Princeton, July 12.

Phyciodes pratensis Behr.—Very common everywhere along the trail.

Basilarchia Lorquini Boisd.—Very common everywhere.

Cercyonis charon Edw.—Quite common at Princeton.

Erebia Vidleri Elwes.—On each side of the Princeton Summit, but especially abundant towards Princeton, for about ten miles, wherever were any kind of open grassy spots. It is a weak flier, and often settles on the grass or leaves, and so is easily captured.

Coenonympha elko Edw.—Princeton, but not common, July 12, 13, 14.

Eneis gigas Butl.—Skaget Valley, two specimens, July 20. I am not sure of this species, but my specimens only answered to that species as figured in Holland's Book.

Epidemia mariposa Reak.—Skaget Valley, July 20.

E. helloides Boisd.—Common everywhere.

Cupido lycea Edw.—High summit to Princeton.

C. fulla Edw.—Princeton to Cedar Flat. Very common.

C. sœpiolus Boisd.—Skaget Valley, Princeton.

Nomiades antiacis Boisd.—Skaget Valley, Princeton Summit.

Phædrotus sagittigera Feld.—Princeton, July 12. Two specimens.

Agriades podarce Feld.—Skaget Valley, Princeton Summit.

A. rustica Edw.—Skaget Valley, Princeton Summit. Rare.

Rusticus enoptes Boisd.—Princeton, July 12-14.

R. glaucon Edw.—Princeton.

R. Melissa Edw.—Skaget Valley, Princeton Summit.

R. Scudderi Edw.—Princeton.

R. acmon D. & H.—Princeton.

Everes amyntula Boisd.—Princeton Summit, July 16.

The Saturniid moth, *Pseudohazis Nuttalli* Streak., was common at one point on the trail. It flies only in the hottest sunshine, and is so strong and swift on the wing that it is very hard to catch. The moths were just emerging from the chrysalids when I was there, and I found several still moist imagoes, and a number of empty pupa-shells.

ENTOMOLOGICAL COLLECTIONS IN QUEBEC.

The Report of the Superintendent of Public Instruction of the Province of Quebec for the year 1908-09 states that in 1893 the Government of the Province purchased the collection made by the late Abbé Provancher. This collection is fairly large, and contains in Coleoptera alone 1,903 species, represented by 2,627 specimens. The great value of the collection, however, is the fact that it contains nearly all the type specimens on which the Abbé based his descriptions of hundreds of new species in different orders, especially in the Hymenoptera. The collection remains in the three cabinets in which he had himself arranged it, and has not been disturbed in any way. It is therefore available for inspection by students at any time, and may be seen by application in the Museum of the Department.

Another collection of great interest is that made by the Rev. Dr. Fyles during a long series of years that he spent in the neighbourhood of Quebec and in the Eastern Townships. It consists very largely of Lepidoptera. The specimens are said to be well mounted and in perfect order. There are amongst them some few types of species that he described.

Among the curiosities of the Museum is an immense Tiger-beetle, two and one-half feet long and one and one-half feet high. It is a reproduction in shape and colour of *Cicindela purpurea*, and was made by a wood-carver in Quebec in 1876, and exhibited at the Colonial and Indian Exhibition held in London that year.

It is satisfactory to know that the collections in Quebec are being carefully looked after by the Abbé Huard, who is an enthusiastic entomologist.

C. J. S. B.

NOTE ON *CHIONOBAS GIGAS* BUTLER.

BY E. P. VENABLES.

Mr. Cockle's note on the occurrence of *Chionobas gigas* at Kaslo at an altitude of 1,800 feet, is of interest. I also have taken the species in 1908 in the Okanagan Valley, twelve miles east of Vernon, altitude 1,000 feet, in open meadow land near water. On this occasion I saw two or three more individuals at the same spot, but failed to capture them.

I also observed the species on the mountain side above the valley in 1909—"a single individual." It is evident from these observations that the range of this species is not confined to the high altitudes alone.

INCIDENTAL CAPTURES OF COLEOPTERA AT PLANO,
TEXAS.

BY E. S. TUCKER,

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The following list gives the determinations and records of beetles which, together with insects in other orders, were personally collected during the time I was stationed at Plano, Collin County, Texas, lasting from the first week in May to the end of December, 1907. For the sake of convenience, the arrangement follows the "List of Coleoptera," by Samuel Henshaw, but includes recent changes in nomenclature, and especially the revised family names as adopted by the European authorities, L. V. Heyden, E. Reitter and J. Weise, in "Catalogue Coleopterorum Europæ."

The asterisk (*) when used after a specific name indicates determination or verification by Mr. E. A. Schwarz, whose helpful services, through the courtesy of Dr. L. O. Howard, are hereby gratefully acknowledged.

SUMMARY OF FAMILIES AND SPECIES, INCLUDING VARIETIES :

Cicindelidæ	2	Bostrychidæ	4
Carabidæ	23	Lyctidæ	1
Dytiscidæ	2	Scarabæidæ	15
Hydrophilidæ	4	Cerambycidæ	8
Pselaphidæ	1	Chrysomelidæ	22
Staphylinidæ	5	Lariidæ	3
Phalacridæ	4	Tenebrionidæ	7
Coccinellidæ	9	Cistelidæ	1
Erotylidæ	2	Lagriidæ	1
Cucujidæ	4	Melandryidæ	1
Mycetophagidæ	1	Cedemeridæ	1
Dermestidæ	1	Mordellidæ	6
Nitidulidæ	3	Anthicidæ	3
Latriidæ	1	Meloidæ	5
Troglonitidæ	1	Otiorhynchidæ	1
Dryopidæ	1	Curculionidæ	16
Elateridæ	4	Calandridæ	4
Buprestidæ	4	Ipidæ	1
Cantharidæ	4	Anthribidæ	1
Clididæ	1		

Totals : 39 families, 178 species.

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Family CICINDELIDÆ.

- Tetracha Carolina* L.—July and August, all at night, taken at trap light.
Cicindela punctulata Fab.—July and September, all at night, taken at trap light.

Family CARABIDÆ.

- Pasimachus Californicus* Chd.—July, August and September.
Scarites subterraneus Fab., var. *texanus* Chaud.*—July and August.
Clivina Texana Lec.*—August, at night, taken at trap light.
 bipustulata Fab.—May, July.
Tachys tripunctatus Say.*—July.
Pterostichus Sayi Brulle.—August, at night, taken at trap light.
Evarthrus gravidus Hald.—June.
 sodalis Lec.—May, July, September, October and November.
Lebia pulchella Dej.*—May, at dusk, in oat field.
 analis Dej.—May, at dusk, in oat field.
Loxopeza (Lebia) grandis Htz.—July and August, at night, taken at trap light.
Calleida decora Fab.—July, in oat field; July and August, at night, taken at trap light.
Helluomorpha Texana Lec.—July.
Brachynus sp.—July, at night, taken at trap light; August.
Agonoderus pallipes Fab.—July and August, at night, taken at trap light.
 testaceus Dej.*—May, at dusk, in oat field.
 micros Lec.*—May, at dusk, in oat field; July, August, September, at night, taken at trap light.
Discoderus parallelus Hald.*—July, November.
Stenomorphus rufipes Lec.—October, in oat field; November.
Harpalus caliginosus Fab.—July.
 Pennsylvanicus DeG.—July to September, at night, taken at trap light; October, in oat field.
 gravis Lec.—August and September, at night, taken at trap light.
Anisodactylus opaculus Lec.—July, at night, taken at trap light.

Family DYTISCIDÆ.

- Laccophilus fasciatus* Aubé.*—July, at night, taken at trap light.
Copelatus chevrolatii Aubé.—August, at night, taken at trap light.

Family HYDROPHILIDÆ.

- Tropisternus nimbatus* Say.—October, at night, taken at trap light.

Berosus subsignatus Lec.—July to September, at night, taken at trap light, and a single specimen at random in August.

Philhydrus ochraceus Mels.*—August, at night, taken at trap light.

Phænonotum extriatum Say.*—August, at night, taken at trap light.

Family PSELAPHIDÆ.

Atinus monilicornis Brend.*—August, at night, taken at trap light. Mr. Schwarz added remark: "It is a rare species and strictly myrmecophilous."

Family STAPHYLINIDÆ.

Trichiusa robustula Casey, det. Casey.—May, at dusk, in oat field.

Atheta sp., undescribed, det. Casey.—November.

Philonthus hepaticus Er.*—May, August, at night, taken at trap light.

Stenus colonus Er.*—August.

Dacnochilus argularis Er.*—July.

Family PHALACRIDÆ.

Phalacrus penicillatus Say.—June, in oat field.

politus Melsh.—September, at night, taken at trap light.

Eustilbus (Olibrus) apicalis Melsh.—May, at dusk, in oat field; June, common in oat fields.

Acylomus ergoti (Walsh) Casey.*—May, at dusk, in oat field. Mr. Schwarz remarked: "The insect is the old *Olibrus ergoti*, so named by Mr. B. D. Walsh many years ago, but not described by him. It was described by Casey as *Acylomus ergoti*. It is an extremely common and widely-distributed species living in the smut fungi (ergot) that are so common on graminaceous plants."

Family COCCINELLIDÆ.

Megilla maculata DeG.—May, in oat field; June and July, invading experiment cages with green bugs, *Toxoptera graminum* Rond., in oat fields; August to December, bred in experiments.

Hippodamia convergens Guer.—June, invading experiment cages with green bugs in oat fields; July, in oat fields and at random; October, November, in oat field.

Coccinella oculata Fab., melanistic form of *abdominalis* Say.—July, in corn field near infestation by *Aphis maidis* Fitch; October, in old corn field.

Cycloneda (Coccinella) munda Say.—October.

Psyllobora vigintimaculata Say.—August.

vigintimaculata Say, race *tædata* Lec.—August, November
1st, pairing on broom-weed.

Chilocorus bivulnerus Muls.—November.

Scymnus Loewii Muls.—June, invading experiment cages with green bugs ;
July, in wheat-stubble field ; August, breeding in experiment
cage with green bugs and taken at random ; October,
December. A troublesome enemy encountered in the breed-
ing of *Toxoptera graminum* Rond., in field cages.

Mr. Schwarz refers to this beetle as a common Mexican
species, and considers it identical with *Lecontei* Cr. (= *cinctus*
Lec.), and which has several other synonyms not yet men-
tioned in print.

partitus Casey.—August. Only one specimen taken, which
shows it to be comparatively rare besides *Loewii*.

Family EROTYLIDÆ.

Languria mozardi Latr.—June, in oat field ; July, in wheat-stubble field.

Megalodacne fasciata Fab.—July, sweeping at night.

Family CUCUJIDÆ.

Silvanus Surinamensis L.—June, in flour ; August, appearing in kitchen.

Cathartus cassiæ Reiche (gemellatus Duv.).—July, on ear sweet corn.

advena Waltl.—July, in oat field.

Læmophlæus minutus Oliv. (*pusillus* Schh.)*—July, in seed wheat with
Calandra oryzae L.

Family MYCETOPHAGIDÆ.

Typhæa stercorea L. (*fumata* L.).—June, in oat field ; July, August, at
night, taken at trap light.

Family DERMESTIDÆ.

Trogoderma ornatum Say.—June and July, in window of house ; July, in
corn field.

Family NITIDULIDÆ.

Carpophilus dimidiatus Fab.*—December, on oat plant.

Conotelus stenoides Murr.—October, thick on ears and shucks of June-
planted corn.

Nitidula zigzag Say.*—July, at night, taken at trap light.

Family LATRIDIIDÆ.

Melanophthalma distinguenda Com.—June and July, in oat fields.

Family TROGOSITIDÆ.

Temnochila cœrulea Oliv. (*virescens* Fab.).—July, at night, on old log.

Family DRYOPIDÆ (PARNIDÆ).

Stenelmis vittipennis Zimm.*—August, at night, taken at trap light.

Family ELATERIDÆ.

Drasterius cribratus Lec.—August, at night, taken at trap light.

Glyphonyx testaceus Melsh.—July, at night, taken at trap light.

Melanotus fissilis Say.—August, at night, on old log.

Scaptolenus Lecontei Sallé.—October, at night, taken at trap light ;
November.

Family BUPRESTIDÆ.

Dicerca obscura Fab.—October and November, sunning on iron frame of
windmill.

Buprestis rufipes Oliv.—July.

Chrysobothris femorata Fab., var. *Lesueuri* L. & G.*—August.

Agrilus egenus Gory.*—July.

Family CANTHARIDÆ (LAMPYRIDÆ).

Photinus dimissus Lec.*—July, at night, taken at trap light.

benignus Lec.—May, at dusk, in oat field ; June, sweeping at
night ; July, at night, taken at trap light ; August.

Pleotomus pallens Lec.—July.

Lobetus abdominalis Lec.—August, September.

Family CLERIDÆ.

Hydnocera pubescens Lec.—July, in oat field.

Family BOSTRYCHIDÆ.

Endecatomois rugosus Rand.*—November.

Xylobiops basilaris Say.—August, at night, taken at trap light.

Prostephanus (*Dinoderus*) *punctatus* Say.*—August, at night, taken at
trap light.

Rhizopertha dominica Fab. (*Dinoderus pusillus* Fab.).*—November, bred
in meal.

Family LYCTIDÆ.

Lyctus (*Trogoxylon*) *parallelopipedus* Melsh.—September.

Family SCARABÆIDÆ.

Canthon humectus Say (*cyanelus* Lec.).—May, a pair, rolling dung-
ball ; July.

lævis Dru.—July.

- Pinotus (Copris) carolinus* L.—August.
Phanæus triangularis Say.*—July.
 igneus MacL.—July, September.
Atænius cognatus Lec.*—July and August, at night, taken at trap light.
Aphodius lividus Oliv.—July and September, at night, taken at trap light.
 inquinatus Hbst.—October, in window; November, common
 in green wheat and oat fields.
 lutulentus Hald.*—November.
Lachnosterna lanceolata Say.—June.
 torta Lec.—July to September, at night, taken at trap light
 and prevalent in foliage of elm trees.
 glabricula Lec.*—July and August, at night, taken at trap
 light.
Cyclocephala immaculata Oliv.*—July, at night, taken at trap light.
Phileurus valgus Fab.—May, at night, taken at trap light.
Allorhina nitida L.—July, in clusters on base of sunflowers; August, on
 willow.

Family CERAMBYCIDÆ.

- Malodon dasystemus* Say.—July, at night, from old logs; August.
Smodicum cucujiforme Say.—July, at night, taken at trap light and on
 bark of tree.
Eburia quadrigeminata Say.—July, at night, on bark of tree.
Ischnocnemis bivittatus Dup.—October and November.
Neoclytus luscus Fab.*—November, at roots of persimmon.
Oncideres cingulata Say.—August, November, on fallen elm twig which
 had been girdled. The work of this species on elm became
 quite noticeable about September 20, on account of ground
 beneath trees being littered with fallen girdled twigs.
Ataxia crypta Say.—October, at night, taken at trap light.
Tetraopes femoratus Lec.*—Typical form, according to Mr. Schwarz;
 November.

Family CHRYSOMELIDÆ.

- Donacia proxima* Kirby.*—August, at night, taken at trap light.
Anomœa laticlavata Forst.—June and July.
Exema conspersa Mann.—May, August, at night, taken at trap light.
Diachus auratus Fab.—May.
Myochrous denticollis Say.—June, in oat field; August, at night, taken at
 trap light; November.
Nodonota tristis Oliv.*—July, in wheat-stubble field and at random.

Leptinotarsa decemlineata Say.—July, on *Solanum rostratum* in corn field.

Chrysomela auripennis Say.—July, in oat field ; October, November.

Plagioderia viridis Melsh.*—May.

Luperus Brunneus Cr.—May, July, at night, taken at trap light.

Diabrotica duodecimpunctata Oliv.—May, in oat fields and at random ;

July, in corn fields and at random, and at night taken at trap light ; August at random ; August and September, at night, taken at trap light ; October.

Hypolampus pilosa Ill.*—July.

Homophœta æquinoctialis L.—July.

Edionychis Texana Cr.*—November.

Disonycha glabrata Fab.—July, in corn field.

abbreviata Melsh.—November.

Haltica ignita Ill.—August, at night, taken at trap light.

Crepidodera atriventris Melsh.—July, in wheat-stubble field.

Epitrix parvula Fab.—June.

Mantura Floridana Cr.—November.

Chætocnema pulicaris Melsh.*—May, at dusk, in oat field ; August, October, at night, sweeping ; November.

Microrhopala vittata Fab.*—August.

Family LARIIDÆ (BRUCHIDÆ).

Laria (*Bruchus*) *protracta* Horn.—July, at night, taken at trap light.

bisignata Horn.—July, in wheat-stubble field.

schrankiæ Horn.—July, in oat-stubble field.

Family TENEBRIONIDÆ.

Eleodes Texana Lec.*—July and August, at night, from rotting logs.

tricostata Say.*—October.

Alobates Pennsylvanica DeG.*—July and August, at night, from rotting logs.

Opatrinus aciculatus Lec.*—August.

Tribolium ferrugineum Fab.—May, on ham in kitchen ; June, in flour ;

July, on kitchen shelves ; August, in kitchen ; November, bred in meal.

Alphitobius diaperinus Panz.*—June, in flour.

Platydemus ruficornis Sturm.—August, at night, taken at trap light.

Family CISTELIDÆ.

Lobopoda (*Allecula*) *punctulata* Melsh.—July, at night, on old logs.

Family LAGRIIDÆ.

Statira gagatina Melsh.*—May, at night, taken at trap light.

Family MELANDRYIDÆ.

Eustrophus bicolor Say.—July and August, at night, on old logs.

Family EDEMERIDÆ.

Oxaxis cana Lec.*—June, at night, taken at trap light; July, at night, taken at trap light.

Family MORDELLIDÆ.

Mordella octopunctata Fab.—July.

carinata Smith.*—July.

Mordellistena guttulata Helm.*—June and July, in oat fields.

nubila Lec.*—August.

pustulata Melsh.*—August, at night, taken at trap light; August at random.

unicolor Lec.*—July, in oat field; August, at night, taken at trap light.

Family ANTHICIDÆ.

Notoxus monodon Fab.—August.

Anthicus floralis L.*—July, at night, taken at trap light.

lætus Laf.*—August, at night, taken at trap light.

Family MELOIDÆ.

Macrobasis immaculata Say.*—August, at night, taken at trap light; October.

Epicauta sericans Lec.—July, in oat and corn fields and at random.

lemniscata Fab.—July to September, at night, taken at trap light.

Pennsylvanica DeG.—August, November.

Pyrota terminata Lec.—August and September, at night, taken at trap light.

Family OTIORHYNCHIDÆ.

Graphorhinus vadosus Say, det. Pierce.—November.

Family CURCULIONIDÆ.

Apion ellipticum Smith.—May, October.

occidentale Fall.—July, in oat-stubble field.

Macrops Wickhami Dietz.—August, at night, taken at trap light.

Lixus scrobicollis Boh.—July.

Smicronyx (Desmoris) *constrictus* Say.—August, at night, taken at trap light.

sordidus Lec.—August, at night, taken at trap light.

Pnigodes setosus Lec.—November, emerged in field-cage over oat plants and at random.

Anthonomus grandis Boh.—October, common on green cotton balls.

æneolus Dietz.—July, in wheat-stubble field.

Conotrachelus nenuphar Hbst.—June and July, larvæ commonly infesting peaches.

seniculus Lec.—July and August, at night, taken at trap light.

Cylindrocopturus longulus Lec., det. Pierce.—June, in oat field.

Ceutorhynchus Zimmermanni Gyll.—May.

Baris transversa Say.—July, in oat field and at random.

Trichobaris Texana Lec.—August.

Balaninus Victoriensis Chhntn.—October, in cotton field ; November.

Family CALANDRIDÆ.

Rhodobænus tredecimpunctatus Ill.—August.

Sphenophorus sp.—Specimen lost, but probably *maidis* Chhntn., which has since been taken in the corresponding month. July.

Calandra oryzae L.—July, in seed wheat.

Cossonus corticola Say.—June.

Family IPIDÆ. (SCOLYTIDÆ.)

Platypus compositus Say.—November.

Family ANTHRIBIDÆ.

Brachytarsus alternatus Say.—June, in oat field.

Dr. PHILIP P. CALVERT, Assistant Professor of Zoology in the University of Pennsylvania, and Mrs. Calvert, arrived in Philadelphia on May 17, from Costa Rica, after a year's residence in that country. They were in Cartago, their headquarters, at the time of the earthquake of May 4, which totally destroyed that town, but escaped unhurt. A brick partition wall fell into the room in which they were sitting, burying and destroying the living insect larvæ which were in rearing, some of the experiments having run for eleven months. On the following day they were able to recover from the ruins nearly all their other collections, notes, photographs, instruments, etc., and later to bring them home in safety. Many data on the seasonal distribution, larval forms and habits of Costa Rican Odonata (the principal objects of their investigations) have been secured.—*Science*.

A NEW SPECIES OF THE GENUS LEUCOPIS.

BY W. R. THOMPSON.

Bureau of Entomology, U. S. Dept. of Agriculture.

This interesting little Agromyzid genus does not appear to contain a great number of species, and but four have been recorded from America hitherto. These, together with the new form described in this paper, are included in the following table. It will be noted that they differ mainly in the character of the markings of the mesonotum and abdomen:

TABLE OF SPECIES.

- | | |
|---|--------------------------|
| 1. Dorsum of thorax immaculate..... | 2 |
| Dorsum of thorax with two brown vittæ..... | 3 |
| 2. Abdomen immaculate..... | <i>simplex</i> Loew. |
| Abdomen with two lateral spots and a median basal vittula of velvety-black upon the second, third and fourth segments.. | <i>maculata</i> , n. sp. |
| 3. Second abdominal segment with two lateral brown spots, third and fourth segments immaculate..... | <i>nigricornis</i> Egg. |
| Third and fourth abdominal segments not immaculate..... | 4. |
| 4. Two lateral spots and a basal median vittula on the second abdominal segment, only the basal vittula on the third and fourth segments..... | <i>bella</i> Loew. |
| Two lateral spots and a basal median vittula on second, third and fourth segments..... | <i>bellula</i> Will. |

Since the number of species in the genus is so small, and for greater convenience, the full descriptions, compiled from the original sources, are given below:

Leucopis nigricornis Egger.

Egger, Verh. Zool.-Bot., XII, p. 782, 1862.

♂ ♀.—Lead-gray, antennæ large, black, thorax bistriate, all of the tarsi yellowish, wings whitish. Length, 1½ lin.

Antennæ large, black, cheeks, front and vertex ashen-gray, the front above the antennæ with an arched groove, which continues on both sides into the facial grooves, the vertex with three long, slightly impressed lines. Thorax, scutellum and abdomen bluish-gray, the thorax with two, not broad, convergent vittæ on the middle of the dorsum, the abdomen with two black spots. Venter whitish-gray, somewhat shining when viewed from anteriorly. Legs: coxæ and femora to the knees grayish, the knees golden, the tibiæ of the first and second pair of legs golden, those of the

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hind legs in the middle broadly brownish. All of the tarsi golden, wings whitish.

(Trans. from original description.)

An examination of the specimens in the U. S. N. M. collections discloses considerable variation in the character of the thoracic vittæ in this species. They are in some specimens very strong and well marked, at times continued to the disc of the scutellum, in others so faint as to be discernible only after careful examination. The spots upon the second abdominal segment also vary considerably in size.

Leucopis simplex Loew.

Loew, Cent., VIII, No. 96, 1869.

♂.—Length of body, $\frac{3}{4}$ lin.; of wing, $\frac{5}{6}$ lin. Blackish, entirely covered with thickly-dusted whitish pollen, the antennæ and palpi black, legs blackish, base and apex of the tibiæ and the first four tarsal joints yellowish.

Colour of body black, uniformly concealed by white pollen, abdomen immaculate. Antennæ and palpi black in colour. Femora black, tibiæ blackish-fuscous, in the base broadly, in the apex less broadly yellowish, tarsi yellowish, but with the last joint only blackish-fuscous. Halteres whitish, wings hyaline, veins fuscous.

(Trans. from original description and compared with type.)

The colour of the legs in the specimens in the U. S. N. M. collections appears to vary somewhat, as some of the specimens have the base and apex only, and others the greater part of the femora yellowish. Many of the specimens, which otherwise agree with Loew's description, have the wings whitish dusted. One specimen which I found in the series, from Flagstaff, Arizona (H. S. Barber coll.), has the thorax immaculate, but there are two small black spots on the second abdominal segment; another from Sea Isle City, N. J., has the thorax immaculate, the abdomen with the characteristic markings of *L. bella*, the second abdominal segment bearing two lateral blackish spots, and a basal median vittula, the third and fourth with the basal median vittula only.

Leucopis bella Loew.

Loew, Cent. VI, No. 99 (1865).

♀.—Length of body, $\frac{11}{12}$ to 1 line; of wing, $\frac{11}{12}$ line. Whitish, thorax with two fuscous vittæ, first abdominal segment, except the margins, black, following segments each with a single minute median basal black spot, the second segment also bearing a black spot on each side.

Whitish, opaque, frontal vitta concolorous, on both sides margined with blackish. Antennæ black, whitish pollinose. Palpi black, proboscis yellowish. Dorsum of the thorax adorned with two uninterrupted vittæ, which slightly converge toward the posterior margin. Abdomen shining white, the first segment, except the margins, black, opaque. Second, third and fourth segments each with a single basal median vittula, the second also bearing a round black spot on each side. Legs black, whitish pollinose, knees and tarsi yellowish, the extreme apex of the latter a little darker. Wings milky, veins dilutely subfuscous.

(Trans. from original description, and compared with type.)

The specimens referred to this species in the U. S. N. M. collections do not show a great deal of variation in the character of the thoracic vittæ unless the specimen mentioned in the note under *P. simplex* be an immature individual of this species. The abdominal spots vary somewhat in size.

Leucopis bellula Will.

Williston, Insect Life, Vol. I, No. 8, p. 258 (1889).

Length, $1\frac{3}{4}$ -2 mm. Black, thickly grayish-white dusted. Front with two gently arcuate black stripes; the narrow orbital space perceptibly more whitish. Antennæ black, the basal joints shimmering whitish, arista short. Face in colour like the frontal orbits. Mesonotum with two conspicuous chocolate-brown stripes, beginning on the inner side of each humerus and gently converging to the posterior margin. In the middle of the dorsum, before the scutellum, there are two bristles; the usual bristles on the lateral margin and on the margin of the scutellum; none on the front or vertex. Abdomen more whitish than the thorax, clothed with short black hairs, first segment with the lateral margins and a posterior band deep brown, second and third segments each with a slender, subinterrupted stripe and a pair of rounded spots, all deep brown in colour, the pair on the second moderately large, on the third smaller, and on the fourth punctiform or minute. Legs black, with the same whitish pruinosity, the immediate tip of femora, the base of the front and hind tibiæ, the middle tibiæ and the tarsi, except their tip, yellow, the tibiæ elsewhere and the tip of the tarsi brown or infuscated; in some specimens the tibiæ throughout are more brown. Wings hyaline or faintly clouded; the auxiliary vein distinctly separated from the first longitudinal, except at tip, the last section of the fifth vein a little shorter than the penultimate one of the fourth.

The thoracic vittæ in the majority of the specimens of this species are dark and quite well marked, sometimes reaching to the hind margin

of the scutellum. The wings in some specimens are quite markedly whitish dusted.

An examination of the paratypes of this species in the U. S. N. M. collection makes it evident that there is a slight error, due to a slip of the pen, in the description quoted above. Instead of "first segment of the abdomen *with* the lateral margins and a posterior band deep brown," the description should read, "first segment of the abdomen, *except* the lateral margins and a posterior band, deep brown."

Leucopis maculata, n. sp.

♂ ♀.—Length, 2.5–2.75 mm. Ground colour black, thickly dusted with bluish-white pollen. Dorsum of the thorax without brown vittæ, with three parallel, narrow, light gray vittæ, running backward from the anterior margin of the mesonotum and fading out on its posterior half. First segment of the abdomen, except the margins, sometimes darker gray than the rest of the abdomen, the greater part of this segment bare, the margins and the remainder of the abdomen with short black hairs. Second, third and fourth segments each with a basal median vittula and two lateral spots of velvety-black. On the second segment the basal median vittula reaches about half way to the hind margin of the segment, tapering posteriorly. Lateral black spots small, irregularly circular, about one-third the length of the segment in diameter. Lateral spots on the third segment similar, the median vittula smaller, not reaching half way to the hind margin of the segment. Lateral spots on the fourth abdominal segment not half the size of those on the preceding segments, the median vittula very small, sometimes evanescent. Tibiæ, tarsi, and the apices of all of the femora luteous, the tarsi sometimes infusate toward the tip. Femora, except the tips and sometimes the narrow bases, concolorous with the rest of the body. Face, front and cheeks thickly dusted with whitish pollen, palpi and antennæ black, the latter thinly dusted with whitish pollen. Wings milky, uniformly whitish dusted.

Described from four specimens, three ♂'s and one ♀, bred from *Eriopeltis coloradensis*, by Messrs. H. S. Smith and M. H. Swenk, at Calvert, Nebraska, Nov. 15, 1909. Type No. 13141, U. S. N. M.

The larvæ of this species were found feeding upon the egg-mass of the above-mentioned scale insect. They appear to be predatory in habit, somewhat resembling Syrphid larvæ in their mode of attack, like the other species of the genus of which the habits are known.

As will be seen from the above description, this species resembles *L. bellula* Will. in the markings on the abdomen, but differs from it in the

absence of the pair of brown vittæ on the mesonotum. I have not been able to detect the slightest trace of this in any of my specimens. I describe this form as new with some hesitation, on account of the rather variable nature of the specific characters in our specimens of this genus. However, it is probable that this variation is due in part, at least, to the immaturity of bred specimens. Those from which the above description was taken are apparently quite well developed and the abdominal characters are well marked. They differ from the other species, moreover, in their slightly larger size.

NOTES ON TENTHREDINOIDEA, WITH DESCRIPTIONS OF NEW SPECIES.

BY S. A. ROHWER, WASHINGTON, D. C.

PAPER XII.—(Genus HOPLOCAMPA I.)

The genus *Hoplocampa* Hartig was described in 1837 (Fam. d. Blatt. und Holzwesp., p. 276), as a subgenus of *Selendria* Leach. It originally included eight species, but has since been restricted to species which are congeneric with *Tenthredo* (*Allantus*) *brevis* Klug. By different writers of Tenthredinoidea *Hoplocampa* has been treated differently, some placing it with *Hemichroa* Stephens, while others have considered it more closely allied to *Phyllotoma* Fallén and *Eriocampoides* Konow. It is in many ways related to *Blennocampa* (and allies) on the one hand and *Nematus* (and allies) on the other. Perhaps it should form a distinct tribe, separated from the *Nematids* by the presence of a radial cross-vein, different shaped head and antennæ in the adult, and in having the larva 22-footed, as in *Blennocampids*. From the *Blennocampids* the adult differs in the position of the basal vein and the non-parallel first recurrent vein and other characters.

Characters of Hoplocampa Hartig.

Small species; clypeus emarginate or subtruncate; malar space wanting or present; antennæ 9 jointed, the pedecellum longer than wide; ocelli in a low triangle; orbits rather narrow, the vertex rounded; last ventral segment of the female produced in the apical middle; sheath of the normal type; hypopygidium large; post-basitarsis much shorter than the following joints; claws with a small inner tooth; mesothorax without sutures which separate præ-plates; basal plates well separated; venation similar to the figure of *Hoplocampa ferruginea* (Fabricius), as figured on plate XXXIII, fig. 61, Proc. U. S. Nat. Mus., Vol. XXIX, No. 1438, 1906.

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The larva have eight pairs of abdominal feet, and are known to feed on the following plants: *Prunus*, *Cratægus*, *Sorbus*, *Lonicera*, *Ribes* and *Amelanchier*.

Hoplocampa Hartig may be separated into two subgenera on the length of the malar space. The Nearctic species in some respects differ from the Palearctic species, although there is a group of species in the west which are allies of the European species.

Subgenera of Hoplocampa.

Malar space as great as or greater than the width of the mandible at base; eyes short, scarcely twice as long as wide; ocelli in a low triangle.....

Macgillivrayella Ashmead.

(Type: *Macgillivrayella Oregonensis* Ashmead.)

Malar space very narrow or wanting, never as great as the width of the mandible at the base; eyes elongate, nearly three times as long as wide; ocelli usually in a curved line.....

Hoplocampa Hartig.

(Type: *Tenthredo* (*Allantus*) *brevis* Klug.)

Species of the subgenus Macgillivrayella Ashmead.

Females 1.

Males 2.

1. Transverse radius oblique and received distinctly beyond the middle of the third cubital cell; (ocellar basin almost wanting; stigma slightly broader at the base; wings creamy-hyaline, iridescent).....

Oregonensis, Ashm.

Transverse radius nearly perpendicular and received near the middle of the cell.....

lacteipennis Roh.

2. Venation pallid-hyaline; hypopygidium not notched in the apical middle.....

Oregonensis Ashm.

Venation, except stigma, pale brown; hypopygidium notched in the apical middle.....

xanthura Roh.

Hoplocampa (*Macgillivrayella*) *Oregonensis* Ashmead.

Macgillivraya Oregonensis Ashmead, CAN. ENT., XXX, 10, 1898, p.

257. (Mentioned as the type of genus *Macgillivraya*.)

Female: Length, 5 mm. Clypeus deeply, circularly emarginate, lobes rounded at the apex; antennal foveæ large, extending both above and below, confluent with the supraclypeal fovea; no complete supraclypeal line; middle fovea not sharply defined, elongate; no ocellar basin; post-ocellar line straight and well defined; lateral ocelli below the supraorbital line; antennæ rather slender, the third joint subequal with the fourth;

entire insect shining, impunctate; sheath straight above, obliquely truncate, and then tapering to the broadened base; stigma rounded on the lower margin, broadest a little basad of middle; transverse radius oblique and received at the apical third of the cell; upper discal cell slightly exceeding the lower on the outer margin. Entirely reddish-yellow, the antennæ above a little darker. Wings creamy-hyaline, iridescent; venation pallid-hyaline.

Male: Length, 4-4.5 mm. Hypopygidium much longer than wide, truncate at the apex. Agrees with the above description of the female.

Type locality: Mt. Hood, Oregon. Collector unknown.

Type: No. 12841. U. S. N. M.

Hoplocampa (Macgillivrayella) *xanthura*, n. sp.

Male: 4.75 mm. Very like *Oregonensis*, but the following differences are to be noted: Antennæ somewhat longer, emargination of the clypeus shallower, middle fovea smaller and almost wanting, a depressed area in front of the anterior ocellus, the scutellum with some small punctures, transverse radius short, perpendicular and received near the middle of the cell, parallel with the third transverse cubitus, tergum mostly black, venation, except the stigma, pale brown, stigma narrower and gently rounded beneath, hypopygidium with the lateral angles more strongly rounded and a narrow notch in the middle.

Type locality: Montana. Collector unknown.

Type: No. 12842. U. S. N. M.

Hoplocampa (Macgillivrayella) *lacteipennis*, n. sp.

Female: Length, 4.5 mm. Clypeus very shallowly emarginate; supraclypeal line distinct, well defined; antennal foveæ not as large as in *Oregonensis*; antennal furrows complete to the ocelli; middle fovea elongate and connected with the ocellar furrow; postocellar furrow present, but not well defined; antennæ a little longer than in *Oregonensis*; mesonotum with a few scattered, small punctures; end of the abdomen mashed so the characters of the sheath cannot be made out; stigma broad, as in *Oregonensis*; transverse radius nearly perpendicular and received in about the middle of the third cubital cell; upper discal cell of the hind wings slightly exceeding the lower on the outer margin. Reddish-yellow with a brownish tint; wings milky-hyaline, veins pallid-hyaline.

Type locality: Mass. Collector unknown.

Type: No. 12843. U. S. N. M.

[NOTE.—The subgenus *Hoplocampa* will be treated in the next paper of this series.

SYNOPTIC TABLE OF THE SPECIES OF *AULICUS* (COL.).

BY A. B. WOLCOTT, CHICAGO, ILL.

The genus *Aulicus*, as now restricted, is confined to North, Central and South America, the various species giving the genus a geographical range which extends from Texas to Colombia. The Australian species formerly placed in *Aulicus*, but which are not congeneric with our species, have been referred to the genus *Phlogistus* Gorham.

During the progress of some studies of American Cleridæ, the writer found it expedient to construct a table of the known species, which is here presented, with the hope that it may be of service to others.

A. Eyes finely granulate, broadly, deeply, angularly marginate
in front (*Aulicus*, sens. str.).

B. Small species (2.5-3.0 mm.). Cuba.

C. Elytra at base gibbous.

D. Head and anterior half of thorax red ; elytra
black, with markings wanting ; antennæ
yellow *basicollis*.

CC. Elytra at base not gibbous.

E. Head and thorax fuscous, with small white
maculations ; antennæ pale. . . . *alboguttulatus*.

EE. Head, prothorax and antennæ red . . . *bilineatus*.

BB. Larger species (6.2-13.2 mm.). North American Continent.

F. Head and thorax (wholly or in part) red.

G. Form elongate ; elytra moderately
widening posteriorly, coarsely
and densely punctate. . . *monticola*.

GG. Form broader ; elytra with sides
more strongly rounded, finely
but densely punctate. . . *Coffini*.

FF. Head black or blue-black, with metallic
lustre.

H. Thorax broad ; elytra finely
punctate, each elytron with
two nearly obsolete
costæ *nero*.

HH. Thorax narrower ; elytra more
coarsely punctate, each elytron
with four feebly developed
costæ *thoracicus*.

- AA. Eyes coarsely granulate, with rounded emargination in front (*Muisca*, sub. gen.)
 a. Red; eyes, tips of mandibles, and two interrupted elytral fasciæ black. Length, 8 mm., Colombia *biteniata*.

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 3. *A. bilineatus* Chevr., l. c., p. 300. Cuba.
 4. *A. monticola* Gorh., Biol. Centr.-Amer., Col. III, 2, 1882, p. 146, pl. 8, fig. 18; Schklg., Gen. Ins., Cleridæ, 1903, pl. 5, fig. 8; Schklg., Deutsch. Ent. Zeitschr., 1907, p. 306; Wolc., Field Mus. Nat. Hist. Publ., No. 144, Zool. Ser., 1910, p. 364. Texas, Mexico.
 5. *A. Coffini* White, Cat. Cler. Brit. Mus., 1849, p. 53 (*Serriger*); Chevr., Mem. Cler., 1876, p. 5; Gorh., Cist. Ent., 1876, p. 72-86; Gorh., Biol. Centr.-Amer., Col. III, 2, 1882, p. 146; Schklg., Deutsch. Ent. Zeitschr., 1907, p. 307. Mexico.
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 7. *A. thoracicus* Schklg., Deutsch. Ent. Zeitschr., 1907, p. 305. Mexico (Guerrero).
 Subgen. *Muisca* Spin., Mon. Cler., II, 1844, p. 147.
 8. *A. (M.) biteniatus* Spin., Mon. Cler., II, 1844, p. 148; Gorh., Cist. Ent., 1876, p. 84. Colombia.

NEW SPECIES AND VARIETIES OF NORTH AMERICAN LEPIDOPTERA.

BY WILLIAM BARNES, S. B., M. D., AND J. B. MCDUNNOUGH, PH. D.,
 DECATUR, ILL.

(Continued from page 213.)

Prothrinax ocellata, n. sp.

♂.—Palpi and front brownish-yellow; vertex, collar, thorax and patagia blackish, with a strong admixture of gray scales; upturned tips of patagia and metathoracic tuft brownish; collar crossed posteriorly by a darker band. Abdomen deep brown, lighter underneath. Primaries brownish-yellow, largely obscured, however, by lilac-gray and purplish-black, leaving the ground colour visible only in the submarginal and

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marginal areas, and as a narrow, oblique, ill-defined band from middle of inner margin to base of wing. Costal half of base largely whitish, followed along costal margin by a blackish shade, which extends beyond reniform, and fades gradually towards apex and disk into purplish-gray. T. a. line visible only as an indistinct blackish line, separating the white basal shade from the darker portion following, perpendicular to costa for short distance, thence outcurved to a point below cubital vein, touching orbicular at its lower basal extremity. T. p. line, from well beyond reniform, defines sharply the purplish-gray shade outwardly, and proceeds in a series of decreasing curves to below cubitus, where it joins t. a. line. Ordinary spots very distinct; orbicular large, circular, black, filled with gray scales and surrounded by gray band, which in turn is ringed with black; reniform oval, similar to orbicular, but outer black line is not continuous, being open towards apex between veins M_1 and M_3 . Claviform a slight black wedge-shaped mark, crossed by t. a. line. The basal half of inner margin below anal vein is occupied by a purplish-black patch, which extends upwards at base as far as median vein. The anal angle is occupied by a patch of similar colour, bordered inwardly by a whitish semicircular line. Both these patches are much rougher in scaling than the rest of wing. Veins scaled with black, most prominent near apex of wing. Vein M_2 bordered with black at outer extremity, at which point an indistinct smoky shade proceeds inward across the yellowish ground colour. Fringes yellow, checkered with black.

Secondaries white, with a small black discal spot; veins prominently marked with blackish-brown. Fringes white, bordered by a blackish basal line, which towards costa becomes broken into spots. At extremity of vein Cu_2 a smoky shading.

Beneath, primaries whitish, with prominent black distal spot and blackish shading along costa, markings of upper side showing slightly through wing. Secondaries as above, discal spot more prominent.

Expanse, 35 mm.

Habitat.—Redington, Ariz.

Type, 1 ♂, coll. Barnes.

This species belongs to the new genus *Prothrinax*, created by Hampson (Cat. of Lep. Fal., Vol. VIII, p. 225) for *luteoedia* Sm., with which species it bears a great superficial resemblance. Apart from its much greater size, it may, however, be readily distinguished from *luteoedia* by its prominent reniform, the lack of the apical black shading, and by the black veining of secondaries.

Provia, n. gen. (Type *P. argentata*.)

Proboscis moderately strong; palpi upturned to just beyond front, with long hairs beneath; front smooth, rounded, densely clothed with smooth short hairs; eyes prominent, rounded; antennæ of both sexes finely ciliate, more prominently so in male sex; fore tibia short, thickly haired, with long curved claw at extremity; head and thorax clothed with long rough hair, untufted; abdomen smooth. Fore wing narrow, broad at base, outer margin rounded; vein R_1 from middle of cell, areole present, R_3 and R_4 stalked, together with R_5 from apex of areole, vein M_1 from upper end of cell, veins M_2 and M_3 and Cu from near angle of cell. Hind wings with veins R and M_1 slightly stalked, M_3 and Cu from angle of cell.

This genus is closely allied to *Eutolype* Grt., and *Copipanolis* Grt., differs, however, from both in the stronger proboscis, the lack of the corneous process of fore tibia, and in antennæ of male being ciliate and not pectinate. In thoracic vestiture it more nearly approaches *Copipanolis*, whilst the shape of wing resembles that of *Eutolype*.

Provia argentata, n. sp.

♂.—Palpi gray, with black hairs; front yellowish-white; vertex, thorax and patagia largely gray, with black stripes; abdomen smoky brown; legs gray, with patches of long black hairs at base. Primaries smoky-brown, darkest in central portion of wing, and shaded along costa and inner margin with gray. None of the transverse lines are present, but the ordinary spots are very prominent. The orbicular is small, horizontally oblong, black, thinly outlined with silvery-white; reniform large, upright, black, edged with white and with a few pale scales in centre. From its base a silvery patch extends for a short distance outwards, the outer margin of which is deeply notched; from the upper tooth a blackish shade extends to outer margin, continued towards apex as a series of decreasing black spots; claviform silvery-white, edged with black, and preceded by a thick black basal dash, through which the anal vein is traceable as a thin white line. Outer margin occupied by a series of irregular white patches, not prominent at apex, but more or less confluent towards anal angle; veins scaled with black towards extremity, fringes smoky-brown, interrupted with white opposite veins. Secondaries whitish; veins distinctly marked in brown.

♀.—Similar to male; somewhat darker in ground-colour on primaries; secondaries deep smoky-brown, with white fringes.

Expanse, 34 mm.

Habitat.—Eureka, Ut. (Spalding), 2 ♂♂'s, 1 ♀.

Types, coll. Barnes.

Perania, n. gen. (Type *P. dissociata*.)

Proboscis moderate; palpi upturned to well beyond front; front with large conical process, sharp at apex, and hollowed out on under side at base, which is tuberculate; eyes naked, fairly prominent; vestiture largely scaly; thorax but slightly tufted; abdomen tufted on basal segments; fore tibia smooth, without apical claw; fore wing rapidly broadening from base to apex, outer margin rounded, areole small, diamond-shaped; veins R_3 and R_4 stalked, together with R_5 from apex of areole; M_1 from close to apex of cell; M_2 , M_3 and Cu from lower angle of cell; secondaries with veins R and M from upper angle of cell; M_3 and Cu from lower angle; M_2 parallel to M_3 .

This genus approaches nearest to *Achatodes* Gn., in general structure, but in outward appearance *dissociata* is widely different from *A. zea* Har., and has in fact much more superficial resemblance to the *Stibadium* group.

Perania dissociata, n. sp.

♀.—General ground-colour olivaceous brown; vertex, collar and posterior portion of metathorax lighter in colour than patagia and thorax; antennæ with small tuft of whitish hairs at base. Basal half of primaries much darker in colour than remainder of wing. This darker colour is sharply defined outwardly by a still deeper shade proceeding from middle of costa to lower angle of cell, thence to middle of inner margin, an angle slightly greater than 90° being thus formed at junction of veins M_3 and Cu. The t. p. line is faintly discernible as a geminate line, composed of a series of lunules, arising on costa at three-quarters of the distance from base to apex, and strongly outcurved to vein M_3 , thence incurved to vein Cu_2 , approaching the dark median shade, with which it runs parallel to inner margin. Outer margin shaded with darker olive; veins scaled with black at outer extremities. Secondaries smoky, darker along outer margin. Underneath light ochreous, slightly darker in cell on primaries, otherwise without markings.

Expanse, 34 mm.

Habitat.—Provo, Ut. (Spalding), 2 ♀ ♀'s.

Type, coll. Barnes.

Euxoa xasta, n. sp.

Palpi yellowish-gray, upturned; front protruding, gray, mingled at vertex with black; collar, thorax and patagia gray, with darker shading, the former with a black transverse band, abdomen lighter.

Primaries ochreous, shaded with darker, costa and inner margin gray; a narrow black basal dash inclined slightly upward; ordinary spots prominent, orbicular gray, filled with darker shade, and outlined with black, except basally, where the black marginal lines proceed for a short distance parallel to each other towards the base. Reniform well scalloped outwardly, margined with black opposite orbicular, the space between the two spots slightly darker than ground colour. Claviform outlined in black; a submarginal row of black dashes in interspaces, most prominent in central portion of wing; marginal area considerably darker than remainder of wing, and terminated by fine black line, slightly lunate in interspaces, second anal vein black from base to margin; cubitus gray as far as reniform; all veins blackish in submarginal area, veins M_3 and Cu being prominently bordered with gray. Fringes smoky, with a fine yellow basal line and a darker median shade. Secondaries white at base, with a broad smoky-brown border and a brownish lunule at end of cell, fringes white. Beneath, primaries yellowish-white, with spot at end of cell, and costa and outer margin sprinkled with brown; secondaries white, costa with brown sprinkling; slight spot at end of cell.

Expanse, 33 mm.

Habitat.—Kerrville, Texas, 2 ♀ ♀'s.

Type, coll. Barnes.

This species is allied to *E. Hollemani* Grt., is, however, considerably lighter in general appearance; the reniform and orbicular are distinctly separate, whereas in typical *Hollemani* (we possess specimens compared with type) they are fused; the claviform is also present in our species, and the black basal dash less prominent.

Stibadium mavina, n. sp.

♂.—General colour ochreous, moderately frosted with white and brown scales. T. a. line scarcely perceptible, marked on costa at about one-third of the length by a slight patch of whitish scales. T. p. line narrow, white, angled outwardly near costa, thence oblique and nearly parallel to margin. Median space brighter yellow, contrasting especially with submarginal portion of wing. Ordinary spots practically indistinguishable, very faintly outlined with white. Slight whitish mark proceeding obliquely downwards from costa near apex. Secondaries lighter than primaries at base, shading into darker towards margin. Fringes and thorax concolorous with wings. Beneath, without markings, sprinkled with darker scales along costa and outer margin, especially on secondaries.

Habitat.—Provo, Ut. (Spalding).

Type, 1 ♂, coll. Barnes.

This species most nearly approaches *spumosum* Grt., but its indistinct maculation and ochreous colour readily distinguish it from this species.

Catocala Beutenmuelleri, n. sp.

Ground colour of primaries an even bluish-gray, slightly shaded with darker, especially on outer margin. A black subbasal slightly dentate line extends half across wing at base, and is terminated by a black basal dash. The t. a. line is geminate, composed of a series of outcurved lunules, extending from costa at about one-quarter of its length to middle of inner margin, and shaded outwardly in costal portion with black; very prominently toothed basally on second anal vein; reniform yellowish, central portion outlined with darker, slightly toothed at apex and preceded on costa by two dark shades, the basal one of which is most prominent; subreniform similar in colour, faintly outlined with black; t. p. line single, black, with two prominent teeth beyond cell, the upper of which is much the larger; the inward bend along second anal vein extends nearly to t. a. line, and thence outwardly to a point on inner margin two-thirds from base; outwardly this line is bordered by a brownish shade, followed by bluish-gray; marginal area shaded with blackish, and containing a series of elongate black spots; fringes shaded with smoky. Secondaries orange-vermilion, median black band fairly broad, somewhat attenuate in central portion, sharply angled and not reaching inner margin; black marginal band broadest at costa, dentate at anal angle, bordered outwardly with vermilion, most prominent near costa and shortly before anal angle; fringes white, marked with black on central portion of wing. Beneath, primaries reddish, with broad black median and terminal bands; inner margin and basal portion of cell shaded with black. Secondaries as above, lighter on costal portion, no vermilion colour exterior to marginal band. Head and thorax bluish-gray, collar crossed by darker bands. Abdomen reddish, tufted with gray on anal segment.

Expanse, 47 mm.

Habitat.—Provo, Ut. (Spalding), 3 ♂♂'s, 1 ♀.

Type, coll. Barnes.

This species closely approaches *verrilliana* Grt., and in markings is practically identical. It may be distinguished by the bluish-gray colour of primaries and their much more uniform appearance, the contrasting shades of *verrilliana* being almost totally lacking. It is probably merely a racial form of this species. There is a tendency in the primaries to become rather suffused, the markings losing the clear-cut appearance of the typical specimens. We take pleasure in naming this species after Mr. W. Beutenmueller, who has contributed so much to our knowledge of this group.

Gloveria sphingiformis, n. sp.

♂.—General ground colour deep chocolate-brown; antennæ strongly bipectinate to tip; primaries narrow, elongate, costa rounded at apex, outer margin slightly concave, rounded at inner angle, colour darkest at base and in discal cell; a prominent whitish spot at end of cell, beyond which the central area of wing is semitransparent, bordered outwardly by a strongly dentate black band, which extends across wing from near apex to anal angle; in the upper portion inwardly this black band is shaded with yellowish-white, some traces of which colour are also visible outwardly near angle. Secondaries uniformly deep chocolate, fringes yellowish. Under side similar to upper, semitransparent area of primaries more extended at anal angle, and washed with yellowish; black band almost obsolete.

Expanse, 64 mm.

Habitat.—Kerrville, Tex. (Lacy), 1 ♂.

Type, coll. Barnes.

This species stands midway between *Arizonensis* Pack., and *gargamela* Stkr., approaching the former species in wing shape and the latter in coloration. The uniform colour of secondaries renders it readily distinguishable from allied species.

Lagoa Lacyi, n. sp.

♂.—Palpi, base of fore legs, last joint of tarsi, and a small fringe of hairs around eyes black, otherwise of a yellowish-cream colour, slightly darker along costal margin of primaries, especially underneath. At the apex of cell and at junction of veins M_4 and M_5 a small brownish spot, not repeated on under side. The long crinkly hairs show a slight tendency to deepen in colour at base of wing and irregularly on the disk.

Expanse, 27 mm.

♀.—Without yellowish tinge of ♂, creamy-white, in other respects similar.

Expanse, 35 mm.

Habitat.—Kerrville, Texas; Shovel Mt., Tex. Described from 1 ♂ and 10 ♀ ♀'s.

Type, coll. Barnes.

Lagoa crispata, ab. *grisea*.

The ground colour of primaries and secondaries on both sides is an even gray, fringes white, other markings as in *crispata*.

Habitat.—Newark, N. J. (Keller), 1 ♀.

Coll. Barnes.