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POPULAR AND PRACTICAL ENTOMOLOGY.

THE CONTROL OF ANTS IN DWELLINGS.—A NEW REMEDY.*

BY ARTHUR GIBSON, CHIEF ASSISTANT ENTOMOLOGIST, DEPARTMENT OF AGRICULTURE, OTTAWA.

A simple remedy for the control of ants in dwellings has long been a desideratum. The usual recommendations are: locate the nest outside and destroy the occupants by pouring into the entrance a quantity of bisulphide of carbon, kerosene emulsion, or even boiling water; trap the ants by placing on the shelves or other parts of the house frequented, sponges which have been soaked in sweetened water and which afterwards, with the ants therein collected, are dropped into boiling water; etc. Such other well-known recommendations as have been made from time to time need not be mentioned here.

During the summer of 1916, the common carpenter ant, *Camponotus pennsylvanicus*, was extremely abundant in a summer cottage in the Gatineau hills near Chelsea, Que., which my family occupied throughout the season. They were particularly numerous about the kitchen, frequenting especially a cross-beam near the chimney, close to which they evidently had established their headquarters. From this point they wandered throughout the kitchen and dining-room, getting into bread and cake boxes, etc., in fact, proving generally a decided nuisance. The problem of controlling ants in dwellings, therefore, became an immediate personal one, but fortunately a very simple one. Knowing the success which the United States Bureau of Entomology had had in controlling roaches with sodium fluoride, I obtained some of this powder and applied it during the evening of May 24, by

* Contribution from the Entomological Branch, Dept. of Agriculture, Ottawa.

means of a small puffer or dust gun. The powder was dusted into the openings between the beam and the roof, as also into other cracks or openings nearby. The following morning the ants were not nearly so noticeable, so I went over the ground again on the evening of May 25. Since this last date, practically no ants were seen in our cottage in the places where previous to the use of the sodium fluoride they were very abundant. The result of our first test of the use of this chemical as a remedy for ants in dwellings was so satisfactory that every opportunity of further experimenting with it was taken advantage of.

On May 27, I visited another summer cottage in the outside kitchen of which the common shed-builder ant, *Cremastogaster lineolata*, was present in countless numbers, causing much anxiety from its habit of crawling over tables, shelves, etc. In this dwelling the ants also frequented the beams supporting the roof. The sodium fluoride was dusted into the cracks between the beams and the roof and also on to shelves, etc., where the ants were present in numbers. An examination was made of this kitchen during the following evening and practically all the ants had disappeared, only a few here and there being observed. Only one application was made. The owner of this dwelling recently informed me that no further annoyance was caused by the ants during the remainder of the season.

In other nearby cottages, too, the same results were obtained, and from owners of summer dwellings on the Rideau Lakes and other places in the vicinity of Ottawa, to whom recommendations were made to use the sodium fluoride, the reports received have been similar and in all cases satisfactory. In one instance in the city of Ottawa the carpenter ant, *Camponotus pennsylvanicus*, was present in annoying numbers in the kitchen of an apartment house. The insects entered through a door which opened on to a balcony. In this instance the sodium fluoride was simply dusted on the floor near the door. After its use on two occasions only no further ants entered the apartment. In this latter instance the powder was simply placed in a shell vial and dusted on to the floor through a cheese-cloth covering which had been tied over the opening.

The Susceptibility of the Eggs of Aphis Pomi and Aphis Avenæ to Hydrocyanic Acid Gas Formation.

BY WILLIAM A. ROSS, DOMINION ENTOMOLOGICAL LABORATORY, VINELAND STATION, ONTARIO.

It is of economic interest to note that the fumigation of young apple trees with hydrocyanic acid gas just before or shortly after the buds commence to swell not only controls the San José scale, but it also destroys the eggs of aphides.

In the spring of 1914, we procured from a local nursery seven apple trees well stocked with the eggs of *Aphis pomi* and *Aphis avenæ*. Three of the trees were fumigated for forty-five minutes with hydrocyanic acid gas (1 oz. KCN to 100 cubic feet, 1:1:3 formula), and the others were used as checks. None of the eggs on the fumigated nursery stock hatched, whereas large numbers hatched on the check trees.

This spring the foregoing experiment was duplicated, and the same highly satisfactory results were obtained—100 per. cent of the aphid eggs were destroyed.

In the 1914 experiment the nursery stock was fumigated eight days, and in the 1916 experiment six days before the eggs on the check trees commenced to hatch.

A CHANGE OF SYNONYMY IN XYLOMIGES (LEPID.).

BY F. H. WOLLEY DOD.

The species described by Smith as *Xylomiges pallidior* is identical with *simplex* Walk. Harvey's *crucialis*, hitherto misidentified as *simplex*, is distinct. Even after seeing Smith's type and possessing specimens of both forms, it was some years before I was at all sure that the species really existed, as the difference appeared to be merely varietal. But, as time went on and I saw and acquired more material, their distinctness became apparent. Having become satisfied as to the existence of two species, judged by superficial characters alone, I got Mr. Tams to make several mounts of the genitalia of each, including Vancouver Island specimens of both forms. These were found to differ in such a way as to make their separation quite easy. Being at present separated from my specimens and mounts by several thousand miles, I am unable to state concisely just what these differences are, but hope to make it clear some day.

November, 1916.

Smith published a photograph of his type in the Canadian Entomologist, leaving the identity of his species beyond doubt. I also possessed a specimen "Xd. type" with Walker's *simplex*. But as that comparison had been made at a time when I had failed to recognize two species, I was unable to place any reliance on the comparison. I was, however, quite satisfied as to the distinctness of *crucialis* from *pallidior*. Hampson published a figure of *pallidior*, made from another, of the type, sent to him by Smith, which is quite recognizable. His woodcut of *simplex* is not so good, but my notes on Walker's type were such as to lead me to suspect strongly that I had made a mistake and that Smith also had fallen into his oft-repeated error, in that, whilst recognizing two very closely allied species, instead of seeking a re-identification of *simplex*, he had chosen to assume its correctness, and created a synonym. I accordingly sent Sir George Hampson a few specimens of each, stating my suspicions, carefully pointing out the distinctive characters, and requesting him to re-examine Walker's type. His diagnosis was in accordance with my suspicions, and I have since visited the British Museum and corroborated his evidence, which results in the synonymy here cited. I regret being unable, at present, to publish a close comparison of the two species, for reasons given above, but feel safe in emphasizing the following points: *Crucialis* is slightly longer-winged than *simplex*, the discoidal spots are a trifle smaller, and the subterminal line or series of blackish streaks is arranged so as to form two oblique triangular shades. In *simplex* they form a more regular and even series, about parallel with the termen. The two species occur together and are not rare on Vancouver Island. Whilst *crucialis* has usually the clearest white ground colour of the two, both have a dark, almost suffused, grey variation. I have been misled into mistaking the extreme dark variations of either species for one form, the corresponding light variations for the other, and must warn others against falling into this error. It must be admitted that the two species are not easily distinguished unless well known.

The synonymy stands as follows:—

Xylomiges simplex Walk.
" *pallidior* Smith.
Xylomiges crucialis Harr.
" *simplex* Smith et al., nec Walk.

NOTES ON THE PSAMMOCHARIDÆ DESCRIBED BY PROVANCHER, WITH DESCRIPTION OF A NEW SPECIES.

BY S. A. ROHWER.

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The following notes on the types of the species of Psammocharidæ, described by Abbé Provancher, were made in June, 1915, and presented with the hope that they will enable Hymenopterists to understand these species better. The new species here described had previously been considered to be *minima* Provancher, but is easily distinguished from that species as the following notes will show.

No types were definitely designated by Provancher, and in the collection there is no indication as to which specimen is type. In this paper the word "type," etc., is used in the sense of "electrotype."

Ceropales (*superba* Provancher)—**robinsoni** Cresson.

Type in Harrington collection; paratype bearing yellow label "766" Dernière Provancher Collection Public Museum, Quebec.

The synonymy indicated by Fox is no doubt correct.

Ceropales minima Provancher.

Type a male with blue label "124" (script) and yellow label "1420" (printed) in Dernière Provancher Collection, Public Museum, Quebec.

This is very probably a dark form of *fraterna* Smith, although no specimens with as few yellow marks on the abdomen are available. In the type the dorsal aspect of the propodeum is granular with a feeble, short, median sulcus, the posterior face is transversely aciculato-granular; the third cubital on the cubitus is twice as long as the second, and on the radius but little shorter than the second; the head is granular and has no median sulcus on the front.

Ceropales foxii, new species.

In Fox's synopsis of North America Ceropales (Trans. Amer. Ent. Soc., vol. 19, 1892) this species will fall near *femoralis* Cresson,

but may be distinguished from it by a number of characters as the following description will show.

Male.—Length 5 mm. Clypeus very gently, arcuately emarginate; front granular and with a few scattered distinct punctures, and a shallow elongate fovea at about the middle; vertex and posterior orbits shining almost impunctured; postocellar line distinctly shorter than the ocellocular line; antennæ subequal to the length of the head and thorax, the third and fourth joints subequal; thorax shining with a few sparse punctures; the dorsal plate of mesepisternum with larger punctures than the lower; second pleural suture foveolate; propodeum granular with a distinct sulcus, the base of which is foveolate; nervulus slightly antefurcal; first intercubitus strongly curved towards the base; second and third cubital cells subequal on the radius, but on the cubitus the third is distinctly longer: longer calcarium of hind tibiæ three-fourths the length of the hind basitarsus; abdomen shining. Black; clypeus except a basal median spot, inner orbits to near top of eye, spot between antennæ, scape beneath, posterior orbits except medially, lateral anterior dorsal angles and posterior margin of pronotum, spot on metanotum, and lateral, apical spots on first three tergites yellow or yellowish-white; flagellum piceous; legs beyond bases of femora rufo-piceous; wings hyaline, venation yellowish, costa, subcosta and base of stigma brown; posterior face of propodeum and the hind coxæ with dense silvery pile, the rest of the body without dense pile.

Falls Church, Va. Described from one male collected July 22, by S. A. Rohwer and named in honour of W. J. Fox, the reviser of the North American species of this genus.

Type—Cat. No. 20118, U. S. N. M.

Ageniella atrata (Provancher).

Location of type not known. Allotype (♂) has blue label "125" (script) and yellow label "1417" (printing), and is in Dernière Provancher Collection, Public Museum, Quebec.

The allotype is the same as the species treated by Banks (Jn. N. Y. Ent. Soc., vol. 19, 1912 (1911) p. 234) under this name.

Ageniella perfecta (Provancher).

Type male bearing yellow label "783" in the Dernière Provancher Collection, Public Museum, Quebec.

The type runs to *perfecta* in Banks' table (Jn. N. Y. Ent. Soc., vol. 19, 1912 (1911) p. 234) but differs from a specimen (in Banks' collection) determined as that species in the shape of the third cubital, which is larger and has the outer margin oblique (not curved) and the second recurrent is a little beyond middle.

Ageniella rufigastra (Provancher).

Type female bearing blue label "122" (script) and yellow label "1419" (printing) in Dernière Provancher Collection, Public Museum, Quebec.

This species has usually been considered a synonym of *congrua* Cresson, but the type differs from a homotype of *congrua* made by Banks (in coll. Banks) in the blackish hind legs and in the decidedly postfurcal nervulus.

Episyron griseus (Provancher).

Provancher's type is a male, not female, and is in the Dernière Provancher Collection in the Public Museum of Quebec, bearing a yellow label "1011" on pin.

This species is related to *biguttatus* etc., but may be distinguished by the angulate posterior margin of pronotum and absence of markings on the abdomen. The abdominal markings are, however, not constant, and specimens from Canada (Baker collection) in the National Museum, which have the posterior margin of the pronotum angulate but have two lateral spots on the third tergite, have been placed under Provancher's species.

Pompiloides apicatus (Provancher).

Type female bearing yellow label "769" in Dernière Provancher Collection, Public Museum, Quebec.

The following notes may aid in the determination of this species. Propodeum shining with a distinct median furrow; second and following tergites with appressed pile; nervellus postfurcal; first intercubitus strongly curved; third intercubitus

distinctly angulate; eyes nearly parallel the antennocular line longer than the interantennal line; antennæ rather short and stout.

Pompiloides (*castaneus* Provancher)—**argenteus** (Cresson).

Type male bearing yellow label "774" and name label "*argenteus* Cress." Dernière Provancher Collection, Public Museum, Quebec. Provancher's manuscript list proves that this is type of *castaneus*.

Argenteus (Cresson) agrees with all of the notes made on *castaneus*, and there seems to be but little doubt that the synonymy indicated by Provancher is correct.

Batazonus coquilletti (Provancher).

Type male Cat. No. 1980, U. S. Nat. Mus.

This is probably a synonym of *navus* Cresson.

DESCRIPTION OF A NEW SESIID.

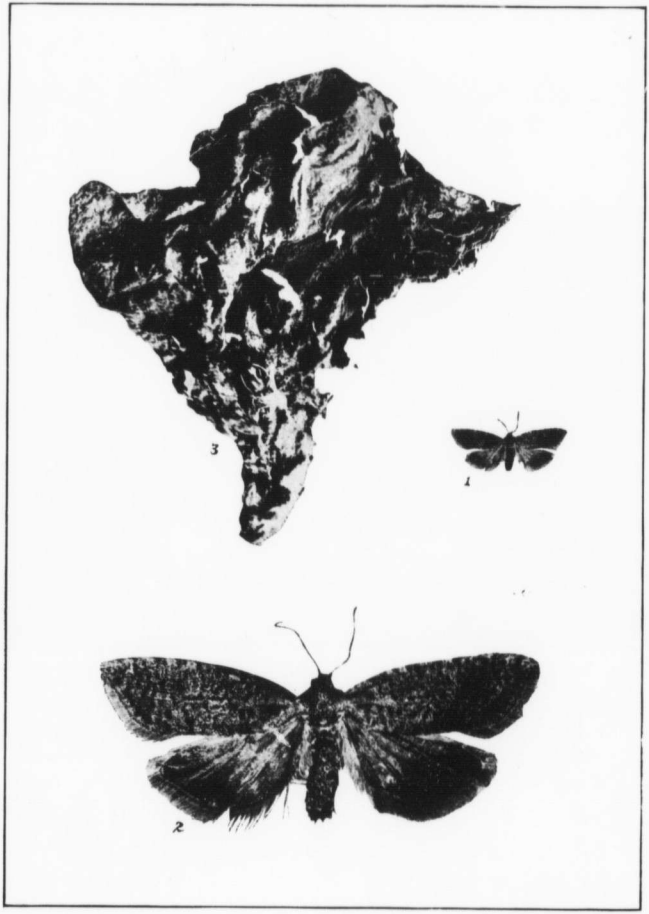
BY WILLIAM BEUTENMULLER, NEW YORK.

Gaëa arizonensis, sp. nov.

Female.—Fore wings opaque, golden orange red, dusted with fuscous in the intervenular parts. All the veins, rather heavily marked with fuscuous. Discal mark fuscous, edged with orange red. Hind wings transparent, veins fuscous, and the outer margins narrowly edged with orange red. Fringes fuscous. Under side of fore wings with the intervenular parts considerably brighter, orange red, as also the transverse discal mark, which is wholly orange red. Hind wings similar to the above, but with the narrow, orange red margins brighter. Head black; palpi yellow. Antennæ orange red, fuscous terminally and decidedly clavate. Abdomen brown-black with a broad, yellow band on the posterior edge of each segment, except the fourth, the last three bands broader than the three basal ones. Anal tuft lemon yellow. Under side of abdomen, with all the bands much broader and the fourth also banded. Posterior legs yellow, joints black, femora black (remaining legs wanting). Expanse 25 mm.

Habitat.—Pinal Mts., Arizona.

Described from a single female. Type: collection Dr. William Barnes.



1.—Type of *Tortrix oleraceana* sp. nov., natural size.
2.—Type of *T. oleraceana*, enlarged four times.
3.—Leaf of cabbage showing edges rolled by the larva of *T. oleraceana*.

A NEW SPECIES OF TORTRIX OF ECONOMIC IMPORTANCE, FROM NEWFOUNDLAND (LEPIDOPTERA: TORTRICIDÆ).*

BY ARTHUR GIBSON, CHIEF ASSISTANT ENTOMOLOGIST, IN CHARGE OF FIELD CROP INSECT INVESTIGATIONS, DEPARTMENT OF AGRICULTURE, OTTAWA.

Towards the end of July, 1915, Mr. Albert J. Boyle, the Acting Secretary of the Newfoundland Agricultural Board, St. John's, Newfoundland, sent to the Dominion Entomologist leaves of cabbages which were infested by a small tortricid larva. The caterpillars pupated in transit, and moths emerged at Ottawa as follows: three on August 9 and one on August 17. The caterpillars, we were informed, were present in very destructive numbers on some farms near St. John's, Nfd., in fact on one farm, according to Mr. Boyle who personally investigated the outbreak, the whole of the first and much of the second plantings of cabbages were destroyed by the larvæ. The larva curls the leaf like other tortricids; this habit is shown in the figure herewith, the photograph having been taken from material received from St. John's.

Mr. Boyle informed us that oftentimes in spring cabbage plants are imported into Newfoundland from Ireland, and for this reason we thought that the moth might be the European species, *Tortrix virgaureana* Tr. Two specimens were, therefore, forwarded to Dr. Guy A. K. Marshall, Director of the Imperial Bureau of Entomology, who submitted them to Mr. Durrant, of the British Museum. Mr. Durrant examined the specimens but could not associate them definitely with *virgaureana*. Dr. Marshall reported that the black spots in the Newfoundland insect are much better defined than in any of the British species and are rather more numerous. Mr. August Busck, of the U. S. National Museum, also kindly examined a specimen of the Newfoundland moth and reported that it is undoubtedly closely allied

* Contribution from the Entomological Branch, Department of Agriculture, Ottawa.
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to *Tortrix wahlbomiana* L. var. *virgaureana* Tr., but that it did not match any of the more than fifty bred European specimens in the Museum. He also added, "nor is it any of our described North American species."

In view of the economic importance of the insect it seems desirable to give it a definite name, and, therefore, I propose the following:

Tortrix oleraceana, sp. nov.

Labial palpi gray outside irrorated with cream, pale cream inside with darker tips. Antennæ, head, body and fore-wings neutral gray, thickly irrorated with cream. The fore-wings bear conspicuous, blackish, irregular spots. In the inner half of the wing these spots are arranged to form an imperfect letter W; they occur as follows: a double transverse anterior series, more or less joined together and extending from the costa to a distance of about three-quarters of the width of the wing; from the posterior end of the anterior series the spots extend obliquely forward to within one-quarter the width of the wing from the costa, and then obliquely backward, joining, a little below the centre of the wing, the inside spots of a double median series which form the distal arm of the W and extend rather closer to the inner margin than the anterior series. The spots in the median series are not so frequent. In the space above the internal angle of the W there are also a few blackish spots. In the distal half of the wing a number of blackish spots are present, extending from the costal to the dorsal area; these latter spots are not arranged after any pattern but occur chiefly toward the margins; near the outer margin the spots are distinctly larger and form a submarginal row. Outer margin blackish with a cream edge. Cilia concolorous with wing. On the costa near the outer row of the transverse anterior spots are two conspicuous cream-coloured areas between which is a blackish blotch; two other distinct cream-coloured costal areas are also present in the distal half of wing, the inner one of which adjoins the outer arm of the W. Between these two latter cream-coloured spots there is a blackish, V-shaped costal spot. In addition to these pale costal areas, there are also a few other cream-

coloured spots, not so large or distinct, chiefly in the apical area of the wing.

Hind wings wholly neutral gray, irrorated with cream. Body beneath pale metallic cream. Legs gray, outside irrorated with cream and crossed by bands of the same colour; pale cream inside.

Alar expanse 19 mm.

Type deposited in collection of the Entomological Branch, Department of Agriculture, Ottawa.

Variations.—During the present year (1916) the insect has again been destructive in Newfoundland, and Mr. Boyle has forwarded to us specimens of the larvæ from which additional moths have been reared. The description of the type given above answers closely to all of the specimens reared (8) with the exception of two specimens which differ in having each fore-wing crossed with two irregular whitish bands, in addition to which there is a basal and an apical patch of the same colour. These specimens are labelled metatypes A and B respectively in the collection of the Entomological Branch. The bands and patches on the fore-wings of metatype A are conspicuously whitish, those on B being more of a sordid white.

THE HEATH COLLECTION OF LEPIDOPTERA.

BY F. H. WOLLEY DOD.

(Continued from Page 232.)

Hadena sp. A single specimen without date, broken and verdigrised, standing as *didonea* Sm., I believe to be of an undescribed species closely allied to *indirecta* Grt., and use a manuscript name for it in my private notes. A specimen of it stood wrongly under *didonea* in Smith's own collection. I have seen some half dozen specimens from widely separate localities.

Hadena egens Walk. (syn. *transfrons* Newm.).

Hadena claudens Walk. Some of the specimens stood as *albertina* Hamps., possibly on my authority. Dr. McDunnough

is of the opinion that *albertina* is not distinct from *claudens*, which is very likely correct.

Hadena misclioides Gn. *Macerata* Sm. under which name the species stood, is the same thing. So also is *miscellus*.

Hadena fractilinea Grt.

Polia contacta Walk. (syn. *pulverulenta* Sm.). Two specimens, standing as *extincta*, doubtless on Smith's authority. It may possibly be correct, but *extincta* is at present unidentified in collections.

Polia acutissima Grt. (syn *medialis* Grt). Heath used often to distribute this species as *confragosa* Morr. That is very likely correct, though no one is able to state so positively at present.

Dryobota illocata Walk.

Hyppa xylinoides Gn.

Trachea delicata Grt. One specimen.

Euplexia lucipara Linn. Mr. Tams finds that the male genitalia of all the North American *lucipara* he has so far examined differ from those of British specimens.

Actinotia ramosula Gn. One female, July 30th, 1910.

Dipterygia scabriuscula Linn.

Pyrophila pyramidoides Gn.

Helotropha reniformis Grt. A very fine and variable series. Some stood under *plutonia* Grt.

Laphygma frugiperda S & A. A good series. A single specimen also did duty for *Euxoa acornis*, a species not in the collection.

Homohadena stabilis Sm.

Homohadena infixa Walk. This stood as *fifia* Dyer, which is possibly correct.

Homohadena badistriga Grt.

Oncocnemis atrifasciata Morr. One specimen.

Oncocnemis viriditincta Sm. One specimen.

Oncocnemis poliochroa Hamps.

Oncocnemis riparia Morr. One specimen, amongst *cibalis*.

Oncocnemis cibalis Grt.

Adita chionanthi S. & A.

Rhynchagrotis gilvipennis Grt.

Rhynchagrotis rufipectus Morr.

Rhynchagrotis placida Grt. The species stood also as *minimalis* and *anchocelioides*.

Rhynchagrotis alternata Grt.

Adelphagrotis prasina Fabr.

Platagrotis pressa Grt. Other specimens of it stood as *condita* Gn.

Euretagrotis sigmoides Gn.

Euretagrotis perattenta Grt. The specimens were of the dull, poorly marked form named *innatenta* by Smith.

Euretagrotis attenta Grt.

Pachnobia littoralis Pack.

Pachnobia salicarum Walk.

Agrotis ypsilon Rott.

Peridroma occulta Linn. A series under the correct name, and a rubbed series elsewhere as *Polia pulverulenta* Sm.

Peridroma astricta Morr.

Peridroma margaritosa Hbn.

Noctua baja Linn.

Noctua normaniana Grt.

Noctua bicarnea Gn. Several specimens, mostly mixed with *treatei*, and one with *collaris*. Manitoba specimens appear to be rather hard to separate from *treatei*. I have never seen it from west of Manitoba.

Noctua treatei Grt. Two specimens.

Noctua substrigata Sm. One specimen, July 18th, 1911.

Noctua c-nigrum Linn.

Noctua cynica Sm. A series stood under *cynica*, *rubifera* and *rosaria*. In describing *cynica* Smith Stated that it was separable from *rubifera* only by male genitalia. So far I have found nothing to match what he figures as genitalia of *rubifera*.

Noctua rosaria. Two males. Their resemblance to *cynica* was closer than that of any I had previously seen. I have referred this species to *rubi* View, but Mr. Tams finds that the genitalia differ.

Noctua fennica Tausch.

Noctua plecta Linn.

Noctua collaris G. & R.

Noctua haruspica Grt. The largest specimen stood under this name, and smaller ones under *inopinatus*. *Inopinatus* is scarcely a recognizable variety.

Noctua clandestina Harr. A few worn *haruspica* were mixed with this series. One very badly worn *clandestina* stood by itself as *havila*. Elsewhere, five worn specimens, and one of *rufipectus* stood as *Amphipyra tragopoginis*, which was not in the collection.

Noctua atricincta Sm.

Chorizagrotis auxiliaris Grt., with its varieties *introferens* Grt., and *agrestis* Grt. Specimens also stood under *soror* Sm. The latter name does not refer to a distinct species, but I am unable at present to designate the exact variety.

Chorizagrotis balinitis Grt. Two specimens. A few forms of *auxiliaris* stood associated with them.

Chorizagrotis thanatologia Dyar. There were two specimens which I consider referable to this species. One fine male was near var. *sordida* Smith, and a female was var. *perfida* Dod. Both the specimens stood under *tessellata*.

Rhizagrotis flavicollis Sm.

Rhizagrotis perolivalis Sm. Other specimens of it stood as *plagigera* Morr.

Feltia ducens Walk., and the small, pale var. *hudsonii* Sm.

Feltia herilis Grt.

Feltia venerabilis Walk.

Feltia volubilis Harv.

Porosagrotis mimallonis Grt.

Euxoa segregata Sm. Four specimens, a ♂ and 3 ♀♀. A female bore date Sept. 29th, 1903. Another ♀ had red ink label No. 177. Very rare in Canada.

Euxoa niveilinea Grt. Two males, standing as *quadridentata*, I decided were this species.

Euxoa ridingsiana Grt. (syn. *maimes* Sm.).

Euxoa dargo Strk. One specimen, as *rumatana* Sm., which is an exact synonym.

Euxoa velleripennis Grt. And other specimens of it as *perpolita* Morr.

Euxoa catenula Grt (syn. *contagionis* Sm.) Two specimens, of which one female only was dated, Sept. 24th, 1910. It was a surprise to see this species from Manitoba. It is extremely rare in Canada.

Euxoa scandens Riley. Standing as *Porosagrotis vetusta* Walk., which was not in the collection.

Euxoa deterra Walk.

Euxoa poncha Smith. Three males, fortunately all dated, Sept. 17th, 1904; Sept. 13th, 1910, and Sept. 20th, 1911. Heath had presented me with a fourth specimen about a year previously. It had stood in his collection as *citricolor* on Smith's authority. That determination was obviously wrong, though it resembles it in colour. I submitted a specimen to Messrs. Barnes and McDunnough, who decided that it was almost certainly *poncha*, one of the last species described by Smith, from Poncha Springs, and other localities in Colorado. It is allied to *medialis* and *cænis*, but very closely to *citricolor*.

Euxoa messoria Harr. A series correctly, and others as *fuscigera* Grt., and *septentrionalis* Walk. Two specimens of *pindar* Smith stood under *abar* Strk. I am under the impression that *pindar* is a variation of *messoria*. *Abar* Strk. is *divergens* Walk. I have seen Strecker's type.

Euxoa pleuritica Grt.

Euxoa incallida Sm. Some specimens stood separated as *quinquelinea* Sm.

Euxoa rena Sm. Standing as *dissona* Moschl.

Euxoa declarata Walk. (=*insulsa* Sm., nec Walk.). This species was very badly mixed. A confusion of it with *albipennis* is always excusable, as they are really very close allies. A worn series did duty for *intrita* Morr., and an aggregation referred to *titubatis* consisted principally of worn *declarata*.

Euxoa albipennis Grt. A long series stood under this name and *verticalis*. The latter is a form about intermediate between

albipennis and *declarata*, and its exact status cannot at present be determined, as a long series appears to intergrade with both, with a distinct balance in favour of *declarata*. The same may be said of *spectanda* Smith. The most interesting evidence deduced from Heath's material in this group, showed the presumed identity of *indensa* Sm. This was described from Cartwright shortly before Smith's death. Several years previously I had pointed out to Smith that Manitoba specimens associated with *albipennis* in his collection were of the form he had described from a unique as *malis*. But the type of *malis* happens to be a small and rather stunted specimen, and he apparently ignored the suggestion, as he never mentioned *malis* in his description of *indensa*. The *indensa* of the Heath collection was *malis* Sm., and the description fits. I have been familiar with the form for many years, and believe it to be a pale grey variation of *albipennis*.

Euxoa tessellata Harr. A series under this name, and another under *focinus* Sm., which is the same species.

Euxoa basalis Grt.

Euxoa ochrogaster Gn. Four small specimens of this species stood separated as *acutifrons* Sm., presumably on Smith's authority. I believe *acutifrons* to be a reddish form of *tessellata*, approaching var. *nordica* Sm. The resemblance of these small *ochrogaster* to reddish specimens of *nordica* was very striking, and Smith's error in this case was less unjustifiable than was so often the case with his determinations.

Euxoa idahoensis Grt. Two specimens, as *furterus* Sm. which is very likely the same species. A specimen of apparent *ochrogaster* stood with them, and indeed resembled them so remarkably that the misassociation was quite excusable.

Euxoa obeliscoides Gn. Smith re-described from Manitoba specimens as *infusa*. Specimens from this region almost entirely lack the red shades of typical *obeliscoides*, though Smith's "species" was not based on the colour difference.

Euxoa divergens Walk.

Euxoa redimicula Morr.

Euxoa tristicula Morr., and the variety without the black markings, *remota* Smith, which he re-described as *nesilens*.

COLLECTING NOTES AND RANDOM OBSERVATIONS ON THE MAINE COLEOPTERA.

BY C. A. FROST, FRAMINGHAM, MASS.

Cicindela purpurea limbalis Klug. Two female specimens of this variety, taken at Wales, June 15, 1909, are very much like the single specimen from Mt Desert Island that was given me by Mr. E. D. Harris.

Cicindela formosa generosa Dej. A single specimen of this species was seen at the roadside in Monmouth, June, 1912, and is the most eastern record that has come to my notice. I once took a few at Ogunquit Beach, September 17, 1903. They were not along the beach with the swarms of *hirticollis*, but back on the high sand dunes and on the slope toward the meadow behind it.

Omophron americanum Dej. My first specimen of this common but interesting species was found when in bathing in Lake Cochnewagin at Monmouth, June 20, 1907. It was driven out while walking on a small sand pit that extends out along a swampy meadow, and further investigations by treading about and throwing water drove them from their burrows by dozens. They also occur along the sandy margins of small brooks where the vegetation is sparse and, like *Elaphrus*, often appear before the eyes as if they had sprung out of the ground or had magically evolved from the bare sand.

Elaphrus clairvillei Kirby. I secured a good series of this fine species at Wales, July 9, 1913, along the edges of a meadow through which runs a small brook. They were found at the line where the growth of alders and other small trees met the rushes of the wet, and in some places very soft, meadow bottom. The first specimen was found under a bit of bark in a small area of bare mud under a large swamp maple on July 6, but I was not able to thoroughly explore the swamp and took only six specimens. A few days later I started out bright and early, armed with a pair of rubber boots, and worked along the edges of the bushes for a quarter of a mile or more. They could be driven into sight and easily captured by treading carefully about a small area of from

six to ten feet in diameter. Rarely more than one specimen was taken in a spot, and the eyes had to be constantly fixed on the ground to get any. An entire day was spent at this back-breaking collecting, and when sunset came I felt very much as I used to feel after a day of potato digging.

Elaphrus olivaceus Lec. After returning home and critically examining the catch of *clairvillei*, I was delighted to find two specimens that I thought were *lævigatus*, but comparison with the single specimen in the LeConte collection at Cambridge showed them to be typical *olivaceus*, which I had supposed was a mountain species. These specimens were taken out in the open meadow at the edge of the brook on bare and soft mud. This sluggish, winding, meadow stream which is barely two feet wide in places and in others scarcely traceable, can be but a few hundred feet above sea level, and is hidden between hills of more than a hundred feet rise. On the west, a mile away, is Sabattus Mountain, the highest elevation for miles around. The vegetation of the meadow is the common, coarse, broad-leaved grass of the low lands in Maine, and along the edge *Alnus incana* which runs up in places to meet the juniper of the bare and rocky pasture land. Within the last few years the larger growth of the hillsides has been cut off.

Elaphrus cicatricosus Lec. On June 25, 1912, and July 16, 1914, I visited the woodland swamp on the shore of Lake Cochnewagin at Monmouth where I had found this species in 1910. It is rather remarkable that three specimens were taken on each of the three years, one specimen in one spot and two in the other, and either spot can be covered with a wash tub. One additional specimen was taken after thoroughly "treading" over the thousand or so square feet of swamp in 1914. No specimens could be found in the denser growth where no sun entered and no grass grew.

Blethisa quadricollis Hald. My only specimen of this species was taken at Wales, June 23, 1912. I had dammed up a tiny rivulet to drive out small species of beetles, and the rising water chased into view this fine Carabid.

Badister pulchellus Lec. While hunting for *Elaphrus* at Wales, as previously noted, five specimens of this showy little beetle

were picked up on the ground in the meadow. Comparison with the species of this genus in the LeConte collection, showed that all but one of my species were marked almost exactly like the specimens labelled *bipustulatus* Fab., but in every specimen the hind angles of the prothorax were depressed in a manner similar to that of the types of *pulchellus*. My specimens show that the extent of the black markings is variable and indicate that a larger number of specimens will give a complete series of colour intergrades. We shall then have but comparative extent and depth of the depressions of the hind angles of the prothorax for the specific difference (Bull. Brooklyn Ent. Soc. vol. V, p. 7). I have not examined the two species for other differences, but the character above given is very slight in the specimens seen.

Necrophorus vespilloides Hbst. Two specimens of this species were taken on a dead woodchuck in the deep woods at Wales, June 15, 1909, and another specimen from the same locality bears the date of July 10, 1913.

Listotrophus cingulatus Grav. Some time was spent at Monmouth watching this species to find the reason for their immediate appearance on fresh cow dung. I soon found that they were stalking the green flies that infested the manure in numbers. Several of the beetles were observed with flies in their jaws, but the exact manner in which they were seized was not seen. The beetles evidently came upon them around the edges of the pile or cornered them in folds and pockets of the mass. They have also been seen feeding on adult *Aphodius fimetarius*.

Phymaphora pulchella Newm. Four specimens were found at Monmouth, June 27, 1912, beneath the ragged bark of a dead basswood (linden) tree. In identifying this rare catch it was noted that figure 199 on page 537 of Blatchley's Coleoptera of Indiana is a fair representation of *Mycetina perpulchra* Newm. and not of *P. pulchella* Newm. as stated in the text.

Cryptorhopalum hæmorrhoidale Lec. This species has been taken rarely on Spiræa flowers in Maine. Three were taken somewhere within the limits of the town of Turner on July 14, 1914, by the labour-saving method of sticking the net out of the automobile as we rode along the narrow shrub-fringed road.

Ips confluentus Say. The necessity of using care in passing by supposedly familiar insects was well illustrated when I recently examined a bottle of alcoholic specimens taken at South Paris, July 10, 1914, and found my first specimen of this species. I had carelessly scraped it out of the pitch on the end of a log in the mill yard for *I. sanguinolentus*, but with a vague feeling that there was something unfamiliar about it. I wonder how many rarities I have discarded!

Georyssus pusillus Lec. Three specimens were taken on a sand bar in the Little Androscoggin River at South Paris, June 17, 1912.

Limnichus punctatus Lec. On June 15, 1907, while I was sitting by a spring in Wales trying to reduce my temperature and satisfy my thirst by keeping at the saturation point, I noticed many of these small insects very slowly moving about on the sandy mud along the tiny stream that ran from the spring. I captured all in sight and started out more by throwing water on the bare places.

Tharops ruficornis Say. On June 23, 1910, two were taken by beating at Monmouth, and on the 25th I found a few more resting on the ends of beech sticks in piles of cordwood in a forest clearing at Wales.

Alaus myops Fab. This species has been taken a number of times on logs at Paris and Monmouth, while at the latter place it was once found feeding on the sap that oozed from a red oak stump. Several years ago I took a couple of Alaus larvæ under the bark of a white pine stump at Monmouth about June 25. The larger one was two and one-half inches long and apparently full grown. They were put into a box with twenty or thirty large ant larvæ and half a dozen *Elater* larvæ, and at the end of three days only the large larva remained. A second lot of larvæ disappeared in the next two days, and the surviving *Alaus* was brought to Framingham, Mass. At odd times during the fall more larvæ were put in the box which was a tin one about ten inches high and four by eight inches in the other dimensions; it was more than half full of dirt, rotten wood, and mould. On October 7th the larva was

found to be covered with small yellowish-white mites, and they were carefully scraped off with a sharp knife. As a reward I received a bite on the finger that penetrated the skin deep enough to bring the blood. On August 25, more than a year after the capture, I found in the box a very lively *Alaus myops* that measured 39 millimeters. From the same box there appeared *Coscinoptera dominicana* and *Pogonocherus mixtus*, two fortunate individuals that had escaped the maw of the savage *Alaus*. It seems to me that the larva of this insect is generally carnivorous instead of lignivorous as has been often stated. The flattened head and prominent mandibles are well fitted for searching out and seizing larvæ beneath the bark of dead and dying trees, or stumps from which the bark has become loosened.

Melanotus leonardi Lec. A number of specimens of this were taken at Paris, June 15, 1910, on raspberry bushes that fringed the bare, ledgy summit of a hill.

Corymbites vernalis Hentz. Five or six specimens of this were taken at Wales, June 16, 1907, on the flowers of the black cherry (*Prunus serotina*) and on June 12, 1909, a few more were taken flying about a clump of *Prunus virginiana* near the same locality.

Corymbites fallax Say. The only specimens I have ever seen were the two that were beaten from small paper birch trees near the summit of a hill at Paris, June 15, 1910.

Hypnoidus melsheimeri Horn, a variety of *pectoralis* Say, *exiguus* Rand., and *striatulus* Lec. (?) were all taken on July 9, 1914, at the old fording place on the Little Androscoggin River at South Paris. They were discovered by turning over the stones that were half imbedded in the sandy soil and pulling up the bunches of grass that grew among them. I do not think they were beneath the stones but around the edges, from whence they were dislodged into the cavity. All the specimens were found in one spot a few feet in diameter and I could not find them anywhere else on the beach, even in spots that appeared exactly the same.

The noon sun had poured down its rays upon this spot and the high banks and wooded shores had guarded it from every

breeze until the stones were uncomfortably hot, but it was evidently a place of interest to these pretty little elaters. They exhibited surprising activity coupled with the ability to disappear as if by magic, even snapping themselves out of sight from the wetted finger before it could be placed over the alcohol bottle, while attempts at picking them up with the fingers or tweezers resulted mainly in pinches of sand. By drenching the spot with water they become less lively but also less conspicuous. A single specimen of the variety of *pectoralis* was later swept from some weeds. In 1913 I took *exiguus* in numbers a few feet from this spot, under the same circumstances.

Limonius aurifer Lec. This elegant little creature was taken once by beating maple sprouts in a forest clearing in Wales, June 24, 1910.

Drapetes geminatus Say. One specimen was swept from *Alnus incana* at Wales, July 9, 1913, and two more were taken at Monmouth, July 14, and 17, 1914, in a cut over woodland full of slash and raspberry bushes. One of these two was swept from raspberry bushes and the other was crawling on a dead maple stub.

Chrysobothris blanchardi Horn. At Paris (July 12 to 19, 1913) I took a number of this species on pine logs in the mill yard and on the trunks of the white pines growing near the lumber piles. I though they were *trinervia* until my returning home, when I found they were the first series of *blanchardi* I had ever taken. One specimen was taken in the same place on July 16, 1914.

Agrilus politus Say. Several specimens of a dark purple-cupreous were taken on Corylus leaves at Paris on July 9, 1914. These are of the same colour variety as specimens taken on Corylus in Mass., June 22, 1913, and June 21, 1914.

Agrilus arcuatus Say. A single specimen of this was taken at the same time and place as the preceding species. This variety was called *coryli* by Dr. Horn in his "Species of Agrilus of Boreal America" page 297, and there seems to have been no description of it other than these few words: "Var. *coryli* Horn.—Colour uniformly bright brassy." The colour varies from a bright brassy-cupreous to a dark purple-cupreous, and so closely do these colour forms resemble those of *politus* that a careful examination

of the sculpture, thorax, or claws is necessary to separate them. Both species were taken on the same patch of *Corylus* at Sherborn, Mass., and for some time remained mixed in my boxes as *arcuatus*. It would seem from this and from other facts at hand that the food plant has much to do with the variations in colour that are exhibited by this interesting genus.

Collops tricolor Say. Several specimens were taken at Paris, June 14, 1910, running about on the sun-scorched ledge at the summit of a hill of perhaps a thousand feet elevation.

Ptinus bicinctus Sturm. A number of dead specimens of this species were taken by sifting the debris from the grain bin and the barrels and boxes in the corn house at Wales, about July 1, 1905. I also noticed that many of the numerous pellets of rat dung were perforated with a neat hole in the side and contained a whitish, hairy larva. A few specimens were bred, but most of the material was sent to Prof. H. C. Fall who determined the species for me.

Ptilinus ruficornis Say, has been taken quite commonly at Monmouth, June 21 to 25 on several years, and at Wales it was found boring into beech wood June 25, 1910. In my series there are three males and twelve females, which shows the relative abundance of the sexes.

Odontosphindus denticollis Lec. Three were taken on the top of an oak stump in a species of flattened fungus, June 27, 1912.

Trox scaber Linn. At Monmouth on November 28, 1907, I found a large number of adults under an old blanket which had evidently been lying for some years beside a cart road.

Serica tristis Lec. This species has been very common on *Alnus incana*, at Monmouth June 21, 1910, at Wales June 26, 1909, at Paris June 19, 1912, and was taken at Fabyans, N. H. July 4, 1914. It has been seen eating the petals of blackberry flowers.

Aphonus tridentata Say. I have always been puzzled to account for finding dead specimens of this species on well-travelled roadsides, in beaten paths, and in sand pits. The specimens are generally spread out with no indications that they have been killed by birds or insects, and many times in perfect condition.

I have found but one live specimen. The earliest date is June 13, at Paris, and the latest August 2, at Wales.

Euphoria fulgida Fab. Two specimens were taken at sap on a red oak stump at Monmouth June 29, 1912. One of these was decorated with a number of spots resembling whitewash on the disk of the elytra, and a single spot on each side near the margin. This is the only one I have ever taken with white markings. I once saw a number of these beautiful insects flying about me while surveying. They were attracted to the brass mountings of the level on which the sun was shining. Near me was a corn field in which the farmer had hung pieces of tin to scare off the crows, and perhaps these shining, swaying bits of metal had first attracted them to the locality.

Physocnemum brevilineum Say. About the 16th of July, 1913, I was pleased to discover that these graceful little creatures were visiting the elms in the village of South Paris, and from noon until nearly 5 p.m., while the sun was shining, I replenished my meagre supply. They did not favour trees under two feet in diameter, and were found low down on the trunks running in and out of the crevices and folds of the bark much resembling huge ants. On the disappearance of the sun beneath a cloud they secreted themselves, and when frightened dropped to the ground and attempted to hide. When the sun was very hot they sometimes escaped by flying. In 1914 they were found from July 12 to 16; and apparently the maximum abundance extends over a very short period.

Xylotrechus quadrimaculatus Hald. The first and only specimen I have ever taken was found on a pile of lumber at Monmouth, June 29, 1912, and appeared to be freshly emerged. This speci-, men is of a reddish-brown colour, and I have another from Orono, July 14, 1906, which is a light testaceous grey.

Calloides nobilis Say. I was greatly surprised to find five specimens of this fine beetle at sap on an oak stump at Monmouth, June 29, 1912.

Monohammus confusor Kirby. I have taken this species twice at Monmouth.

Monohammus marmorator Rand. A single specimen has been sent me from Wales, but I have not yet been able to find it myself.

Plagionotus speciosus Say. For thirteen years I have looked in vain for this species on the infested maples at Monmouth, and during this time I have received but two, both dismantled wrecks, from friends there. One year a friend cheerfully informed me that he had collected seventeen and was keeping them alive in a jar for me when his wife let them all out a few days before my arrival because it was "too cruel to keep the poor things shut up like that." On July 9, 1914, at South Paris I took my first specimen, and for a week I made regular trips two or three times a day from tree to tree around the village I acquired fourteen specimens and a desire for more, besides arousing the curiosity of all the villagers. It is remarkable how inconspicuous these large and highly coloured beetles are, unless directly in the sun and low down on the tree. They are slow moving and I lost but one specimen seen, which escaped by flight from the ground while I was trying to dislodge a second one from a high limb by throwing my net at it.

Leptura nigrella Lec. The first specimen of this sombre insect I ever saw was a female which was taken in the mill yard at Monmouth, June 28, 1912. It was taken by a lucky swing of the net while in the air after an awkward leap from a pile of logs. When I had examined my catch I felt more than repaid for the shaking up of the undignified landing. A male was taken on a maple stub in a small clearing on July 17, 1914.

Leptura biforis Newm. A single specimen was taken on flowers at Monmouth, August 29, 1902.

Hoplosia nubila Lec. One specimen was taken on a log in the mill yard at Paris, July 12, 1913.

Oberea pallida Casey. This species has been beaten from *Alnus incana* in considerable numbers, both at Wales and Monmouth, on several occasions. The dates range from June 19 to the 29, and a single specimen was taken at Paris on July 10, 1910. This species seems to be abundantly distinct from any other *Oberea* and can be readily distinguished by the uniform colour of the entire insect, even the black callous spots of the pronotum become, in some cases, (not a sexual character as indicated in the description) nearly concolorous with the rest of the disk.

Donacia cincticornis Newm. A so-called variety of this species is found on the leaves of the yellow pond lily (Nuphar) in the coves of the lake at Monmouth, and it is also the common species of the lilies in the sluggish, winding streams of the meadow lands. It is a broad, depressed insect of a dark, violet-blue colour. They fly from one lily leaf to another when disturbed, keeping so close to the water that they are very hard to net; they also delay the start until the net has passed over them. In the open lake, if the boat is allowed to drift broadside across a patch of lilies when the waves are high, one can see this species shining like balls of quicksilver as they cling to the submerged pads, sometimes a foot beneath the water.

Donacia subtilis Kunze. This species is less common but is found in the sheltered coves of the lakes resting on the stems of the water grasses. I have taken them in the hand by leaning over the bow of the boat. Dates are June 21 to 25.

Donacia palmata Oliv. A very few specimens of this species have been taken at Monmouth, June 21 to 29.

Donacia torosa Lec. A series of a supposedly undescribed species which was swept from the grass of a wet meadow at Wales has turned out to be typical specimens of this form. It has been supposed to be a variety of *distincta*, but I think it will finally be given full rank. It is of a uniform dark blue or, as given in the description, blackish-violet colour. Dates are June 16, 1907, and June 13, 1909.

Haltica bimarginata Say. This well-known species appeared in such numbers on a small area of *Alnus* sprouts at Monmouth that I was curious to know how many could be taken. I selected two bunches of the bushes about three feet high, and swept them with six strokes of the net. In bottling the catch several escaped, but there remained 596 individuals. This does not quite equal the record of 600 odd specimens of *Phyllotreta sinuata* which were taken at one sweep from a bunch of *Cruciferæ* at Framingham, Mass.

Eupsalis minuta Drury. One specimen of this species was taken on a red oak log in the mill yard, and a pair of them was once found industriously boring holes in a log of the same kind in the deep woods at Wales, July 23, 1908.

SOME CALIFORNIA BEES.

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

THE BEES RECORDED BELOW WERE RECEIVED FROM POMONA COLLEGE, CALIFORNIA.

Perdita (*Cockerellia*) **aureovittata,** n. sp.

♀.—Length 8 mm.; robust, with dull white hair; head broad, dark bluish green, eyes slightly diverging below; mandibles bidentate, reddish in middle, pale yellow on upper side basally; labial palpi with first joint about 770 microns long, and last three together about 448; maxillary palpi slender, last joint orange, joints measuring in microns, approximately, (1) 192, (2) 160, (3) 144, (4) 96, (5) 96, (6) 104; clypeus piceous, sparsely punctured, with a large, pale yellow spot on each side, but none in middle; no supraclypeal mark; lateral face-marks pale yellow, consisting of rather small triangular patches at lower corners of face; flagellum light ferruginous beneath; mesothorax very minutely punctured, green in front and around margins, but black on disc; scutellum black, with fine punctures; rest of thorax dark blue-green; prothorax without yellow markings; legs dark brown, the anterior femora with a small yellow spot at apex; middle femora sharply keeled beneath; tegulæ pale testaceous; wings hyaline, nervures and stigma light ferruginous; b. n. falling far short of t. m.; marginal cell very oblique at end, so much so that it could be described as pointed; abdomen with five very broad, entire, bright orange bands, those on segments 2–4 notched anteriorly in middle, and all more or less excavated behind sublaterally; hair at apex pallid, with a brownish tint; venter dark brown.

Hab.—Claremont, California (*Baker*). Pomona coll. 226. Related to *P. sparsa* and *P. albipennis*, but readily known by the face-markings, broad, orange abdominal bands, etc.

Zacosmia maculata (Cresson).

Claremont (Baker); Pomona coll. 163. This is the true *Z. maculata*; a male which I collected at Juarez (Chihuahua), Mexico, May 12, may be taken as typical of a new subspecies *desertorum*.

It is rather small, with the light hair very pale; mesothorax more closely punctured, the brown marks on its anterior part faint and suffused; dark marks of abdomen paler the spots dilute brownish, evanescent posteriorly; second segment with a black dagger-like mark in middle, but the dark basal area so reduced as to be almost entirely overlapped by the first segment.

Tniepeolus pomonalis, n. sp.

♂.—Black, with the usual markings on thorax and abdomen warm ochreous, the band on sixth abdominal segment creamy-white; legs, antennæ and tegulæ black. Length about 12 mm.; robust. Superficially, this looks almost exactly like *E. remigatus* Fabricius, from Virginia, but it differs as follows: mesothorax anteriorly with two well-developed longitudinal bands, longer than in *remigatus* (these joined, as in *remigatus*, with the band surrounding mesothorax except in middle of front); median black area on first segment pointed at sides; apical plate of abdomen much larger; insect distinctly more robust. There is also a close resemblance to *T. concolor* Rob., from Illinois, but *T. pomonalis* differs thus: clypeus with no median ridge; light hair of face limited to a certain amount on clypeus and lower part of supraclypeal area, and a large band on each side of antennæ; bare part of pleura very densely punctured all over; a continuous hair-band all round mesothorax except in anterior middle; black area on first abdominal segment not sharply limited at sides; abdominal bands much broader; apical plate much larger. From *T. texanus* var. *nigripes* it is known by the clypeus, which is densely minutely punctured, and has scattered larger punctures, which are shallow. *T. superbus* (Provancher), described from Los Angeles, I have never seen, but *T. pomonalis* differs from the description in being larger, with no spot on tegulæ, stripes on mesothorax too large to be described as "two little lines," and no spots at sides of metathorax. The middle of the abdomen beneath has two silvery-white bands close together, the first with more than the middle third missing; on outer face of middle tibiæ anteriorly is a small band of orange-fulvous glittering hair; the wings are very dark; there is pale hair along the border of metathoracic enclosure.

Hab.—Claremont, California, (*Baker*). Pomona coll. 160. The mesothoracic bands or stripes distinguish this from *T. nigriceps* Smith, and the marking of the first abdominal segment is different, though that of the second agrees with *nigriceps*.

Nomia arizonensis angelesia Ckll.

Claremont (*Baker*). Pomona coll. 196.

Andrena plumifera, n. sp.

♀.—Length about 10 mm ; rather robust, black; head and thorax with abundant ochraceous hair, pallid on face, cheeks and under side of thorax, becoming fulvous on thorax above; facial quadrangle broader than long; process of labrum broadly rounded; clypeus entirely dull, hairy, the minute punctures forming transverse lines, no median ridge; facial foveæ broad, ochreous, extending below level of antennæ, the lower end not sharply defined; third antennal joint 416 microns long, 4 and 5 together 365, 4 to 6 together 560; flagellum very obscurely brownish beneath; mesothorax and scutellum dull and granular; area of metathorax small, rather conspicuously rugose; tegulæ piceous with a rufous spot; wings greyish; stigma dark reddish, slender, lanceolate, not over half diameter of marginal cell; b. n. meeting t. c.; second s. m. receiving first r. n. a little beyond middle; third s. m. very long; legs black, with pale hair, brown on middle and hind knees; middle and hind basitarsi broad; scope of hind tibiæ ample, dense, strongly plumose (collecting pale yellow pollen); abdomen somewhat shining, with a microscopically reticulate surface and excessively minute punctures; segments 2 to 4 with broad, dense white hair-bands, that on 2 broadly and abruptly interrupted in middle; apex with very pale purplish-grey hair, almost a lilac shade.

Hab.—Claremont, California (*Baker*; Pomona coll. 199). A species of the subgenus *Pterandrena*, running in Viereck's key (Canad. Entom., 1904, p. 227) to *A. nudimediocornis* Vier., which differs by the distinctly punctured dorsulum. Superficially, it looks exactly like *A. bridwelli* Ckll., but the surface of the abdomen is entirely different. It is smaller than *A. pecosana* Ckll., with the clypeus quite different.

A REMARKABLE NEW SPECIES OF PHORA (*TRINEURA*).

BY CHARLES T. BRUES, BUSSEY INSTITUTION, HARVARD UNIVERSITY.

The genus Phora, more generally known under the name of Trineura, includes a small number of species of velvety black colour. Quite recently Prof. J. M. Aldrich received from Manitoba a series of specimens which he at once recognized as an undescribed species. Instead of the velvety black colour so characteristic of the other members of the genus, the mesonotum of the male is satiny blue-green, while the remainder of the body exhibits a less distinct tinge of the same colour. Structurally, the species departs in no striking way from its congeners.

On account of its peculiar appearance he suggested that I describe it at the present time.

Phora (=*Trineura*) **viridinota**, sp. nov.

Male.—Length 1.5 mm. Black; mesonotum and scutellum blue-green and opaque; abdomen almost black, but slightly tinged with greenish; front greyish green; knees of four anterior legs and front tibiæ and tarsi brownish testaceous; wings hyaline, costal vein black, first and third veins dilute piceous. Front slightly more than twice as high as broad, its bristles large and strong except the lowest pair, which are half the size of the others. Ocelli in an equilateral triangle, the posterior ones as far from one another as from the eye-margin. Antennæ small, oval, with bare arista. Palpi very small, half as long as the antennæ, with stout, closely placed, although small, bristles. Postocular cilia enlarged below. Mesonotum sparsely clothed with bristly hairs; with a single pair of very prominent dorsocentral macrochætæ in front of the lateral angles of the scutellum. Scutellum subtriangular, nearly as wide as long, with one pair of stout bristles and a very weak pair anterior to the stout ones. Propleura bristly along the entire posterior edge, the bristles larger near the coxa; mesopleura bare. Abdomen with the second and sixth segments elongated, the sixth most noticeably so. Hypopygium, when viewed from the side, with the median plate extending posteriorly into a finger-like projection which is longer than in *P. aterrima*. Anterior legs with the tarsi not wider than the tibiæ; metatarsus one-third as long as the tibia; second tarsal joint a little widened, less than half as broad as long; third twice, and fourth nearly twice as long

as broad. Middle tibiæ with five or six long bristles along the basal two-thirds of the outer edge and a single bristle at the basal third on the anterior surface; longer spur two-thirds as long as the metatarsus. Hind tibia with a single bristle on the anterior surface at the basal two-fifths and a short one just before the apex; longer spur scarcely longer than the width of the metatarsus. Wings with the costal vein reaching to the middle, its bristles rather long and sparse, about 17 in each series, and each bristle about as long as the greatest distance from the costa to the first vein; first vein bending sharply and then slanting to the costa, its apex nearer to the tip of the costa than to the humeral cross-vein; fourth vein weakly curved on its basal half, straight beyond, ending barely before the wing tip; fifth and sixth weak, nearly straight; seventh obsolete. Halteres black.

Female.—The front is broader, and the body is black, with only the slightest tinge of the green colour of the male. The front tarsi are more distinctly thickened, the second and following joints being slightly wider than the tibia; second joint distinctly less than twice as wide as long; third one-third longer than wide.

Described from four specimens; type ♂, two ♂ paratypes and one ♀ paratype. Treesbank, Manitoba, Canada, (N. Criddle) May 30. Type in the collection of the Entomological Branch, Dept. of Agriculture, Ottawa.

As Professor Aldrich remarked in his letter sent with the specimens, this is the only Phorid which shows a distinct green colour, the other members of the family being black, brown, reddish or yellow of various shades and combinations. Only one other form with which I am familiar, *Melaloncha pulchella* Brues, departs from this type of coloration, the abdomen having bands of bluish pruinosity.

BOOK REVIEW.

RHYNCOPHORA OR WEEVILS OF NORTHEASTERN AMERICA. BY W. S. BLATCHLEY AND C. W. LENG. THE NATURE PUBLISHING CO., 1558 PARK AVENUE, INDIANAPOLIS, INDIANA, U. S. A.

Those who possess the monumental work of Prof. Blatchley on the Coleoptera of Indiana will rejoice to learn that he has completed his great task by publishing the present volume on the Rhyncophora, which were not included in the former book. By

associating with him Mr. Leng, who had for some time been working on the Weevils of the Atlantic Coast, he has been able to extend the scope of the volume so as to include the United States and Canada, east of the Mississippi River, thus going far beyond the bounds of the State of Indiana, to whose Coleopterous fauna the previous book was confined. The volume contains 682 pages and is illustrated with 155 figures.

In their introduction the authors state that their "primary object has been to furnish to students and tyros in Entomology a simple manual which would enable them in the most direct way possible to arrange, classify and determine the scientific names of the weevils in their collections." In accordance with this design the work begins with an explanation of the external anatomy of these beetles, with clear figures of the various structures. After a careful study of these details the reader will be able to go on and make good use of the book. Four families are recognized, namely, the Brenthidæ, Anthribidæ, Curculionidæ and Scolytidæ; to the third of these over five hundred pages are devoted, and descriptions are given of 856 species distributed among thirteen sub-families.

According to the plan of the work, a general description of each family is given, followed by keys to the genera, which in turn are described and usually illustrated with a characteristic figure, assisting materially in their recognition. After the genus a key is given to the species, followed by descriptions, with an account of their geographical range, habits, dates of capture and other particulars. By a careful use of the keys, a species may be run down and a specimen identified with comparatively little difficulty.

At the end of the volume there is a Bibliography of the works that have been referred to, and Indexes to the Plants affected by weevils, the Families, Sub-families, Tribes and Genera.

We may justly congratulate the authors on the completion of such an excellent work, which must have involved a very large amount of most painstaking labour. The book will be eagerly welcomed by all entomologists who are interested in this division of the Coleoptera, and should render more popular the collection and study of the Rhyncophora now that facilities for doing so are admirably supplied. C. J. S. B.

Mailed November 14th.