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THE IMPORTATION OF THE SAN JOSE SCALE, ASPIDIOTUS PERNICIOSUS, FROM JAPAN.

BY F. M. WEBSTER, WOOSTER, OHIO.

In *Entomological News*, Vol. IX., pp. 95-96, Mr. T. D. A. Cockerell states that Mr. Alexander Craw, quarantine officer at San Francisco, California, had "two or three times" found *Aspidiotus perniciosus* on trees from Japan, and, notably, on a plum tree that arrived January 25th, 1898.

On April 29th, 1898, the writer found *A. perniciosus* with *Diaspis amygdali* on Japan white semi-double Flowering Cherry, received direct from Japan during the winter of 1896-97, the trees having been planted out in an isolated locality during the latter part of April, 1897, and though having been growing in America for nearly or quite a year, their location was sufficient proof that they could not, by any possible chance, have become infested in this country. Only a part of the trees were infested, and these but slightly, the scale being more abundant near the surface of the ground and diminishing in numbers upward, while there were none to be found on the branches. The trees were small, being only about a half inch in diameter at base.

A lot of stock, belonging to the same varieties as those above mentioned, *Prunus pandula* and *P. pseudo-ceraceus*, that had also been imported directly from Japan and from the same firm, but during the winter of 1897-8, was then examined. Unlike the first lot, these trees had never been removed from the storehouse where they had been removed from the boxes in which they were imported. These trees were smaller than the others, having evidently been arch grafted, on older stock of some variety of cherry, by cutting off the original top and leaving a stump about six or eight inches in height and an inch or more in diameter, the cleft for the insertion of the graft being made after the usual manner, but instead of using a scion in the ordinary way, a young growing shoot of the flowering cherry had been inserted into the cleft at one side of the stump at the top, and the juncture covered with grafting

wax, the shoot, however, not being severed until after it had united with the stump, when it was cut off just below the juncture, thus greatly facilitating the growth of the graft, as it could draw its nourishment from the parent stock until it had firmly united with the new. These old stocks or stumps were much more seriously infested with the San José scale than the younger wood, averaging from one to six individuals to the square inch of bark surface, but extending upwards on the young growth well toward the extremity. On the old wood many of the scales were dead, but there were plenty of live ones and it was impossible to determine whether or not the dead had been parasitized, partly eaten by carnivorous enemies, or crushed in the handling of the stock, but that this was a direct importation does not admit of a doubt.

Mr. Cockerell thinks that the San José scale may probably be a native of the more or less elevated regions of Japan, the species of scale insects found there near the sea level seeming to belong to oriental tropical types. It was impossible to learn the exact locality where the stock examined by me had been propagated, but there were certainly no indications of immunity to the attack of this scale, though the trees might, perhaps, have withstood the attack better and survived longer, but, judging from all that could be observed from the actions of the scale on the importation of 1896-7, without the influences of natural enemies, it would spread as rapidly on a tree from Japan as it would on one from America, and this raises the question as to why, if it occurs in Japan, as it certainly does, this scale does not become as destructive there as with us in America. If this immunity is not due to resistive powers of the stock, and I certainly believe, from what I saw in these cases, it is not, then the protection must come from the influences of natural enemies, which is of itself the best possible proof that Japan is the native home of *Aspidiotus perniciosus*, and that we have a case parallel with that of the introduction of the Cottony-cushion scale, *Icerya purchasi*, into California from Australia. We have imported the San José scale and left behind its natural enemies that hold it in check in Japan, and while we cannot tell just what these enemies are, if the scale is a native of that country we have probably been importing it for years, and in that case, if the enemies were of a fungous nature, or internal feeders, we should have gotten them with their host insect long ago. It seems probable, then, that these enemies, or at least the one that is holding this scale in check, is one that is easily separated from its food and has for this reason been left

behind in the importation of fruit and ornamental stock upon which the scale has occurred. The overwhelming success that followed the introduction of the Australian lady beetle, *Novius cardinalis*, and the suppression of the Cottony-cushion scale might not again be repeated in the case of the San José scale, as, in case of a successful introduction of its natural enemies, its wide diffusion over the country would render its suppression much more difficult, but it would now seem that we have in our possession information enough to indicate very strongly that in Japan *Aspidiotus perniciosus* has natural enemies, which, if brought to this country and distributed in infested orchards and places where the scale exists, would sooner or later overcome this pest and hold it in check thereafter. We have accomplished this once and saved from ruin an immense industry, starting with even less prospects of success than we now have in the case of the San José scale. A competent entomologist located in Japan, for perhaps a year, would solve the problem, as within that time he would be able to study the San José scale and its enemies over a considerable area of country, and if such enemies were transmittible, and we have no reason to suppose that they are not, arrangements could be made to have them transmitted in quantity to the various Experiment Stations in this country in the States where the scale is known to occur. From a scientific standpoint, there does not appear to be a single significant obstacle in the way of again carrying out this plan of introducing from a foreign country the natural enemies of an insect that has been introduced with the plants upon which it depredates, while these natural enemies, owing to their habits, have been left behind.

Financially speaking, there ought to be no question as to the value to the country of the benefits to be derived from this importation, in case it is found to be practical. Even if it should fail, which must be reckoned among the possibilities, but not by any means among the probabilities, the financial loss would be but a mere bagatelle for either Canada or the United States, or even a single State, for that matter.

The total expense of sending Mr. Koebele and myself to Australia (See reports U. S. Commissioners to Centennial Exhibition at Melbourne, 1888, p. 78) in 1888-89, exclusive of salaries, was exactly \$1,694.97. With \$2,000 or \$2,500 at his disposal, an entomologist would be able to accomplish all that I have indicated, provided, of course, that he was already a salaried officer and his pay was continued by the institution with which he was connected. There are two widely separated town-

ships in Ohio, in either one of which the San José scale has done injuries that would amount to the larger of these sums, if not even more, and the Province of Ontario is probably spending fully as much in trying to exterminate the scale in some of the localities where it has already obtained a foothold.

TWO NEW SPECIES OF KERMES FROM KANSAS.

BY E. E. BOGUE, STILLWATER, OKLAHOMA.

Kermes pubescens, Bogue, n. sp.

♂ scale spheroidal, $3\frac{1}{2}$ mm. in diameter, 3 high; pointed and grooved beneath; covered all over with short straggling whitish pubescence. Colour rather light brown, with more or less obscure and suffused dark brown bands marking the obsolete segments. Surface shining, with minute concolorous specks, but no dark spots or pits.

Hab.—On twigs and leaves of oak (*Quercus macrocarpa* and *Q. prinoides*), at Manhattan, Kansas. Collected by Mr. J. B. Norton. Mr. Norton reports that this does considerable damage to *Quercus macrocarpa*. It occurs very thickly on the young twigs and leaves.

“Allied to such species as *K. galliformis*, but very distinct by its pubescence, dark colour with suffused markings, and comparatively small size.” (Ckll. in litt.)

The following species, also found by Mr. Norton, has been described by Mr. Cockerell, who sent his MS. to be included in this article.

Kermes concinnulus, Ckll., n. sp.

♀ scale 4 mm. long, $4\frac{1}{2}$ broad, $3\frac{1}{2}$ high; very convex, rounded in front, more or less flattened behind; flattened beneath, except a median anterior keel-like prominence. Colour lively ochreous. Surface shining, not speckled with black; segmentation very distinct, the sutures marked by bands and spots of dark brown and black, on the hind part by numerous pits. A median longitudinal groove, where the segmentation is obsolete, also partly marked out in black. Sutures not deep, nor are the segments strongly gibbous on each side of the median groove.

“Skin with many small round glands. Antennæ and legs very minute, short and stout.

“Antennæ bristly at tip, joints obscure.” (Cockerell MS.)

Hab.—On oak (*Quercus macrocarpa*), at Manhattan, Kansas. Collected by J. B. Norton. Allied to *K. Cockerelli*, Ehrhorn, ined.

NOTES ON SOME SAWFLY LARVÆ, ESPECIALLY THE
XYELIDÆ.

BY HARRISON G. DYAR, PH. D., WASHINGTON, D. C.

MACROPHYA FLAVICOXÆ, Nort.

Head light brown, almost orange on the vertex, a little dot at occiput, eye in a black spot; width, 1.8 mm. Body greenish white, not shining, a dusky black dorsal stripe and a very distinct velvet-black lateral one, broken into two square patches situated on the third and fifth annulets, connected by smoky shadings. The spots are broken up posteriorly and absent on joint 13. Dorsal band greenish black. Segments neatly annulate, feet on joints 6-12 and 13; anal plates immaculate. Towards the end of the stage the segments are faintly orange banded in the middle (on second and third annulets), the anal flap broadly orange.

Ultimate stage.—Head brownish with blackish apical shade, eye black. Body shining greenish waxen, no marks except the orange bands which persist rather distinctly, covering four annulets, apparently first, second, third and seventh, the segments 7-annulate, marked a little with tar-brown in the folds. Single brooded; found on the red-berried elder (*Sambucus racemosa*) at Jefferson Highlands, N. H., towards the end of July, resting curled on the back of the leaf. The larvæ pass the winter in cells in the earth. One ♂ specimen was bred, which was submitted to Mr. MacGillivray, who labelled it with doubt, "n. sp., near *flavicoxæ*." I prefer not to consider it distinct for the present. The specimen is in the U. S. National Museum, marked "6 L."

MACROPHYA EXTERNA, Say.

Stage III. (?)—Head pale testaceous, a little darker on the vertex, a large black spot covering the eye; width, .9 mm. Body tapering posteriorly, finely annulate, translucent white; no marks, the dorsum appearing green from the food. Thoracic feet colourless; abdominal ones on joints 6-12 and 13.

Stage IV.—Head whitish, eye black, a dark shaded spot on the vertex; width, 1.2 mm. Thorax enlarged; body white, finely 7-annulate, the dorsum green from food.

Stage V.—Head whitish, eye in a large black spot, a large smoky black patch on vertex; width, 1.6 mm. Body rather opaque white, neatly 7-annulate, the food green; no marks. The larva curls with the tail raised over the back. Sits on the under side of the leaf.

Stage VI. Head shining white, a large black patch covering, but mostly behind, the eye; a rounded grayish black patch on vertex, finely white punctured; width, 2.1 mm. Body white, dorsal and subdorsal broad blackish olive shade bands on joints 2-13; anal plate black. Abdomen neatly annulate; feet all white.

Stage VII.—Head as before, but slightly pruinose; width, 2.5 mm. Dorsum to spiracles black, leaden or greenish centrally, the colour diluted on joint 2 anteriorly and before the black anal plate. Feet all white; a black patch on the lower subventral fold. Segments neatly 7-annulate.

Stage VIII. (ultimate). Head sordid pinkish, waxen, shining; width, 2.4 mm. Body the same colour, with a darker dorsal band and broken lateral one; segments 7-annulate.

Single brooded, forming cells in the earth. Found on the hickory at Bronx Park, N. Y., and Bellport, Long Island, during July.

Determined by Mr. Ashmead, from one bred ♀, as a variety of *M. externa*. Specimen labelled "S P."

According to Mr. W. H. Ashmead's classification, the described species of Xyelidæ are as follows:

MACROXYELA, Kirby.

1. *ferruginea*, Say.
2. *tricolor*, Nort.
3. *infuscata*, Nort.
4. *acnea*, Nort.

MEGAXYELA, Ashmead.

5. *major*, Cress.

PLEURONEURA, Konow.

6. *aviingrata*, Dyar.

MANOXYELA, Ashmead.

7. *californica*, Ashm.

XYELA, Dalman.

8. *minor*, Nort.

Genus MACROXYELA.

The larvæ of this genus are all unknown. The long ovipositor of the ♀ suggests an internal feeder.

Genus MEGANYELA.

The larvæ of *M. major* proved hard to rear, and only imperfect specimens were obtained ; but the identification is nearly certain.

The larvæ are exposed feeders, gregarious on the young leaves of hickory in May, conspicuously coloured yellow with black spots. Both thoracic and abdominal feet are present, but are very small and hardly functional, the larvæ resting curled around a portion of leaf or stem, and wriggling about with the help of a few inconspicuous threads of silk.

Egg cuts irregular, somewhat distant, each a yellowish area on one side of the midrib ; the upper epidermis partly separated and brownish in an area of nearly 3 mm. ; lower epidermis a little swollen and yellowish in this area. No distinct cut remaining after the larvæ hatch.

Stage II.—Head black, with long antennæ ; width, .6 mm. Body whitish yellow, with black tubercles as in the next stage.

Stage III.—Much as in the next stages, the anal plate elevated and black, but no black spot on joint 13, the upper two spots of third annulet joined. Width of head, .8 mm.

Stage IV.—Head, 1.2 mm. The same ; there is no black mark on the cervical shield.

Stage V.—Head, 1.8 mm. The same.

Stage VI.—Head rounded, prominent, proportionately small ; antennæ long, 5-jointed ; shining black, antennæ and palpi white ringed in the joints ; width, 2.2 mm. Body segments 4-annulate, the first a small dorsal arc, the rest large, reaching subventral folds ; spiracle on second. Colour, opaque shining yellow, a little clearer in the folds of the annulets. A black cervical mark, truncate before, widened and trilobate behind ; thoracic feet, a large patch on joint 13 anteriorly, besides the anal flap on its entire upper side, including the punctured, swollen, suranal prominences and the tubercles, shining black. Tubercles rather large, but slightly elevated, minutely piliferous ; four on second and third annulets above spiracle, two on fourth annulet, lateral, and one on each subventral fold. A faint dorsal, blackish shade between the uppermost tubercles, sometimes distinct. Abdominal feet small on joints 6-12 and 13. Single brooded, no ultimate stage. The larvæ leave the trees by the end of May, enter deeply into the earth, and form fragile cells.

Genus PLEURONEURA.

I have elsewhere described the larva of *P. arvingrata*, with the structure and habits of the preceding, but solitary and coloured to resemble the excrement of birds.

Genus MANONYELA.

Unknown in the larval state, but not improbably similar to the next.

Genus XYELA.

The imago of *X. minor* is found abundantly on the pine (*Pinus virginiana*) very early in the season, in February and March, in the vicinity of Washington, D. C. The larva (or what I believe to be the larva, as it has not yet been bred) occurs in the staminate aments of this tree, feeding concealed, but not a true internal feeder, as it does not attack the stem or bracts, so far as I can make out, except to form an aperture at emergence. Probably they feed on the young pollen. The larvæ leave the aments before they blossom, during April, drop to the ground, which they enter for some distance to form hibernating cells. There is but one brood in the year, the April larvæ yielding the imago the following February.

Larva.—Head small, rounded, nearly white, faintly brownish, especially around the mouth, eye very small, black; antennæ distinct and quite long; width about .4 mm. Body subcylindrical, venter a little flattened; subventral folds moderately distinct. Thoracic feet short and conic, functionless; abdominal ones wanting. Segments obscurely 3-annulate; anal plate round, slightly projecting, somewhat cornified and brownish, smooth; joint 13 slightly transversely ridged, sloping posteriorly. Thorax somewhat thickened, the whole body quite robust. All opaque white, waxy, no marks. The skin is transparent, but the alimentary canal lined with fat-granules produces the opacity.

From the foregoing a definition of the Xyelid larva would read as follows: Sawfly larvæ with prominent head and moderately long, distinct antennæ. Thoracic feet reduced; abdominal ones rudimentary or absent, number as in the Tenthredininae. Segments with few annulets (three or four), the tubercles, when present, several haired and situated in two and a half rows transversely on the spiracular and two following annulets; the half row the most posterior.

Apparently most nearly allied to the Lydiidæ, but without the anal stylets, and spinning little or no silk.

CLASSIFICATION OF THE HORNTAILS AND SAWFLIES,
OR THE SUB-ORDER PHYTOPHAGA.

BY WILLIAM H. ASHMEAD, ASSISTANT CURATOR, DEPARTMENT OF INSECTS,
U. S. NATIONAL MUSEUM.

(Paper No. 2.)

Series I.—XYLOPHAGA.

FAMILY I.—ORYSSIDÆ.

This group was recognized as a sub-family by Newman as early as 1834, and as a distinct family by Haliday in 1839. It is represented at present by a single genus, *Oryssus*, Latr., which is apparently the stem from whence some of the parasitic Hymenoptera originated; *i. e.*, the Megalyridæ, Stephanidæ, etc.

I have now, however, the pleasure of indicating below another genus, indigenous to Africa.

Although comparatively few species are described in the group, it yet appears to be widely distributed, species having been found in North, Central and South America, Europe, Africa, Asia and Aru, in the Malay Archipelago.

After I had sent my MS. of this family in for publication, I found that Mr. F. W. Konow, in his paper entitled "Systematische und Kritische Bearbeitung der Siriciden—Tribus Oryssini,"* which I had not seen, had already given a revision of the genera. In this valuable contribution, Konow recognized four genera, three of which were here described for the first time. One of these, *Chalinus*, I had also indicated as new in my table under the name of *Chrysoryssus*, based upon a specimen of *Oryssus imperialis*, Westwood, in the National Museum, taken by Mr. Rolla P. Currie, March, 1897, at Mount Coffee, Liberia, Africa. It is one of the most brilliant of phytophagous insects, resembling in its metallic green colour many of the Chrysidæ.

The genera *Ophrynopus* and *Mocsarya* are unknown to me; the former occurs in Mexico, South America, and Aru, the latter being represented by a single species, *M. metallica*, Mocs.; from Sambawa, Sunda Island.

The four genera recognized by Konow may be easily distinguished by the aid of the following table:

Table of Genera

Face without carinæ; body not metallic.....	4.
Face with 2-4 carinæ; body usually metallic....	2.

* Természetrzaji Füzetek, etc., XX., 1897, p. 602.

2. Facial carinae 2-4 and *divergent* anteriorly.....3.
 Facial carinae 2 and *convergent* anteriorly.
 Submedian cell in hind wings shorter than the median, the transverse median nervure joining the median vein before the origin of the cubitus, the discoidal transverse nervure present; anterior tibiae with a deep emargination just before apex; hind tibiae with the outer edge serrate..... *Chalinus*, Konow.
3. Face bicarinate; discoidal cell petiolate; lanceolate cell widely contracted..... *Ophrynopus*, Konow.
 Face quadricarinate; discoidal cell sessile; lanceolate cell petiolate..... *Mocsarya*, Konow.
4. Front wings with the lanceolate cell longly contracted; submedian cell in hind wings much longer than the median, the transverse median nervure uniting with the median vein far beyond the origin of the cubitus; transverse discoidal nervure always wanting. *Oryssus*, Latreille.

Oryssus, Latreille.

The following is apparently an undescribed species new to our fauna:

Oryssus thoracicus, n. sp.—♂. Length, 4.75 mm. Head, antennae except the first five joints, the apical joint at apex, and the abdomen are black, the thorax, first five joints of antennae with the apex of the last, and the legs, red; the anterior tibiae beneath are dusky with a white streak at base; the middle tibiae have a white streak behind; while hind tibiae are blackish, with a white streak at basal half behind. The wings are subfuscous, paler toward base.

Hab.—Santa Cruz Mts., California.

Described from a single specimen.

FAMILY II.—SIRICIDÆ.

This family is also widely distributed throughout the world, although represented by comparatively few genera. The family may be separated into two subfamilies as follows:

Table of Subfamilies.

- First transverse cubitus usually originating from the basal nervure; hind wings with a complete anal cell; hind tibiae with two apical spurs..... Subfamily I., Siricinæ.
- First transverse cubitus not originating from the basal nervure, but from the cubitus; hind wings without a complete anal cell; hind tibiae without or with only one apical spur..... Subfamily II., Tremecinæ.

Subfamily I.—SIRICINÆ.

Table of Genera.

Third joint of antennæ usually a little shorter than the fourth or not longer; process of the last dorsal abdominal segment long, widened before apex; head more or less marked with yellow or white *Sirex*, Linné.

Third joint of antennæ longer than the fourth; process of the last dorsal abdominal segment shorter, triangular, and equally thickened to apex; head wholly black or blue-black. *Paururus*, Konow.

Paururus, Konow.

To this genus belong *Urocercus Abbottii*, Kirby; *U. apicalis*, Kirby; *U. cyaneus*, Fabr.; *U. Edwardsii*, Br.; *U. gracilis*, Westw.; *U. hirsutus*, Kirby; *U. nigricornis*, Fabr.; and *U. zonatus*, Nort.

The following is new:

Paururus pinicolus, n. sp.—♀. Length to tip of process, 18–19 mm.; to tip of ovipositor, 23–24 mm. Head, thorax and dorsal abdominal segments 1–4, or at least more or less of the fourth, especially at the sides, all ventral segments, sheaths of the ovipositor, and the legs, blue-black; rest of abdomen red. Process triangular, serrated at sides, its tip and beneath blackish. Wings dark fuliginous; the costal vein to stigma and the stigma within, ferruginous; rest of veins black or piceous. Antennæ 19-jointed, black, a little longer than the head and thorax united. The head and thorax are closely punctate, opaque and well clothed with black pile.

Hab.—Jacksonville, Fla.; Washington, D. C.; and Morgantown, W. Va.

The specimens from West Virginia were sent me by Prof. A. D. Hopkins, who informed me he took them boring in pine (*Pinus*, sp.). The others were captured by myself in November and December, several years ago.

Subfamily II.—TREMECINÆ.

Table of Genera.

Front wings with four submarginal cells. 2.

Front wings with three submarginal cells.

Antennæ filiform, multiarticulate, the third joint longer than the fourth; tarsi slender, cylindrical, the basal joint of hind tarsi shorter than their tibiæ *Xeris*, Costa.

- Antennæ short, filiform, 5- or 6-jointed, the third joint shorter than the fourth ; basal joint of hind tarsi longer than their tibiæ, much flattened and produced outwardly at apex beyond the second joint. *Teredon*, Norton.
2. Antennæ short and equally thickened or somewhat thicker before apex, the third joint usually a little shorter than the fourth, or at least no longer ; hind tarsi dilated in ♂ *Tremex*, Jurine.

Xeris, Costa.

To this genus belong *Urocercus caudatus*, Cr., and *U. Morrisoni*, Cr.

FAMILY III.—XIPHYDRIIDÆ.

Most European and American writers have placed these insects with the Siricidæ, but their *habitus* is quite different, and the characters used in my table readily distinguish them from the true horntails.

The Swedish entomologist, C. G. Thomson, in 1871, first separated them from the *Siricidæ* as a distinct tribe, and in this he has been followed by Cameron and Konow.

I have recognized two subfamilies separated as follows :

Table of Subfamilies.

- Front wings with one submarginal cell. Subfamily I., *Derecyrtinæ*.
 Front wings with two submarginal cells Subfamily II., *Xiphydriinæ*.

Subfamily I.—DERECYRTINÆ.

This group is represented by a single genus, known at present to occur only in Central and South America.

- Front wings with four submarginal cells *Derecyrta*, Smith.

Subfamily II.—XIPHYDRIINÆ.

Three distinct genera are now recognized in this group, all being found in our fauna. They may be separated as follows :

Table of Genera.

- Front wings with three submarginal cells 2.
 Front wings with four submarginal cells.
 Lanceolate cell contracted beyond the base and closed *Brachyxiphus*, Philippi.
 Lanceolate cell subcontracted, but still open . . . *Xiphydria*, Latreille.
 2. Lanceolate cell contracted and uniting beyond the base *Konowia*, Brauns.

FAMILY IV.—CEPHIDÆ.

This group was first treated as a distinct family by that master systematist, A. H. Haliday, as early as 1839.

Dr. Von Dalla Torre has credited the group to Westwood, evidently without having observed that Westwood, in his Introduction, merely accepted the views of Haliday, treating the group, however, as a sub-family instead of a family.

The genera have been recently tabulated by Konow as follows :

Table of Genera.

- First joint of flagellum not or scarcely longer than the second, the flagellum towards tip more or less clavate..... 5.
- First joint of flagellum distinctly longer than the second, the flagellum towards tip not thicker than at base.
- Hind wings with a complete cubital cell ; hind tibiæ with one or two spurs before tip..... 2.
- Hind wings without a complete cubital cell ; hind tibiæ without spurs before tip ; last ventral abdominal segment in ♂ without an emargination..... *Caenocephus*, Konow.
2. Antennæ thickened at the middle..... 3.
- Antennæ filiform, uniformly thickened, or with joints 3-5 slightly compressed 4.
3. Abdomen short and thick, at the most about half the length of the thorax ; antennæ shorter than the head and thorax united, distinctly thickened before tip ; last ventral segment in ♂ ending in a short thickened knob, produced upwards into a distinct process, the penultimate ventral segment normal..... *Pachycephus*, Stein.
- Abdomen long, fully twice as long as the thorax ; antennæ longer than the head and thorax united, feebly thickened at the middle ; last ventral segment in ♂ emarginate at apex, the penultimate with a transverse impression, clothed with erect black bristles... *Syrista*, Konow.
4. Hind tibiæ with a single spur before the tip ; antennæ with joints 3 and 4, and sometimes 5, compressed, the following to apex, of nearly an equal thickness..... *Macrocephus*, Schlecht.
- Hind tibiæ with two spurs before the tip ; antennæ rather slender, filiform..... *Janus*, Stephens.
5. Pronotum quadrate, longer than wide, with the head thickly punctured, flat, scarcely emarginate behind ; antennæ long, very feebly thickened toward apex ; hind tibiæ usually with only one spur before the tip..... *Calameuta*, Konow.

Pronotum transverse.

Hind tibiæ with two spurs before the tip 6.

Hind tibiæ without or with only one spur before the tip 8.

6. Sheaths of ovipositor, seen from above, narrow, pointed, or of an equal breadth to tips; penultimate ventral segment in ♂ without, or at the most with a small brush-like apparatus 7.

Sheaths of ovipositor, seen from above, broadened toward tips; two penultimate ventral segments in ♂ with brush-like

bristles *Astutus*, Panzer.

(? = *Eversmannella*, Jukowlew.)

7. Sheaths of ovipositor of an equal breadth or pointed at apex; ♂ with the two penultimate ventral segments convex without foveæ *Cephus*, Latreille.

Sheaths of ovipositor broadened toward apex; ♂ with the two penultimate ventral segments swollen before the hind margin, with foveæ filled with stiff bristles *Trachelus*, Latreille.

8. Hind tibiæ with one spur before the tip; ventral segments of ♂ normal, without special characters *Monoplopus*, Konow.

Hind tibiæ without a spur before the tip; three penultimate ventral segments in ♂ clothed with stiff brush-like bristles . . . *Ateuchopus*, Konow.

Cephus, Latreille.

Cephus Graenicheri, n. sp. — ♀. Length, 11 mm. Black, shining; antennæ 20-jointed, very slightly but gradually thickened toward apex; clypeus, except a median black spot anteriorly, a line beneath the eyes, mandibles except teeth, palpi except the terminal joints, which are dusky, a spot on front of tegulæ, two spots beneath on the upper angles of episternum and mesopleura respectively, spots on the anterior and middle coxæ, and the hind coxæ, except a black spot within, yellow; rest of legs, except all the trochanters, tips of the joints of the anterior and middle tarsi with their terminal joint entirely, apex of hind tibiæ and their tarsi, which are black or fuscous, reddish-yellow. Wings smoky hyaline, the costa and the stigma yellowish, the latter with a longitudinal dusky streak within; rest of veins black or blackish. Abdomen longer than the head and thorax united, compressed, black, with bands and blotches polished, shining, impunctured, except some sparse, rather coarse punctures on the first dorsal segment above, and some closer punctures laterally at base of the second segment; the second segment has an obscure rufous spot on each side at base; the third has a narrow

yellowish band at base, shading into rufous at apex; the fourth has a yellowish blotch laterally towards the ventral surface; the fifth is narrowly yellowish at base, but laterally broadening to the venter, so that at the sides near the venter, except an irregular triangular black mark which encloses the spiracles, it appears almost entirely yellow; the dorsal or apical part of the segment is rufous; the sixth has two small yellowish marks above, but below or at the sides from the spiracles it is yellow; the seventh, except a spot at sides close to the venter, is black; the eighth is mostly black, with a large yellow spot at the reflexed apex, and a yellow spot on the margin just below it; venter black, except the terminal segment laterally at apex and the margins of the hypopygium, which are yellow; hind tibiae with two spurs before apex.

Hab.—Milwaukee, Wisconsin.

Described from a single ♀ specimen taken by Dr. Sigmand Graenicher, and in honour of whom the species is named.

THE DESCRIBED SPECIES OF XIPHIDIUM IN THE UNITED STATES AND CANADA.

BY SAMUEL H. SCUDDER, CAMBRIDGE, MASS.

The following table, made as simple as possible, and based almost exclusively upon the female sex, will serve to distinguish the species of Xiphidium hitherto described or recorded from the United States and Canada. It includes only the species of Xiphidium proper; *i. e.*, those of slender form with straight or nearly straight ovipositor, excluding the stouter species with distinctly arcuate ovipositor, commonly referred to *Orchelimum*, though both are classed together by Redtenbacher.

TABLE OF THE DESCRIBED SPECIES OF XIPHIDIUM.

- α^1 Under side of hind femora armed with several spines; ovipositor longer than hind femora *ensiferum* Scudder.
- α^2 Under side of hind femora with at most a single spine.
- b^1 Ovipositor at least half as long again as hind femora.
- c^1 Tegmina much longer than body *attenuatum* Scudder.
- c^2 Tegmina no longer than body.
- d^1 Tegmina nearly or quite covering the abdomen *Scudderi* McNeill.
- d^2 Tegmina scarcely longer than the pronotum *strictum* Scudder.

- b*¹ Ovipositor at most but little longer than the hind femora.
*c*¹ Ovipositor as long as or longer than the hind femora.
*d*¹ Tegmina covering or almost covering the abdomen *nigropleura* Bruner.
*d*² Tegmina hardly or not longer than the pronotum *saltans* Scudder.
*c*² Ovipositor distinctly shorter than the hind femora.
*d*¹ Tegmina much longer than the body, and wings still longer *fasciatum* DeGeer.
*d*² Tegmina not reaching tip of abdomen, and wings still shorter.
*e*¹ Ovipositor nearly or quite straight, and fully three-fourths as long as hind femora.
*f*¹ Larger; hind femora nearly or quite 16 mm. long. Ovipositor attenuate at tip as much by the curve of the upper as of the under edge *gossypii* Scudder.
*f*² Smaller; hind femora hardly or not exceeding 13 mm. in length. Ovipositor attenuate at tip by the curve of the under edge only *brevipenne* Scudder.
*e*² Ovipositor distinctly though feebly arcuate, and less than three-fourths as long as the hind femora *nemorale* Scudder.

It may be added that *X. modestum* Bruner (March, 1891), and *X. taeniatum* Redtenbacher (July, 1891), are synonyms of *X. saltans* Scudder (1872); and *X. curtipenne* Redtenbacher (1891), the same as *X. nemorale* Scudder (1875).

PHILANTHUS HENRICUS—(P. 153).

This species should be credited to Mr. Dunning alone; I neither described nor named it. I did send Mr. Dunning a few Philanthidæ, with MS. names and descriptive notes, and these, in the event of publication, should be credited jointly; but *P. henricus* is not my species in any sense. The type specimen, I should add, was collected by Professor Townsend.

T. D. A. COCKERELL.

SOME NEW SPIDERS.

BY NATHAN BANKS, WASHINGTON, D. C.

Pecilochoa minuta, n. sp.

Length ♂, 4 mm.; cephal., 1.7 mm. long, 1.1 broad, patella plus tibia IV., 1.6 mm. Cephalothorax uniform reddish yellow, legs and palpi a trifle paler, except metatarsi IV. which are reddish brown; sternum yellowish; abdomen black, with short white hairs and some longer black ones at base; venter with a pale streak each side; spinnerets red-brown. Head narrow; posterior eye row slightly recurved, longer than anterior row, the P. M. E. round, their diameter apart and as near the P. S. E. as to each other, equal in size; eyes of anterior row subequal, all close together. No plate under fang of mandibles. Legs quite hairy, but the scopulas not dense; femora with three or four very large spines above, each spine longer than the posterior eye row; no spine above on tibia IV., one below at tip of tibia I. Sternum narrow, nearly twice as long as wide. Abdomen slender, no wider than cephalothorax, spinnerets large, an interrupted ventral fold near their base. The tibia of the male palpus has on the outer tip a large, stout, slightly curved projection one-half the length of the tarsus and blunt pointed at tip; the palpal organ is swollen near middle, the style is short.

One male; Brazos Co., Texas.

Cybaodes (?) incerta, n. sp.

Length ♀, 4.5 mm. Cephalothorax brownish yellow, darkest in front and black around each eye; mandibles rather darker than cephalothorax; legs and sternum pale yellowish, abdomen pale gray, thickly clothed with rather long white hairs and longer black bristles, mostly at base. Cephalothorax once and a half longer than wide, broad and low in front. Eyes in two rows close to each other, hind row about straight, longer than the anterior row; the posterior eyes larger than the anterior eyes; P. M. E. closer to equal P. S. E. than to each other; A. M. E. about as close to each other as A. S. E., dark coloured. Clypeus narrow; mandibles large, porrect, slightly divergent, front margin with three teeth, hind margin with two smaller teeth, fang long and stout; maxillæ twice as long as broad, rounded at tip, scarcely inclined, plainly obliquely impressed; lip longer than broad, rounded at tip. Sternum longer than broad, truncate in front, sides rounded; legs rather large, of moderate length; all femora shorter than the cephalothorax, clothed with hairs and spines, tibia I. with one spine near base, two towards tip; metatarsus I.

with two near base, two near middle, and one at tip; tibia II. with one at base and one towards middle, three under metatarsus II.; tibiæ III. and IV. with (under) two very long ones at base, two long ones at middle, and two much shorter at tip; above with several; metatarsi with many long and stout spines; three claws, the pair with teeth below. Abdomen once and a half longer than broad; spinnerets are before the tip, two-jointed, lower pair the longest, at base between them is a hump, and at base of this is a transverse furrow; the epigynum shows a short, spoon-shaped septum, leaving each side a curved reddish mark.

From debris on salt crust; Salton, Calif.; March, 1897. (H. G. Hubbard.) I am uncertain of its position, but think it very near *Cybaodes*.

Theridium cinctipes, n. sp.

Length ♂, 1.3 mm.; femur I., 1.1 mm. long. Cephalothorax yellow-brown, margins black, blackish around eyes and extending back to the dorsal groove; abdomen mottled with black and white, two pairs of small basal white spots, behind these a white stripe with serrate sides gradually narrowing to the spinnerets; sides with three or four white spots; venter black, with two prominent silvery spots; sternum blackish; legs white, with black bands at ends of joints and on the middle of tibia I. Abdomen moderately high, one and a half times as long as broad; leg I. very long, femur I. more than twice as long as femur III., tibia I. much longer than the cephalothorax. The male palpal organ is short and compact. There is a transverse mark across its base which has an upward projection near its outer end; a circular dark bulb is nearer the tip on the outer side, and from it a slender dark tube extends below, across and upward toward the tip, where it ends in a short, pointed sheath; near base of the sheath there arises a larger, curved, pointed process.

Brazos Co., Texas.

Theridium subterraneum, n. sp.

Length ♀, 3 mm.; tibia I., 1.8 mm. Pale yellowish, legs rather darker, a dark trifurcate mark on the cephalothorax; abdomen gray, with some blackish transverse patches in two rows on the dorsum. Cephalothorax highest behind eye-region; P. M. E. slightly farther from each other than from the P. S. E.; A. M. E. smaller and less than their diameter apart; legs quite long, femur I. longer than the cephalothorax, abdomen sub-globose, longer than broad, and as high as broad, clothed (as elsewhere) with long hairs. Epigynum shows a triangular area, with

a slender point in front, behind is a transverse area pointed in front, and in front are two dark spots connected to the posterior area by a reddish line. Taken from graves, Washington, D. C. (Dr. Motter.)

Nesticus cavicola, n. sp.

Length ♂, 1.5 mm. Wholly pale whitish, clothed with long bristly hairs. Cephalothorax rather short and broad; six eyes, sub-equal in size, A. M. E. not visible; posterior row nearly straight, the P. M. E. farther apart than from the P. S. E.; S. E. touching; sternum broad, sides rounded; legs long, all femora longer than the cephalothorax, hairs on legs longer than the diameter of the joints; abdomen pointed behind, one and a half times longer than broad. Femur of male palpus rather long, palpal organ large, a projection of tibia broadest near tip and bifid, one branch is cleft; the style is long, curved around tip of bulb, from the tip of bulb there projects outward a pointed spine, and below is another projection tipped with a short black hook. From a cave, Chiricahua Mts. (Wood Canon), Ariz., June, 1897. (H. E. Hubbard.)

Erigone albescens, n. sp.

Length ♀, 1.8 mm. Cephalothorax, legs, mandibles, and sternum uniform yellowish, abdomen uniform whitish gray; eyes on black spots. Head rather elevated; posterior eye-row procurved, the P. M. E. about as far from each other as from the equal P. S. E.; A. M. E. small, and close together. Mandibles of moderate size, vertical, armed along their lower front margin with several teeth, and behind with a row of denticles, sternum broad, sides rounded, blunt pointed behind; legs of moderate length, with many hairs and a few spines, one above on tibia IV.; abdomen oviform, clothed with scattered stiff hairs, which arise from minute yellowish dots; epigynum shows two curved dark lines approaching each other from behind, and a darkish spot outwards from their tips. From the inside of coffins in graves opened during the transfer of a cemetery, Washington, D. C. (Dr. Motter.)

Philodromus pacificus, n. sp.

Length ♀, 4.1 mm. Cephalothorax yellowish, darkest on the sides, which are densely mottled and lineate with red-brown, a white \vee mark on the middle with its apex near the dorsal groove, dorsum of abdomen white, showing two basal pairs of yellowish muscular spots, sides of abdomen broadly suffused with red-brown from base to tip, venter whitish; femora, patellæ, and tibiæ pale reddish brown above, lighter below, distal joints yellowish. Sternum light yellowish, the body is full,

quite broad and short. Eyes not widely separated, P. M. E. as close to P. S. E. as to A. S. E., the A. M. E. are not very much nearer the A. S. E. than to each other. Abdomen twice as long as the cephalothorax. Femur II. longer than the cephalothorax. The epigynum shows an area longer than broad, with nearly parallel sides, divided by a rather narrow septum widened at its tip, the apical part of the sides are dark circular, and the basal part light and oval. Olympia, Washington. (T. Kincaid.)

NOTES ON COLLECTING AT BLOOM.

BY A. W. HANHAM, WINNIPEG, MAN.

At Brandon, Manitoba, in 1896, some very successful collecting was done on the prairies and open hillsides surrounding the town. Except in the valley of the Assiniboine River, which is still well wooded, the country around Brandon is very open—regular prairie country—with, of course, a good proportion under cultivation, it being one of the good wheat-growing districts of Manitoba.

However, there is plenty of good collecting ground to be found in almost any direction, and within a few minutes' walk. A short account of collecting at bloom may be of interest to our entomological readers, especially to those who have never visited "the boundless prairies of the West." Or there may be some who have had that pleasure, but have never tried collecting in this way, for lack of opportunity.

In 1896, I was at Brandon from July 9th to August 4th, and in 1897, from August 5th to 28th.

In 1896, I had my first evening collecting on the 15th; in previous years I had often collected off flowers towards dusk, and that was my procedure on this evening. It was on my homeward way that the inspiration came to me to sweep the clumps of bloom I came to, and the result astonished me, and led to the practice of collecting in this way on all available evenings.

It was quite too dark to see things moving on the wing or at rest on the flowers, and the only way to find out the contents of the net, after sweeping, was to hold it up against the sky line; even then it was generally impossible to tell what the catch consisted of, though the moths in the net could be seen and counted. After sweeping a few heads of bloom, it was nothing out of the way to find a dozen or more moths in the net, and it was surprising how little struggling they did either in the

net or when bottled. Most of the Noctuids contented themselves with crawling about the net, and quite a number feigned death; the presence of a *Plusia* in the net could almost always be told by the noise it made in flying.

First bottling the lively ones as they flew up the side of the net, I would then shake or gather the rest into a corner, and then, putting my wide-mouthed bottle in, I would run it up the slope of the bottom side of the net and everything would tumble or be scooped into it. Of course, during the whole process the net had to be held up against the sky, and I managed to keep it at the right elevation and steadiness by gripping the end of the stick between my knees. This allowed me the free use of both hands for securing the catch.

Even on quite cool evenings—when before dark hardly a thing had been noticed on the wing—quite a number would still be swept off the flowers, and they were even more sluggish than usual.

As in "sugaring," the number of species taken, outside of the Noctuidæ, did not amount to anything.

As the catch of the evening was, to a great extent, an unknown quantity—as to the species taken, not the numbers—the anticipation of the "output" on arrival home was decidedly pleasurable, and, till the novelty wore off, rather exciting.

Plusias were not taken in any great abundance by this method; in fact, the majority of those captured during my visit were netted before dark.

The plants or flowers off which the moths were swept were as follows:

Wild bergamot or horsemint (*Monarda fistulosa*, var. *mollis*).

Scotch thistle (*Cnicus undulatus*).

Spreading dogbane (*Apocynum androsæmifolium*).

Wild sunflower (*Helianthus rigidus*).

Species of golden-rod, of which *Solidago rigidus* appeared the most attractive.

Of the above, the wild bergamot, while it lasted, was, without doubt, the most alluring. It seems to grow pretty generally over the prairie, both in the open and in open bush, especially among clumps of silver-bush.

Unfortunately, during my second visit very little of it remained in bloom, but the wild sunflower was everywhere in profusion.

On July 15th I took my first specimen of *Plusia insolita*, and on

the 25th, the second; on July 23rd a *Plusia biloba* (such a beauty), and on the 24th I secured *Deva purpurigera*.

In July, the most abundant Noctuids were: *Noctua fennica*, *Carneades flavicollis* (a good species) and *tessellata*, *Hadena devastatrix*, and *Leucania commoides*; and of these *flavicollis* was easily the most plentiful, and every evening, after the examination of the contents of the bottles, it was thrown out by the score.

A few of the best captures in July were: Several species of *Rhynchagrotis*; *Noctua patelfacta*, *normaniana* and *atricincta*; *Carneades pleuritica*, *basalis*, *silens* and *redimicula*; *Mamestra purpurissata*; *Orthosia Conradi?* and *Cucullia florea*. In August, *Noctua collaris*, *Hadena stipata* and *transfrons*, *Oncocnemis atrifasciata*, *Caradrina extimia*, etc.; and the following predominated then: *Noctua baja*, *Feltia subgothica* and *jaculifera*, and *Carneades insuisa*; and a large, handsome pyralid, *Eurycyon sticticalis*, was very common at flowers at night, as well as during the day.

Both *Noctua collaris* and *Hadena transfrons* seemed to have a decided preference for *Solidago rigidus*.

At Winnipeg there is but little open prairie near the city, or easy of access, consequently few attempts have been made at this style of collecting. Mosquitoes, too, are much more in evidence here, and evening collecting, for this reason, until well on in August, has to be abandoned.

The Canada thistle (*Cnicus arvensis*) is a regular pest in and around Winnipeg; when in bloom it is very attractive. I have taken *Plusia ni* and *Californica* off it (July 30th), and *thyatiroides* (Aug. 15th), in 1895, and in 1896 (Aug. 10th), *Orthosia euroa* was very common; by sweeping after dark I secured this species in abundance, and only kept a portion of those netted.

On August 11th (1896), I got five specimens of *Noctua collaris*, all off *Solidago rigidus*.

On August 18th and 24th (1896), I captured the same number of *Plusia thyatiroides* off a tall wild sunflower (*Helianthus scabra*) growing in dark woods near Elm Park. I was "sugaring" on these evenings, and some of my sugared trees were within a few feet of the flowers, but these *Plusias* apparently were not attracted to the sugar in the least.

I have never yet captured a *Plusia* "at sugar," but others, who have done more "sugaring" than I have, may have taken them in this way.

DESCRIPTIONS OF NEW GENERA AND SPECIES OF THE
GEOMETRINA OF NORTH AMERICA.

BY GEO. D. HULST, BROOKLYN, N. Y.

(Continued from page 164.)

DIASTICTIS BENIGNA, n. sp.

Expands 23 mm. Palpi rather long, heavy, drooping, blue-gray; front, thorax and abdomen blue-gray, the latter whitish lined posteriorly on segments. Fore wings bluish-gray, lightest on middle field, mixed with some black scales; basal line faint or obsolete, marked by a black spot on costa; middle line beginning with black spot at costa, then through black lengthened discal spot, then obsolete; outer line with black spot at costa, otherwise obsolete; outer field darker towards margin, with a large brown submarginal shading between 3 and 5. Hind wings even, smooth, blue-gray. Beneath dark bluish fuscous on all wings, becoming blackish along outer margins; costa of fore wings speckled with black and gray.

Los Angeles Co., Cal. Type in National Museum. An insect very much in appearance like the Eastern *Macaria minorata*, Pack., but the fore wings are not falcate, the hind wings are not angled, and the palpi are much longer and heavier. The antennæ of *D. benigna*, here described, are wanting, so the generic reference cannot be certain; but as there is no hair pencil on hind tibiae in ♂, it cannot be either *Sciagraphia* or *Macaria*, as I define them. Type No. 3959.

DIASTICTIS SERICEATA, n. sp.

Expands 24-26 mm. Palpi, front and thorax, white; abdomen white, with fuscous stain, with many intermixed black scales. Fore wings white, with long light fuscous cross striations, which become many exceedingly fine, yet sharply distinct, though often broken, cross lines, giving an appearance of solid colour to the naked eye; a black, geminate, straight, basal cross line; another outward, less distinct, also geminate, nearly straight, with a band of reddish-brown between; discal spots black. Hind wings light fuscous, becoming grayish outwardly; marginal line of black spots on all wings. Beneath fuscous gray, coarsely striated with fuscous on hind wings, outer margins darkest. The fore wings have a smooth, silky appearance, with an apparent broad central band, even in width across the wing.

Colorado Desert, from Hy. Edwards; Arizona, from Dr. Kunzé. The latter taken from Aug. 29 to Sept. 9, 1896.

JUBARELLA, n. gen.

Palpi light, small ; front quadrate, somewhat bulging ; antennæ of ♂ simple, flattened, very finely ciliate ; thorax light, tufted in front, patagiæ long scaled ; abdomen slender, untufted ; wings broad, extended, even, rounded ; fore wings without fovea below in ♂, 12 veins, 10 and 11 from cell, anastomosing with 12 and each other ; hind wings, 8 veins, 5 undeveloped. Legs rather long, fore tibiæ unarmed, hind tibiæ with two pairs of spurs, not swollen, without hair pencil. ♀ unknown, possibly wingless.

JUBARELLA DANBYI, n. sp.

Expands 48 mm. Palpi and front black : thorax black, tuftings whitish at ends ; abdomen blackish-gray, interlined ; wings even, blue-gray, with scattered black scales, these less and so the gray lighter in a broad sinuous band beyond discal spot ; a brownish shading towards apex and submarginally to inner margin ; discal spot white, with edging cloud on fore wings, black and prominent on hind wings ; the hind wings less blackened, and so generally lighter than fore wings ; fore wings with black dashes on veins 3, 4, 5 and 6 on outer space, hind wings with row of faint black dots outwardly on veins. Beneath gray-black striated ; fore wings with black outer line, brownish near apex ; hind wings with outer row of black spots.

Rosslund, Brit. Col.; from Mr. Danby. A rather lightly scaled insect resembling *Coniodes plumigeraria*, Hulst.

SPODOPTERA KUNZEI, n. sp.

Expands 25-28 mm. Palpi and front whitish ochreous ; antennæ fuscous ; all wings whitish, evenly overlaid with light fuscous striations, without lines ; discal spots prominent, white by absence of striations ; thorax and abdomen white or with a fuscous tint ; beneath a glistening white, with a fuscous tint, with an ochreous shade along costa and margins. The abdominal tuftings which mark the genus are prominent, ochreous, shading to blackish.

Prescott and Senator, Ariz.; from Dr. Kunzé, in whose honour the specific name is given.

ÆTHYCTERA LINEATA, n. sp.

Expands 35 mm. Front thorax and abdomen gray ; fore wings whitish, with scattered black atoms, these heavier on costa and sub-discal vein, making these distinctly apparent ; the scales darken by

quantity into blackish lines between veins 1 and 2, 3 and 4, and 4 and 5, the last reaching half the wing to outer margin; the second the heaviest and black, but shortest; the first nearly the whole length of the wing, and lightest. Hind wings white, silky; all wings thinly scaled, rather long and narrow. Beneath more smoky, the fore wings with the markings above fainter.

Glenmore Springs, Colorado; from Dr. Barnes.

ALCIS MAESTOSA, n. sp.

Expands 33 mm. Palpi black below, ochre above; front fuscous gray; antennæ dark fuscous; thorax fuscous gray, mixed with blackish; abdomen fuscous, blackish dorsally, and posteriorly on segments; wings broad, even fuscous, mixed more or less with black, with many of the scales loosely raised, and in the light showing as powdered white atoms; fore wings, basal line fine, black, rounded, somewhat angled at cell; outer line rather evenly wavy, fine, black, nearly parallel with outer margin; an outer line of intervenular blackish shadow spots, and a corresponding marginal line connecting with black marginal points, the veins on outer field being rather broadly smooth, fuscous in colour. Hind wings corresponding with fore wings, the black being heavier and less separate at veins, the basal line obsolete, the outer line wavy, dentate, rounded; the outer blackish spots edged outwardly with a dentate white line; marginal line of broken black spots; all discal spots present, black. Beneath fuscous blackish, the outer lines showing in black points on veins, the outer margin darker fuscous; discal spots present.

Label doubtful, either Ia. or Ga., probably the former; taken Apl. 22. Type in National Museum. Type No. 3942.

ALCIS LALLATA, n. sp.

Expands 45-48 mm. Palpi and front blackish; thorax bluish-gray, with black collar and edge to patagiæ; abdomen fuscous, with black scales mixed; fore wings a bright blue-gray, with black shadings and cross lines; basal lines well out, fine, geminate, bent, waved; a middle blackish shading with strong outer sinus just below black discal spot; outer line bent outwardly beyond cell, rather evenly scalloped its whole length; an outer line of faint whitish lunules; veins black at ends; hind wings gray fuscous, even, without lines, discal spots faint. Beneath smooth, light fuscous, slightly darker towards margins.

Senator, Aug. 20; Prescott, July 9; and San Francisco Mts., Ariz., July 26; from Dr. Kunze.

SELIDOSEMA LACHRYMOSA, n. sp.

Expands 30 mm. Palpi black, tipped with ochreous; front black; thorax blackish fuscous; abdomen blackish fuscous. All wings nearly uniform blackish fuscous, fore wings rather narrow, apex acute, outer margin rounded, inner margin long; inner line well out, rounded, a sinus at cell opposite discal spot, and a less one at vein 2; outer line beginning on costa near apex, strongly sinuous, the largest sinus outwardly at vein 3, and a short, almost angular one close to inner margin, whose middle the line reaches, or a little beyond it; the lines are fine, black, the outer faintly edged outwardly with gray; a faint whitish, sub-wavy, submarginal line nearly parallel with outer margin; discal spot rather large, oval, white. Hind wings triangular, both angles prominent and sharp, outer margin irregularly wavy; a faint discal shadow line; an outer fine, black, somewhat undulating line; discal spot distinct, white; marginal lines on all wings fine, black, broken. Beneath almost even blackish fuscous, smoother than above.

Los Angeles Co., Cal.; taken in July.

CLEORA SUBAUSTRALIS, n. sp.

Expands 42 mm. Palpi moderate, ascending, fuscous brown, black in front and at end; front dark smoky fuscous; summit fuscous brown; thorax dark fuscous, with a bluish tinge, behind lighter; abdomen ochre fuscous, stained and dotted dorsally with blackish, incompletely interlining the segments. Wings light brownish ochre, heavily and quite evenly overlaid with blackish patches and striations, giving a generally mottled appearance, enough separated basally and outwardly to give faint indications of rounded sinuate lines of ground colour; a lighter spot outwardly at vein 3; a large, lengthened, black discal spot, and a marginal line of rather heavy intervenular black points. Hind wings corresponding to fore wings, a lighter spot at vein 3, a faint zigzag lighter outer line, a lengthened black discal spot, and a line of black intervenular lunules. Beneath even light ochre brown; fore wings darkened basally along costa, and outwardly below apex; discal spots on all wings, long, black; some faint blackish striæ scattered on fore wings.

Cocoanut Grove, Florida. National Museum collection. The generic reference is provisional. Type No. 3960.

CLEORA PEDICELLATA, n. sp.

Expands 43 mm. Palpi rather long, porrect, rather slender, ochre, heavily marked with black, last segment black; front tufted, ochre

fuscous below, black at middle, and stained with reddish above; antennae dentate, with two slender spines, quite long, from each segment, ochre brown, ringed with black; thorax ochre brown, mixed with blackish; abdomen ochre brown, the segments lined with black. Fore wings ochre brown, somewhat marked with black; basal line indeterminate, two outer lines quite oblique, wavy jagged, definite only on posterior half of wing, and anteriorly shown by venular spots; an outer submarginal line of black intervenular spots, this followed by a second quite indeterminate; black, large, rounded discal spot, and a marginal row of intervenular black spots; hind wings colour of fore wings, with seven blackish cross lines, the fifth from base being finer, more distinct, and more irregular than the others, which are quite even and subparallel; discal spot black, rather large, with a whitish lunule within; marginal line black, of scarcely confluent marks, each with an inner white edging. Beneath very much as above, but with a strong reddish tinge, the lines less distinct, and with an outer row of black spots on both wings. The wings above have scattered, pedicellate, upright scales, black at ends, and generally white on lower half; these form a distinct tuft at the discal spots on all wings above.

Cocoanut Grove, Florida. National Museum collection. I have the female only. The insect probably represents a very distinct new genus. Type No. 3958.

SELIDOSEMA CONFIGURATA, n. sp.

Expands 40 mm. Palpi and front blackish; thorax gray; al lomen ochre-gray, with dark fuscous interlining and dorsally; fore wings gray, with a bluish tint, with some washing of fuscous and scattered black scales; lines black, distinct; basal rounded, with a black dot within it at cell; middle line passing through large black discal spot, sinuous to inner margin; outer line very distinct, bent out sharply at cell, then rounded back subparallel with outer margin, coalescing between 1 and 2 with middle line, then separating to margin, outwardly last half with heavy shadowing; a subapical black dash; lines outwardly a little brownish; margin a little wavy, line black, heavier at ends of veins; hind wings, gray; a straight basal line, a distinct black extradiscal rounded line, and a submarginal shadow; margin somewhat wavy, black lined; beneath light fuscous, even in colour; the lines finely, but distinctly, produced.

Colorado; from Dr. Gillette.

[TO BE CONTINUED.]

BOOK NOTICE.

TWENTY-FIRST REPORT OF OBSERVATIONS ON INJURIOUS INSECTS AND COMMON FARM PESTS DURING THE YEAR 1897, WITH METHODS OF PREVENTION AND REMEDY. — By Eleanor A. Ormerod, London: Simpkin, Marshall, Hamilton, Kent & Co., 1898 (1s. 6d.), pp. 160.

We beg to offer our hearty congratulations to Miss Ormerod on the publication of the twenty-first of her annual reports. Twenty-one years is a long period for anyone to carry on a laborious work, but this talented and indefatigable lady has not only accomplished a most valuable and important work, she has done so without any assistance except that of her late lamented sister, and entirely at her own expense. On this side of the Atlantic reports of this character are published by the Government of the Province or State to which they belong, but in England no official recognition has been shown, and though the country has undoubtedly been saved hundreds of thousands of pounds by the instructions given in these Reports to the farmers and gardeners of Great Britain, whereby they have been able to intelligently cope with their insect foes, and employ the best methods of prevention of their attacks, yet no aid has been afforded her from the public purse. No recognition of the immense value of her work has been vouchsafed by the powers that be. But while officially ignored, Miss Ormerod's name and work are held in the highest honour throughout Great Britain, and treated by the press in every department with the utmost respect; and in many British colonies and several foreign countries her name is widely known and her talents fully recognized.

A single observer, however able and industrious, could not possibly pay attention to all the manifestations of insect injury throughout the British Isles, but Miss Ormerod has by degrees gathered together a corps of observers in every county and district throughout the United Kingdom, and is kept closely informed of all that causes injury or loss to crops or fruit, and to live stock as well. During the past year she received about 3,000 letters on entomological subjects, and with the aid of a secretary was enabled to attend to them all. She thus conducts at her own charges what ought to be a Division of Entomology in the Department of Agriculture at London.

In the report before us, thirty-six species of insects are dealt with and figured, their ravages described, and methods of prevention and remedy fully given. Several of them are familiar to us on this side of the Atlantic; *e. g.*, Apple Codling Moth, Cockroaches, *Xyleborus xylographus*, Mediterranean Flour Moth (*Ephesia kuhniella*), etc.

From the care and accuracy which characterize her descriptions and figures, Miss Ormerod's work is of permanent value to economic entomologists everywhere, and her reports are always received with welcome and gratitude by those who have the good fortune to obtain them. That she may long be spared to carry on her admirable work is the earnest aspiration of her many friends.

C. J. S. B.