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A LIST OF MANITOBA MOTHS.—PART V.

BY A. W. HANHAM, WINNIPEG, MAN.

(Continued from page 320, Vol. XXXI., November, 1899.)

The Geometers of this Province, in respect to both my own captures and those of other collectors which I have been privileged to see, appear to be fairly well identified.

In December last I was honoured by a flying visit from Mr. Hutchinson, of Kinosota, on Lake Manitoba. He brought in a whole collection of things with him, some for names, others for my benefit. Among the moths we were unable to tackle satisfactorily were a few Geometers. Our friend is developing into an enthusiastic entomologist, and we look for some good work from him in the near future. Few of us, I fancy, would care to be hampered with numerous cases of insects, in addition to other "impedimenta," when undertaking a seventy-mile sleigh drive in bitter weather to reach the nearest railway station.

Another enthusiast, Mr. Heath, has, I believe, made some fresh captures since I saw his things, and there may also be some additions lurking in Mr. Criddle's cases. I believe that everything in the collections of Messrs. Boger and Marmont has been located.

The comparatively small percentage of unnamed or doubtful species in this family is a matter for congratulation. At the same time, I question if it has received as much attention from us as the others already listed and no doubt species have been overlooked among the more difficult genera, as *Leptomeris*, *Eois*, *Tephroclystis*, *Eucymatoge*, etc.

My most successful collecting has been done at light, and many of my best things were taken in that way.

The season of 1900, though an unusually long one for Manitoba, was an "off" year for Geometers in this district, and there was a great paucity of both species and individuals. The snowfall was light, the spring an early and hot one, and no rain fell, worth mentioning, until the beginning of July. I have no doubt whatever that these weather

conditions had a good deal to do with the absence or scarcity of a large proportion of our usually common Bombyces and Geometers.

From time to time I submitted my unknown and doubtful captures to the late Rev. G. D. Hulst (whose recent classification has been followed in this list), from whom I always received kindly aid. I received a letter from him, dated but a few days before his untimely death, regarding two new species, which I have included in this list, named by him as recently as June 25, 1900. Help has also been given freely by Prof. H. G. Dyar, to whom my thanks are due.

Eudeilinea herminiata, Guen., has not been included in this list, as I understand it has been transferred to the Bombycidæ.

Dyspteris abortivaria, H.-Sch. July 1st. Elm Park. Rare.

Nyctobia fusifasciata, Wlk. May 18th and later. Quite rare.

Rachela Bruceata, Hulst. On the wing early in October. Not plentiful.

Paleacrita vernata, Harr. April. Not common here.

Alsophila pometaria, Peck. Seldom out before October. Common.

Eudule mendica, Walk. (Already listed with the Bombyces). Early in July. Abundant in dark woods.

Talledega tabulata, Hulst. May and July. Common at light and at rest on trees in woods.

Nannia refusata, Walk. (Harveiata, Pk.). End of June. Very common in Elm Park.

Tephroclystis implicata, Walk. June. A few at light.

" ornata, Hulst. June. Rare.

" miserulata, Grt. June. Rare.

" absynthiata, L. May and August. Here and at Brandon.

" zygædenata, Pack. June. Rare.

Tephroclystis raveocostaliata, Pack. Plentiful at light, middle of May, 1898.

Tephroclystis borealis, Hulst. (Unique.)

Tephroclystis latipennis, Hulst. First recorded from Quebec. Descriptions of these two new species appear on page 114, Vol. XXX. (1898).

Eucymatoge anticaria, Walk. (Strattonata, Pk.). Middle of June. Rare.

" intestinata, Guen. Early in July. Common at light.

" vitalbata, Hüb. June. Only a pair taken. Rounthwaite.

Venusia duodecimlineata, Pack. May. Rare here.

Venusia comptaria, Walk. (perlineata, Pack.). Rare. Another early thing.

Euchœca albovittata, Guen. July 4th, etc. Flies low in dark woods, and is difficult to follow.

Euchœca cretaceata, Pack. June. Have a pair from here and another from Quebec.

Euchœca lucata, Guen. June. Not uncommon in Elm Park, at rest on trees.

Euchœca albogilvaria, Morr. (Now Acidalia albifera, Walk. See September number of Entomological News.) June. Common in Elm Park.

Calocalpe undulata, L. July. Occasional in Elm Park, and at rest.

Phileremo formosa, Hulst. Only one taken.

Eustroma diversilineatum, Hüb. July. At light.

" populatum, L. Middle of July, at light, but not plentiful.

Eustroma testatum, L. End of August. Common in ravine near Experimental Farm, Brandon.

Eustroma destinatum, Moesch. (and var. lugubratum, M.). Brandon and Rounthwaite. Another rather late species.

Plemyria hastata, L. Early in July. Rounthwaite and Cartwright.

" tristata, L. Middle to end of June. Rounthwaite.

" sociata, L. June into July. Common.

Percnoptilota fluviata, Hüb. Quite common here.

Mesoleuca ruficiliata, Guen. June. Not common.

" lacustrata, Guen. Fairly common. July.

" intermediata, Guen. Occurs here.

" truncata, Hüb. Quite rare here.

" hersiliata, Guen. Cartwright only.

" vasaliata, Guen. Kinosota. Rare.

Hydriomena sordidata, Fab. (var.). May 29th (one). Also from Cartwright.

Hydriomena trifasciata, Bork. Common. Appears to be double brooded.

" californiata, Pack. May 20th (one).

Hydriomena latirupta, Walk. Common. This species must be double brooded, as I took some this season at sugar, at Brandon, on October 10th.

Hydriomena multiferata, Walk. July 3rd. One at rest in Elm Park.

Triphosa dubitata, Linn. This species has much the same habits and tastes as the Noctuids; it turns up every season, but is never common. Have taken it at light in April, in May under log on ground and under loose bark of stump. On October 8th I took one at sugar, and in the fall and winter have found specimens in my cellar.

Cœnocalpe magnoliata, Guen. June. Not common here.

Gypsochroa designata, Bork. July. At light.

Xanthorhöe ferrugata, Hüb. Common, May and June, at light.

Xanthorhöe unidentaria, Haw. Appears to be rare here; have three specimens.

Xanthorhöe munitata, Hübn. Cartwright. Named for Mr. Heath by Prof. J. B. Smith.

Xanthorhöe montanata, Haw. Have a pair.

Hæmatopsis grataria, Fab. One of our common species; comes freely to light.

Mycterophora Slossoniæ, Hulst. I got my first specimen on July 15th, 1894, in the house; the second the following year, in my cellar. For description see page 120, Vol. XXX. (1898).

Synelys ennucleata, Guen. June and July. Elm Park.

Synelys alabastaria, Hüb. (reconditaria, Walk.). June and July. Elm Park.

Xystrota hepaticaria, Guen. Unique. Cartwright.

Cinglis purata, Guen. July 13th. I have only taken a pair.

Leptomeris quinquelinearia, Pack. June. Common.

" magnetaria. Cartwright.

Eois inductata, Guen. A common prairie species, on the wing early in June and in August.

Eois Hanhami, Hulst. Out early in June. Have only taken this species and the following in dark woods. (Elm Park.)

Eois persimilis, Hulst. Out early in June. Both these new species are described in June number of Vol. XXX. (1898).

Callizzia amorata, Pack. Taken at light, from middle of June into August. Not common.

Calledapteryx dryopterata, Grt. June 17th, etc. One or two taken at light. Mr. Hutchinson tells me that he finds this species fairly abundant at Kinosota, on Lake Manitoba.

Chlorochlamys chloroleucaria, Guen. June. Not very plentiful.

Nemoria subcroceata, Walk. Cartwright and Rounthwaite.

Eucrostis incertata, Walk. (gratata, Pack.). May into June. Common at Bird's Hill.

Synchlora glaucaria, Guen. End of June into July. Occasional at light.

Aplodes mimosaria, Guen. Out with glaucaria, but more numerous.

Anaplodes iridaria, Guen. (rectaria, Grt.). The only Manitoba specimen I have seen is in Mr. Boger's collection.

Brephos infans, Moesch. Mr. Heath has taken this at Cartwright.

Leucobrephos Middendorfi, Men. April 25th, 1896 (a ♂). Recorded in January (1897) number of CANADIAN ENTOMOLOGIST. Mr. Heath has taken this fine moth, and Mr. Dennis, of Beulah, sent me a ♀ for identification.

Epelis truncataria, Walk. Aweme and Cartwright.

Epelis Faxonii, Minot. June 12th, etc. Common locally on prairie. Flies freely during the day.

Eufidonia notataria, Walk. Middle of June. Particularly plentiful at Rounthwaite in 1899.

Orthofidonia exornata, Walk. June 11th. One at light. Taken also by Mr. Marmont and Mr. Hutchinson.

Orthofidonia semiclarata, Walk. End of May into June. Rare at Bird's Hill.

Orthofidonia vestaliata, Guen. Common. Our first white moth on the wing.

Gueneria basiaria, Walk. June. Not uncommon.

Deilinia elimata, Hulst. June. Occasional.

" variolaria, Guen. June. Quite common.

" erythremaria, Guen. June. Not uncommon.

" exanthemata, Scop. June. Not uncommon.

Deilinia solamata, Hulst. June 19th and July 22nd (1898). Single specimens flying by day on the prairie.

Sciagraphia granitata, Guen. July. Not at all common. Taken at light.

Sciagraphia denticulata, Grt. July 13th. A pair at light. More abundant at Rounthwaite.

Sciagraphia muscariata, Guen. Elm Park. Rare.

" heliothidata, Guen. One at light.

Sciagraphia continuata, Walk. Cartwright and Rounthwaite. Rather a rarity.

Sciagraphia mellistrigata, Grt. Common at light, middle of May and again in July.

Philobia enotata, Linn. June. Common in Elm Park.

Macaria eremiata, Guen. July 22nd (1898). One on prairie.

" dispuncta, Walk. June 29th (1898). One in Elm Park.

Diastictis ribearia, Fitch. July. Quite plentiful. Comes freely to light.

" sulphuraria, Pack.

Diastictis flavicaria, Pack. Both these species are out early in August; neither are common.

Diastictis pustularia, Hub. (latiferrugata, Walk.) Have seen this from Cartwright and Rounthwaite. Appears to be rare.

Diastictis subalbaria, Hulst. Not common here.

" subfalcata, Hulst. July. A pair taken.

Sympherta Julia, Hulst. July 13th, etc. A few at light.

Apæcasia defluata, Walk.

Apæcasia atropunctata, Pack. Neither of these species appear to be common here.

Alcis sulphuraria, Pack. (baltearia, Hulst). July. At light; three specimens.

Alcis atrolinearia, Hulst. May 20th. One at rest on fence.

Amilapsis subatomaria, Guen. July 7th, etc. Elm Park, at rest on trees.

Paraphia deplanaria, Guen. Elm Park. Rare.

Selidosema humarium, Guen. One specimen only.

Selidosema umbrosarium, Guen. Common in Elm Park early in the summer. At rest on trees, sometimes congregating under loose bark.

Cleora indicataria, Walk. May 17th. One or two at light.

Cleora larvaria, Guen. One specimen only.

Melanolophia canadaria, Guen. May 22nd and later. Common and variable.

Ectropis crepuscularia, Schif. Plentiful early in the summer.

Lycia ursaria, Pack. Rounthwaite. An early species. (Appears to be plentiful at Kinosota.)

Lycia cognataria, Guen. June. Not uncommon at rest on houses, fences, etc., and some have been taken at light.

Nacophora quernaria, Ab. Sm. Cartwright.

Apocheima Rachelæ, Hulst. Mr. Marmont took a male of this species at Rounthwaite in 1898. The female, which is wingless and spidery, dropped into the grass and escaped. In 1899 he was more fortunate, capturing several males and a female. About dusk on April 27th (same year), I noticed a number of moths flying low about the ground and along the side of my house. I managed to bottle four, and later on, with a light, discovered a pair "in coitu" on my cellar window. On the 29th I took two more males at rest on the same window.

Erannis tiliaria, Harr. Cartwright and Rounthwaite. Have not taken it myself in Manitoba.

Cingilia catenaria, Cram. A September species. Brandon and Rounthwaite. Mr. Marmont finds them very abundant in a small swamp near his place. Those I have seen from Manitoba have been white; those from Quebec invariably smoky.

Dyscia orciferata, Walk. A typical prairie species. Taken at Bird's Hill, and quite common at Rounthwaite in 1899. On the wing from early in June into July.

Anagoga occiduaria, Walk. May 22nd, one, and another at light in June.

Sicya macularia, Harr. July 19th, etc. Common at light in 1897 for about a week; also taken at Brandon.

Therina endropiaria, G. & R. Quite rare here.

Therina fervidaria, Hüb. Aug. 18th, etc. Common in Elm Park, at bloom; comes occasionally to sugar.

Metrocampa perlata, Guen. July 19th, etc. Not uncommon at light in 1897.

Eugonobapta nivosata, Guen. July. A few at light.

Ennomos subsignarius, Hüb. Aug. 9th to Sept. 22nd. A few at light.

Xanthotype crocataria, Fab. Plentiful at beginning of July.

Plagodis serinaria, H.-S. Taken at Kinosota by Mr. Hutchinson. Appears to be rare in the Province.

Plagodis phlogosaria, Guen. Cartwright.

Hyperitis amicaria, H.-Sch. (and var. alienaria, H.-S.). May 20th, and common in June. Some of the varieties are very handsome.

Ania limbata, Haw. July. A few at light.

Gonodontis hypochraria, H.-Sch. On the wing from the end of May to the end of June.

Gonodontis Warneri, Haw. June 17th and 20th. Here and at Rounthwaite. Not common.

Euchlæna obtusaria, Hub. Rare at light in June.

Euchlæna effectaria, Walk. Common at light in June.

Euchlæna Johnsonaria, Fitch. (bilinearia, Pack.). A few at light about the middle of June.

Euchlæna amœnaria, Guen. Cartwright.

Euchlæna pectinaria, Schif. (var.). Rare at light in June. This is one of our most handsome Geometers.

Euchlæna abnormalis, Hulst. June 22nd, 1898. One specimen taken at light.

Selenia alciphearia, Walk. May 20th. A pair at light.

Metanema inatomaria, Guen. July 3rd, etc. Not uncommon at light.

Metanema determinata, Walk. June 17th. A pair at light; also from Cartwright.

Pryocycla armataria, Guen. May 24th (1898). One at light.

Azelina peplaria, Hub. (Hubnerata, Guen.) (and atrocolorata, Hulst.). June 4th, etc. Common at light in 1898.

Azelina Behrensata, Pack. June. A few at light.

Caberodes confusaria, Hub. (and var. metrocamptata, Guen.). July. Winnipeg and Brandon. Not common.

Tetracis crocallata, Guen. June into July. A few at light.

Sabulodes lorata, Grt. June into July. Also at light.

Sabulodes sulphurata, Pack. (near var. imitata, Hy. Edw.). A poor specimen taken at light in June.

Sabulodes depontanata, Grt. (now Hypererytha arcasaria, Walk. See September number of Entomological News). Cartwright.

Sabulodes transversata, Dru. End of August to middle of September. Very common at light and at bloom.

Abbottana clemataria, Ab. & Sm. May 13th, etc. Rather rare here; plentiful with Mr. Hutchinson.

We may congratulate DR. H. GUARD KNAGGS on the fact that his "Lepidopterists' Guide for the Use of the Young Collector of Butterflies and Moths" has this year been reprinted for the third time. (Published by Gurney & Jackson, 1 Paternoster Row, London, E. C., England. Price, one shilling.) It is 30 years since the first edition appeared, and many thousand copies have been sold during that time. Though written so long ago, it is as useful and interesting as ever.

NOTES ON THE EARLY STAGES OF CATOCALÆ.

BY G. M. AND E. A. DODGE, LOUISIANA, MO.

Catocala Clintonii.

Egg, deposited June 21st, 1900, is a disc concave below and convex above. The ornamentation consists of a series of ridges converging from the slightly upcurved edge to a central depression which has in its centre a slight tubercle. Colour dark, or blackish. Hatched April 17, 1901.

Larvæ escaped by cutting a hole at one side of the centre above.

Newly-hatched larvæ slender, nearly ¼ inch in length, dark pruinose. Head paler, no marks apparent.

After first moult they are somewhat lighter in colour. The two rows of dorsal tubercles appear as black dots. The head is light, the lobes surmounted with black.

On the tenth day one larva was one-half inch in length, blackish, but paler than at first. Gray sagittate spots along the dorsum indicated the dorsal stripe. Tubercles small and black. Posterior dorsal part of 8th segment black, and dorsal tubercles on anal segments surrounded by black patches.

Head about same colour as body. Three days later this larva measured seven-tenths inch in length. The colour had become gray tinged with red. The usual longitudinal stripes were obsolete, but the darker patches following each of the dorsal tubercles gave the effect of indistinct interrupted subdorsal stripes.

Head quite small, slightly darker than the body, mouth-parts white. A triangular dark patch, apex downward, near summit of each lobe in front.

There were numerous light-coloured filaments. The most distinctive feature was the black band of eighth segment enclosing, centrally, a quite prominent, thick, rounded tubercle or horn, the tip of which was pale gray.

Tenth segment raised posteriorily and marked by two black dashes nearly meeting across the dorsum.

The eleventh segment was also elevated in same way, the posterior part being marked by a much curved black line bounding the raised portion posteriorly.

Head bordered behind with brown.

May 1st, newly moulted. Light gray, the dark patches of the dorsal tubercles having disappeared.

Tubercles white anteriorly and black posteriorly, markings of head as before. Band of eighth segment paler brown, except around base of central tubercle. This last, short, rounded and bent backward. Filaments white, compound, broad at the base, and dividing into about five points.

May 7th, mature larvæ. Uniform reddish gray. Head brown in front, except lower part white, each lobe surmounted by a yellowish spot. Head bordered with dark brown behind. Dorsal stripe indistinct. Tubercles inconspicuous. The dorsal horn of eighth segment is reduced to little more than an acuminate ridge, with summit slightly if at all paler than body colour. Head somewhat elevated; body much flattened. The numerous filaments seem to originate from an extension of the skin along the sides. Very slight black markings on anal segments. Began spinning up May 17th. Two pupæ. One of these is in a thin silken cocoon partially covered with sand and leaves. It measures about three-quarters of an inch in length and is pale red, the head and thoracic parts having a greenish tint. No bloom.

The second pupa is covered with a heavy bluish bloom, through which the red of the abdominal parts shows faintly. Gave imago June 4th.

This larva hatched so early that few trees had opened their buds. We gave them a mixture of everything that seemed to be available, and in each of three lots they selected plum. The larvæ, however, did not do well on plum. They ate it readily enough, and seemed to thrive, but died off from time to time until, of some fifty hatched, only about four or five made pupæ.

May 3rd a single wild larva, mature, was found under an apple tree and fed to pupation upon apple. Hence, it may be safe to infer that apple is the proper food-plant for this species.

Clintonii has for two years past been the earliest of all our Catocalæ specimens, having been taken June 6th or 7th in each year. Previous to that we had not collected.

Catocala minuta, Edw.

Food-plant, *Gleditschia triacanthos* (Honey locust).

Eggs deposited June 23rd, 1900, in crevice of the bark, seventy or more in a compact mass or cluster. Smooth, shining, about twice as long as broad, rounded at the ends, colourless.

Hatched April 21st, 1901.

Buds were just beginning to expand on the honey-locust trees.

Newly-hatched larvæ white, semi-translucent. A small dark spot on each side of the head. Length about three-twentieths of an inch. As soon as full fed they are green and scarcely distinguishable from the leaf upon which they rest.

April 30th they had attained a length of about two-tenths of an inch.

Colour reddish gray, narrowly striped with whitish on the sides, and with a rather broad, light dorsal stripe. Head pale gray.

May 4th, after the second moult, they appeared of a dusky green colour. Dorsal stripe white. Sub-dorsal and stigmatal stripes broad, dark and edged with white.

All the tubercles black, ringed with white at the base. Eighth segment with the usual dark band, but no protuberances. Head dark, mouth-parts white. Black cervical and anal patches.

At this point the larvæ showed much variation in colour.

One form was sooty or rusty black, darkest on sides; another was pale, whitish, without black cervical or anal patch, and transverse band of eighth segment but faintly dark.

At the succeeding moult this variation was still more pronounced, but in the majority of specimens the colour was black, with a broad yellowish dorsal stripe broken by the velvety black band of eighth segment. Sub-dorsal stripes outlined with white. Face and feet black. Sides black except on anterior upper part of eighth segment, where appeared a large oval yellow or red patch contrasting strongly with the body colour. Usually there was also a yellow patch or line across the dorsal portion of segment four.

The eighth segment had a rather high transverse ridge, and on the anal segments the dorsal tubercles were long and black.

Length at this stage three-fourths of an inch. A few whitish filaments appeared along the sides, only four or five at most to any one segment.

As the variations in colour are numerous, while the form does not materially change, a description of the mature larva will suffice and avoid repetition.

May 12th, length one and three-fourths inches. Form slim and rather long for the size. Not greatly fusiform.

Head black behind, dusky in front, with a very small light spot near top of each lobe.

Body brownish black, with a paler dorsal stripe, and broad whitish patches on dorsal surface of segment four and portions of segments seven and eight. The patch on four is usually shaped like a W, with open part forward.

Tubercles white in front, black behind, and followed by black patches, but on the anal segments the dorsal tubercles are quite large and reddish brown in colour.

Band of segments eight and nine broad and deep velvety black.

Ridge of segment eight rather high, inclined backward, and tipped with white or with white flecks on the summit.

Filaments very few, barely noticeable.

Body beneath greenish yellow, with large black spots.

By May 19th upwards of fifty of these larvæ had spun up and mostly pupated, all being the progeny of one moth.

Pupa enclosed in a rather strong silken cocoon covered with leaves, sand or whatever material was to be had.

Length of pupa about three-fourths of an inch. Slender. Only two tenths inch wide at its widest part. Bloom rather heavy.

Gave imago June 4th.

This is a very active larva in all stages of its growth. The imago is not very common here, although we have taken a number of them, including the three forms included under *minuta* and its varieties.

Catocala Judith, Strecker ; *Levettei*, Grote.

Description of mature larva taken hiding under bark on trunk of hickory.

Food-plant, hickory.

Form of body low and flat ; no elevations on any segment. Length, June 1st, one and three-fourths inches. Head, wider than thoracic segments, grayish streaked with pale brown, these streaks uniting upon summit of each lobe and there forming a wider longitudinal streak.

Mouth-parts black, and from each side a black stripe runs up on the cheek about one-tenth of an inch, ending in a point.

Colour, black, closely reticulated throughout with greenish white, making the general colour appear greenish black.

Tubercles white, small, but, from the contrast of colour, very distinct. Cervical and anal plates black. No filaments.

Ventral surface greenish white, each segment marked with a dull brownish spot.

Spun up June 3rd, among leaves. Length of pupa, nine-tenths of an inch; width, five-twentieths.

Colour, pale reddish, with a thin whitish bloom.

Gave imago June 24th.

The larvæ of this species is rarely found except hidden under the loose scales of bark on the trunks of hickory trees. Later the imago may often be found also hidden under bark.

Like many Catocalæ, it is quite common some years, but such a season may be followed by years of scarcity.

It appears to be but little subject to variation. We have not seen the form *miranda*, Hy. Edw., here, and would like to correspond with any one who takes it.

Catocala obscura, Strk.

Larva taken under bark of shell-bark hickory, May 12th, 1901. Food-plant, hickory. Length at maturity, two and one-half inches.

Description of mature larva: Colour, dusky gray. Head broad, but not high, whitish with pale brown markings and a small, ill-defined black blotch at corners of mouth.

The dorsal stripe is interrupted on fourth to ninth segment, inclusive, by black, curved patches that occupy the space between the dorsal tubercles, and opening backward, enclose white, cone-shaped patches, apex forward and truncate behind. Tubercles small and white; no filaments. There is no elevation and no dark band on segment eight. Segment eleven is slightly raised and bordered behind with black; legs pale greenish, marked with some blackish spots.

Below greenish white with large black spots, except on thoracic segments and segments eight and nine.

Pupa: length, half an inch; width, about three-tenths of an inch.

Colour, pale red with a thin bloom.

Imago, July 2nd.

Catocala epione, Drn.

Larva taken under loose bark on hickory. Food-plant, hickory.

May 19th, mature larva; length, two and two-tenths inches. Colour, pruinose. Head narrower than following segment; brown, with a black stripe over the top and down each side to the mouth, with a vertical spur between the lobes. The dorsal stripe is composed of four, or two pairs of, wavy white lines which coalesce on the posterior segments, a similar series of white lines also ornamenting the side, and a double, white subventral line.

The tubercles are small and scarcely discernible except on anal segments, where they are outlined with black. There is a dark stripe along the spiracles, which are black. No filaments. Ventral surface pink, with all the spots black and conspicuous.

May 20th, spun up. Pupa: length, one and one-tenth inches; width, three-tenths inch. Gave imago June 19th.

Catocala habilis, Grt.

Larva taken early in June, under loose bark on hickory. Food-plant, hickory.

June 16th. Length, two and two-tenths inches. Colour, greenish black; very smooth and glossy. Head wider than first segment, pale, with slight brown markings, and with a broad, irregular, black stripe from mouth to top of lobes. The dorsal stripe scarcely paler than the general colour. Tubercles whitish, minute. No ridge or prominence and no transverse band. No filaments.

A very black stigmatal stripe, distinct to the extremities, forms a sharp line of demarcation between the blackish colour above and the greenish gray of the sub-stigmatal region. Ventral surface greenish white, with dusky spots on the central segments only. Spun up June 22nd. Gave imago July 12th, 1901. The larvæ of *habilis* and *Judith* are very similar in appearance and habits, but may be readily distinguished from each other by the black stigmatal stripe and black marks on the head of the former. Occasional larvæ are much paler in general colour, but retain these distinctive markings.

A NEW VARIETY OF CICINDELA VULGARIS.

BY EDWARD DOUBLEDAY HARRIS, NEW YORK.

A undescribed variety of *Cicindela vulgaris*, Say, is reported from the basin of the Rogue River, in S.-W. Oregon. Twenty specimens taken during the month of April of this year, and closely representative of the local tribe, present no differences except a slight one in shade of colour, indicating, apparently, that the variety is well established and worthy of a descriptive name. The elytra markings are identical with those generally recognized as possessed by *vulgaris* proper. It is slightly narrower and the upper surface more convex than the type. The colour is a dull coppery green, the metallic hue being more apparent, as is usual in other species, at the edges of the elytra. It seems to be a connecting link between the type and variety *vibex*, Horn. Its habitat suggests the name *C. roguensis*.

A NEW GOOSEBERRY PLANT-LOUSE.

BY W. P. AND T. D. A. COCKERELL.

Myzus Neomexicanus, n. sp.—*Winged form.* General colour of head and thorax black; prothorax sage-green with a transverse black shield, narrowest in the middle; sides of thorax green; antennæ black; wings clear, stigma and nervures very dark brown; abdomen sage-green, four quadrate black marks on each side anterior to honey-tubes, the last sometimes a mere speck; honey-tubes blackish, darkest basally; segment bearing honey-tubes with a few black spots, this and the following two segments with transverse black bands; legs black, tibiæ brown. Ocelliferous tubercle prominent; frontal tubercles low and broad, these and first antennal joint very slightly gibbous. Honey-tubes not swollen, 300 μ long and 40 broad, 200 μ short of tip of abdomen, cingulate. Body about 2100 μ long, antennæ about 1030, half length of body. Tibia of anterior leg 700, of hind leg 880 μ. Antennal joints (counting the so-called 7th joint as 6b) measuring: (1) 70, (2) 60, (3) 270, (4) 190, (5) 184, (6a) 100, (6b) 270.

Apterous ♀. Clear apple-green (turns yellow in balsam), head and thorax lighter; eyes black; legs, antennæ and honey-tubes yellowish-green like head; fifth and sixth joints of antennæ and tip of honey-tubes dusky; rostrum extending to middle coxæ; lateral tubercles at sides of prothorax (also in winged form), in region of hind legs, and posterior to nectaries, six (three pairs) pointed tubercles in all; cauda elongate, with rounded, sparsely hairy tip; legs long, hind tibiæ bristly. *No capitate hairs.* Very young specimens have red eyes.

Body (adult) about 2430 μ long, antennæ about 1000; honey-tubes 380 long, 50 broad, the tips level with basal part of cauda; tibia of anterior leg 700, of hind leg 940. Antennal joints: (1) 70, (2) 60, (3) 250, (4) 190, (5) 184, (6a) 100, (6b) 230.

Hab.—On wild gooseberry (*Ribes*, probably *R. leptanthum*) in an arroyo about five miles S.-W. of Las Vegas, New Mexico. Abundant at ends of twigs, June 2, 1901; not curling leaves. Attended by *Lasius*. Noticeable for the short antennæ, three pairs of lateral tubercles, and lack of capitate hairs. It is similar in many respects to *M. ribis* and its allies, but evidently distinct. From *M. ribis* proper it differs by the green apterous ♀ without capitate hairs and without a dorsal quadrate mark; from *M. ribis trifasciata* by similar characters, though the coloration of the winged forms is more similar; from *M. ribis Bucktonii* by the

absence of capitate hairs, and abdominal markings of winged ♀; from *M. Targionii* (which it resembles in not curling the leaves) by the character of the markings. It is evidently a native species (it occurs far from any gardens), and we may expect that it will attack cultivated gooseberries and currants as soon as it gets a chance. The allied forms cited above, already known as garden pests, are natives of Europe, though the first has been introduced into America.

We take this opportunity to record *Rhopalosiphum violæ*, Pergande, on house violets in Las Vegas, N. M.; it has not before been reported from New Mexico.

SOME OBSERVATIONS ON THE DEVELOPMENT OF FENISECA TARQUINIUS, FAB.

BY A. I. GOOD, WOOSTER, OHIO.

On October 27, 1900, while walking through some woods along a creek near Wooster, Ohio, my attention was drawn to some white masses on Black Alder (*Ilex verticillata*, Gray). These masses proved to be plant lice covered with a white down. A couple of branches were broken off and taken home. There were found among these masses of lice, and concealed by them, several small, slug-like larvæ about .75 inch in length. The lice, through the kindness of Prof. F. M. Webster, were identified as *Schizoneura tessellata*, Fitch.

The larvæ in a few days became restless, as if wishing to pupate, and on being given a suitable place, soon fastened themselves up, and within a day or two passed into the pupal stage; then we knew that we had the curious monkey-faced pupæ of the little butterfly, *Feniseca tarquinius*. In all, six of these pupæ were obtained, but owing to unfavorable conditions only three of them developed to adults. Other larvæ were found about the first of November, but owing to severe cold weather the majority had perished. Some of these last larvæ were not fully grown, and could hardly have belonged to the first brood.

The strange part is, that to all appearances the food of the larvæ consisted of these lice. The butterfly is not common in this locality, and this is the only time that I have taken it in any form. The larvæ have somewhat the appearance of those of some of the Lady Beetles.

I well remember when with my father, Rev. A. C. Good, we first found the larvæ and pupæ of *Spalgis s-signata*, Holland, in West Africa, and despite their unusual appearance, the larvæ found near Wooster strangely recalled to my mind those of the West African species, though it was not until my Ohio larvæ pupated that I felt sure of their identity.

SOME NEW OR LITTLE-KNOWN BEES.

BY CHARLES ROBERTSON, CARLINVILLE, ILL.

Andrena krigiana, n. sp.

♀.—Black; mandibles rufous at tips, toothed near the apex; basal process of labrum short, subquadrate, emarginate; clypeus somewhat shining towards apex, where it is rather distinctly punctured, elsewhere opaque and reticulated; face before ocelli longitudinally striate; facial foveæ quite short, not descending below insertion of antennæ, filled with a fine pubescence which appears black; antennæ short, joint 3 as long as the next three together, or nearly so, apical joints dull testaceous beneath; thorax throughout opaque and finely reticulated; enclosure of metathorax poorly defined, but rather strongly rugose; pubescence of head and thorax rather thin and dull fulvous; wings subhyaline, nervures and stigma honey-yellow, second cubital cell about one-third as long as the third, oblique, receiving the first recurrent nervure at, or a litttle before, or a little beyond, the middle; abdomen shining, rather sparsely and rather evenly punctured, apical margins of segments pale testaceous, hardly subfasciate, fimbria fulvous; scopæ pale, the hairs of hind tibiæ rather strongly plumose. Length, 8 mm.

♂.—Resembles the female; the face before ocelli not striate; clypeus with a large trilobed yellow spot. Length, 8 mm.

Carlinville, Illinois; 13 ♀, 1 ♂ specimen.

Paralictus, n. g.

This is proposed as a new genus for the reception of *Halictus cephalicus*, Rob., as the type, and *H. platyparius*, Rob., and the following species as congeners:

The venation, proboscis, hind spurs and general characters are the same as in the small, dull greenish species of *Halictus*. The cheeks are broad, mandibles simple; labrum concave, not produced, terminal lobe not produced to a laterally compressed, strongly pectinate point, but broad and flat, more as in *Sphecodes;* anal rims and scopæ obsolete, or nearly so, quite different from *Halictus*. Of ten female specimens, none have any pollen in their meagre scopæ, and I am quite certain that these females do not collect any pollen. I captured both sexes of *P. cephalicus* at a bank filled with nests of *Halictus zephyrus*, and I suspect that this species is an inquiline of that *Halictus*.

Paralictus simplex, n. sp.

♀.—Closely resembles *P. platyparius*, Rob., but may be readily distinguished by the cheeks being broad and rounded, not produced to an obtuse angle as in that species.

Carlinville, Illinois; 3 ♀ specimens.

Halictus truncatus, n. sp.

Halictus similis, Robertson, Trans. Am. Ent. Soc., 22: 145, ♀, 1893.

Halictus similis, Robertson, Trans. Acad. Sci., St. Louis, 10: 52, ♂, 1900.

This species and *H. arcuatus*, Rob., have both been identified as *H. similis*, Sm. It is doubtful to which one that name applies, or whether it applies to either of them.

Melissodes enici, n. sp.

? *Melissodes desponsa*, Smith, B. M. Cat. Hym., 2: 310, ♀, 1854.

Melissodes nigripes, Smith, ibid. 311, ♂ (not ♀).

Melissodes desponsa, Robertson, Trans. Acad. Sci., St. Louis, 7: 354, ♀, 1897.

This is an oligotropic visitor of thistles. It is abundant on the flowers, the female getting her pollen exclusively from them. Two males taken on *Monarda fistulosa* are the only specimens of this species taken on any other flowers.

Melissodes dentiventris, Sm.

? *Macrocera Americana*, Lepeletier, Hist. Ins. Hym., 2: 92, ♂, 1841.

? *Melissodes obliqua*, Smith, B. M. Cat. Hym., 2: 310, ♀, 1854.

Melissodes dentiventris, Smith, ibid., 212, ♂.

Melissodes dentiventris, Robertson, Trans. Acad. Sci., St. Louis, 7: 353, ♀, 1897.

This was identified for me by Mr. Cresson as *M. obliqua*, Sm., and is about as likely to prove to be the true *M. obliqua* as the preceding is. Specimens which are a little faded and in which the oblique fasciæ of abdomen are not evident would readily be identified as that species. The preceding, being an almost exclusive visitor of thistles, is more likely to be overlooked. *M. dentiventris* has been taken on the flowers of sixteen species of nine different genera. The dermination of *M. Americana* is too doubtful to justify its use.

Melissodes trinodis, n. sp.

Melissodes Pennsylvanica, Robertson, Trans. Acad. Sci., St. Louis, 7: 355, ♀ ♂, 1897.

Besides the characters mentioned in the place cited, which distinguish this species from *M. agilis*, Cr., the maxillary palpi may be mentioned. Eighty-two per cent. of my specimens have the maxillary palpi three-jointed, while in the others the fourth joint is very minute. On the other hand, eighty-four per cent. of my specimens of *M. agilis* have the maxillary palpi four-jointed.

This species has been identified as *M. dentiventris*, Sm., and I have called it *M. Pennsylvanica*. Cresson thought his *M. aurigenia* might be the same as *M. Pennsylvanica*, Lep., which is quite as likely.

Epeolus, Latr.

The maxillary palpi are two-jointed, but with only one free joint, so that it appears one-jointed. To this belong *E. bifasciatus*, Cr.; *zonatus*, Sm.; *compactus*, Cr.; *pusillus*, Cr.; *interruptus*, Rob., and the following. It is my opinion that these insects are inquilines of *Colletes*, as in the case of the European *E. variegata*.

Epeolus lectoides, n. sp.

♀.—Closely resembles *E. lectus*, Cr., and may be the same, but it is smaller, the mandibles, tubercles and tips of scutellar spines, ferruginous; tibial spurs ferruginous, not black; abdomen not strongly punctured, apex of segment 5 with a subtriangular, silvery cinereous patch; last ventral segment black. Length, 9 mm.

Carlinville, Illinois; 1 ♀ specimen.

Triepeolus, n. g.

The maxillary palpi three-jointed, with two evident free joints. To this belong *E. concavus*, Cr. (type); *remigatus*, F.; *nevadensis*, Cr.; *lunatus*, Say; *donatus*, Sm.; *Cressonii*, Rob.; *helianthi*, Rob.; *pectoralis*, Rob. I think that these insects are inquilines of Melissodinæ, as Mr. Ashmead has already observed in the case of *E. donatus* and *Eutechnia taurea*.

Chelostomoides, n. g.

This is proposed as a new genus for the reception of *Megachile rufimanus*, Rob. It has the general characters of *Megachile*, apical joint of maxillary palpi quite long, hairy; in female the clypeal region is excavated, the mandibles long, narrow, tridentate.

ACRONYCTA AND TYPES.

BY JOHN B. SMITH, SC. D., RUTGERS COLLEGE, NEW BRUNSWICK, N. J.

In his note on p. 191, Dr. Dyar raises an interesting question, concerning which I would like a general expression of opinion for my own guidance.

Among the material received for study by M. Guenée from the British Museum, perhaps also from other sources, was a considerable number of specimens and drawings collected, bred or drawn by John Abbott, of Georgia.

Not all of the Abbott drawings went to the British Museum, for I saw some in Paris ten years ago, and not all the Abbott drawings have been identified, for I saw in the British Museum many pictures representing insects that have not been taken since, so far as I know, while I identified a few recently described, among these century-old drawings.

It was Abbott's practice to draw and paint the species bred by him, so as to show the stages and the food-plant on one card; but he also made separate drawings of a great many specimens concerning whose early stages he knew nothing.

The originals of his drawings are not always represented by existing specimens. I do not know whether there ever was a definite association between an individual received in Europe and any one drawing.

At all events, Guenée received specimens and drawings, and he made very free use of the drawings, especially in his descriptions of early stages. He always cites such cases as "decrit sur un dessin par Abbott." He does not always say that the adult described by him also came from Abbott or what evidence he had that larva and adult were correctly associated.

In some cases he had no adults at all, and his descriptions are avowedly from the pictures only. Some of these pictures I have failed to find, but they may be still in existence.

Question 1.—What standing has a specific name avowedly based on a drawing made by another, the original of which the describer has never seen and which may or may not be then in existence?

My own strong impression was, that as such descriptions never had a type—that is, were not made from an actual specimen—they should be ignored. Yet, my practice has not been in accordance with this, and there is now at least one species of North American Noctuids listed which is utterly unknown in nature to any living entomologist. The

description of the adult is not bad, and the description of the larva is so good as to make it certain that if it is ever found on the given food-plant, its identification will be reasonably satisfactory.

Several other species have been so identified, and the names are in common use.

Concerning the species of *Acronycta*, it is certain that Guenée has mixed things, and he may have done so in two or three different ways. If the drawings of the adult and larva were not on the same sheet, he may have changed the association, or it may have been changed before it got into his hands. If there was an adult from Abbott, it may not have been the specimen actually bred, but one associated with it as a form or variety. In those early days variation had a wider range, and it is not incredible that "*hamamelis*" and "*afflicta*" might have been considered the same, specifically. Finally—and this I consider the most probable—Guenée actually described his species from Abbott's drawings, but incorrectly identified the examples before him with the drawing from which he had just made his description. He does not say this, however, but alleges specimens in existence.

Question 2.—Under the circumstances, shall the specimens referred to by Guenée and labeled by him be considered as the types, or shall the description of the larva determine the species intended?

Personally, I have decided to accept the labeled adult as representing the species, though I have no doubt that the association of adult and larva was due to a mix-up, and was an error. The adult was first described; the error is in applying the larval description.

Finally, it is, of course, a serious deprivation to be without a sense of humour, but at the risk of losing all reputation in that direction, I must yet confess an utter inability to see anything funny in Dr. Dyar's original note concerning types. He says the suggestion that the type be now destroyed was a joke. He must know, of course, and therefore my remarks, based on an ignorance of that fact, have lost their point and must be withdrawn. I have no apology to make, for they were fully justified by the literal meaning of the expression criticised by me.

There are altogether too many of my own types in the U. S. National Museum to make the matter anything but a serious one to me, and I have too much other material that I expect to send there to make such remarks a matter of indifference.

I will say, however, in justice to Dr. Dyar and to myself, that I did not really believe that he would actually or in any way neglect or allow harm to come to any of the types or other material in his custody in the U. S. National Museum, or would carry out the natural inference to be drawn from his words. I had too much regard for and confidence in him as a man to believe that; but I did believe that he gave expression to a conviction that the importance of types had been overrated, and that nomenclature would be more stable were there none to be referred to. In which, after all, he may be right.

THE EFFECTS OF SCORPION VENOM.

BY O. W. BARRETT, CLARENDON, VERMONT.

The prevailing belief in regard to scorpion stings seems to be correct: dangerous, but seldom fatal.

However, there are scorpions *and* scorpions. Moreover, much depends upon the season and the part stung. Generally speaking, a sting in the dry season is much worse than one in the rainy season, because the venom becomes concentrated during the period of lesser activity. And for obvious reasons a sting in the head, neck or trunk of body is worse than one in the extremities.

In Mexico the brownish-black species (*Vejovis crassimanus*, Pock.; *V. mexicanus*, Koch, and others) which passes under the name of "alacran prieto" is comparatively harmless; it prefers a moist habitat and is "slow to anger." But the larger brownish yellow species (*Centrurus*, sp.) called "alacran huero" are perhaps the most poisonous Arthropods in the world.

Having experienced the full effect of the dry-season venom of a large "huero" (as well as that of other species), I am able to give evidence that is not of the "hear-say" kind.

The pain from the sting is local and very intense for five to ten minutes, until the life of the adjacent nerves is simply killed out. As the ptomaine-like poison spreads into the tissues the involuntary movements and cramps of affected muscles begin. In about half an hour the nearest lymphatics become very painful, and the action of the poison can be felt throughout the system. Then, especially if the sting be in the upper extremities, a period of sneezing begins, and may last an hour or more. This is a reflex action from the cervical ganglia, the functions of which have been deranged by the rapid absorption of the poison into the

lymphatics. The throat feels as if there were a wad of cotton in the fauces, and thirst is satisfied only with great difficulty, since the act of swallowing is accompanied with pain and a "scary," prickling sensation in the pharynx.

After two or three hours the acute pain subsides gradually, but the intense soreness of the flesh near the part stung and the more or less complete paralysis of the muscles and throat continues, and may last for days. Strong heart action is needed to carry the victim past the sixth hour if the sting be a bad one. Death among children and weak persons results apparently from paralysis of the thoracic muscles. Artificial respiration and heart stimulants may be necessary at the crisis.

The secondary symptoms are quite unpleasant, if not dangerous. The membranes of the pharynx become deeply affected, and seem to crack open and slough off, with the result that small ulcers and pus patches appear on the second or third day, and may give trouble for a week. Fever develops within twelve to twenty-four hours, and lasts several days, according to conditions. It is the type of fever which usually follows any great lymphatic disturbance, but it is likely to arouse any latent malaria which the system may contain.

Death from scorpion stings is common among children under six years of age in the Mexican States of Durango and Guerrero. On account of the very many fatal cases in the City of Durango, the authorities have placed a bounty on the tails [sic] of scorpions killed therein.

The whip scorpion (*Mastigoproctus giganteus*), or "vinaigrillo" [so called from its strong odour of vinegar], lives under stones and in loose soil, and is nocturnal in habit. The sting is a straight spine situated near the base of each "jaw," and thus the victim is very likely to get *two* doses at once of a venom which is said to be more powerful than that of the true scorpion. At Cuernavaca I was told of a field labourer who was found dead, but *sitting bolt upright*, so great had been the nervous shock and muscular cramping from a "vinaigrillo" sting.

Wherefore, if might be right, the scorpion is "O K."

It is with deep regret that we announce the death of our esteemed friend, Miss Eleanor A. Ormerod, which took place at her residence, St. Albans, England, on Friday, July 19th. Owing to her advancing years and failing health, she had recently given up her work in economic entomology. We hope on a future occasion to give some account of her life and the practical and scientific work that she accomplished.

A NEW XIPHIDIUM FROM FLORIDA.

BY A. P. MORSE, WELLESLEY, MASS.

Xiphidium gracillimum, sp. nov.—Very slender. Brown above, face and sides greenish, wing veins purple; a conspicuous dark brown mid-dorsal stripe on the head and pronotum, bordered by broad pale bands, sometimes with dusky or purplish markings on the cheeks, sides of pronotum and middle of face. Antennæ brown, extremely long and slender. Eyes very prominent, in side view circular in outline. Fastigium of the vertex ascending, strongly advanced (about the length of the eye seen from above), very narrow (about one-fourth the distance between the eyes), its sides parallel or slightly convergent. Lateral lobes of the pronotum usually triangular in outline by the exceptional reduction of the anterior ventral angle and the straightening of the posterior margin, which forms a line with the hind margin of the posterior process, the humeral sinus distinct but shallow.

Anterior tibiæ with 5 or 6 pairs of spines. Hind femora slender, unspined below, the genicular lobes spined. Sub-genital plate of male truncate; cerci slender, the internal tooth broad at base, slender and acuminate at tip, the apical portion of the cercus elongate, two or two and a half times as long as wide, with the distal half strongly depressed and tapering to a narrow, rounded point, its sides a little sinuous, sub-parallel. Ovipositor of female straight, about two-thirds as long as the hind femora, and barely passing their tips, slightly widened in the middle portion, tapering evenly to an acute point, with the ventral margin a little more convex than the dorsal.

Antenna: ♂, 40–58; ♀, –. Body: ♂, 12–14; ♀, 15. Post. fem.: ♂, 10.5–12; ♀, 13. Teg.: ♂, 14.5–17; ♀, 18.5. Ovip.: 8. Cerci of ♂, 1.5. Total (vertex to tip of wings): ♂, 21.5–25; ♀, 27 mm.

One ♂, April 4, Capron, Fla. Four ♂, one ♀, Biscayne Bay, Fla., Mrs. A. T. Slosson. All from the collection of Mr. S. H. Scudder.

MONTREAL BRANCH, Entomological Society of Ontario. — At the recent annual meeting the following have been elected officers for the ensuing year:

President—G. Chagnon.
Vice-President—C. Stevenson.
Librarian and Curator—A. E. Norris.
Treasurer and Secretary—George A. Moore, 24 Lorne Ave., Montreal.
Council—Henry H. Lyman, A. F. Winn, Dwight Brainerd.

PYRAMEIS CARDUI.

SIR,—Never since I first came to this country in 1893 have I seen any species of butterfly in such abundance as *Pyrameis cardui* is at the present time. During 1893, 1894 and 1895 I don't think I saw a single specimen, though these years seemed particularly favourable to most species. For the past year or two it has been rather common, and I have frequently found the larva on thistle during June. Locally-bred specimens were rather more common than usual last fall, and the same brood (presumably) appeared here with early spring. On May 12th I remarked upon their scarcity, and supposed they had died off, but for the last week they have been getting gradually more numerous, and to-day their numbers appear to have suddenly doubled, if not trebled. I believe I could net a thousand in a day without much difficulty. They do not seem to be travelling in any particular direction, but are evidently a "flight," probably from the South. I have watched the ♀ ♀ settling on a variety of seedling plants, presumably ovipositing, and in one instance found an egg on sage, and apparently no thistles near.

May 25, 1901. F. H. WOLLEY DOD, Calgary, Alberta.

BOOK NOTICES.

MONOGRAPH OF THE SESIIDÆ OF AMERICA, North of Mexico.—By William Beutenmüller. Memoirs of the American Museum of Natural History, New York. Vol. I., Part vi., pp. 215–352. March, 1901. (Price, $5.)

In this sumptuous quarto the author has brought together in complete form the results of his studies of the Clear-winged Moths of North America. In arrangement, style and completeness, the work leaves nothing to be desired. The family is divided into 17 genera, each of which is fully characterized and illustrated by a drawing showing the head, hind leg, venation, and in some cases the anal appendages, of a typical species. With each species is given a very full bibliography as well as descriptions of both sexes and the larva, when known, followed by general notes mentioning resemblances to other species, particulars regarding habits, food-plants, distribution, etc. There are also synopses of genera and species, larval food-habits and of the described larvæ, rendering the work easily available for reference and the identification of species. The work

concludes with an amazing bibliography which fills thirty-six pages and includes 542 titles. This by itself would show the industry and thoroughness of the author and the pains he has taken to render his monograph as perfect and complete as possible. Besides the four and twenty carefully-drawn wood-cuts already referred to, the work is illustrated with eight splendid coloured lithographic plates, on five of which are depicted about 130 figures of the perfect moths, and on the remaining three, specimens of the destructive work of the larvæ in the trunks, limbs and roots of trees and other plants. We heartily congratulate the author on the successful completion of this grand work, and hope that he may be able from time to time to present to the scientific world similar volumes dealing with other groups and families of moths, many of which sorely need the careful revision of a competent monographer. C. J. S. B.

THE INSECT BOOK: A popular account of the Bees, Wasps, Ants, Grasshoppers, Flies and other North American Insects, exclusive of the Butterflies, Moths and Beetles, with full life-histories, tables and bibliographies.—By Leland O. Howard, Ph. D. New York: Doubleday, Page & Co., 34 Union Square. One Vol., small 4to., pp. xxvii. + 429. (Price, $3 net.)

Only last month we noticed Dr. Howard's book on Mosquitoes, and now we have before us a larger and more important work by the same author. It forms one of the series of "Nature Study" books, and is consequently uniform in size and style with Dr. Holland's "The Butterfly Book." The author describes in the title the scope and intention of the work. He does not profess to cover the whole insect world, as Dr. Holland is preparing to deal with the Moths as he has already done with the Butterflies, and Dr. Howard looks to someone else to undertake a popular work on the extensive order of Beetles.

As stated at the outset, the book is meant to be "popular," and therefore does not attempt the impossible task of describing all the insects belonging to the various orders treated of; at the same time, it does give full and interesting accounts of a very large number of species, and relates in an easy and agreeable manner all that the ordinary enquirer will wish to know. Any observant person who picks up an insect that he has not seen before, and wonders what it is and how it lives, will find an answer to his questions here. In most cases he will find an accurate picture of the specimen he is examining, and with very little trouble he will learn all he

wants to know. It is a book that will charm the young people, who are usually such keen-eyed naturalists; it will delight the collector of insects who is beginning the hard study of entomology; and it will be found of daily use by those who apply themselves to the pursuit of the economic side of the science, and who therefore require to know something about all sorts and conditions of insect life. We bespeak for it a wide circulation, and we hope that it will lead many a student and collector to devote himself to the less popular orders of insects, now that his way is made so much easier and he has such an effective help for the identification and classification of his specimens.

The volume is illustrated with 48 plates from photographs of the insects themselves. Twelve of these are coloured, and they are all so clear and so beautifully printed that they can be examined with a magnifying glass in order to observe the details. There are also 264 illustrations in the text, some, of course, familiar, but many new, and all well and carefully drawn. We are especially pleased to notice that the figures on the plates are clearly numbered in regular order, so that there is no need of hunting over the page to find a number wanted, and the list of names faces the picture and saves the necessity of turning over a page to discover the titles of the insects depicted.

C. J. S. B.

NATURE BIOGRAPHIES: The lives of some everyday Butterflies, Moths, Grasshoppers and Flies.—By Clarence Moores Weed, D. Sc. New York: Doubleday, Page & Co. One Vol., pp. 164. (Price, $1.50 net.)

We are glad that Dr. Weed has brought together in book form this series of studies of insect life and has illustrated them so fully and so beautifully with his own exquisite photographs. Some of them we read originally in the pages of newspapers, where they could not be illustrated, but they were nevertheless full of charm and interest. Now that they are published together, and have 150 of the most clear and perfect photographic illustrations that we have ever seen to illuminate them, we are sure that nature-lovers will read them with supreme delight. There are fourteen of these studies—too many to enumerate here, but we may mention particularly those entitled: The Making of a Butterfly, The American Tent-Caterpillar, The Camera and the Entomologist, and

Insects in Winter. Not that these are more noteworthy than the rest, but they will serve to give an indication of the contents of the work.

Dr. Weed's "Stories of Insect Life" have been much appreciated, and we are sure that his "Nature Biographies" will be still more enjoyed, and will lead many, old as well as young, to observe for themselves some of the wonders of the insect world—some of the marvels that every day surround us. C. J. S. B.

Mr. P. Wytsman (108 Boulevard du Nord, Brussels, Belgium) has issued the prospectus of a proposed elaborate and important work, viz., "Genera Insectorum" of the world. It is to be issued, provided one hundred subscribers can be secured, in quarto parts, each containing about 72 pages of text, and 7 plain or coloured plates. The price of each part will be five dollars, and it is expected that 75 parts will be required to complete the work. It is hoped that well-endowed libraries, both in Europe and America, will render the publication practicable; it is far beyond the means of all but very few individuals.

American Association for the Advancement of Science.—The annual meeting will be held at Denver, Colorado, August 24th to 31st, where it is expected that there will be a large attendance of members from all parts of the continent.

The thirteenth annual meeting of the Association of Economic Entomologists will be held at the same place, beginning at 10 a.m. on Friday, August 23rd.

The editor desires to thank some unknown correspondents for sending him (1) a pair of *Attacus promethea* and cocoon, and (2) a specimen of the rare Sphinx moth, *Triptogon modesta*. He would remind correspondents that it is in all cases desirable to place upon the outside of a package the name and address of the sender, as postmarks are frequently illegible, and it is not always possible to identify handwriting.

Locusts in France.—An English newspaper correspondent relates that these pests have been damaging vines, clover and oats in several departments. Owing to the invasion of the locusts, the Government has directed a committee of scientific agriculturists to meet at Arles for the purpose of concerting measures to keep off the plague from the infested districts. The place which has most suffered is the marshy and unhealthy district in the Bouches-du-Rhone, known as the Camargue.

Mailed August 3rd, 1901.