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The Canadian Entomologist.

VOL. VIII. LONDON, ONT., SEPTEMBER, 1876. No. 9

FARTHER NOTES UPON ARGYNNIS MYRINA.

BY W. H. EDWARDS, COALBURGH, W. VA.

In Vol. vii, Oct., 1875, I gave some account of my breeding *myrina* from eggs laid in July, 1875. I am able now to supplement this by the history of an earlier brood. My observations were made last year at Hunter, in the Catskill Mountains, and being at the same place in June of the present year, from 17th June to 1st July, I found this species abundant, and from the rubbed appearance of nearly all the individuals taken by me, I inferred that they had emerged at latest early in June. On the 19th I set two females on violet, in a gauze bag. On the 20th there were several eggs laid. The first butterfly from this lot emerged 15th July, but in their early stages these larvæ were not in my keeping, as I mailed them to Coalburgh. Other females gave eggs on 27th June; the larvæ hatched 3rd July. These I kept by me and brought to Coalburgh, following their changes carefully. The 1st moult occurred July 7th, the 2nd July 10th, the 3rd July 12th, the 4th on 15th; chrysalis on 18th; and the butterfly emerged 23rd July; 26 days from the laying of the egg. This is the history of half a dozen out of the fifty odd of the brood. The others were less regular in their changes, and the last two butterflies emerged 31st July, or 33 days from the egg. There were but four moults, and I was in error in stating last year that the species moulted five times. A remarkable proportion of the butterflies were females, at least four out of five. The first eleven which emerged were all females, and so were several of the last.

I turned the butterflies of this brood loose as they appeared, with the exception of three, hoping to naturalize the species here. They scattered up and down the valley at considerable distances as I occasionally discovered, but I rarely saw one within my grounds. On dissecting one of the three reserved, the abdomen was found filled with nearly mature

eggs. All these larvæ of both lots proceeded to chrysalis, none of them becoming lethargic, as do larvæ of many species of butterflies in their summer broods.

Early on 27th of July I turned out 12 *myrina*, which had emerged from chrysalis since the previous evening, and about nine o'clock I observed a pair in copulation in the grass near my house. They were perfectly quiet and I was able to examine the female carefully to see if there was any abrasion of scales on thorax above, or on the wings. She was perfect and I have no doubt was one of those turned loose that morning. Passing along an hour later, and seeing this pair still in the same spot, I placed the inner edge of my net gently by the female, and she immediately climbed up, dragging the male after her. From the net they were easily transferred to a box and left in quiet. At 7 p. m. they had not separated. By 6 next morning they had, and I at once set the female on a plant of violet, under a bag. Within an hour several eggs were laid on the leaves, and within 48 hours many more had been laid on the leaves and the bag, when I let the insect fly. I counted 93 eggs in all. I had noticed that the freshest possible females of *tharos* and of *nycteis* lay eggs readily on being shut up with their food plants, and the same thing with *Papilio ajax*, but hardly supposed the whole process was quite so rapid as in the present case. These eggs gave larvæ 4th and 5th of August, and the butterflies from them will again lay the eggs for the hybernating larvæ which will go to make the June brood of next year. Of this last brood of the year I as yet know nothing from observation. Whether the larvæ hybernate when half grown, as do the larvæ of many *Melitæas*, or as soon as hatched from the egg, as do the larvæ of *cybele* and other species of *Argynnis*, remains to be discovered.

In 1875, the eggs laid between 20th and 25th July produced butterflies by 3rd September. The eggs laid by the female 28th July, 1876, produces a corresponding brood with those of July, 1875, just mentioned. And this brood is the aestival of Scudder. But it should be called the autumnal, and the mid-brood, the butterflies of which have emerged between 15th and 31st July, as stated, the aestival, the early brood from hybernating larvæ being the vernal.

Description of Preparatory Stages of A. Myrina:

EGG—conoidal, slightly rounded at base, truncated and rounded at summit; marked by 14 (or about) thin vertical ridges, which are somewhat wavy, and mostly extend from base to summit, not quite meeting

about the depressed micropyle; some of these ridges anastomose near the top, others lower, on the sides; the spaces between the ridges roundly excavated and crossed by fine striæ.

YOUNG LARVA—Length, .08 inch; cylindrical, slightly tapering posteriorly, deeply creased at the junction of the segments; color pale green, but brown patches nearly cover segments 5, 7, 9 and 11; furnished with rows of tubercles from which spring black hairs, which are long and curved forwards; head obovate, a little broader than 2nd segment, pilose, brownish black.

After 1st moult, length .2 inch; grayish mottled with brown; armed with 6 rows of short, stout, black spines, which have short black bristles; feet and legs blackish; head cordate, smaller than second segment, pilose, black.

After 2nd moult, length .3 inch; cinereous mottled with black, the spines as before; at the base and on outer side of the spines of the 1st lateral row, on the 3rd, 5th, 7th, 9th and 11th segments, a yellow patch; head as before.

After 3rd moult, length $\frac{4}{10}$ inch; cinereous brown, mottled with darker in small patches; a pale black dorsal line, enlarged on each segment into a rounded spot; the yellow patches as before, but rather orange than yellow; spines longer, those of 2nd segment decidedly so, being between two and three times as long as any others and projected forward over the head; head as before, bronze color.

After FOURTH MOULT and MATURE—Length 1 inch; color cinereous brown, mottled with velvet black, there being a large patch at the base of each spine of the two dorsal rows, and which is edged with a pale color; spines long, tapering, irregular, honey-yellow, often orange at base, with black bristles; those on 2nd segment about 3½ times as long as any others and porrected; legs and feet black; head cordate, with rounded vertices, with black bristles over surface; color bronze.

CHRYSALIS—Length .6 inch; compressed laterally throughout; the wing cases very prominent and flaring at base; the head case not much flattened, its vertices prominent, conical, the intervening space being roundly excavated; the mesonotum prominent, sharply compressed, followed by a deep excavation; on the dorsum two rows of sharp, conical tubercles, those on 7th segment much larger than the others, and all anterior to these two gilded; the two tubercles at head case also large, umber colored; color light brown, the wing cases streaked with darker; or the whole surface is a dark brown.

A SYNONYM OF ANISOPTERYX POMETARIA.

BY B. PICKMAN MANN, CAMBRIDGE, MASS.

In Dr. Packard's Monograph of the Phalænidæ, just issued, the name *Anisopteryx autumnata* is substituted for that of *A. pometaria*, on the ground that the name *A. pometaria* is a synonym of *A. vernata*, and I am quoted as subscribing to the latter proposition. I acknowledge that in Proc. Bost. Soc. Nat. Hist., xv, 382, I applied the name *A. pometaria* to that species which was subsequently shown to be *A. vernata*, but it was at the same time that I applied the name *A. vernata* to that species which I should now call *A. pometaria*, and which Dr. Packard calls *A. autumnata;* I therefore have maintained throughout that the names belong to entirely different species. I have endeavored, in Proc. Bost. Soc. Nat. Hist., xvi, 207, and verbally, to show that these names are not synonyms, and have succeeded so far that after Mr. Morrison had re-named *pometaria*, and was ready to publish his name, he withdrew it; after Mr. Riley had published a statement that *pometaria* Harris was not *pometaria* Mann,* he published another,† saying that it was. I had made the same mistake previously, which I now attribute to Dr. Packard, but I had not expected to find it made again after it had been corrected so many times.

Quite aside from the question of fact whether Harris did describe the autumn species as *pometaria* or not, there could be no question that I believed it, and that my writings should be so interpreted. I was surprised, therefore, to find my description of the monstrous female of "*A. pometaria* Harr., descr.," quoted under *A. vernata*, especially with a foot note stating explicitly that *vernata* was not intended.

My article in Proc. Bost. Soc. Nat. Hist., xvi, 163, which treats entirely of *pometaria* according to my understanding, is cited by Dr. Packard under both species.

I would therefore correct Dr. Packard's Monograph, p. 402, by erasing lines 13 to 16, 20, 21, 25, and putting *pometaria* in place of *autumnata* wherever it occurs in connection with these species. Moreover, the monstrous female of *pometaria* had four aborted wings, not two, as Dr. Packard states.

* Sixth Mo. Rep., p. 29.

† Seventh Mo. Rep., p. 80.

NOTES ON CERTAIN VARIATIONS OF SAMIA CECROPIA.

BY C. E. WORTHINGTON, CHICAGO, ILL.

The deceptive effect of the variable border on the apparent shape of the primary wings in *Samia cecropia* appears to have escaped general notice; indeed, in contrasting this species with *S. promethea*, the latter is universally mentioned as having the primaries much broader in proportion to the length. This is perhaps true of the average *cecropia*, but in numerous individuals I have found primaries even broader in proportion than in *S. promethea* ♀, and narrower than in *promethea* ♂, both by traced outlines and shadow projections, in several instances those with a wide light border appearing extremely narrow but proving to be even broader than the average.

This effect also extends to the so-called sexual difference in the wings, the margin usually being broader and lighter and the apical patch more brilliant in the males.

A careful comparison of a considerable number of specimens shows that no reliance can be placed on the breadth as a sexual character, and that even the antennæ (especially of those fed on *Negundo fraxifolium*) sometimes approach so nearly as to be barely distinguishable.

There are strongly marked variations in the apical patch outside of the W line, generally indicated by a purplish reflection, but sometimes brighter; occasionally above, and more frequently below, being a dull red or a brilliant crimson; more rarely over-running the line inwardly; the four black spots immediately inside of the zigzag line are often reduced to two, those nearest the apex being obsolete.

The discal spots vary greatly in color; normally dull red with a white centre, they are sometimes entirely red with no trace of white; in others they will be found almost white with merely a shade of red or pale brown about the margin, and at the sharp end, where color is always present, their shape varies from that of a pear to a long, curved (crescent-shaped) line or a short straight mark, rarely so small as to be almost obsolete.

Usually at the base of the primaries is a dull red spot, surrounded by a black and white line, and at the base of secondaries a prominent white patch extending along the upper margin; in the first either black or white may be wanting, while the latter, so far as regards the base of the wing, is

occasionally either entirely wanting or existing as a continuation of the margin of the basal patch on primaries; on the upper margin the shade appears to be constant, although sometimes obscured so as to appear a dull gray.

Similar variations are observable in the abdomen, vermillion and white, red, black and white, and rarely dark brown and white (the color of the wings); and in the wings, which may be dark brown sprinkled slightly with gray, and opaque or dull black, and semi-transparent; one specimen in my collection, with the primaries of the first and secondaries of the latter color, presented a curious appearance; this was one of two taken from *Ampelopsis quinquefolia*, the other having both wings thin and silky, and nearly as black as *Papilio asterias*. The palpi usually agree with the body, as do the legs; in this case both are dark red.

Notwithstanding these differences and the wide range in size (4⅜ to 7¼ inches being the extremes of perfect moths in my possession), *cecropia* agrees so well in general appearance that, aside from the black variety mentioned above, a distinctly marked variety is a rarity, the nearest approach I have seen being in four ♂ moths from cocoons found on rose bushes, in which nearly all the space on the primaries between the basal spot and the border, is finely flushed with red, which grows fainter outwardly, the same red flush being continued down the abdominal margin of secondaries, giving the entire moth a reddish hue; the occurrence of red on the primaries is not extremely rare, but I have never seen others than these with red on the secondaries, except in the border.

SYNONYMY OF THE COLEOPTERA OF THE FAUNA BOREALI-AMERICANA, KIRBY.

BY GEO. H. HORN, M. D., PHILADELPHIA, PA.

(Continued).

145. Oiceoptoma americanum Linn. has been known by the ante-Linnean name of *peltata*.

146. " TERMINATUM Kby. is a variety of the preceding.

147. " AFFINE Kby., variety of 145.

148. " CANADENSE Kby., variety of 145.

149. Peltis ferruginea Linn.
150. Nitidula obscura Fab.
151. " OSSIUM Kby., same as 150.
152. " discoidea Fab. Subsequently described as OMOSITA *inversa* Lec., from California.
153. Ips DEJEANII Kby. is VITTATUS Say.
154. Choleva SPENCIANA Kby. is a CATOPS.
155. SCAPHIUM CASTANIPES Kby. is very rare. Occurs also in the White Mts., N. H.
156. Leiodes PUNCTATOSTRIATUS Kby. is *Anisotoma indistincta* Lec.
157. Corticaria DENTICULATA Kby. The name is preoccupied and was changed to *Kirbyi* Lec. It is probably DELETUS Mann.
158. Atomaria atra Steph. (Kby.) Incorrectly determined by Kirby and is probably a dark variety of LAETULA Lec.
159. Cryptophagus HUMERALIS Kby. is a TRIPHYLLUS, and is *ruficornis* Lec.
160. " CONCOLOR Kby. A variety of the preceding.
161. Attagenus CYLINDRICUS Kby. Belongs to a new genus, PERIMEGATOMA Horn. Trans. Am. Ent. Soc., 1875, p. 135.
162. " pellio Linn.
163. Dermestes lardarius Linn.
164. " DISSECTOR Kby. is NUBILUS Say.
165. Byrrhus PICIPES Kby. Name is preoccupied and is now KIRBYI Lec.
166. " CONCOLOR Kby. Now known to us. Is not a variety of *Cytilus varius* Fab., but appears to be a small CYCLOPHORUS Kby.
167. " CYCLOPHORUS Kby.
168. " varius Fab. This is an erroneous determination. The species is CYTILUS TRIVITTATUS Mels.
169. Hydrobius fuscipes Linn.
170. " marginellus Fab. Probably an erroneous determination and may be PHILHYDRUS FIMBRIATUS Mels.
171. " melanocephalus Ol. An erroneous determination and is PHILHYDRUS PERPLEXUS Lec. I have specimens from Mr. Pettit which correspond with Kirby's description of both the above species.
172. Hister PAYKULII Kby. is DEPURATOR Say.

173. Hister HARRISII Kby.
174. Onthophagus latebrosus Fab. is HECATE Panz.
175. " SCABRICOLLIS Kby. is JANUS Panz.
176. Trox arenarius Fab. (Kby.). This may be AEQUALIS Say.
177. Pelidnota punctata Linn.
178. Camptorhina ATRACAPILLA Kby. is SERICA VESPERTINA Schonh.
179. Diplotaxis TRISTIS Kby.
180. Rhizotrogus fervens Gyll. (Kby.) is LACHNOSTERNA FUSCA Fröhl.
181. " DRAKII Kby. A race of 180.
182. Dichelonycha BACKII Kby.
183. " VIRESCENS Kby. is ELONGATULA Schonh. Variety C is SUBVITTATA Lec.
184. " TESTACEA Kby.
185. Cetonia fulgida Fab. is EURYOMIA FULG.
186. Trichius BIGSBII Kby. is GNORIMUS MACULOSUS Kn.
187. " ASSIMILIS Kby. is AFFINIS Gory.
188. " ROTUNDICOLLIS Kby. is PIGER Fab.
189. " VIRIDANS Kby. is AFFINIS Gory.
190. Gymnodus FOVEATUS Kby. ♂
191. " RUGOSUS Kby. ♀ is OSMODERMA SCABRA Beauv.
192. Platycerus piceus Weber (Kby.) is erroneously determined and is DEPRESSUS Lec.
193. Passalus interruptus Linn. (Kby.) is CORNUTUS Fab.
194. Campylus DENTICORNIS Kby.
195. Pedetes BRIGHTWELLI Kby. is an ATHOUS.
196. " (Asaphes) RUFICORNIS Kby. is ASAPHES MEMNONIUS Hbst.
197. Perimecus fulvipes Hbst. (Kby.) is MELANOTUS CASTANIPES Payk.
198. " communis Gyll. is also a MELANOTUS.
199. " SIMILIS Kby. A MELANOTUS, but the synonymy is unknown.
200. Ctenicerus KENDALLI Kby. is CORYMBITES VIRENS Schr.
201. Elater AERIPENNIS Kby. is a CORYMBITES.
202. Buprestis RUSTICORUM Kby. is a variety of MACULIVENTRIS Say.
203. " PAGANORUM Kby. is 202.
204. " NUTTALLI Kby.
205. " lineata Fab.
206. " fasciata Fab.
207. " divaricata Say is a DICERCA.
208. " TENEBROSA Kby. is a DICERCA.

209. Buprestis TENEBRICA Kby. may be the same as DICERCA *lugubris* Lec.
210. " TRINERVIA Kby. is a CHRYSOBOTHRIS.
211. " PROXIMA Kby. is CHRYSOBOTHRIS SCABRIPENNIS Lap. et Gory.
212. " DRUMMONDII Kby. is a MELANOPHILA.
213. " umbellatarum Fab. (Kby.) is erroneously determined and is ANTHAXIA INORNATA Rand.
214. " appendiculata Fab. (Kby.) is erroneously determined and is MELANOPHILA LONGIPES Say.
215. Agrilus BIVITTATUS Kby. is BILINEATUS Weber.
216. Trachys AURULENTA Kby. is BRACHYS OVATA Weber.
217. " ACUDUCTA Kby. Mr. E. Saunders (Trans. Ent. Soc., London, 1868, p. 60) says this is a CISSEIS and from Australia.
218. Pytho NIGER Kby.
219. " AMERICANA Kby.
220. Trogosita AMERICANA Kby. is probably *corticalis* Mels.
221. Monochamus RESUTOR Kby. is SCUTELLATUS Say.
222. " CONFUSOR Kby.
223. " MARMORATOR Kby. is probably that variety of SCUTELLATUS Say, called *Oregonensis* Lec.
224. Acanthocinus (Graphisurus) PUSILLUS Kby. is now called GRAPHISURUS PUSILLUS Kby.
225. Callidium AGRESTE Kby. is a CRIOCEPHALUS.
226. " striatum Linn. (Kby.) is ASEMUM MOESTUM Hald.
227. " COLLARE Kby. is now GONOCALLUS COLLARIS.
228. " PROTEUS Kby. is now MERIUM PROTEUS.
229. " SIMILE Kby. is 228.
230. " DIMIDIATUM Kby. is a PHYMATODES.
231. " (Tetropium) CINNAMOPTERUM Kby. is known as a TETROPIUM.
232. Clytus UNDATUS Kby. is XYLOTRECHUS UNDULATUS Say.
233. " LUNULATUS Kby. is the same.
234. " FUSCUS Kby. A variety of the same.
235. " LONGIPES Kby. is a NEOCLYTUS.
236. " MURICATULUS Kby. is a NEOCLYTUS and has since been described as *leucozonus* Lap.
237. Hargium lineatum Ol. is a RHAGIUM.

238. Pachyta LITURATA Kby.
239. Leptura CHRYSOCOMA Kby.
240. " SUBPUBESCENS Kby. is PROXIMA Say.
241. " ERYTHROPTERA Kby. Variety of 242.
242. " canadensis Ol.
243. " TENUIOR Kby. is TYPOCERUS VELUTINUS Ol.
244. " BREVIS Kby. is L. VAGANS Ol.
245. " sexmaculata Linn.
246. " SEMIVITTATA Kby. is L. VITTATA Ol.
247. " GULOSA Kby. is also L. VITTATA Ol.
248. " SUBARGENTATA Kby.
249. " SIMILIS Kby. is *rufibasis* Lec.
250. " LONGICORNIS Kby. is ACMAEOPS *marginalis* Lec.
251. " PROTEUS Kby. is an ACMAEOPS.
252. " LONGICEPS Kby. is ACMAEOPS PRATENSIS Laich.
253. Anobium FOVEATUM Kby. is a HADROBREGMUS.
254. Cis micans Fab. (Kby.) Unknown; seems to be CHEVROLATII Mell.
255. Tomicus pini Say.
256. Apate BIVITTATA Kby. is a XYLOTERES.
257. " RUFITARSIS Kby. is a XYLOTERES unknown to us.
258. " (Lepisomus) RUFIPENNIS Kby. is a POLYGRAPHUS.
259. " (Lepisomus) NIGRICEPS Kby. Probably the same as 258.
260. " (Lepisomus) BREVICORNIS Kby. Unknown.
261. Hylurgus RUFIPENNIS Kby. is a DENDROCTONUS.
262. Calandra pertinax Ol. is a SPHENOPHORUS.
263. Hylobius CONFUSUS Kby.
264. Lepyrus colon Linn.
265. " GEMELLUS Kby.
266. Cleonis VITTATUS Kby. is CLEONUS.
267. MACROPS MACULICOLLIS Kby.
268. " VITTICOLLIS Kby.
269. LEPIDOPHORUS LINEATICOLLIS Kby.
270. Trachyphloeus MELANOTHRIX Kby. Constitutes, with a California species, a new genus, GEODERCES Horn.
271. Pachyrhynchus SCHONHERRI Kby. is ITHYCERUS NOVEBORACENSIS Forst.
272. Attelabus SIMILIS Kby. is ANALIS Illig.
273. " bipustulatus Fabr.

TINEINA.

BY V. T. CHAMBERS, COVINGTON, KY.

ASYCHNA.

A. ? pulvella. N. sp.

This species is placed in this genus provisionally. It is certainly not a true *Asychna*. Indeed, almost the only character common to all the species which Mr. Stainton places in this genus is their ornamentation, and in this respect *Laverna ? gleditschiæella* is an *Asychna*, whilst this species is far from it. This species *(pulvella)* differs widely enough from all the others in ornamentation; but structurally it approaches this genus so nearly that rather than construct a new one for it, I place it here provisionally. Taking for comparison Mr. Stainton's figures in Ins. Brit., v. 3, the wings of *pulvella* resemble those of *A. æratella* more nearly than any of the other species. They are, however, more narrow and elongate; the dorsal margin of the fore wings is nearly straight, while the costal curves down to it nearly as in *A. modestella* reversed; that is, the costal of *modestella* represents the dorsal of *pulvella*, and the dorsal of *modestella* is a little more curved than the costal of *pulvella*. The neuration is exactly as in *æratella*, except that the cell is unclosed in the fore wings and in the hind wings *pulvella* has one more branch of the median vein (placed between the second and third of *æratella*), and continued through the cell. The palpi are more like those of *A. terminella*. The antennæ are slender, longer than the body, and shorter than the wings. Its attitude in repose resembles that of *Bedellia somnulentella*, to which it bears some resemblance in coloration.

Head, palpi, antennæ, thorax and fore wings whitish, but so densely dusted with ochreous brown as to obscure the ground color; the antennæ are faintly annulate with whitish, with three large white annulations before their tip, which is also white; the second and third of these annulations are intermediate between the first and the tip. The fore wings have a brown streak along the fold and another further back on the disc, and a small white spot at the end of the cell. The ciliae are grey, those of the apex dusted with ochreous brown. Upper surface of the abdomen of the general hue; beneath it is paler and the anal tuft is silvery white. Legs of the general hue, the tarsi annulate with white and the first pair brownish on their anterior surfaces. *Al. ex.* 3/8 inch. Kentucky in June.

ELACHISTA.

E. ? cristatella. N. sp.

This insect, of which I have but a single captured specimen, (in good condition, however,) in its depressed head and its forehead rather acutely angulated, as well as in the size and appearance of the antennae, reminds one strongly of *Acaca ostryæella* Chamb., as it does also in the ornamentation. As, however, *Acaca* is near *Elachista*, and the palpi in this specimen are more elongate and slender than in *Acaca*, and I have not examined the neuration, I place it provisionally in *Elachista*.

Head and face white; the palpi iron gray mixed with white. Antennæ brown. Thorax and wings dark iron gray dusted with white; just before the middle the white dusting forms an indistinct line across the wing, faintly indicating a fascia which is margined on the dorsal edge of the wing by a small raised dark brown tuft. The under surface of the thorax and abdomen and the basal joints of the legs are silvery yellowish, the tibiae and tarsi dark brown on their outer surfaces and annulate at the joints with white, and the anal tuft is silvery. *Al. ex.* scant ¼ inch. Kentucky in June.

COLEOPHORA.

C. nigralineella. N. sp.

Second joint of the palpi with a minute tuft at the apex beneath, and basal joint of the antennae with scales projecting in front.

Palpi (except the whitish inner surface), head, thorax and fore wings ochreous; basal two-thirds of the antennae with alternate annulations of white and brown; the apical third slender and white. Hind wings and upper surface of the abdomen brownish slate color, with two short longitudinal blackish lines on top of each abdominal segment, except the last two, and which are very distinct in fresh specimens, but less so in dry ones; under surface of abdomen and anal tuft yellowish silvery; ciliae of both pairs of wings yellowish ochreous, a little paler than the ground color of the fore wings; anterior surface of the fore legs brownish. *Al. ex.* not quite ½ inch. Kentucky; captured in July, and I have in a single instance bred it from a somewhat pistol-formed case which was found attached to a leaf stem of the Black Walnut (*Juglans nigra*). The case is yellow with pistol *handle* brown, except on its under side, where it is white, and there is a triangular projection on top of the *barrel* near the muzzle, by which it was attached to the stem,

GELECHIA.

G. Clemensella. N. sp.

Second joint of palpi much larger than third, and somewhat brush-like.

Deep roseate with a pale purplish lustre (or perhaps pale ochreous red will be as accurate). The palpi have a dark brown annulus at the base of the third joint and another before its tip; some of the scales are tipped with hoary, and the head, thorax and wings are dusted with dark brown scales, which are aggregated into small specks and spots and are denser in the apical than in the basal half of the wing; the brown spots are more distinct along the costa than elsewhere, and are there equally distinct on the under side; there are three or four small white spots on the disc, and an irregular, not very distinct, white fascia beginning on the dorsal margin near the base, but not extending entirely across the wing. Ciliae of the general hue. *Al. ex.* ¾ inch. Received from Mr. W. H. Stultz, of Easton, Pennsylvania, the former residence of Dr. Clemens, who does not seem to have known the species; at least he has not described it, though it appears to resemble *G. salicifungiella* in some respects.

G. Saundersella. N. sp.

Palpi simple; third joint nearly as long as second, brown; the tip of the second joint, an annulus about the middle of the third and its tip pale creamy yellow. Head creamy yellow dusted with blackish; thorax blackish tipped with pale creamy yellow; fore wings pale creamy yellow densely dusted with blackish scales beneath the fold; a blackish spot on the base of the costal margin, another about the basal fourth on the costal margin, which is not distinctly separated from one placed obliquely behind which touches the fold; another on the costal margin just behind the middle, behind and beneath which is another just above the end of the fold, and the apical part of the wing very densely dusted with blackish; ciliae of the general hue, with a dark brown hinder marginal line (or row of blackish specks) at their base. Hind wings rather deeply emarginate beneath the tip and pale slate color; abdomen pale yellowish tinged with fuscous; anal tuft pale yellowish. Antennæ annulate with pale creamy yellow and blackish. First two pairs of legs dark brown, the tarsi annulate with creamy yellow; hind legs creamy yellow, marked with dark brown or blackish spots. *Al. ex.* a little over ¼ inch. Kentucky in July. I have named this rather pretty little species for the editor of the CANADIAN ENTOMOLOGIST.

ON FOUR NEW CALIFORNIAN HEPIALI.

BY JAMES BEHRENS, SAN FRANCISCO, CAL.

The species described in this paper are from Mendocino. The genus seems to be more numerously represented on the West than on the East Coast of North America. Some of the new forms resemble the European. To none of these species can I refer Dr. Boisduval's descriptions of *hectoides* or *californicus*.

Hepialus sequoiolus, n. s.

Three specimens. Primaries light brown with five darker, black margined, interrupted bands marked on costa by separated spots, the fourth, just before apex, slightly furcate. The terminal or outer band is extended along the veins to the outer margin, interspaceally lunate. From the median fold to internal margin the first band is composed of silvery white united spots, preceding the second band, which is powdered with black and shows inwardly an ochre line. Between the third and fourth bands below vein 5 to internal margin, runs a similar white and narrower band. There is a basal white dash, above which a blackish shading. Hind wings blackish, with fringes and costal margin marked with brown. Beneath the fore wings are marked with pale brown on costa and reflect partially the bands of upper surface. Thorax camel's hair brown, with the abdomen perhaps paler. *Expanse* 37 to 40 mil.

A single specimen differs by its increased size and the absence of the white bands; else, while paler colored, it seems to agree. I am undecided about the value of this form at the present writing.

Hepialus mendocinolus, n. s.

Five specimens. Allied to the preceding and to *ganna* of Europe, but tinged with reddish and more unicolorous and smaller. The darker bands are obsolete in three specimens. In *ganna* the white bands are often connected and the outer one runs from the apex. In this species the white bands are more oblique, parallel, and obtain over the primaries below the cell. A white dash at base connected with the first white band. The brown of the thorax shows a pink tinge and the blackish hind wings are pinkish on the fringes. *Expanse* 32 to 35 mil.

The white bands occupy the same position as in *sequoiolus*, but I do not think it is a form of that species, although eventually it may be found the same.

Hepialus Baroni, n. s.

Four specimens. A distinct species, with concolorous primaries on which the bands are hardly legible. In the best marked specimens they are gray, while the wings are tinged with dull red. The third and fourth bands are fused, and the outer edge of the fourth band is even and marked. At first sight there is little visible except the broader, extra-basal, curved gray band, and the band beyond the cell which I call the fourth. There is a subterminal, narrower, or fifth band. Thorax and hind wings blackish tinged with dull red. *Expanse* 32 to 48 mil.

Named for Mr. Baron, of Mendocino, with whom I have spent some pleasant days in the collection of Lepidoptera. Specimens vary much in size.

Hepialus Lenzi, n. s.

Six specimens. The smallest species and the brightest colored. The ground color is blackish and there is a very bright red tinge on the fringes, costa and the bands. Of these but two are visible, ochre in color, margined with bright red; the outer furcate superiorly, the inner rounded, and limiting outwardly the paler base of the wing. The hairs of the thorax have a bright red tinge; the abdomen is more yellowish brown. The blackish hind wings have yellowish fringes. Beneath the legs are tinged with very bright red, and so also is the costal margin of the wings. *Expanse* 25 to 27 mil.

This pretty species I name after Professor Henry Lenz, Curator of the Lubeck Museum.

In conclusion, I express my obligations to Prof. A. R. Grote, Director of the Museum of the Buffalo Society of Natural Sciences, for an examination of my types and his opinion on the same.

After examining my type of *Saturnia mendocino*, described in the ENTOMOLOGIST, Prof. Grote considers it a true *Saturnia*, and points out that in its yellow hind wings it resembles the European *S. carpini* ♂, while it differs from the European species of the genus by the obsolescence of the lines, the concolorous wings and the reduction of the ocellate marks in size.

MEETINGS OF THE ENTOMOLOGICAL CLUB OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

In accordance with previous announcement, the members of the Entomological Club met on Tuesday, the 22nd of August, at 2 : 30 p. m., in the rooms of the Buffalo Society of Natural Sciences, Dr. LeConte in the chair. The following members were present: Dr. John L. LeConte, Philadelphia, President; S. H. Scudder, Cambridge, Mass., Vice-Pres't; C. V. Riley, St. Louis, Mo., Secretary; J. A. Lintner, Albany, N. Y.; Dr. H. Hagen, Cambridge, Mass.; Dr. John G. Morris, Baltimore, Md.; B. P. Mann, Cambridge, Mass.; W. Saunders, London, Ont.; Rev. C. J. S. Bethune, Port Hope, Ont.; E. B. Reed, London, Ont.; A. R. Grote, M. M. Maycock, Dr. L. F. Harvey, Henry S. Sprague, O. Reinecke, W. W. Stewart, of Buffalo, and others.

PRESIDENT'S ADDRESS.

After calling the meeting to order, the President read the following address:—

In resuming the chair, which by your kind partiality I occupied at the last meeting of the club, permit me, after thanking you for the honor you have done me in thus calling me a second time to this position, to congratulate you on the evidence of increased interest felt in the branch of Zoology to which we give our attention.

This increased interest is shown not only by the larger attendance at the present meeting of Entomologists from distant residences, but by the increase of correspondence between those who collect and study insects. I have received during the year several applications from new correspondents for advice and assistance in the study of Coleoptera; and my colleague, Dr. Horn, informs me that the same is the case with himself. Unfortunately I have been obliged to reply to some of the applicants with a temporary negative, as my time has been almost wholly taken up with efforts to complete my memoir on Rhynchophora, now in course of publication by the American Philosophical Society. This memoir would have been finished some weeks ago, but the exceptional inclemency of the summer heat rendered all work with lenses difficult and uncertain. I think I may promise that the MSS. will be complete in a few weeks. Meanwhile I am glad to say that the arrangement of my cabinet specimens is so far perfected that Dr. Horn or I will be willing to name any sets of

Rhyncophora of the United States or Dominion of Canada, which are sent us, provided that the return of the specimens sent is not required. The subject has been such an extremely troublesome one, and there are still so many uniques in our cabinets, that they need filling up in order to give them that value for future reference which I hope they will possess, and it will also be desirable for the proper recognition of the new genera and species, many of which are very abundant, that specimens should be distributed to foreigners, who have studied this difficult group of objects.

The excellent volume of Dr. A. S. Packard, jr., "Monograph of the Geometrid Moths of the United States," forming Vol. X of the United States Geological Survey of the Territories, requires special mention among the contributions to Entomology since our last meeting. We owe the existence of this volume to the enlightened policy of Dr. F. V. Hayden, Geologist-in-Chief of the Survey, and I hope that a continued appreciation by the National Legislature of the importance of the work done and published by the Survey, will ensure us many future volumes of similar merit.

The ordinary routine work of the description of new genera and species, is going on in the various orders of insects with about the usual degree of rapidity. But from every one comes the same complaint: Too many new forms to be described!

The observations on economic applications of Entomology for the protection of agriculture are also advancing in a most commendable manner, considering that the public and their servants in office still fail to recognize the magnitude of the interests involved.

References to the memoirs contained in the volumes of reports, and to isolated papers in agricultural and other journals, will be found in *Psyche*, a periodical, which, though small, is indispensable to every one occupied in the study of the insects of North America.

I would gladly stop here, but a truthful instinct, a sense of duty to science, and my obligation to you alike forbid silence. I have to speak of a subject of a disagreeable nature.

It is concerning the efforts made by you and other members of the Association at the last meeting at Detroit, to procure the appointment of a Commission for the protection of agriculture against noxious insects; this Commission to be composed of properly informed men of science, and chosen under such circumstances as would prevent the influence of political bias, or personal favoritism. If I do not fatigue your memory too much, you will recollect the memorials that were so extensively signed

in relation to this subject, copies of which memorials are again before you. These memorials were extensively circulated at the West, and were signed by many of the most influential bodies for the promotion and protection of agriculture in that region. During the winter these memorials were sent to Congress, in the expectation that some proper legislation would follow. One of the Senators, in fact, introduced a bill which seems to have been very carefully considered, and indeed bears upon its face some evidence of scientific guidance. This bill provided for the appointment of three Commissioners for five years, the Commissioners to be nominated by the Council of the National Academy of Science to the Secretary of Interior. This bill, having been referred to the Committee on Agriculture, was returned, completely orchidized, in such form as to provide for one Commissioner, to be appointed by the Department of Agriculture, the very enemy and incubus from which the western agriculturist specially desired to be relieved.

The bill in this form passed the Senate, several of the members taking occasion in the discussion which preceded the passage to talk to the demonstration of their own ignorance of the subject. However, this discussion has been already so severely commented upon in several of the newspapers of the Mississippi Valley, that it is quite unnecessary for me to add anything farther, except the hope that the Legislature which choose the successors of those Senators will have men of better education and higher intelligence offered to them as candidates for the position.

I regret to have been obliged to introduce this unpleasant subject, about which I feel a warmth and severity, unsuited to the position in which you have placed me. I must therefore close by begging you, in your respective localities, to continue aiding me in my endeavor to cause the Government authorities to give proper attention to this most important subject.

The minutes of the last meeting held in Detroit were read by the Secretary, C. V. Riley, and approved.

The consideration of reports of committees was postponed, owing to the non-arrival of some of the members.

Mr. Riley made some remarks upon the variation in the venation of the wings of *Anisopteryx pometaria* (or *A. autumnata*), and exhibited mounted preparations of wings of this insect differing greatly from the figures in Dr. Packard's new work.

Mr. Grote considered the variation of neuration in the Geometridæ as of no great value as a specific distinction.

Mr. Riley said that he had scarcely ever raised a large number of forms from the egg without finding that in the imago state there appeared to be more than one so-called species. Whenever he used large quantities of material he found this result. He thought, therefore, that writers when describing species should always state the number of specimens they had before them.

Dr. Hagen then read a valuable paper "On Genera," at the conclusion of which he was warmly applauded. This paper will appear in next issue.

On motion of Mr. Grote, the report of the Committee on Nomenclature was then taken up, when Mr. Riley read a majority report of the Committee.

Mr. Scudder did not approve of the course taken in reference to the rules on nomenclature which had been presented, and thought that members of the committee had exceeded their instructions, and desired that the resolution passed at the last meeting, appointing the committee and defining its duties, be read. He thought that the opinions of leading naturalists on this subject should have been gathered and compared.

The resolution giving instructions to the committee was read as follows: "That the Club appoint a committee of five to prepare and present to the Club at its next annual meeting a compendium of the views of the leading Entomologists of the country upon points which, in their judgement, require elucidation, and also to present a series of resolutions touching such points, in order that intelligent discussion may be had upon them and some general agreement, if possible, arrived at."

Mr. Riley urged as reasons why a majority report had been presented, the difficulty of getting the members of the committee together, and the urgent necessity that some action should be taken in the matter without further delay.

Mr. Saunders supported these views, and urged that the opinions of many of the leading Entomologists on the subject of nomenclature had been given in the pages of the CANADIAN ENTOMOLOGIST during the past year, while others had expressed their views by letter to members of the committee; and seeing that there had been no opportunity for the committee to meet together as a whole, he thought it desirable that these resolutions, which had been endorsed by a majority, should be presented as a guide to the discussions which might take place on the subject.

Mr. Scudder did not think this a proper time or place for the introduction of such rules; he fully agreed, however, that it was very desirable to establish stability in nomenclature.

Mr. Mann regarded Mr. Scudder's remarks as a motion to set aside these rules, and as such was prepared to support it.

Dr. Hagen, in a few words, gave a sketch of the history of nomenclature, showing how tidal waves of new names had been poured from time to time on the Entomological world with the greatest zeal on the part of those who had introduced them; that in many instances these changes were unnecessary and produced confusion instead of establishing order. He thought it highly necessary that some understanding should be arrived at among Entomologists which would lead to greater stability in nomenclature.

Mr. E. B. Reed spoke for those who had comparatively little time to devote to Entomology, and thought that they were a class who should be considered, and that while it was perhaps no great task for those who devoted their whole time to Entomological studies to master the great number of new generic and specific names from time to time introduced, it was imposing a burden on their less fortunate brethren which was grievous to be borne, which was, in fact, more than they could bear, and tended to discourage many and deter others from entering on the study of Entomology. He urged that it was from among the ranks of these beginners that some of the future leaders of Entomological science would be drawn, and it was well to consider what effect these discouraging circumstances would have on the present and future progress of the study.

After some further discussion, the resolutions were referred back to the committee to report on to-morrow. Meanwhile they were ordered to be printed for the members, so that discussion could be had upon them.

EVENING SESSION.

At 7.30 the meeting was again called to order, the President in the chair.

Mr. Riley offered some remarks on a parasite, a mite which attacked the Colorado Potato Beetle. This insect (of which mounted specimens for microscopic examination were submitted) is furnished with a strange and extraordinary development of what he supposed were the maxillæ, by which it was able to attach itself to the Doryphora, and at the same time extract nourishment as well. He thought it was an organ somewhat similar in character to the extensile maxillæ of the larvæ of Dragon Flies.

Mr. Scudder thought that since they appeared to him to be jointed, they must be a palpus of some sort.

Dr. LeConte, after further examination, was of opinion that they were not jointed.

(To be Continued.)