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NOTES ON CHIONOBAS SUBHYALINA, CURTIS.

BY WM. H. EDWARDS, COALBURGH, WEST VA.

This species has long been lost sight of. It was described nearly sixty years ago from a single male "in good condition". I never have heard of its forming part of any collection except that of the British Museum, and my own, and my specimens—a male and a female—were sent me from the Museum more than twenty years ago. In his Catalogue of the Satyridæ, 1868, Mr. Butler says of this species: "We do not possess the type, but our specimens agree exactly with Mr. Curtis's description." Of my two specimens, the female was broken and the wings rubbed so that they were worthless for characterization, but the male is in fair condition. It does not agree with the description in some points. Thus, there are not "two indistinct white dots towards the apex with black ocelli"; and the surface of the under forewing cannot be called "mottled with ochre and pale black, lightest at apex", but the scales are abraded where the mottling should be. The description goes on: "inferior wings spotted and mottled with black and dirty white, forming a waved and curved pale line beyond the middle, with three or four whitish dots beyond it." My male has a slight and pale mesial band "waved" (or crenated) "and curved"; and if the dots beyond it may mean dots on the hind margin, the description will answer. The wings are described as semi-transparent, and this male is so to an unusual degree.

I have had for three years a single male taken by Mr. Bean at Laggan, which in some points agreed with the description of *Subhyalina*, but failed in others. There were no apical dots, no mesial band, and no whitish dots. Instead of the band there is a discoloration in patches, especially on the two margins, where the band would be. Therefore, I have been uncertain as to the position of this individual. But I have recently received two males from Mr. Fletcher, and six males and one female from Mr. Neumoegen, all taken by Mr. Bean at Laggan, kindly loaned me for examination, and this new material makes it certain that

the species is *Subhyalina*. All these examples are remarkably transparent, and on the disk of forewings beneath there is almost a total absence of dark or mottled scales. But, at the apices there is decided mottling, the light colour prevailing. Some, however, have fine brown scales in the upper interspaces as well as over the cell. One male has two light sub-apical dots on upper side, though without black centres, the others show no trace of these. On the under side of the hind wing all these examples agree with the description, and are spotted and mottled with black and dirty white. In respect to the band there is extreme variation, some being quite unbanded, though in these the disk is more or less clouded darker; others have a pale band. One male and the female show an indistinct outer edge of the band, which answers to the description, "a waved and curved pale line"; and two males present the band clearly defined on the posterior side, and nearly so on the basal; but the band is, after all, scarcely more than a shadow, nothing so distinct as is usual in the allied species. As to whitish dots on the margins, three males and one female have them, the rest do not.

Mr. Butler gives "Arctic America" as the locality of this species, but I know of no other than Laggan.

I shall give a plate in Butt. N. A. to *Subhyalina* presently.

ADDENDUM.

After I had sent the foregoing lines to the editor I received two more females of the species treated of, from Dr. Skinner, from Laggan like the rest. One of these in no way seems to differ from the female before described; but the other varies in that half way between the outer edge of the band and the margin, on four interspaces, in the middle of each—the lower subcostal to second median, is a small whitish spot, clearly defined on the two lower interspaces, diffused on the others. This character agrees completely with the description by Curtis as to "three or four whitish dots beyond" the middle of the wing. I find therefore in one or other of the twelve examples viewed, every one of Curtis's characters except black points in the apical spots. But in only one of the twelve is there any appearance of apical dots on upper surface and in only one whitish dots beyond the band. The same female which offers the dots beyond the middle differs from the other eleven, in having a row of whitish dots on the corresponding interspaces of the forewing, two fifths the distance from the margin to apex of the cell, in a straight line, not parallel therefore to the margin. All three of these

females have the band undefined, cloudy. I see that occasionally in a dark *Semidea*, white spots are present in similar position on the under hind wing to that of this last-mentioned female *Subhyalina*.

FIELD NOTES FROM TEXAS AND LOUISIANA.

BY H. F. WICKHAM, IOWA CITY, IOWA.

In the summer of 1892 I spent a month on the line of the Southern Pacific R. R., between Morgan City, Louisiana, and San Antonio, Texas. While the collecting was by no means of the best, a few notes may interest the readers of the CANADIAN ENTOMOLOGIST and give some idea of insect life in the Southern States during the hot months.

Morgan City lies to the west of New Orleans on the Atchafalaya River, in a country so flat that, as the natives say, "Water will only run as far as you dig a ditch for it." The neighbourhood is covered in great part by heavy woods, with a rank underbrush of poison oak, trumpet creeper and palmetto, the ground beneath all being, at the time of my visit, soaked with rains and dotted with innumerable pools of water in which mosquitoes were freely breeding. Along the edge of the woods I had to do the most of the collecting, as I found it quite an impossibility to brave the attacks of the mosquitoes and Tabanidæ in the depth of the forest.

The palmetto proved to be the plant best worth hunting over, and when I arrived on the twenty-second of June it was in bloom, or just going out in some cases. Where the flowers were fresh and sweet there were numbers of *Euphoria sepulchralis* and *Trichius delta*, the latter the less numerous and very hard to capture in the bright sunshine, though when cloudy weather prevailed they were much more sluggish. *Chauliognathus marginatus* occurred on the flowers in numbers, but it was not considered worth while to take many of them, as it appears to be common from Pennsylvania south, though I never take it in Iowa. *Paria canella* occurred once in a while, and a single specimen of *Phyton pallidum* was also shaken into my umbrella. When the flowers had fallen off, disclosing the newly-formed fruit, I found a very nice Curculionid beetle, *Pachybaris porosus*, which was known previously from Florida. It seemed not to occur on the plants except where the flowers had commenced to drop off, and quite likely oviposits on the newly-formed fruit. Wherever an open patch allowed a chance for growth of wild sunflowers, there were a good many beetles of other kinds—*Mecas inornata*, *Systema*,

sp., and a *Baris*, which seems to be new. A *Solanum* yielded a few specimens of an *Anthonomus* and a very small specimen of *Trichobaris trinotata*, a species which has proved in places a very serious pest to the potato. By scratching away dead leaves in a thicket a few *Lachnosterna ephelida* were secured, and a few also of *Anisodactylus maculicornis*. A rotten log, on being broken, disclosed an example of *Chlanius fuscicornis*; another contained several specimens of *Passalus cornutus*, with its larva. An ant's nest held, besides the legitimate inhabitants, a number of the curious little *Limulodes paradoxus*, which I have found with ants from Iowa to Arizona. Dry fungus was full of *Ennearthron*, and in it I found also a specimen of *Euplectus linearis*.

At night, around the light, I added still a few species to my collecting bottles—*Hippodamia parenthesis*, *Atenius figurator*, *Cyclocephala immaculata* and *Lachnosterna ephelida*, but insects were not by any means as common as I had expected them to be, so on the twenty-sixth I left for Houston, Texas.

The next afternoon, arrived at Houston, I found inside of the city limits great numbers of a beautiful weevil, *Eudiagogus pulcher*, which has a curious habit in lieu of dropping off the food-plant, as is usual with most Rhynchophora when disturbed. It feeds on the leaves of the coffee-weed, and usually remains on the upper surface of the leaf while eating in plain sight. If disturbed, it whirls quickly around to the under surface of the leaf, and either remains clinging there or runs rapidly down the stem of the plant towards the ground, keeping to the under side, so as to be invisible from above. With it I found associated *Anomæa laticlavata* and *Neoclytus erythrocephalus*.

Along the sides of the track, where the vegetation was rank, I got a few beautiful specimens of *Edionychis* and a few of *Paria viridicyanea*. Under a stone occurred several *Psammodynus nanus* in burrows which they had made just at the surface of the ground, much as some Scolytidæ bore in bark. A stump covered with fungi was next investigated and proved quite a rich find, yielding *Platydema* of two or three species, *Hoplocephala bicornis*, *Tritoma erythrocephala*, *T. angulata* and *T. atriventris*, besides several examples of the pretty little *Formicomus scitulus*, which seemed not to live on the fungi, but on the ground near them.

The woods themselves yielded beetles of a different sort. Beating branches of lately cut pine trees was productive of a number of *Drasterius amabilis*, a few *Silvanus rectus*, and a few other things. A little *Mono-*

hammus of the form called *minor* was taken, also a *Buprestis* and a *Chalcophora*. Where a live oak was being cut up I found *Chrysobothris femorata* var. *Alabama* and *Neoclytus scutellaris* running over the branches, but they were wild and difficult of capture. A large fungus was found to be often infested by *Pocadius helvolus* and a smaller one by *Pallodes silaceus*. Of these latter, when the fungus was small only one or two specimens were found in it, but larger fungi yielded more beetles. Five or six specimens of *Octotoma plicatula* were taken on leaves, and looked very little like living things when at rest.

Washing the banks of a stream brought very little to light, except a few specimens of *Tachys* and a very small *Heterocerus*; water-beetles were almost entirely absent. One incident of interest was noticed here, however, when a little *Tettix* (I use the generic name in the old, wide sense) was disturbed and jumped into the water, alighting on a stick that was completely submerged to the depth of about an inch, and rested there until I captured it. This brings to mind a note of Mr. Roberts in "Entomologica Americana," where he states that he found *Stenus* on masses of frogs' eggs which were completely submerged.

Collecting on weeds along the edges of woods and in open patches disclosed a number of *Conotrachelus leucophæatus* in the heads of a plant with milky sap, and with them occurred large numbers of *Aphthona texana*, a little jumping beetle of rather slow movements. I took all of them with my fingers without great trouble. *Henous confertus* runs around in grassy places during the morning and evening, having apparently the same habits in this respect as many of its wingless relations.

A day was spent in making a side-trip to Galveston to get in sea-shore collecting. The beach was alive with *Cicindela saulcyi*, but the only other Coleoptera there were *Phaleria* sp., and an Oedemerid, probably an *Asclera*. Farther back, out of reach of the tides and salt spray, I got a great number of *Haltica punctipennis* which was swarming on some low weeds.

Columbus was reached on the morning of July fifth, and work commenced at once. Though only a few hours ride from Houston, it is in quite a different looking piece of country. The valley of the Colorado here is wooded with deciduous trees, the pine having disappeared, and the better drainage is apparent from the nature of the soil. This spot was made historic in the annals of Entomology by the labours of Mr.

Schwarz, and the papers of Drs. Leconte and Horn of a few years back are full of allusions to species collected there by him. I hoped to find it an interesting field, and was not disappointed.

Most of the work was done along the river bottom, where the cottonwood timber was usually sufficiently free from underbrush to admit of freedom of movement and of sight. The felled trees, when the bark was peeled off, furnished *Toxidium compressum*, *Litargus balteatus*, *Epierus regularis* and *Bacanius punctiformis*. Beneath the old trunks were found *Blapstinus fortis* and *arenarius*. The cow-droppings were productive of *Copris carolina*, *Phanæus triangularis*, *Onthophagus pennsylvanicus*, *Aphodius tenuistriatus* and *stercorosus* and *Cercyon variegatum*. The banks of the river were covered with *Cicindela rectilatera* and *C. sperata*; *Tetragonoderus fasciatus* and *T. latipennis*, the latter abundant, were to be obtained in more circumscribed spots with a species of *Stennis* near *stygius*. The weeds on the bars, on being pulled up, were found to shelter around their roots a colony of *Agonoderus comma*, *Anthicus difficilis*, *A. nanus*, *Metachroma interrupta* and *Myochrous denticollis*. This *Myochrous* was also often found feeding on willows.

On leaving the immediate vicinity of the river and working along the roads, *Languria læta* is found commonly with *Acylomus calcaratus* and *Conotrachelus leucophæatus*. Arriving at a point where a little creek crossed the road, I ascended it, and where a tree had been felled across it some years ago and was consequently in a rather advanced stage of decay, settled down for an hour or two of solid work. By peeling off the bark carefully I was able to get everything worth taking, as whatever was nimble enough to escape my bottle at first, fell into the water and was easily secured. The results were two *Mallodon dasystomus*, several *Eupsalis minuta*, *Platydema ruficorne*, *flavipes*, *lævipès*, *Eustrophus bicolor*, and several other things. Leaving this spot and going on to a freshly cut mesquit, I got under the loose bark four or five specimens of *Conotrachelus anaglypticus*, a few *Carpophilus semitectus*. and some *Laemophilus chæmeropis*. Under damp logs I found the specimens of larvæ, pupæ and imagines of *Epipocus* described in another paper.

After a week's stay at Columbus I moved on to Harwood, which is at a considerably higher altitude—here the cottonwoods were gone and replaced by mesquit and oak, much of it "scrub." The collecting was not nearly so good and of a different character, *Eleodes tricolorata* being one of the most prominent beetles. Two or three *Pasimachus* were found under

logs, also a pair of *Romaleum atomarium* and a large *Mallodon serrulatus*. *Acmaeodera pulchella* var. *mixta* and *Bruchus amicus* occurred on flowers. The leguminose trees and shrubs yielded, by beating, *Cryptocephalus defectus*, *Epicauta nigratarsis* and *Coleocerus marmoratus*, while under the bark and in the wood of dead trunks and branches I took a number of *Phloxonemus catenulatus* and *Trogoxylon*, sp., besides a fine *Amphicerus*. The dead wood was full of cerambycid larvæ.

The next stop was made at Luling, in the San Marcos Valley, a spot which pleased me more than any other in Texas. The river bottom is heavily wooded in places, and the holes and cracks in the great trees were the hiding places of beetles of large size and great beauty. The fine *Zopherus haldemanni* was taken here in some numbers, sometimes resting on the surface of logs which were lying on the ground, or, just as often, climbing on the trunks of trees seven or eight feet up. Besides these I got a large *Mallodon*, two *Alaus lusciosus* and a number of *Strategus julianus*, the last nearly all dead but in perfect order—sometimes not yet stiffened. They occurred in holes where trees had been torn up by the roots, or often simply lying on the ground without cover or protection of any sort. *Photuris pennsylvanica* was found very commonly in one spot, clinging to the trunks of trees close to the ground, while three or four *Chlœnius orbis* were taken beneath logs in damp places. A pair of *Canthon cyanellus* were detected in the act of inspecting a dead clam on the river bank and were promptly “run in.”

The weeds along the roads were full of a species of *Chrysomela*, for which I can get no name. The great compositæ by the edges of the cotton-fields furnished numerous *Lixus laesicollis*, *Smicronyx obtectus*, *Pachytychius amœnus*, and some other weevils.

San Antonio did not prove to be in as good a locality for beetles, and only in a few favoured spots could anything be found. Beating along the track of one of the lines of railroad proved more productive than anything else, and in this way I obtained a number of *Cryptocephalus defectus*, *Coccinella abdominalis*, *Epicauta nigratarsis*, and a little Galerucid not yet described. The banks of the river, close to the source, yielded *Ega sallei*, *Oodes* sp., *Ochthebius foveicollis*, and *Linnichus lutrochinus*, with several other things; but the great haul of the season was a lot of several dozen assorted ticks, which I collected on my own person after sitting on a stone in the woods for a few moments to eat my lunch.

A NEW GASTROPACHA.

BY J. J. RIVERS, UNIVERSITY OF CALIFORNIA, BERKELEY, CAL.

Phyllodesma Dyari, n. sp.—General appearance of the palest sienna or yellowish-ochre. Thorax and patagia thickly clothed with short hair of a uniform pale tone, the abdominal covering similar, but longer and finer, which gives to it a slightly silky appearance.

♂. Anterior wings with the anal angle deeply emarginate; three lines of dusky spots cross the disc ending near the costa, these being lines rather than bands. There are in some examples two dusky spots, one more conspicuous than the other, in the discal space. From the hind margin up to the middle line of spots, and extending to the apex of the wing, the area is of a rosy or peach-brown; the remainder of the wing being paler and colder in tone, in fact ochry-yellowish.

Posterior wings with the usual deep emargination on the costa. From just above the anal angle, a pale and rather wide band runs across towards the outer margin; this pale band widens on the inner margin when in contact with the abdomen, and this part of the wing is clothed with the same long filament-like hairs as the abdomen.

Fringes of all the wings rusty and white in separate rows of scales, the basal row being rusty and running out and covering the points of the nervules, while the white scales are seen only in the hollows of the crenations.

Beneath, pale rosy-brown, a darker central band traverses all the wings, beginning near the costal edge of the forewings, and finishing short of the anal angle of the hind wings. There appears on some specimens only, a short second band, when the ground colour between them is whitish. In the central area bordering the emargination of the hind wings is a wide patch of rusty brown.

♀. General appearance much paler than in the other sex, being very pale creamy or ochry-yellow. Margins of all the wings crenate; strongest on the hind margin of the posterior wings and decreasing in boldness towards the apex of the anterior wings. There are faint lines of spots on the disc of the forewings, suggestive of bands, and on the hind wings the only variation of the same pale expression of the whole insect is a broad, well-defined band of a lighter colour, that crosses the wing from above the anal angle.

Beneath uniformly pale ochry-brown, with a large attendant patch, conspicuously darker, in the immediate region of the emargination of the hinder wings.

Expanse of wings, ♂, 1.55-1.80 inches; ♀, 2.25 inches.

Habitat: El Paso, Texas.

THE BUTTERFLIES OF LAGGAN, N. W. T.; ACCOUNT OF
CERTAIN SPECIES INHABITING THE ROCKY
MOUNTAINS IN LATITUDE 51° 25'.

BY THOMAS E. BEAN, LAGGAN, ALBERTA.

(Continued from page 132, Vol. 22.)

ELEVATIONS IN VICINITY OF LAGGAN.—Altitudes near Laggan have in some cases been very incorrectly stated. In "Appleton's Canadian Guide-Book; Western Canada," published 1892, the altitude of Louise Lake (Emerald Lake of the Geological Survey) is given as one thousand feet above Laggan, and the elevation of Agnes Lake is stated at three thousand five hundred feet above Laggan. Such statistics are worse than useless.

The elevation of the Canadian Pacific Railway at Laggan, by latest profiles, is five thousand and eight feet. Emerald Lake is five hundred to six hundred feet higher—its elevation can hardly exceed five thousand six hundred feet. Agnes Lake is about two hundred feet below the normal timber-line, so that its altitude is not far from six thousand eight hundred feet; it is eighteen hundred feet above Laggan, and pretty accurately twelve hundred feet higher than Emerald Lake.

According to the Geological Survey Reports, timber-line on the mountains around Laggan occurs at about seven thousand feet. This elevation compares with an altitude in Colorado of something over eleven thousand feet. Gannett's "Dictionary of Altitudes" gives U. S. Survey estimates of 31 timber-lines in Colorado, of which 29 are above eleven thousand feet.

CARTEROCEPHALUS PALEMÓN, Pallas.

Paniscus, Fabricius.

Mandan, Edw.

Material of *Mandan* examined:—1 ♂ from Nepigon (Mr. Fletcher); 36 local ♂s, some imperfect, but nearly all bright and readable; 1 ♂, 1 ♀ from Banff (Mr. H. K. Burrison); 12 local ♀s, all being legible, and 8 of them bright and fine. Examples of *Palemón* compared:—4 ♂s, 2 ♀s from Germany; 2 ♂s, 1 ♀ from Zurich, Switzerland; 2 ♂s from northern Finland.

This examination was undertaken because from frequently repeated comparisons of the Bow Valley *Mandan* with *Palemón* the essential agreement of the two had become evident. Until this final study was

made, I had thought *Mandan* of New England and eastern Canada might be distinct not only from *Palaemon* of Europe, but also from *Mandan* of the Bow Valley. That idea I can no longer entertain. The amount of variation among my few instances of *Palaemon* proves to be greater than I have hitherto considered it, and this fact lessens the probability that the name *Mandan* covers two species. My reasoning is:—(1) The European *Palaemon* is so uniform in size and colour, and presents its variations in a manner so undemonstrative, that the true values of its variations are easily recognized, and it is readily seen that the several variational phases constitute but a single species. (2) *Mandan*, like many other of our lepidoptera, is strongly influenced by the meteorological peculiarities of widely separated districts inhabited by it in North America, and in certain extreme conditions displays its variational capacity with a freedom, an exuberance, quite in contrast to the conservative variation of species in Europe. (3) As I find the variation in *Palaemon* essentially as important as the more emergent and erratic variation shown in certain environments by *Mandan*, and as *Palaemon* in its various attitudes is inseparable from corresponding aspects of *Mandan* and helps to render evident the unity of *Mandan's* extreme phases, I am therefore led to believe *Mandan* contains but one species, although it has been so well supplied with synonyms and its extremes of colour variation are so great.

In the material at hand, together with the *Mandan* literature accessible, I find no indication of more than one species, unless it be the difference in food-plants—The Nepigon and Bow Valley sections eating grasses, while *Palaemon* of Europe is said to feed on *Plantago major*. This diversity does not greatly impress me, as the "unexpected" in that line often happens. After discovering (Aug. 5, 1889) that *Colias nastes* eats Willow, and having (in August, 1890) persuaded *Grapta zephyrus* to accept a diet of rose, I am prepared for almost any specialty in food-plants. *Melitæa anicia* feeds on two species of plants, or more; so does *Lycæna aquilo*.

From the insects compared I have the following information. The Banff specimens agree with the Laggan series. The Nepigon ♂ is almost a copy of one Finland ♂—if smaller, the difference is very slight; it differs above forewing in having the median yellow-brown spots shorter (partly obliterate); on under side the Finland example is more suffused with yellow and the spots under hind wing are less clear; in every

essential character the two insects are alike. The Bow Valley material has been determined as *Mandan*. If it is *Mandan*, then *a fortiori* it is also *Palæmon*, for it is closer to *Palæmon* of Germany than to the *Mandan* of eastern North America. Arranging the entire series according to affinity of variation, the Nepigon specimen goes to one extreme, next in order follow the two Finland *Palæmon*, then two of the *Palæmon* from Germany, and a number of the Bow Valley *Mandan*. Nearly all the remaining Bow Valley *Mandan* range still further away by an increasing size and boldness (conspicuousness) of the fulvous spots above primary, these spots being in some specimens so enlarged as to replace almost entirely the dark brown of general surface. The two *Palæmon* ♂s from Switzerland, two of the German *Palæmon* and a small section of the Bow Valley *Mandan* ♂s follow a line of variation somewhat diverse from what is seen in the major part of the series, but without special bearing on the main question, except as further illustrating the fact that *Mandan* is more ready to break ranks than is consistent with due respect to "the authorities." In one particular, all the North Americans examined are alike—the spots under hind wing are clear in colour and distinctly in contrast to the ground colour. Part of the Europeans agree with the North American specimens in this, and the others have the spots suffused with dull yellow as in *Carterocephalus silvius*. The description of *Mandan* in Fernald's "Butterflies of Maine," indicates that the Maine *Mandan* is practically like that of Nepigon, and that the spots below hind wing are clear in colour; the description in general covers *Palæmon* equally with *Mandan*. Mr. W. H. Edwards, in his description of *Stercopteryx skada*, mentions that the spots below hind wing, except the outer rows, were of a yellowish tint. Mr. S. H. Scudder describes the spots beneath hind wing of *Hesperia mesapana* as "very large silvery white spots"; in the Laggan specimens the colour is a pale buff, scarcely white in any.

Mandan in the greater part of its range seems to be extremely rare. A few captures have been recorded, made in New England and at various localities in the Province of Quebec, with one or more in Alaska and Labrador. It appears to have been found in frequency only in two districts—the region between Hudson Bay and Lake Superior, and the Bow Valley. Mr. James Fletcher's records for Nepigon are well known. Mr. J. Jenner Weir, in THE ENTOMOLOGIST, writing of lepidoptera collected chiefly at Moose, on south coast of Hudson Bay, makes this record:—

"*Heteropterus mandan*, Edw.—Much resembles *H. paniscus*, Fab.; common in 1883, but not observed before."

A specimen of *Mandan* was in 1872 determined by Mr. H. K. Morrison as *Paniscus (Palæmon)*. In an account of lepidoptera collected on Anticosti, Mr. William Couper writes:—" *Hesperia paniscus*, Fabr.—A single specimen captured at Fox Bay, Anticosti, on the 26th June. It was sent to Mr. Morrison, who informs me that it does not differ in the slightest from the European specimens of *paniscus*. It is close to *Mandan*, Edw."—(CAN. ENT., Nov., 1872.) At that time *Mandan* was excessively rare in collections.

Carterocephalus palæmon of the Bow Valley is larger than the same species in Europe and eastern North America, and is more variable in size, ranging from expanse of the Finland and Switzerland instances to a size noticeably exceeding that of the German examples. It displays greater individual variation also as to size and colour of the fulvous spots above forewing. At Laggan it chiefly frequents grassy meadows along the Bow at an altitude of 4,800 to 5,000 feet, the ♂ in ordinary seasons appearing early in June and the ♀ during last half of the month. Several ♀s have been taken at Emerald Lake in early July, and 1 ♀ at Agnes Lake early in August. It occurs also at Stephen, B. C., six miles west of Laggan.

This is one of those species which come from pupa earlier or later according to the forwardness or tardiness of the season; it is by no means so prompt to a date as are some of the local butterflies. There is no indication of more than one flight in a season.

ADDITIONAL NOTE ON THE LARVA OF PALÆMON.

After sending away the foregoing, a very interesting article was met with in *The Entomologist* (London, England), Oct. and Nov., 1892, which tends to confirm my views already stated:—"Life History of *Carterocephalus Palæmon*, by F. W. Frohawk, F.E.S." So far as I can judge Mr. Frohawk's account of the larva of *Palæmon* agrees substantially with the description of the larva of *Mandan* published by Mr. James Fletcher in CANADIAN ENTOMOLOGIST, June, 1889. My main object in the present reference is to mention that *Palæmon*, as well as *Mandan*, eats grasses. Mr. Frohawk reared his larvæ with success on *Bromus asper*.

My own incomplete notes of the local larva, from observations made in June, 1889, agree entirely with Mr. Frohawk's account. An interesting fact in my experiment was that several of the eggs were laid by lamp

light at eleven o'clock one night. The young larva emerges near apex of egg, and usually eats little, if any more of the shell than sufficient to allow of his exit. The larvæ fed on grass.

I make no citations from Mr. Frohawk's article. It should be read entire by all interested in the subject.

ADDITIONS TO THE LIST OF CANADIAN LEPIDOPTERA.

BY J. ALSTON MOFFAT, LONDON. ONT.

During the years 1891 and 1892, I have received the following names new to the Canadian list. Some of the specimens have been in my possession for several years, as I hoped to secure others of the same kind, whereby I might obtain their names without inconveniencing anyone by a request for their return. But they remain uniques with me to the present time; solitary witnesses to the fact that they are to be got, if looked for in the right place at the right time.

The gentlemen to whose kindness I am indebted for the identification of my material are: Prof. J. B. Smith in the Bombycidae and Noctuidae, Rev. Dr. Hulst for the Geometridae, and Prof. C. H. Fernald in the Micros. I have followed the sequence and nomenclature of Prof. Smith's list of 1891.

Scolecampa liburna, Geyer.

I captured this specimen at Ridgeway in July, 1885. And I see by the Buffalo list of 1891 it is therein reported as "taken occasionally in Lancaster, at light," by Mr. E. P. VanDuzee. I am not aware of its having been taken in Canada since.

Epiglaea decliva, Grote.

A single specimen taken at Hamilton eight years ago, in the autumn, when looking for Scopelosomas and Lithophanes.

Xylina tepida, Grote.

A single specimen taken at London, September 29th, 1891. On one of my visits to Mr. Grote in Buffalo, whilst he was naming some Lithophanes for me, he called my attention especially to this species as "one that ought to be found with us," and yet this is the first intimation that I have received of its being taken in Canada.

Litognatha litophora, Grote.

Herminia petrealis, Grote.

Hypena damnosalis, Walker.

No doubt several more of the Deltoides might be added to our list, if they were closely looked after, but the unattractive appearance of many of them, and the difficulty in separating the forms, has a tendency to weaken the interest taken in them.

Acidalia subbarbaria, Pack.

Eudeilinea herminiata, var. *albata*, Guen.

Semiothisa preatomata, Harv.

Tephrosia cognataria, Hub.

Paraphia unipunctaria, Haw.

Petrophora truncata, Hub.

Phlyctania extricalis, Guen.

Homophysa psychicalis, Hulst. Two specimens taken at London in 1892. This handsome little species was described and named *Botis psychicalis* by Dr. Hulst in 1886, from two females taken in Georgia and Texas.

Hydrocampa stenialis, Guen.

This delicate and highly ornamented species I had taken at Hamilton for several years, one or two in a season, although only obtaining the name of it last November. During the season of 1892 I came on a colony of it at London and secured six. It is variable in size and depth of colouring, but varies little in the design of ornamentation, considering it is so elaborate. Dr. Hulst redescribed a specimen from Florida, under the name of *H. australis*. He gives the expanse of wings as 16 mm. I have one that is 15 mm., but I also have one that is only 10. Dr. Hulst gives the colours as fuscous and light ochreous. One of my specimens is of a deep leaden hue, with the light portions greatly reduced in size.

Schænobius melinellus, Clem.

Perispasta caeculalis, Zell.

A single specimen taken at Hamilton several years ago. It was sitting on the upper side of a leaf quite exposed. Its unusual form and marking attracted my attention at the time, and although I looked for it regularly afterwards in that locality, at the same season of the year, I never came upon another, and the only other one I have seen was sent to me for determination by Mr. Winn, of Montreal.

Perispasta immixtalis, Grote.

A single specimen taken at London in the season of 1892, and that in rather poor condition.

Teras nivisellana, Wlsm.

" *variana*, Fernald.

Cacœcia rosana, Linn.

Enectra pilleriana, Schiff.

Exartema punctana, Wlsm.

This attractive species I had been taking for a number of years at Hamilton, one and two specimens in a season. It was moderately plentiful in one locality at London during the early part of July, where I secured about a dozen and a-half specimens of it. It is quite variable in size and depth of shading. My specimens range from 15 to 25 mm. in expanse of wing, the smallest males being, as a rule, the lightest in colour.

Sericoris bipartitana, Clem.

Pædisca otiosana, Clem.

Semasia signatana, Clem.

Argyresthia andereggiella, F. V. R.

Laverna subbistrigella, Haw.

Butalis impositella, Zell.

THE SYSTEMATIC POSITION OF VARINA ORNATA, NEUM.*

BY A. S. PACKARD.

For a specimen of this most interesting moth I am indebted to Mrs. Slosson, and after an examination of it I am unable to find any Bombycine characters, except the heavily pectinated antennæ. In Prof. Smith's List of Lepidoptera it is placed in the Liparidæ between Artaxa and Lagoa, though it bears no resemblance to these moths except in the shape of the antennæ. It has also been regarded as allied to the Cochliopodidæ. Prof. Smith has recently stated that it is a synonym of *Acherdoa ferraria*, Walk. (See CAN. ENT., xxiv, 135, 1892). It appears from its heavily pectinated antennæ to belong among the Noctuo-Bombyces, and all its characters indicate its affinities with the Noctuina. On denuding the head, the front is seen to be very full and convex, and those who claim that the characters of the head are useless in distinguishing families, we would refer to this case, as no Bombycine moth with which we are

*Papilio iv., 94, 1881.

acquainted has such a full, protuberant front. The palpi are also truly noctuid in shape, the joints being very distinct, the 3rd joint long and slender compared with those of the Bombyces. The forewings have a well-developed dot and reniform spot, genuine Noctuid marks, and the hind wings have the peculiar gloss of Noctuid moths. The venation of the wing is unlike that of the Liparidæ and Cochliopodidæ, and entirely unlike that of the Notodontidæ. There are 4 branches of the median vein, and their arrangement and that of the subcostal veinlets appears to be characteristically Noctuid.

I am confirmed in the view that this moth belongs among the Noctuids by the following observations of Mrs. Slosson, who was fortunate enough to hatch out the larvæ, and to find that they are semiloopers, like the freshly-hatched larvæ of many Noctuids.

"I captured at light, in the spring of 1891, a *Varina ornata* ♀ and placed her at once in a box made for the purpose. But when I opened the box for examination I found to my chagrin, that I had unfortunately closed the lid upon my treasure and crushed her to death. As the abdomen seemed somewhat distended, I pressed it gently, and had the satisfaction of seeing two eggs drop out. I could secure no more. As it was late at night and my light was poor, I deferred close examination of the eggs. The next day I was attacked with neuralgia in the eyes, and was quite unable to use a magnifying glass. On the 6th or 7th day the eggs were hatched. I was still suffering, and could make no close observations. But one thing was plainly to be seen, the larvæ were "loopers"! This I could see for myself, and an unscientific friend who looked at them through a lens at once declared them to be "measuring worms." Knowing nothing of the food-plant, I sent out for leaves of the various trees and herbs growing near. But the larvæ would eat nothing. On the third day, though still alive they were very weak. I placed a bit of palmetto—*Sabal serrulata*—in their glass, and they at once crawled feebly upon it, and began nibbling its surface. But it was too late, and not knowing how vastly important to science would be a prolongation of their existence, they quietly passed away. I regretted deeply my lost opportunity of settling finally the proper position of this interesting moth. But I can but consider this proven fact of the young larvæ's being loopers a very significant one."

CATOCALINE MOTHS FROM GEORGIA.

BY A. R. GROTE, A. M., BREMEN, GERMANY.

In the collection of the Bremen Museum are a number of *Noctuidæ* *Catocalinæ*, brought by Norwich, many years ago, from the vicinity of Savannah, Georgia, and belonging to species for the most part new to me. Nearly all are now identified by me as described by Guenée in the Species General, and their notice here can hardly fail to be of interest. I have previously remarked upon the fact that, as we progress southwardly, we are met by an increase in the number of species of Catocaline Owllet Moths, while the *Noctuinae*, or typical *Noctuidæ*, diminish; the metropolis of the former seems to lie in the Tropical, of the latter in the North Temperate Zone. But already in the Southern States we meet with many species of Banded Owllets, which seem absent in Canada and the Northern United States.

GRAMMODES, GUEN.

Guenée describes in the Species General three North American species, *Smithii*, *Similis* and *Consobrina*, under the generic term *Ophiusa*, Tr., a name which, being pre-occupied in zoology, cannot be retained. These three species, then unknown to me in nature, I referred temporarily to the genus *Grammodes*, in the Buffalo Check List, 39, 1876, as also in the New York Check List, 39, 1882. This course is followed by the Philadelphia Check List, 57, 1891. At this writing I have not the necessary means or material to satisfactorily review the generic position of the species described in the present paper. Of Guenée's three American species of *Ophiusa*, two, *Smithii* and *Consobrina*, are now identified by me in the Norwich collection. These two are closely allied, so much so that, at the first glance, they seem the same, though readily distinguished. Under these circumstances it seems inexplicable to me that Guenée should place them in two distinct groups, and should interpolate a group and follow *Smithii* with a species, *similis*, which, from the description, must differ somewhat widely in appearance. The two species before me seem allied to *Euclidia cuspidæ*, while in the dusty-gray colour, texture and vestiture, they resemble *Drasteria*. They are distinguished by the fine, even, cleanly-cut and very distinct median lines. All the species here included have a deep brown or blackish, apical, liturate mark. That they will remain under this generic title, which is only a substitute for *Ophiusa*, as used by Guenée for them, does not seem probable to me.

1. SMITHII, Guen., Sp. Gen., VII., 266, 1852, *Ophiusa*.

The forewings are powdery light ash-gray over brown, with a slight violaceous reflection. The brown colour appears as a diffuse deeper shading before the t. a. line, and again before the t. p. line over the outer portion of median space. T. a. line narrow, brown, slightly bent and relieved outwardly against the gray median space. T. p. line similar in appearance, but very cleanly cut and even, forming two angles outwardly; the first and most prominent opposite the cell, the second projection on the interspace above vein 1; thus the line forms three subequal scallops, the upper one shallower and more oblique, the middle one the longest. A deep brown, inwardly oblique, shaded apical mark, terminating in a second linear one, which appears as if dislocated and turns outwardly. Hind wings obscure brown, a little dusted with grayish on the outer margin before the angle. Beneath both wings concolorous, paler yellowish-brown, with a faint darker median line and discal point. On primaries above the brown reniform is feebly marked. Body concolorous. Two female specimens examined, expanding 37-38 mil. In Mus. Brem.

Guenée names this species for one of the authors of the "Insects of Georgia."

2. CONSOBRINA, Guen., Sp. Gen., VII., 1852, *Ophiusa*.

Almost exactly like *Smithii*. The base of primaries somewhat darker shaded, hardly ashen; the liturate apical mark seems to run inwardly obliquely throughout its length and is uniformly preceded by a deep brown shade, appearing continuous. The t. p. line wants the second angulation and thus forms a single curve from a point opposite the cell to the inner margin. These seem the only differences in markings. Two males examined, expanding, one 40, the other only 35 mil. In Mus. Brem.

I regard it as not impossible that *Consobrina* is the male of *Smithii*. The antennæ in both are simple, the joints provided with short hairs beneath. The terminal joint of the palpi appears to be shorter in *Consobrina*, and probably really is so, but this feature might be sexual. Guenée does not note the sex of his material. In ornamentation the only differences I find are in the apical shade and the t. p. line; this latter character alone is strongly marked and leads one to suspect a distinct species. The difference in size noted by Guenée (p. 268) does not exist. In this group of moths the male is not infrequently much larger than the

female, but is inconstant in size of wing. One specimen of *Consobrina* is in this respect smaller than *Smithii*. As to the difference in shading, it appears to me quite unimportant and not unlikely a variable character.

3. SIMILIS, Guen. Sp. Gen. VII., 267, 1852. *Ophiusa*.

"40 mil. Wings entire, powdery, of an even violaceous ashen, shaded here and there with reddish; with the two median lines hardly visible, very fine and, between them, another similar line bent in an opposite direction to the t. p. line and nearly touching the latter at either extremity, the whole hardly distinct. A black apical mark, composed of two little triangles united at apices, a little shaded interiorly. Hind wings light brown, with the fringes ashen. Beneath of the same brown, with indistinct line and lunule.

Var. APICALIS, id. The arcuate median line largely shaded with blackish exteriorly."

This species is unknown to me. It cannot be the succeeding form owing to the given colour, the triangulate apical spots, and the arcuate median line.

4. CONCOLOR, n. s.

♂ Entirely of a light chocolate brown. The forewings unicolorous, with a slight frosty violet reflection, without any perceptible markings or any darker shadings, except the liturate dark brown apical mark, which is oblique, of nearly uniform width and subcontinuous. Hind wings plain brown, the outer edge and fringes very slightly shaded with ashen. Beneath paler, concolorous yellowish-brown, with faint traces of one or more common lines and discal dots. Palpi slightly exceeding the front. Antennæ simple, the joints beneath with short hairs. One specimen, expanding 42 mil., in Mus. Brem.

♀ Somewhat darker than the male. The frosty violaceous shade obtains strongly over basal half of primaries and allows an uneven darker t. a. line to be faintly visible. At the centre of the wing, in the place of the median shade, is a straight sharp line of demarcation, beyond which the wing is outwardly diffusely much darker shaded, the dark colour fading to the fringes and allowing the apical mark to be plainly visible. In one specimen the apical mark is apparently linear and dislocated in-

feriorly. Else as in the male. In one specimen there are terminal dots near the anal angle of secondaries. Two specimens, one expanding 46 mil., the other only 38 mil. Savannah, Norwich, in Mus. Brem.

Renewed examinations of the male of this prominent and well-sized species show, that in certain lights exceedingly faint traces of the t. a. line may be discerned. But the brown surface of the wing is unbroken to the eye, without lines or discal spot, and is relieved only by the distinct apical mark.

AGNOMONIA, Hübn.

1. ANILIS, Drury, II., 21, Pl. XII., 3, 1770-1775.

Sequistriaris, Hübn., Zutr., 419-20, 1825, *Agnomonina*.

Anilis, Guen., VII., 273, 1852, *Agnomonina*.

Two specimens of this not unusual species from Savannah in Mus. Brem. In this genus the apices of forewings are sharp, the short fringes usually discoloured, the external margin sinuous or straight, not rounded; the forewings have a certain lustre on their upper surface.

2. QUADRIFILARIS, Hübn., Zutr., 569-70, 1825, *Agnomonina*.

Guen., VII., 300, 1852, *Poaphila*.

Two specimens of this well-marked species from Savannah in Mus. Brem. Smaller than *anilis*, of a lighter lustrous brown. The forewings crossed by two white median stripes, narrower than in *anilis*, and continuous, whereas in *anilis* the outer band is abbreviated. *Anilis* is much stouter with the external margin sinuate, curving inwardly below the apex.

3. OBSOLETA, Grt. Proc. Bost. Soc., N. H., 417, 1876, *Poaphila*.

Quadrifilaris, var. A., Guen., VII., 301, 1852, *Poaphila*.

Of this species, taken by Dr. Thaxter in Florida, there are no specimens in the collection. According to my observation, it is decidedly distinct from *Quadrifilaris*.

4. ERASA, Guen., VII., 301, 1852, *Poaphila*.

The forewings are of a somewhat grayish or fuscous-brown with a slight lustre, darker shaded outwardly. The markings are quite indistinct,

and only traces of the transverse lines can be made out. The short fringes are tipped with whitish; apices pointed, external margin quite straight. Hind wings without markings; abdomen somewhat grayish. An inconspicuous species, distinguishable by the pale fringes. One male before me from Savannah, expanding 31 mil., in Mus. Brem.

Probably most of the species referred to *Poaphila* in the Species General, and in our Check Lists, belong really to *Agnomonina*. Of the species described by Guenée I have not identified anywhere *Contempta* or *Bistrigata*. *Poaphila sylvarum*, in the collection before me, may be considered typical of its genus. *Flavistriaria perplexa*, and *herbarum*, determined by me in Coll. Mus. Brem., are apparently related to *Phurys* and *Celiptera*, as also is *Bistrigata* from Hübner's figure. I have described two species in Bulletin, U. S. Geol. Survey, IV., 184, 185, which may also belong to *Agnomonina*. The types are in Coll. Brit. Mus. A name to be admitted must be sanctioned by figure or description. But what are we to do with the bad descriptions of the British Museum Lists? Can the supposed types of Mr. Walker be admitted as evidence? In cases where they in any way contradict the description I think certainly not.

PHURYS, Guen.

1. FLAVISTRILIARIA, Hübn., Zutr. 555-6, 1825, *Crochiphora*.

Guen., VII., 302, 1852, *Poaphila*.

The forewings are grayish-brown, with a faint discal mark and a rigid ochre-yellow subterminal band, followed by a narrower dark brown shade line. Two specimens before me, which belong evidently to the species described by Guenée, but do not quite agree in shape of wing and appearance with Hübner's figure, while the only markings correspond, and these are so simple that it must be the species. The identification of *flavistriaria* has led me to that of Guenée's *perplexa*, described comparatively in the Species General. Guenée changes the specific name to *Flavistriaris*.

2. PERPLEXA, Guen., VII., 303, 1852, *Poaphila*.

Glaus, Grt., Proc. Bost. S., N. H., 416, 1876, *Phurys*.

This species differs from *Flavistriaria* mainly by the concolorous pale gray colour, while the subterminal stripe has less yellow, the dark brown

line predominating. Faint indications of an uneven t. a. line. The discal mark almost obsolete. Faint terminal dots may be discerned. Hind wings gray without lines. Two specimens, Savannah, Georgia, in Mus. Brem.

The more of our species of Catocaline Noctuids, belonging to the group of which *Drasteria* may be considered typical, the so-called "Grass Moths," I have become acquainted with, the more do I see the necessity for their generic revision. But the material I have had at any one time has been so small and fragmentary that I have been unable to attempt it.

DESCRIPTIONS OF CERTAIN LEPIDOPTEROUS LARVÆ.

BY HARRISON G. DYAR.

Colias Behrii, Edw.

Egg.—Spindle shaped, a little contracted just before the tip, with low longitudinal and transverse ridges, which divide the surface into shallow, rectangular parallelograms. Length, 1.3 mm.; width, .6 mm. The eggs are laid singly on the upper side of the leaves of a species of ground huckleberry, its food plant.

First stage.—Head rounded, dark brown; width, .25 mm. Body of normal shape, sordid whitish, apparently without marks; minutely pilose.

Fifth stage.—Head rounded, very slightly bilobed, slightly reticulated with brown; no other marks; width, 2 mm. Mouth parts brown; ocelli and jaws black. An even, pinkish white dorsal line, very narrowly black bordered, runs the length of the body, tapering a little at each end, obsolete on joints 2, 3 and 13. A broader, even, subdorsal line, nearly white on the edges, salmon-coloured centrally, and bordered above by a black lunate shade on the anterior part of each segment. A similar, very even substigmatal band, pinkish centrally; the bordering black shades surround the spiracles and are larger and more diffuse than those above the subdorsal band, but very faint on the thoracic segments. A faint, even, lateral band, paler than the ground colour, which is probably some shade of green in living specimens. Spiracles white, the pair on joint 12 larger than the others. Thoracic feet testaceous.

Pupa.—This seems not distinguishable from that of other species of *Colias*. Thorax large, the back arched and cases prominent; abdomen

tapering; cremaster short, square at tip, flattened and firmly adhering to the silken web. It appears to have been yellowish-green, a lateral pale line on the abdomen, the antenna cases marked with pink.

Described from alcoholic specimens collected by Mr. J. B. Lambert in the High Sierras of California. Concerning the habits of this insect, Mr. Lambert writes:—"July 27th, about nine or ten in the morning of the third day of search, I discovered the food-plant of the hardy little mountaineer. His little queen fluttered into the grass on the meadows at the base of Mt. Gibbs. When she had laid about five or six eggs, she flew on to the dry moraine and sandy hills to eat flowers, and in the meantime another took her place. The eggs were deposited on the low growing huckleberry vine, which is lower than the grasses that it grows among, affording protection to the eggs and larvæ against the dews and frosts that prevail at any day on the highland meadows. The males outnumber the emales six to one, according to my catch, as the latter feed on the flowers growing on the old moraines which rise up out of the meadows, and only fly to the meadows to deposit their eggs.

When the larvæ get large they hide, and in the first stage they are almost invisible. When $\frac{1}{4}$ inch long they are semi-transparent; when $\frac{1}{3}$ inch, they get about the colour of a lightly bruised apple and worm-like, without spines. They greatly resemble the withered huckleberry ruit. The eggs when first laid are glistening white, then dull white, and finally greenish. They hatch in six days."

Ichthyura vau, Fitch.

Egg.—Hemispherical, flat below, the shell semi-transparent white. Under the microscope it appears covered with small, slight depressions, closely crowded together and forming obscure roundedly hexagonal reticulations; diameter, .9 mm. Laid singly, or as many as seven together on the under side of a leaf. The larva hatches by eating a piece off of the vertex of the egg, which may remain attached to the shell like a circular trap door.

Third stage.—Head slightly bilobed, rounded, clypeus depressed, hairy, especially on the lower part; shining black throughout. Cervical shield and anal plate blackish. Body vinous-brown, with a broad band of sordid yellowish-white, absent on joints 5 and 12, and containing a

triple brown line. Subventral space, from the spiracles to the feet, irregularly mottled and streaked with yellowish. Feet black. The minute piliferous tubercles of rows 1 and 2 are stained yellow. Width of head, 1.2 mm.

Fourth stage.—Head round, full, pilose, blackish-brown, paler above the mouth and slightly shiny; width, 1.8 mm. Body largely obscure, purple-brown, this colour forming a triple dorsal line and covering the whole lateral area to the feet. Dorsum grayish-white between the lines, and this colour also obtains in a rather broad lateral line and minute mottlings all over the brown area, which are distinct without a lens only subventrally. Thoracic feet black, abdominal ones concolorous with the body. The tubercles are very inconspicuous, but row 1 is marked by little yellow dots through the whole length. The hairs are fine and short, pale, those arising from the body very much shorter than those from the tubercles. In another example joints 5 and 12 were seen to be slightly enlarged dorsally and coloured purple-brown, while all the tubercles of rows 1-5 were obscurely yellow.

Fifth stage.—Head slightly flat in front, blackish-brown, pale-purplish in the sutures; labrum sordid white; width, 2.3-2.5 mm. Body purplish-brown, marked as before, but the pale gray parts are slightly obscured by minute brown mottlings and the yellow piliferous tubercles are small but very distinct. Each bears its one hair and the rest of the body is minutely pilose. There are traces of a black bisected cervical shield; no distinct anal plate. In another example, the whole surface of the body was marbled with pale gray, greatly obscuring the lines, though the yellow tubercles were still distinct.

At maturity the body was sordid white, thickly mottled with pale brown, forming a faint triple dorsal, single subdorsal and stigmatal lines; spiracles black; tubercles orange.

Food-plant.—Species of willow (*Salix*). The larvæ live singly, each tightly wedged in a little house formed of leaves and silk, from which they come forth to feed. Larvæ from Boston, Mass.

NEBRASKA MYRIAPODA.

BY F. C. KENYAN, UNIVERSITY OF NEBRASKA.

Heretofore nothing concerning the Myriapoda of Nebraska has been published. Hence the following short list of species will not be without interest:—

Lysioptalum lactarium, (Say).

Parajulus canadensis, (Newp).

P. impressus, (Say).

Spirobolus marginatus, (Say) Newp.

Leptodesmus floridus, Wood.

Fontaria virginicensis, (Drury) J. E. Gray.

Paradesmus erythropygus, (Brandt) Wood.

Polydesmus canadensis, Newp.

P. granulatus, Say.

Scoliopterus bothriopus, (Wood) Mein.

Geophilus cephalicus, (Wood) Mein.

Geophilus bipuncticeps, Wood.

Scolopocryptops sexspinosus, (Say) Newp.

Scolopendra woodii, Mein.

Archilithabius malterris, sp. n.—Prosternal teeth, 2 + 2. Ocelli, 10-12, arranged in 3 rows. Antennal articles, 21. Coxal pores, 2, 3, 3, 2, 3, 3, 4, 3, or 10-13, round. Spines on the first pair of legs, 2, 3, 1; on the penultimate pair, 1, 3, 3; 1; on the anal pair, 1, 3, 2, 0. Claw of female genitalia entire. Slender, light chestnut, head darker. Joints of antennae rather long. Length, 12-13 mm.

From the Bad-lands, Sioux Co.

Archilithobius nebrascensis, sp. n.

Prosternal teeth, 2 + 2. Ocelli, 11-15, arranged in 3 rows. Antennae; articles, 20-21. Coxal pores, 2, 3, 3, 2-3, 4, 4, 3, or 10-14. Spines on the first pair of legs, 1, 1, 1-1, 2, 1; on the penultimate pair, 1, 3, 3, 2; on the anal pair, 1, 3, 2, 0. Claw of female genitalia bipartite. Rather robust. Orange-brown; head darker, smooth; shortly pilose. Head subrotundate. First scutum, large, subquadrate. Antennae, long, tapering, shortly pilose; articles long. Length, 11 mm.

A. dorsopinorum, sp. nv.

Prosternal teeth, 2 + 2. Ocelli, 11-15, arranged in 3 rows. Articles of the antennæ, 21. Coxal pores, 3, 4, 4, 3-4, 5, 5, 4, or 14-18. Spines on the first pair of legs, 1, 2, 1-2, 3, 1; on the penultimate pair, 1, 3, 2, 1-1, 3, 3, 2, on the anal pair, 1, 3, 2, 1. Penultimate pair of legs armed with 2 claws; the anal legs with one claw. Claw of female genitalia tripartite.

Body depressed. Light brown; head a little darker. Anal legs only slightly crassate.

This seems to be related to Bollman's *clatus*, but is distinguished from that species by having the ocelli and the coxal pores more numerous, and the spines of the anal legs differently arranged.

A. Bruneri, sp. nv.

Prosternal teeth, 2 + 2. Ocelli, 9-12, arranged in 3 rows. Antennal articles (♂) 20-(♀) 21. Coxal pores, round, 2, 3, 3, 2-3, 4, 4, 3, or 10-14. Spines on the first pair of legs, 0, 1, 1-2, 2, 1; on the penultimate pair, 1, 3, 3, 2; on the anal pair, 1, 3, 3, 1. Penultimate legs armed with 2 claws; the anal pair with one. Claw of female genitalia entire.

Scarcely robust. Light chestnut; head and first scutum darker; pilose. Head subrotundate; longer than broad. Antennal joint, head-like, thickly pilose. Body tapering anteriorly. Anal legs not crassate, pilose; fifth joint sulcate beneath; the last two joints decidedly flattened on the inner side.

Lithobius sexdentatus, sp. nv.

Prosternal teeth, 3 + 3. Ocelli, 19-24, arranged in 4 rows. Antennal articles, 20-21. Coxal pores, 4, 4, 5, 4-4, 5, 5, 4, or 17-18; round. Spines on the first pair of legs, 1, 3, 1-2, 3, 1; on the penultimate pair, 1, 3, 3, 2; on the anal pair, 1, 3, 2, 0. Anal and penultimate legs each armed with a single claw. Claw of female genitalia entire. Slightly robust, dark chestnut; head darker. Head subrotundate; longer than broad. Antennæ short, pilose, articles long. Anal legs slightly crassate. Length, 12 mm.

From the Bad-lands of Sioux Co.

L. Celer, Boll.

L. forficatus (Linn) Leach.

Neolithobius mordax, (Koch) Stux.

Scutigera forceps, (Raf.) Latr.

CORRESPONDENCE.

PARNASSIUS CLODIUS AND P. SMINTHEUS.

SIR,—Good specimens of these species are generally easily separated, but occasionally specimens are taken the identity of which it is difficult to decide. Mr. C. de Blois-Green, of Victoria, B. C., who has taken both specimens in large numbers, has drawn my attention to a character which he finds reliable in all instances. This is that in *Clodius* the antennæ are uniformly black, whilst in *Smintheus* they are ringed with white. Of course, when the abdominal pouch is attached, there is no difficulty in separating the female of *Clodius* with its large pouch from *Smintheus* with its small keel-shaped appendage. The value of these abdominal pouches has been well-worked out by Mr. H. J. Elwes in an exhaustive paper published in the Transactions of the Entomological Society of London. Some specimens received from Mr. de Blois-Green were sent to Dr. H. Strecker, and his opinion asked as to the value of the character based on the colour of the antennæ. His reply, which I think will be read with interest by lepidopterists, is as follows:—

“Your letter and the remnants of the *Parnassius* received. The latter are only *Clodius*, of the form found in the State of Washington and western British Columbia; those further south (California) are not as large nor as brightly coloured, as a general thing. Your correspondent is right in laying stress on the black antennæ. *Clodius* belongs to a group and is allied to some sub-group having black antennæ and large pouches. They embrace *Nordmanni*, from Armenia; *Clarius*, from W. Siberia; *Eversmanni*, from Alaska and Siberia; *Felderi*, the Amoor; *Mnemosync*, Germany- and Switzerland, etc.; *Stubendorfii*, Siberia; and *Glacialis*, Japan; whereas *Smintheus* has white-ringed antennæ, and its allies, distinguished further by the keel-shaped pouch, are *Apollo*, Germany; *Hesbolus*, Mongolia, etc.; *Nomion*, Siberia; *Jacquemonti*, Himalayahs, etc., with white-ringed antennæ also; but there are sub-groups allied to these with the same keel-like pouch as *Apollinus*, Tartary; *Honrathi*, Turkestan, etc., that have all black antennæ, so there is no rule without an exception. Our *Parnassius*, according to my views, are but three species:—

1. *Smintheus*, Dbldy—Hew.
2. *Clodius*, Men.
3. *Eversmanni*, Men.

All the others, such as *Thor*, *Menetriesii*, etc., are but varieties or aberrants. It would be easy to make fifty such species of *Smintheus* alone, if you took them at various altitudes and locations. Some butterflies, as, for instance, *Papilio Turnus*, of which I have great giants from North Carolina, Georgia, etc., expanding $5\frac{1}{2}$ inches, while others from the White Mountains spread only $2\frac{1}{2}$ inches, and there are all sorts of shades of yellow, orange, brown and black, and yet who would think of making a dozen species of these? I notice that Mr. W. H. Edwards includes *Par. Nomion* in our fauna. I think somehow he must be mistaken, unless possibly it was caught in Alaska."

HERMAN STRECKER."

Feeling sure that the above letter will be of interest to many of our readers, I have obtained Dr. Strecker's permission to publish it.

JAMES FLETCHER, Ottawa.

UNIDENTIFIED BOMBYCIDS.

SIR,—Messrs. Dyar and Neumoegen have struck a snag in their work, according to their statement in CAN. ENT. for May, 1893. I am glad that I am able to help them over one part of it. Of the "unidentified names," *Saligena personata* has been long since referred as a synonym of *Raphia frater*, and I am able to confirm the correctness of the reference. So *Edema obliqua* has been proved a noctuid, and an *Arzama*. As *Sphidia* or *Arzama obliquata*, it is a well-known insect. Messrs. Neumoegen and Dyar are following Mr. Kirby's use of generic terms very closely. It would be a matter of some interest if they would inform us whether, in the case of Hübner's *Tentamen*, they have independently concluded that it should be adopted, or whether they simply follow Mr. Kirby without original investigation. So few of the working entomologists have accepted the *Tentamen* as authority, that it is not impertinent to ask why they have joined the minority.

JOHN B. SMITH.

PROF. C. H. TYLER TOWNSEND

has been appointed Curator of the Museum at the Institute of Jamaica, in place of Mr. T. D. A. Cockerell, who has recently resigned on account of ill-health. Mr. Townsend's address is now Kingston, Jamaica, West Indies. We wish him much success and prosperity in his new position, and trust that he will continue to favour us with his valuable communications.

Mailed June 12th.