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The Canadian Entomologist.

VOL. VIII.

LONDON, ONT., JUNE, 1876.

No. 6

NOTES ON THE VARIATION IN COLOR OF *ÆDIPODA* *CORALLIPES* AND *ÆDIPODA* *CINCTA*.

BY G. M. DODGE, GLENCOE, DODGE CO., NEBRASKA.

Rev. Cyrus Thomas, in his *Acrididæ of North America*, page 132, says: "There are no permanent characters by which to distinguish alcoholic specimens of *Ædipoda corallipes*, *Haldemanii*, *paradoxa* and *rugosa* from each other." He therefore considers them the same. Probably *Æ. discoidea* might be considered as another variety of the same. This much named grasshopper is abundant in Nebraska from the middle of June to about the middle of August. Owing to its large size (which is exceeded here only by the huge, wingless *B. magnus*) and colored wings it is one of the most conspicuous of our Orthoptera. It would be difficult, if not impossible, to breed grasshoppers from the egg; the only way, therefore, to establish the relationship of different varieties, is by comparing a large number of fresh specimens, seconded by close observation of their habits. I have therefore collected and compared a large number of specimens of this species during the past summer. I find but little difference between them except in the color of the wings and hind femora and tibiæ; but these vary considerably, as the following table will show:

- Variety A. Wings yellow; inside of hind femora and hind tibiæ yellow.
- " B. Wings red; inside of hind femora and hind tibiæ yellow
(*Æ. paradoxa*).
- " C. Wings yellow; inside of hind femora and hind tibiæ bright red (*Æ. Haldemanii*).
- " D. Wings red; inside of hind femora and hind tibiæ bright red.
- " E. Wings yellow; inside of hind femora whitish, ribs brown; hind tibiæ yellow.
- " F. Wings yellow; inside of hind femora brown, lower sulcus blue; hind tibiæ yellow.

Variety G. Wings red ; inside of hind femora brown, lower sulcus green ; hind tibiae yellowish red.

“ H. Wings red ; inside of hind femora greenish blue ; hind tibiae yellow (*Æ. discoidea*).

Variety “D” I have frequently seen mated, but never with any other variety. This, then, may prove a distinct species, which point another season’s observation may determine. The other varieties mate indiscriminately and assume the imago form at the same time. Probably a close search would reveal other varieties not enumerated above.

A similar instance of variation in color is afforded by another Nebraska species, viz.. *Ædipoda cincta* Thos.

This species appeared sparingly last August. Its season was of short duration. It is of medium size and has spotted elytra similar to *Æ. corallipes*. In Mr. Thomas’ description of the ♀ the wings are said to be “transparent, base greenish yellow, a narrow fuliginous band across the middle, apex pellucid with a few fuscous dots.” This description applies very well to perhaps half the ♀ specimens obtained here ; although the band can hardly be called “narrow” as compared with our other *Ædipodas*. But specimens with the base of the wings red were quite as frequently seen, both males and females. The two varieties appeared at the same time, were found in company and disappeared together. Other than the color of the wings, there is no perceptible difference between them. The ♂, not described by Mr. Thomas, is smaller and darker than the ♀. It has several large fuscous spots at tip of wings ; the inside of hind femora and hind tibiae are of a more brilliant blue, and the whole upper side of the abdomen has, in life, the same beautiful color.

The species, as taken here, differs in several particulars from Mr. Thomas’ description of *cincta*, but is said by that gentleman to be identical.

The red winged var. may therefore be known as *Ædipoda cincta* var. *umbrator*. The measurements of both varieties are as follows :

Female—Length, 1.25 inches ; elytra, 1.20 inches ; hind femora, .65 in.
Male—Length, .95 inches ; elytra, .90 inches ; hind femora, .55 inches.

From the above notes it will be seen that color can not always be depended upon as a specific character in our *Ædipodini*. Undoubtedly the present number of supposed species could be greatly reduced by careful comparisons instituted on the field of collection.

TINEINA.

BY V. T. CHAMBERS, COVINGTON, KENTUCKY.

ADELA.

A. (Nematais?) trifasciella, ♂. *N. sp.*

Eyes large and close together on the vertex. Palpi, base of tongue and large basal joint of the antennæ, head and upper surface of the thorax, clothed with long blackish hairs, darker than the fore wings are, except at their base. The antennæ are more than twice the length of the wings and silvery white, the basal third dotted above with blackish. Wings and legs rich dark brown, changing with the light to green, blue, violet, bronze and golden. At about the basal fourth of the fore wings is a narrow white fascia, about or just behind the middle is another slightly angulated posteriorly; these two fasciæ are a little nearer together on the costal than on the dorsal margin, the first one being a little oblique, and before the apex is another costal streak perpendicular to the margin, and nearly opposite, but a little behind it, is a small dorsal white streak. Probably these two streaks are sometimes united; and the first two fasciæ are much less distinct in the middle than on the margins, and are possibly sometimes interrupted. The tarsi are grayish fuscous, annulate with white at the joints. *Al. ex.* $\frac{1}{2}$ inch. Received from Mr. James Behrens, of San Francisco, California.

A. fasciella, ♀. *N. sp.*

The white streaks and fasciæ on the wings resemble those of the preceding species, except that they are wider and more distinct. The middle one is not angulated, the first one *appears* to be a dorsal streak not crossing the wing, but this appearance may be the effect of slight denudation of the base of the dorsal margin; and the third streak stops abruptly close to the dorsal margin, is not interrupted and is not nearer to the apex on the dorsal than on the costal margin. All this, however, is within the ordinary range of variation within the limits of a species, and this *may* be the female of the preceding species. But the head and appendages are clothed with saffron hairs, instead of blackish, and the hairs are shorter. The antennæ are broken off, except the basal half of one, which has alternate black and white joints at the base, becoming black simply flecked

with white further on ; the basal joint is not swollen and the stalk is simple ; the color of the thorax and fore wings is as in the preceding species, but the reflections are more green and blue ; the hind wings are dark fuscous, *with a small white spot* about midway of the dorsal margin. The abdomen is narrow and pointed and of a rich brown hue. *Al. ex.* $\frac{1}{2}$ inch. Mr. Behrens, San Francisco.

A. flammeusella, ♀. *N. sp.*

A single specimen with both antennæ broken off near the base. The basal joint of the antennæ is not incisorate, and my notes made when the specimen was received say that the antennæ are black annulate with white. The palpi also are gone. The head is clothed with saffron yellow hairs as in the preceding species, and the body, the basal joints of the legs and the fore wings are rich greenish brown, varying with the light to purple, bronzy green or golden ; by gas light it appears bright golden and with the wings closed looks like a minute brilliant flame, whence the specific name. The fore wings have no markings except a minute whitish spot at the beginning of the costal ciliæ, which is also visible on the under side of the wing. It is a little smaller than either of the two preceding species, and like them was received from Mr. Behrens.

SEMELE.

S. argentinotella. *N. sp.*

Face and palpi pale stramineous, except the outer surface of the second joint of the palpi, which is black. Vertex, upper surface of the thorax and base of the wings of a rich black, the black of the base of the wings passing back along the fold and about the middle of the wing length, spreading gradually over the entire wing, but becoming more brownish and strongly bronzed. The costal and dorsal parts of the wing, where the black is confined mainly to the fold, are suffused with silvery white on a brown ground, which it almost obscures, and the white scales pass backwards into the bronzed brown parts of the wing behind the middle ; and there is also a patch of suffused white at the base of the dorsal ciliae before the apex ; the bronzed brown becomes deeper from the middle of the wing length backwards, and the apex is nearly black. There are two silvery spots at the end of the cell and six silvery costal streaks, or more properly, seven, but the first is on the extreme costa and seems to form part of the suffused white of that part of the wing ; the

next is short and very oblique, and a little before the middle; and each of the succeeding five is a little less oblique and a little larger, the last pointing obliquely forwards; there is a streak at the apex (or exceedingly close to it on the dorsal margin), and there are six dorsal silvery streaks, the first five pointing a little obliquely backwards, and the sixth opposite and perpendicular to the last costal streak. The first and second dorsal streaks are opposite, respectively, to the spaces between the second and third, and third and fourth costal streaks (counting seven costal streaks in all); the third and fourth dorsal streaks are closer together, and are both opposite the space between the fourth and fifth costal streaks, and the fifth dorsal is opposite the end of the fifth costal. The dorsal ciliae are whitish with two dark brown hinder marginal lines behind the tip of the wing, the first about the middle and the other near the end of the ciliae. All of the silvery streaks are very smooth and a little raised. The antennae are black except at the base beneath and the apical fifth of their length, which are creamy white. Hind wings and abdomen (except its under surface) purplish fuscous; under surface and anal tuft creamy white. The basal joints of the legs are also yellowish white; but the tibiae and tarsi are black on their anterior surfaces, and annulate with creamy white. *Al. ex.* $1\frac{1}{2}$ inch. Kentucky in June.

S. argentistrigella.

Tinea argentistrigella, ante v. 5, p. 89.

This species structurally and in ornamentation resembles the one above described. The head is not roughened as in *Tinea*, the long scales of the vertex project forwards rather than upwards and those of the face project upwards to meet them. I have not examined the neuriation of *S. bifasciella*, but that species differs from these two by having distinct tufts on the wings and the maxillary palpi folded more like those of *Tinea*. The labial palpi of these three species and the clothing of the head, form and size of the antennae and probably the neuriation of the wings are alike, and they are nearer my genus *Pityo* than to *Tinea*.

TINEA.

T. imitatorella. *N. sp.*

At page 85, vol. 5 of the CAN. ENT., I have described a species as *T. comitariella* (there misprinted *cunitariella*). It is not necessary to describe this species (*imitatorella*) otherwise than by a reference to the

description there given. It is proper to say, however, that the palpi and legs should rather be described as silvery gray, or as gray, with blackish markings on the legs, rather than as silvery white stained with fuscous. Captured specimens of *imitatorella* were for a long time placed among *cœmitariella*, though a close examination would have shown the difference. I did not, however, observe the difference until I bred from a new larval case a species which I recognized at first as *T. cœmitariella*. On examination of the specimen and comparison with bred specimens of *cœmitariella*—a single specimen of each—a difference was found in the costal and dorsal streaks on the wings, but an examination of other specimens showed that this could not be relied on, as both species vary greatly in this respect, as these markings vary from lines which cross the wings to mere dots on the margin. The legs of *imitatorella* are more decidedly black than in the other species, but the only important difference in the imago is in the antennæ. The antennæ of *cœmitariella* are robust and yellow banded above with fuscous lines, while those of *imitatorella* are quite slender and in color shining black. There is also a decided difference in the larval cases; that of *cœmitariella* is much depressed, narrow wing before each end, that is, scalloped on each side before each end, the under side truncated at each end and the upper projecting like the bowl of a spoon beyond it; the case of *imitatorella* is scarcely at all depressed, it is not scalloped as in *cœmitariella*, the upper side does not project beyond the lower, and the anterior end is narrower than the posterior one.

T. croceoverticella. *N. sp.*

Dark brown, in some lights strongly bronzed; head saffron colored; antennæ dark brown; palpi a little paler than the head; under surface silvery whitish faintly tinged with golden yellow; wings rather wide; ciliae grayish, with two brown hinder marginal lines, one at their base and the other beyond their middle. *Al. ex.* a little over $\frac{1}{4}$ inch. Kentucky.

T. thoracestrigella. *N. sp.*

Much like the above, but larger, having an *al. ex.* of more than $\frac{3}{8}$ of an inch. The fore wings are simply dark brown, without bronzy reflections; and so are the ciliae, which show no hinder marginal line; the hind wings also are brown, though paler than the fore wings. The head is more reddish saffron, and a line of that color extends from the head to the tip of the thorax. Otherwise it resembles the species above described.

ON HOMOPTERA AND ALLIED FORMS.

BY A. R. GROTE,

Director of the Museum, Buffalo Society Natural Sciences.

The species of *Homoptera* stand in need of a revision. They are usually but partially and confusedly named in such collections as I have had access to. With regard to the generic title, its acceptance is only provisional. Two species, *Phacocyma lunifera* Hübn. and *Phacocyma fluctuaris* Hübn., are unknown to me. The descriptions hitherto published in this genus are difficult to use for identification; no comparative characters are given, no analysis of the lines entered upon. The characters separating *Zalc* and *Ypsia* are in great part unexplained, and of the latter dependant on larval characters. *Obliqua*, *duplicata* and *benesignata* are allied, the two first perhaps synonymous; *nigricans* is unknown to me; probably no one has yet correctly identified *calycanthata* of Abbot & Smith. Walker's and Bethune's "*calycanthata*" is *Zalc horrida* Hübn. Guenee's *calycanthata* I think I have identified. *Minerea* I think I know. Walker's *herminioides* is *Episcuxis aemula*! Leaving Walker's names out of the question, we have *lunata*, *edusa* and *Saundersii* generally fixed in collections; besides this, I have *calycanthata* Guen. and *albifasciata* Beth. determined. *Atritincta* and *edusina* are small dark forms from Texas. The present paper calls attention to the want of information and is written in the hope that material will come in so that the species may be worked over. It is necessary in studying the species to observe the course of the thread-like transverse posterior (t. p.) line. In *lunata* it is waved; in its course superiorly, opposite the cell, it will be seen to be dentate in addition to the usual central indentation. It is also dentate in *Saundersii* and *edusa*. *Rosæ* Behr., from California, from a single specimen, does not seem to me distinct from *lunata*. Drury's fig. (pl. 20) is hardly well enough drawn to decide, but the t. p. line appears to be given as somewhat jagged, so I do not venture to alter our usual determination of his species, which is our dark brown and stouter form. Another species, which I propose to consider as *minerea*, is similar to *lunata*, but differs by this line, frequently obliterate, being nearly even except the discal notch; it is a little waved inferiorly, but is not dentate superiorly. *Minerea* is of

the same facies and color as *lunata*, and is not to be confounded with more grayish or blackish forms which have this line distinct and even. It has the same subterminal dark shades as *lunata*, and the discal lunule (reniform) black and large. From time to time I have suspected in it *minerea*, and smaller specimens as *lunifera*, but it can not be the latter. It is very common in Canada and often goes under the name *lunata*. In pale specimens the median space and terminal, above the inferior black shade, are concolorous, yellow brown, and the dark markings contrast. The subterminal black lunate shade is diffuse and broader than in *lunata*. Beneath the hollow reniform is more evident than in *lunata*; I do not think there is a character in the lines of the under surface; in *lunata* (Texas to Canada) these are variable. On the submedian space the t. p. line shows a slight notch or dot or thickening in *lunata*, wanting in *minerea*. *Minerea* is thinner bodied, and, perhaps, less compact and slighter winged than *lunata*. Else the two are nearly alike.

Saundersji is very like *lunata*, but has narrow whitish shades following the t. a. and subterminal lines; also on costa after the t. p. line. *Calycanthata* Guen. differs from *edusa* in the evenness of the t. p. line and richer color. *Albofasciata* differs by having a narrow white filling beyond the s. t. line. The two following forms seem to be undescribed.

Homoptera unilineata, n. s.

♂. This species is of the size of *Zalc horrida*. It is totally pale brown, with all the lines indistinct except the subterminal. The wings are crossed by nebulous striae of a darker hue. The orbicular is a black point. Reniform not legible on either surface. Subterminal line continuous, even, medially produced, geminate, its outer line bright ochre brown, space between its component lines pale. Terminal space faintly hoary, more distinctly striate. Hind wings concolorous with subterminal line alone distinct, black, obliterate on costal region. Wings dentate; fringes concolorous. Beneath without stigmata, paler, unicolorous, brown. Body parts concolorous. *Expanse* 43 mil. Canada, Mr. Saunders.

This cannot be *uniformis*, CAN. ENT., 7, 148, because that species is said to have "the subterminal line only seen as a black diffuse shade crossing the wings." This line is linear and very distinct in *unilineata*, and it is brown, its outer line bright ochre, on primaries. In *Zalc horrida* there is a rounded discal sinus to the s. t. line, wanting in *unilineata*.

Ypsia umbripennis, n. s.

♀. Size and markings of *undularis*; black with the median space of primaries inferiorly and base of secondaries brownish. At once distinguished from *undularis* by two white linear shades accompanying the t. p. line and before it, from disc to internal margin. The lines and outline of the reniform velvety black. Subterminal line marked with whitish opposite the cell. Hind wings with the white linear shades from the cell to internal margin. Beneath dark brown with empty reniform and transverse lines. Head and thorax black. *Expanse* 43 mil. Grimsby, Mr. Pettit; London, Mr. Saunders.

Very much like *undularis*, but noticeably different by the white lines on both wings. This may be Walker's variety of "*squamularis*"; if so he has not unlikely transposed *coricias* and *undularis*.

NOTES ON LITODONTA, WITH REMARKS ON
ONCOCNEMIS.

BY LEON F. HARVEY, A. M., M. D., BUFFALO, N. Y.

In a collection sent by Mr. Belfrage from Bosque Co., Texas, are 15 generally fresh specimens of this genus which I have carefully examined. The type of *hydromeli* ♂ is numbered 527 (violet label), the ♀ 246 (red label). The orange dots following the fuscous blotches of the subterminal line are less evident in the male, and at the base of the wing the orange powdering is less prominent. I am inclined to consider seven specimens, two males, five females, captured from May 3rd to May 21st, as typical.

The variation is in the extent of the orange shadings. The abdomen of the male is a trifle longer, and the hind wings more purely whitish. The antennæ in both sexes are feathered, the tips being simple; in the males the pectinations are a little longer. The hind wings of one female are almost blackish, save the bases, and there is but the slightest trace of orange on fore wings; another is very small, measuring but 26 m. m., the

orange observable only behind the s. t. line. These specimens are numbered 246, 247, 527, 528, 529, two unnumbered. There can hardly be a specific value due to the presence of the orange scales. Throughout the same characters of ornamentation prevail. With other six males no orange is apparent; the green approaches a bluish tinge, with possibly a clearer ground to the wing. Of these three were taken in May, two in August, and one in November. I cannot regard them as differing from *hydromeli*; there are a very few orange scales behind the more isolated spot of the s. t. line, between the second and third nervule, in the November ♂. At the present writing I do not feel justified in expressing the difference by a name. Two of these are numbered 248 and 531. Two other males are different in the total absence of all green color, the prevailing colors being white and blackish. The 10th and 11th of August are the dates of their capture, and they are numbered 530. It may be well to note this difference, whether it be specific or not, expressing it by the name *fusca*. This name is based on perfectly fresh specimens, not faded ones, originally, perhaps, green. There is the slightest possible trace of a warm tint behind the s. t. line. On the costa of the hind wings there is a little shading, the usual faint pale band being apparent. In these two examples there is no essential difference other than noted from the rest of the specimens. As is usual, the t. a. line is denticulate on the costa, then waved and geminate, the white costal filling being present in a marked degree, as well as the white filling to the sub-basal line. From a casual glance at these insects and from the numbers of Mr. Belfrage, I was led to expect two or three species. Now I have to record only one, yet *fusca* may hereafter lay claim to specific value.

Lederer, in writing of the genus *Oncocnemis*, says that the species are found in the Ural and Altai Mountains, and we have no information of any other European locality. Mr. Grote first discovered it in this country, as found in Colorado, thus stamping it more thoroughly, as he thought, as a mountainous insect. But lately it has been captured in three widely different localities. *O. riparia* Morrison = *Chandleri* Grote, found on Staten Island, N. Y., by Mr. Fred. Tepper; *O. Chandleri*, found in Eric Co., N. Y., by Miss Mary E. Walker; *O. augustus* Harvey, collected by Mr. Belfrage in Bosque Co., Texas. Mr. Grote has just described another species, *O. Saundersiana*, Grimsby, Canada (Mr. Pettit). We have here a very wide range, showing conclusively that its habitat is of the low as well as the high lands, of the south as of the north.

NEW MOTHS.

BY A. R. GROTE, BUFFALO, N. Y.

Botis submedialis, n. s.

Allied to *marculenta* G. & R. Stouter, of a duskier yellow. Distinguished by the open, fuscous-ringed discal spots and by the presence of a similar spot on the median space inferiorly, below the median vein. These ringed spots are inconspicuous. The subterminal line of *marculenta* is obsolete. Secondaries with a broader angulated median fuscous fascia; the subterminal again wanting. Beneath fuscous, with the outer transverse line on the fore wings picked out by interspaceal pale blotches.

Expanse 27 mil. Hab. Canada (Mr. Saunders).

Hydrocampha ekthlipsis, n. s.

Size of *genuinalis* Led., with the wings more pointed and the external margin more sinuate. Dusky yellow with white spots margined by black lines. Two of these spots superposed on median space, the lower the larger, pyramidal. A large white spot open to costa at outer third, its outer edge rounded; in *genuinalis* this spot has its outer edge alone distinct and concave. A fine brown line, submedially angulate, follows this outer spot on the yellow ground color of the wing. Then a subterminal whitish shade band is bordered inwardly by a diffuse dentate brown line, and outwardly by an even dark line; terminal space even, yellow. This ornamentation is repeated on hind wings where the median spots are confluent. Beneath as above.

Expanse 22 mil. Albany (O. Meske); London (Mr. Saunders).

Eurymene rosaria G. & R. MS.

Entirely pale yellow with the transverse lines appearing as diffuse darker bands, the outer stained with blackish and pink at internal margin. External margin of fore wings rounded. Costa at base flushed with pink. Hind wings with an olive-colored curved abbreviated band at internal angle, outwardly diffusely pink. Beneath more brightly yellow, unicolorous, with the secondaries pink beyond the flexed outer line. No discal marks. Abdomen beneath and fore femora pink. This species has been distributed under the above MS. name, but not as yet described.

It is said to feed on Willow (Saunders). It is a well-sized species with indeterminate lines and no discal spots. The female expands 38 mil.

Eurymene Kuetzingi Grote.

A description and the type of this purple-black species have been sent to Prof. Packard for publication in his expected monograph of the Geometræ. It is named for Mr. Kuetzing, of Montreal, who found the species.

Sisyrosea, n. g.

The type of this genus is the *Limacodes inornatus* of Grote and Robinson. *Sisyrosea inornata* has the male antennæ bipectinate, with converging setose branches, throughout their length. The palpi are prominent, the body thickly scaled. The moths are of the size of the species of *Euclea* as defined by Packard. The color recalls the sack-bearing species of *Perophora*. *S. inornata* is immaculate, without lines (Am. N. Y. Lyc. N. Hist., 8, 1866).

Sisyrosea Nasoni, n. s.

♂ ♀. This species is of a pale brownish color, like its congener, sparsely sprinkled with black. An oblique dark brown line crosses the fore wings from apical third of costal to basal third of internal margin. A second subterminal dark brown line crosses the wing straightly. Both lines are faintly pale bordered outwardly. The thorax is slightly brighter, reddish tinged. *Expanse* 1 inch to 1¼.

Collected by Dr. William A. Nason, after whom the species is named, in Virginia.

CANADIAN INSECTS AT THE CENTENNIAL.—It will please our friends to know that the collection of insects sent from the Entomological Society of Ontario to the Centennial Exposition in Philadelphia, arrived there in excellent order. Visitors will find it displayed in the Canadian department in the Agricultural Hall. There are eighty-six cases in all, arranged in a double row on a suitable stand, which is over seventy-six feet in length. We think the collection does great credit to the energy and industry of our members.

NOTES ON ENTOMOLOGICAL NOMENCLATURE.

Part II.

BY W. H. EDWARDS.

(Concluded).

In coitus 26 are 4 species, 3 of which are put in *Myrina* Fab., one of the genera of the *Lycæniinae*, and 1 in *Euselasia* Hüb., of the *Lemoniinae*. But the coitus *Euselasia* is in the other Tribe, and third Stirps of same, the *Napæae*!

Second Stirps *Archontes* (*Papilio*, etc.), 1st family *Heroici*, 2nd coitus *Jasonides*, under which stand *Machaon* and *Turnus*. Third coitus *Euphœades*, under which stand *Glaucus* (black female of *Turnus*), *Troilus* and *Asterias*. That is, according to the Hübnerian view, *Turnus* is nearer to *Machaon* than to its own female; and *Glaucus* is nearer to *Asterias* than to its own male! In Scudder's Revision he puts *Asterias* in the genus *Amaryssus* Dalman, and *Glaucus* into *Euphœades* Hübner, bringing *Turnus* out of *Jasonides* to join his mate, and puts *Troilus* into a new genus, calling it *Pterourus* Scopoli, 1,777. But in the Hist. Sketch he sees fit to condemn Scopoli's *Pterourus* with ignominy, in spite of the inexorable, on account of "the incongruity of the materials of which the genus is composed." However Scopoli's group only contained *Papilios*, *Theclas*, *Hesperians* and heterocerous moths, and why it should be so treated when Hübner's amazing coitus are called generic and made much of, is not clear to the average mind.* But as it would not do to leave *Troilus* outside because of Scopoli's bad taste, Mr. Scudder felt compelled to utilize *Jasonides*, and into it is now thrust *Glaucus*, with which the ghost of Hübner may well feel disgusted. After he had gotten his little

* I have taken some pains to compare the coitus names with the generic names given in the Hist. Sketch, to see if any had been rejected on account of the "incongruity of the materials," but in no case do I discover that this has happened. In *Callidula*, where the Sketch says the coitus is made up of one butterfly and two moths, the author merely suggests that the "genus may be referred to the heterocerous lepidoptera." Had there been two butterflies and one moth, he would have referred it to the butterflies.

black heap so carefully together, for a stranger to pick out one and toss it over to the yellows, shows a degree of irreverence for Hübner's arrangement that is disturbing. So it happens, that in the various works of Mr. Scudder, *Troilus* has gone by three different generic titles within five years, namely, *Papilio Troilus*, *Pterourus Troilus* and *Euphœades Troilus* ! Now all this trouble could have been avoided had the genus been called *Pterourus Scudder*, as it really was. *Scopoli* had no more to do with Scudder's genus *Pterourus* than had *Julius Cæsar*.

All the first 18 coitus of the first 2 families of the Archontes are put by Kirby in *Papilio* Linn., he paying no heed to the *Verzeichniss* divisions of this genus. The 4th coitus, 1st family, contains 6 species, of which our *Cresphontes* is one. Another is *Pelaus* Fab., which is given in the *Verz.* as a synonym of *Torquatus* Cram., and looking up the latter in Kirby, it stands as male of a distinct species whose female is *Caudius Hübner*, which in the *Verzeichniss* is in the 2nd family *Priamides*, separated by one family and nine coitus from its mate !

In 5th coitus stands *Pammon* Linn. Its variety *Mutius* is in the 6th as are also its females, *Theseus* and *Romulus*.

In the 2nd family, *Echemon* Hübner is male, and is in the 1st coitus, while its female, *Echelus*, is in the 2nd coitus. So in 1st is *Tellus*, which is the female of *Sesostris*, in 2nd. And *Marcus* in 1st is female of *Aeneas* in 2nd. And *Anchises* Linn. in 1st is a synonym of *Lysander* Cramer, which is in the 2nd.

In the 6th coitus are two species only, one of which stands in Kirby No. 19 on the list of *Papilios*, the other No. 91. And all through these two families the species skip about in Kirby from one part of *Papilio* to another, two adjoining species in one coitus being often separated by species which go to form parts of several other coitus in the *Verzeichniss*. Thus, between *Anchises* Cramer and the next species, *Echemon*, of the *Verz.*, stand seven species in Kirby, all of which are enumerated by Hübner, and are scattered over 2 families and 3 coitus. So between *Ulysses* Linn. and the next in same coitus, *Philenor* Fab., stand in Kirby 23 of Hübner's species, from 2 families and 9 coitus.

What better illustration could be given of the true nature of this unnatural system than is displayed in these *Papilios*, the coitus based on no tangible character, the species raked together in heaps according to color or size of wing ; males parted from their mates, varieties from the parent species, one dimorphic form from its fellow ; congeneric species in

different parts of the field and even over the fence in the next one, while the most distantly related species of the genus lie side by side. Is it possible that such assemblages deserve to be treated as genera !

Mr. Scudder bears hard upon Herr Koch, because he divided the *Papilio*s according to the presence or absence of tails, as *caudati*, *caunati*, etc., and calls it "an extraordinary case of the survival of the spirit of mediæval science; would not have been excusable, scarcely tolerable, if it had been proposed in the middle of the last century; it is astonishing that it was allowed to appear in the respectable journal of Stettin, and of course they must drop," etc. (Hist. Sketch). But really I do not see why Koch should be thus flouted for dividing the *Papilio*s in 1860 by their tails, when in 1875 *Jasonides* is pronounced by Mr. Scudder himself a satisfactory genus, "the hind wings tolerably long and tolerably short tailed." Or *Heraclides*, "the hind wings tolerably short and broad tailed." Why not the same sauce for both sexes of the goose !

Third Stirps *Andropoda*, 2nd family, 3rd coitus *Zerene*, thus defined: "Wings bright yellow, black margined, red fringed," and here stand the yellow species of *Colias*, namely, *Palacno*, *Caesonia*, etc. In the 4th coitus, *Colotides*, come the orange species of *Colias*, *Edusa*, *Eurytheme*, etc., and it is defined, "wings above reddish-yellow with reflections, black margined." No more unreasonable than hundreds of other coitus, and showing very clearly that a coitus is a group of less value than a genus, in some cases. In others they are greater than a genus, as I have said; and if any of them are co-extensive with a genus, it is plainly by the merest chance. I would note here that *Colotides* would certainly have embraced the N. Am. *Colias Eurydice*, which is congeneric with *Caesonia*, but reddish, while the latter is yellow. And the female of *Eurydice* would as certainly have gone in a different coitus, had Hübner known of it.*

In this Stirps, *Pieris Schrank* picks species from 1st family, 1st, 2nd, and 8th to 12th coitus.

Tachyris Wall. picks from 2nd, 3rd, 6th, 10th, 11th, and also 2 species from the 3rd Stirps of the 1st Tribe, *Napacæ* !

Pontia Fab. selects from 1st family 4th, and 2nd family 2nd coitus. And the 1st coitus of the 3rd family has 2 species, both of which are put to *Dismorphia* Hüb., one of the coitus of 1st Tribe, 1st Stirps, *Nereides* !

* It appears from the above that the name *Zerene*, supposing a coitus name to be applicable as a generic name, cannot be applied to the species *Eurydice*, and therefore to *Caesonia*, as Mr. Scudder has done in his Revision, *Zerene* only including "bright yellow" butterflies. Let us respect Hübner as well as admire him.

And so I might go through the rest of the *gentiles* to the end of the *Hesperidae*, and for all that matter, through the volume. But I think I have shown the "utter want of agreement between Hübner's groups and modern genera."

How incomplete and indefinite the characters given to the *Stirps* are I have shown, and yet these are of all the definitions in the book the ones especially requiring careful elaboration. There is nothing in them that prevented Hübner himself from assigning to one *Stirps* species which are congeneric with species of another. I have given repeated instances of this. The family has the same style of definition as the *coitus*, based almost wholly on color, and consequently we see that the limits of neither are at all heeded by the modern systematist. The family names are to-day, in spite of laws and canons, ignored as unmanageable, but the *coitus* are every whit as bad and can only be used by totally disregarding the characters assigned them by Hübner. In fact these characters in the hands of the systematist are as if they had never been written. He makes up his own genera upon principles which Hübner never dreamed of, and takes what species he likes and leaves what he likes all over this book. If he gave his new genus his own name as the maker of it, not an objection could be made. It certainly is his and can go by the name of another only by a fiction. But among the late genus makers—and genus making has become a special craft—the usage has obtained to select for the group of species to be distinguished, a name from some old author, most especially one of Hübner's *coitus* names, and whether or not any species enumerated under the *coitus* be included in the new genus is a matter of not the least moment, any more than whether the definition of the *coitus* is applicable or not, and affix to it the name "Hub., 1816." Now, why is that? It certainly says as plainly as words can make it, "Hubner created this genus and gave it this name, in 1816," which is false. But by saying it and sticking to it, the modern maker by his pertinacity gets a place for his spurious genus as by right of usage before long, and his claim of priority is held by himself and the rest of the guild to cut off all other authors from the fictitious date to the present day. The scandalous injustice of this proceeding ought to be apparent to every one concerned. And apart from the injustice, the immediate effect is to unsettle the nomenclature and to hold it in that condition. Mr. Scudder excuses himself for having introduced hundreds of names from Hubner and other ancient authors as generic, which names never before were heard of, and nearly all of which are used to supercede the work of com-

petent lepidopterists, by hoping that he "has done something towards introducing some degree of *fixity, logic and precision* in the generic nomenclature." It strikes me rather that "something has been done" in the direction of chaos. And when I consider the mischief caused by the manufacture of spurious genera, and the excessive multiplication of genera on characters almost too trivial to be specific, and the wholesale creation of genera by mere enumeration of species, or by the mention of a single species only as type, which has of late prevailed, I do not hesitate to say that it would have been better to-day for this science had not a new genus been promulgated these last fifteen years. Nearly the whole movement, in this country at least, during this period, has been based in error, and very few indeed of the genera will bear examination.

There is but one remedy for this state of things, and fortunately, it is simple. Let each genus created since the date when the Rules of the British Association were adopted, viz., 1842, be tried by those Rules, and *those found wanting be rejected, no matter who made them.* For genera before 1842, as between two names in use, the prior right should belong to the first named. *But no name then in use should give way to an obsolete or rejected name, even though the latter be of prior date.* And next, *let each genus be called by the name of its real, not reputed, author.* A genus will then stand on its own merits and we shall see but little more of this unseemly and reckless genus making. I hope to see the adoption of Rules to this effect by the Entomological section of the Am. Association at its next meeting, and this will be the first step of real progress in reforming the nomenclature. But the Rules already binding disposes of a very large percentage of the generic names brought forward in the Historical Sketch. Certainly of 400 or more taken from the Tentamen and the various works of Hübner, most especially from this most foolish work, the Verzeichniss bekannter Schmetterlinge.

To show that I do not stand alone in condemnation of Hübner as an authority for genera, I will give in conclusion the language of certain lepidopterists, *facile principes*, whose opinions on this subject are entitled to consideration.

Dr. A. Speyer, Ent. Zeit. Stett. 1875, after stating that he had never seen the Tentamen and therefore could not pass judgment upon its names, thus says of the Verz. bek. Schmett.: "*It passes for an undisputed principle that other rights are needed to introduce a new species than merely giving it a name. It must be accompanied by a description or a drawing*

which shall make it recognizable. This same principle is carried out no less in regard to generic names. They first receive their authority from the subjoined sufficient characterization. We may give the most liberal interpretation to this demand, and indeed must do so, especially with regard to the earlier authors. One may perhaps go so far as to regard a genus as sufficiently characterized by the species correctly placed beneath it. But hardly any one could assert that the great majority of Hübner's genera could be considered as scientifically established even with the most liberal interpretation. The greater part of them are only described according to agreement, often very superficial, in color and markings and perfectly insignificant characteristics. The names in this catalogue have besides no more right to stand than other so-called catalogue names—for instance, most specific names in the Vienna Catalogue. They may be used in the erection of new genera, since they are mostly well chosen, but by no means have a right to supplant later but well founded genera.”¹

“This work (Hübner's Verzeichniss) had been systematically set aside as an authority by most European entomologists because it was felt that his so-called genera were mere guesses founded on facies alone—happy guesses no doubt sometimes, but as frequently wrong as right—and wholly without such definition as was held, even in his own day, to be required to constitute a new genus. . . . The proper course to be taken is to reinstate every name which of late years has been made to give place to one of Hübner's, and further to treat the Verzeichniss as a mere Catalogue which can never be quoted as an authority for genera. . . . Such old names as Chionobas, Agraulis, Eresia, Terias, Callidryas, Anthocharis, with many more, are changed for others which most of us have never heard of, and which generally are to be found in no other work than Hübner's obsolete and worthless Catalogue. . . . As a matter of justice it may be maintained that we should recognize the careful and elaborate definition of a Doubleday or a Westwood, rather than the childish guesses of a Hübner, and should quote the former as the authority for the genus, even should they out of courtesy have adopted the names of the latter.” A. R. Wallace, Ann. Address, before cited.

“We cannot approve the names borrowed from the coitus of Hübner and applied by certain entomologists to their so-called genera. Hübner had never seen in nature the sixth part of the Lepidoptera which he has undertaken to group from their superficialities. He has given no where a positive character to his coitus, in which the species are often assorted by chance. We could cite more than one instance where a variety is not

placed in the same group with its parent species. *What would be said of a botanist who should define his genera by the color of the flowers, the marbling or the pinking of the leaves!* It is for these reasons that, after the example of Ochseneimer, of Latreille, of Godart, of Treitschke, of Duponchel, of Gueneé, etc., we reject this sort of genera and consider them as not having been made." Dr. Boisduval, Spec. Gen. Het. Sphin., 1874.

"We should likewise speak of the classification of Hübner, but we have never been able to comprehend the principle on which it is based. This author so often places in distinct genera species between which are scarcely found specific distinctions, that the whole forms for us a chaos almost unintelligible. In our opinion, while Hübner is the first of iconographers, he is the last of systematists." Boisduval, Spec. Gen., I, p. 153, 1836.

"I must not pass in silence his Systematic Catalogue, to which there seems some disposition to return after it has been justly neglected for thirty years. I cannot deny that it contains some happy hits, some natural groups, but one could scarcely assert that there are many such. On the other hand, he has multiplied genera with an incredible recklessness. Many pages would be required in citing all the examples. . . . Our *Xanthia* are scattered over 7 coitus, *Agrotis* comprises not less than 17! And yet one would be mistaken if he thought this extreme division permitted Hübner to bring together only analogous species. The genera of fewest species are often the most heterogeneous. (Here several examples are given.) His Tribes agree among themselves no better than his genera. I have given these examples because there seems to day a desire to erect the Verzeichniss into an authority, and it was well to show why I consider it, with my associate (Boisduval), as not having been made, and why I have not felt myself obliged to employ the generic names of this still-born work." Gueneé, Spec. Gen. Noct. I, Pref., p. 73, 1852.

NOTES ON PREPARATORY STAGES OF DANAI ARCHIPPUS.

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

On the 14th May last I found several eggs of *archippus* on milkweed. These hatched on the 17th inst. On the 19th all had passed first moult. On the 21st all had passed second moult. On the 22nd two

passed third moult. On the 25th these two passed fourth moult, and were one inch long. They continued to grow till the 29th, when they measured 1.8 inch, and in the morning had fixed for chrysalis. Made chrysalis in the afternoon of same day, and the butterflies emerged on 9th June. Time from hatching to chrysalis 12 days. A female, which I confined on milkweed, laid eggs on 24th May, which hatched on 30th, by which the duration of the egg stage would be 6 days, of the chrysalis 11 days, deposition of the egg to the butterfly 29 days. This is surprisingly rapid. The larvæ which delayed a little the third moult passed the same shortly after, and became butterflies within from one to three days after the first two mentioned. There has been some uncertainty as to the number of moults of this species, some authors giving three only. I have had for two years a series of drawings made by Miss Peart, in 1873, representing all these stages, as followed out by herself, near Philadelphia, and she found and figured the four moults. In this region there are at least two broods annually, the later one appearing about the 1st of October, and the butterflies hibernate.

CORRESPONDENCE.

DEAR SIR,—

In a recent number of the C. E., my friend, W. V. Andrews, desired to know if any of the readers of the ENT. had taken brown larvæ of *Ceratonia quadricornis*. Three years ago they were common here on the English elms, and a large proportion of them were brown; indeed, the green ones were the exception. ROBERT BUNKER, Rochester, N. Y.

DEAR SIR,—

I recently had the pleasure of receiving a female *Smerinthus cerisii* Kirby, which I believe is the only known example of that sex. This interesting specimen was captured in Maine. Yours truly,

GEO. W. PECK, New York.