I have elsewhere explained myself. There are several other points in Prof. Smith's paper to which I could reply, or as to which I could express an adverse opinion, but I am so much gratified that a needed revision of the species of *Agrotis* has been accomplished, that my own justification or the vindication of my priority in particular instances, becomes a matter of little moment. Any errors it may contain will no doubt be rectified in the future, and in the meantime we have in it a valuable repository of our knowledge of the North American species of *Agrotis*.

ON THE POSITION OF LIMENITIS PROSERPINA, EDW.

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

Mr. Scudder, in Butt. N. E., argues at length in favor of considering *Proserpina* as neither more or less than a hybrid between *L. Arthemis* and *L. Ursula* (called *Astyanax**). I differ from him, holding *Proserpina* to be a dimorphic form of *Arthemis*, just as *Papilio Glaucus* is a dimorphic form of *P. Turnus*.

**Astyanax* is one of the resurrected names which I, with many entomologists, hold to be objectionable and not to be adopted to the exclusion of names long in use and familiar, repeatedly treated of and figured in books. In the words of the late B. D. Walsh, one might as well "tell New Yorkers to call their city New Amsterdam, or the English to have their letters addressed to Londinium, because these were the original names." Fabricius, in 1775, named the species *Astyanax*. In 1793 he renamed it *Ursula*, for the following reason: it then stood in the genus *Papilio*, in which also stood another species by name of *Astyanax*. He therefore changed the first of these to *Ursula*, and by this name the species has been known to this day—almost 100 years. It is so figured by Abbott and Smith, 1797, and by Boisduval and Leconte, 1833. That Fabricius was right in changing the name to avoid a duplicate in the same genus is undoubted, and although the second *Astyanax* has since been found to be the female of something else, there is no reason for now disturbing *Ursula*. It was a common practice with the early naturalists, and especially with Linnaeus, to change a name given for another, and the change was accepted by their contemporaries. In some cases we can to-day see the reason; in others we cannot, but that there was a sufficient reason at the time is not to be questioned. There was no "priority rule" at that day. To deny that Linnaeus had the right to change one of his own names if he saw fit is a piece of impertinence. No rule of the kind spoken of was ever adopted till 1842, and that could properly have no retroactive effect. The resurrection of obsolete names has been the greatest possible nuisance during the last 20 years or since the publication of Kirby's Catalogue. Two years after the appearance of this Catalogue in 1872 1st July, as appears by the Trans. Ent. Soc., London, the following circular, addressed to entomologists, was laid before the Society, with signatures of most of the leading British entomologists appended:— 'ENTOMOLOGICAL NOMENCLATURE.—The undersigned considering the confusion with which entomological nomenclature is threatened (and from which it is already to no small extent suffering) by the reinstatement of forgotten names to supersede

Now what are the known facts about *Proserpina*?

1. The species *Arthemis*, black, with a broad common band of white across the disks, occupies the whole northern part of the continent, from ocean to ocean, and from the Arctic Circle to northern Massachusetts and westward to Wisconsin.

2. Along the southern border of the range of *Arthemis*, in certain localities only, there flies, and constantly associates with it, a small black form agreeing exactly with it in size and in outline of wings. This form may either be without a white stripe across the disks (*vide* Butt. N. A., 2, pl. 36, fig. 5), or it may present such a stripe corresponding in position

those in universal employment, urge upon entomologists the desirability of ignoring the names so brought forward until such time as the method of dealing with them shall be settled by common agreement.

"(Signed) H. W. Bates. Alfred R. Wallace. Wm. C. Hewitson. Francis P. Pascoe. T. Vernon Wollaston. John A. Power. Samuel Stevens. Edward Sheppard. Ferdinand Grut. J. W. Dunning. Frederic Moore.	W. Arnold Lewis. Frederick Bond. J. Jenner Weir. E. Shepherd. Edw. W. Janson. Edw. Newman. E. T. Higgins. B. F. Logan. J. Greene. Thos. H. Briggs. W. C. Boyd.
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Howard Vaughan."

And following this: "Professor Westwood stated that . . . he considered a law similar to that which limits adverse claims to real property in this country to a period of twenty years, might with equal advantage be applied in zoology."

Now, since 1872, there has been no "common agreement" by entomologists as "to the method of dealing" with these "forgotten names," and the question stands just where it stood then. Mr. Scudder, apparently, in order to get some show of authority for resurrecting dead names, has followed he says, "the rules laid down by the American Ornithologists Union"! (What have entomologists to do with the rules of American Ornithologists?) And so he displaces a large proportion of the recognized names in American lepidopterology for dead and forgotten and what is worse, often wholly unauthenticated ones. Thus we get *Danaus Plexippus* for *D. Archippus* (in his earlier writings he called it *D. Eriippus*), *Limenitis Archippus* for *L. Disippus*, *Papilio Polyxenes* for *P. Asterias*, *Neonympha Eurydice* for *N. Canthus* (absolutely without any right whatever), *N. Phocion* for *N. Areolatus*, *N. Cornelius* for *N. Gemma* (both these unauthenticated), etc., etc., without end. One of the strangest changes of all is that of *Papilio Turnus* into *P. Glaucus*. *Turnus* has been described 119 years, and during the entire period has been known by that name alone. *Glaucus* was described 126 years ago from one sex only. It is not a species at all, it is the black dimorphic female of *Turnus*, and it has no corresponding male. It is scarcely twenty years since this fact was made known. As a dimorphic form it needs a distinguishing name. It is the practice to give such forms names. Mr. Scudder now calls the entire species *Glaucus*, but to get a name for the black female he calls it *Glaucus-Glaucus*! and there is no *Turnus* any more. Is not that a precious device! I advise every lepidopterist to ignore such changes, one and all, and to adhere to the accustomed names, nearly every one of which has a full century of undisputed title.

to the outer edge of the white band of *Arthemis* (as in Butt. N. A., 1, pl. 41, figs. 1, 2). It is rarely or never solid white, of clear colour, as in *Arthemis*, but is slight and often nebulous.

3. South of the territory occupied by *Arthemis* is the black species, *Ursula*, flying to the Gulf of Mexico and at the southwest, in Arizona at least. Over a considerable belt, say perhaps of fifty to one hundred miles width, along the southern range of *Arthemis* and northern range of *Ursula*, many examples have been taken which are undisputed *Ursula*, but have more or less distinct traces of a white stripe similar to that seen in *Proserpina* (Butt. N. A., I, pl. 41, figs. 3, 41, for such an example of *Ursula*), though never so heavy as in the most strongly marked examples of *Proserpina*. South of this belt, so far as I am aware, such striped examples have not been taken. *Ursula* without modification or variation occupies many degrees of latitude, but in the southwest comes to be considerably changed and is lost in its variety *Arizonensis*.

4. I myself obtained eggs from a female *Proserpina* at Stony Clove, in the town of Hunter, in the Catskills, elevation 2,000 feet, and from these eggs raised four pupæ from which came three *Arthemis* and one *Proserpina* (this last is figured in Vol. II. before cited), so establishing the dimorphism. The relationship of the two forms had been suspected but never proved. Mr. Mead relates, CAN. ENT. VII, 162, that he obtained about 500 eggs from fifteen females *Arthemis*, and 31 eggs from a single female *Proserpina* at same time, showing the black female to be as fertile as the pied one.

5. I am thoroughly familiar with this part of the Catskills—in fact was born and bred in the town of Hunter—and for many years collected butterflies there, and I can say positively that I have never seen an example of *Ursula* there. It does not fly at all in that elevated district. On reaching the Valley of the Hudson, ten miles west from Stony Clove, *Ursula* begins to appear. Nowhere is the surface in Hunter at less than 1,700 feet, and all the highest peaks of the range are within the town limits. Between the Clove and the river valley are Round Top, High Peak, etc., and the lowest ground is the summit of the Kaaterskill Clove, elevation nearly 3,000 feet.

6. In preparing the text for *L. Arthemis* for Butt. N. A., I made careful enquiries about *Proserpina* all along the line from Maine to Wisconsin, and published the information gained. This form was rare in Maine, not common in south New Hampshire, unknown in Vermont, as also

in the Adirondacks of New York; common in middle Michigan, and in certain localities in Wisconsin. Had not been seen at Toronto, Canada, but occasionally was noticed at Hamilton. That is, along a line of 1,000 to 1,500 miles on the southern border of the range of *Arthemis*, and the northern border of the range of *Ursula*, at a few spots only had *Proserpina* been observed east of Michigan (to the west there is no definite information). The only region where *Proserpina* was known to be abundant is in the town of Hunter above spoken of. All this appeared from the evidence spread out in the Butt. N. A.; and Mr. Scudder has been able to add nothing to it but this, that in "the Graylock Hopper" (an elevated valley in the mountains) at Williamstown, Mass., *Proserpina* was "tolerably common." As to its abundance at Stony Clove we have the direct testimony of Mr. Mead, who also collected there year after year. Speaking of one year he says:—"When I collected every *Proserpina* I could find I took 110, of *Arthemis* I actually did take about 200 and could have taken 1,000 without any difficulty.

7. In all the preparatory stages *Proserpina* and *Arthemis* are precisely alike, and both are specifically removed from *Ursula*. Witness the figures of the eggs, *Arthemis*, Butt. N. E., pl. 64, fig. 15; *Ursula*, fig. 12. I have Mrs. Peart's drawings of the eggs of both *Proserpina* and *Arthemis*, and they are indistinguishable. In the first two larval stages all this group are alike, but at second moult each species takes on characters of its own. Fig. 26, pl. 74, given by Mr. Scudder as *Arthemis* mature larva is copied from Trouvelot's drawing of *Proserpina* (made for me and loaned for use in the Butt. N. E.). This drawing is named on its card *Proserpina*, and of course, in giving it on his plate as *Arthemis*, Mr. Scudder was satisfied that it answered equally well for either form. I have another drawing of *Arthemis* at the same stage, made by Mrs. Peart, and all its peculiarities are shared by *Proserpina*. These are widely different from the mature stage of *Ursula*, as is plain from Mr. Scudder's figures of the latter, pl. 17, figs. 17, 21. Just so, the pupæ of *Arthemis* and *Proserpina* are alike (I have drawings of both), and differ specifically in form and colour from the pupa of *Ursula*, Butt. N. E., pl. 83, fig. 12, for *Ursula*; fig. 14 for *Arthemis*, copied from Mrs. Peart's drawing of *Proserpina*. So we have, on the one hand, the two co-forms, alike in each and all of the three earlier stages, and alike in size and shape of wings in the imago, (and Mr. Scudder allows this to be the fact, by using the drawings of larva and pupa of the co-forms interchangeably); on the other, *Ursula*, differing distinctly in the three stages,

and nearly always much larger in the imago, with differences in the shape of each wing. (As is well shown in Butt. N. E., pl. 2, *Arthemis* fig. 5, *Ursula* fig. 8.)

8. All the species of *Limenitis*, at the east, have one style of flight, and it is that which Mr. Scudder attributes particularly to *Disippus* (his *Archippus*): p. 277, "the flight is rather leisurely and sailing; it moves irregularly from place to place." Of *Arthemis*, he says, p. 300, it has "a rather short and rapid flight." Perhaps it has sometimes, but usually it has the same leisurely flight as *Disippus*. Of *Ursula*, p. 287: "Its flight is similar to that of *Disippus*, but still more *lofty and grand*, more leisurely and sweeping." *Ursula* is a very common species here at Coalburgh, and I can bear witness that there is nothing lofty or grand about its mode of flight. It darts about from place to place, from the ground to a leaf on tree, from tree to ground, haunts one locality, and once seen may be seen there regularly for days; feeds on excrement on the ground, and lingers about the spots where that is to be found. A sustained flight would be contrary to its observed habits. I should as soon expect an *Apatura* butterfly to fly long distances as a *Limenitis*. The habits of the two are very much alike.

In the argument to prove *Proserpina* to be a hybrid between *Ursula* and *Arthemis*, instead of a dimorphic form only of *Arthemis*, Mr. Scudder says:—" *Proserpina* occurs only in a very narrow belt across the eastern third of the continent, a belt which forms the southern boundary of the range of *Arthemis* and the northern of *Ursula*. It is known at so many points in this belt, *that it presumably occurs wherever Arthemis and Ursula are brought into contact*." That this is an unwarrantable assumption follows from what I have before stated. "There are but two arguments used to prove the improbability of such a relationship as is here urged: 1. To assert that *Proserpina* has been found where it is probable that *Ursula* does not occur within at least an easy day's flight; a distance of a few miles is of no account whatever." Is it not? Are we to suppose that *Ursula*, male, of the Hudson River Valley, is so seized with a longing for *Arthemis* female, of Stony Clove, as to transform him from a short and leisurely flyer into one "lofty and grand," to whom "the distance of a few miles is of no account whatever," and cause him to desert his own females and scale mountain ranges for other females whom he has never seen nor heard of, and of whom there cannot be a hereditary reminiscence? Or do the *Arthemis* females attract the

males *Ursula* by an emanation after the fashion of the Bombycid females, perceivable ten miles away at the very least? There ought, on any theory of attraction, to be a steady flight of *Ursula* males across the peaks, and once arrived at Stony Clove they should take up their abode there, and be seen in company with these so ardently sought females. But they are not there—never in a single instance have been seen there; and to attribute to them such powers of flight is contrary to what Mr. Scudder is fond of calling the “stupid fact.”

On the other hand, the *Proserpina* males and females live with the *Arthemis*, mate in both sexes with the two sexes of *Arthemis*, and the eggs of one form hatch as readily as do those of the other. The black males mate with black females, and pied males with pied females. Black on both sides will account for the black progeny considered by Mr. Scudder as so close to *Ursula*; and the other mixtures will account for every phase of colour or marking exhibited. Mr. Scudder proceeds: “Several instances of undoubted hybridism are known in the genus.” On which I remark that distinct species of other genera are also known to copulate, and it is not uncommon of *Colias*. And there are instances of species of unrelated genera, even sub-families, copulating. The late W. S. Foster, in 1889, on one of the peaks in Colorado, captured a male *Melitea Palla* in copulation with a female *Chrysophanus Snow* and they only separated in the cyanide bottle. I have the two mounted by Mr. Foster on one pin, with his label stating the facts attached. Also he notified me of the capture at the time it was made. Mr. Bruce has twice taken pairs of *Lycanæ* of which the sexes belonged to different sub-groups in copulation. Such instances go to show that a male, not finding its own female, may seize another, even one wholly unrelated. What fierce passion possesses the males of butterflies may be seen by referring to the history of *Heliconia Charitonia*, Butt. N. A., Vol. II. But when females of a species are abundant, it does not seem very probable that a male will seek the female of another species, much less scale the Catskills to find her!

“*Proserpina* partakes of the characters of the two species mentioned . . . ; it possesses, in fact, just the characters we should expect of a hybrid between these two species. It varies most towards *Ursula* where this prevails, and most towards *Arthemis* where that prevails.” I have answered this in the preceding paragraph. No *Ursula* need to be called in for the solving of this puzzle.

"A careful comparison of a considerable series shows that there is no difference whatever in the genital armour of *Proserpina* and *Ursula*." We should like to have heard whether there is any difference between the armour of *Arthemis* and *Ursula*. The form *Proserpina* is undeniably related to *Arthemis*, only supposably to *Ursula*. If the genitalia, as evidence of specific value, are worth anything, then there should be no differences whatever between *Arthemis* and *Proserpina*. Therefore, if these organs in *Proserpina* are like *Ursula*, as Mr. Scudder tells us, in *Arthemis* they must also be like *Ursula*. But it is implied in the foregoing statement that this is not the case, but that *Arthemis* is unlike both *Proserpina* and *Ursula*. The preparatory stages tell a very different story, and I prefer to believe their testimony rather than that of the other.*

Why any where *Arthemis* has a co-form, or how such form has come to be, is not explainable, any more than why *Papilio Turnus* has a black female as well as a yellow one. The fact is all we know. From the Northern States to the Arctic Circle, in just the territory occupied by

*Are the genitalia valuable in determining species? I doubt it much. We do not need to examine them to prove that two species plainly distinct in the imago are really so as *Papilio Turnus* and *Philenor*. It is when the imagos are puzzling that help from any quarter would be welcomed; as in case of the *Grapta* *C. album*, *Comma*, *Satyrus* and *Faunus*. Will they help us here? Looking at Mr. Scudder's plates, I see that what I consider natural genera, as *Colias*, *Argynnis*, *Limenitis*, etc., have each their own type of these organs. It is not to be supposed that they are cast in moulds like so many iron pots, and knowing that every other organ varies, we have the right to believe that the genitalia vary also. How much is the question. In the plates the figures are not drawn to an uniform scale, and the organs are differently exposed, probably drawn as they had dried. Some seem to have shrunk in the drying, others perhaps are done from green subjects, and are full and plump. But taking them as they stand: on pl. 33 all these species of *Limenitis* seem to be essentially alike, and I apprehend that the variation between them is no greater than would be found between individuals of each. So the three *Argynnis*, *Atlantis*, *Cybele* and *Aphrodite* are essentially alike. *Grapta Progne* cannot be distinguished from *G. Comma*, though they belong to different sub-groups, while *G. Faunus* differs conspicuously from *Comma*, though these two belong to the same sub-group, and can be but one remove from a common ancestor. On pl. 34 *Phyciodes Tharos* and *Batesii* are alike; and quite a lot of *Theclas*, together with *Incisalis Nippon* and *Irus*, seem all alike and nowhere specifically different. On pl. 35, the three *Colias*, *Interior*, *Philodice* and *Eurytheme*, are as like as three marrowfats. My friends why are things thus?

If the test is not infallible it is not to be trusted. If it fails anywhere it may fail often. Now, on page 329, under the head of *Grapta Interrogationis*, we read these words: "The two forms (of this species, to wit, *Fabricii* and *Umbrosa*) differ so greatly and so constantly from each other, not only in the colouring but in the form of the wings, and even in the abdominal appendages (the genitalia), that they have been considered distinct species"! That is, if they had not, by breeding from the egg, been proved to be one species by the evidence of the genitalia they would be considered as two! It seems to me this settles at once and for all the value of these organs as tests of species. The study of them may amuse an idle hour, the drawings of them are very pretty, but that they are of any value so far as concerns closely related species does not appear.

Arthemis, the yellow female *Turnus* alone is found. Along the southern boundary the black one appears ; here and there a single individual, and having once got a foothold the black form gradually gains the mastery, and in the south alone rules. There are no yellow females of *Turnus* there.

It seems to me not improbable that *Arthemis*, of all its group, is nearest the parent species. Every character, from egg to imago, shows that all these species are very closely related, and apparently not more than one remove from a common form. *Arthemis* being so dominant, occupying the north, whence most species are supposed to have come, it may even be identical with that form. Having once given rise to a black co-form, this last has gone southward and become modified in shape of imago and color, and in the southwest is itself replaced by its own variety *Arizonensis*.

That two distinct species wherever they come in contact can cross freely, and originate a permanent, intermediate and hybrid race, I do not believe. And, in the present case, the so-called hybrid race is not intermediate, but entirely on the side of one of the supposed parents, to wit, *Arthemis*, and a long way from the other, to wit, *Ursula*. Analogy shows us that it is a case of dimorphism, not hybridism.

TEN NEW SPECIES OF ORTHOPTERA FROM NEBRASKA— NOTES ON HABITS, WING VARIATION, ETC.

BY LAWRENCE BRUNER, LINCOLN, NEBRASKA.

(Continued from page 40.)

Xiphidium modestum, n. sp.—Related to *X. saltans* Scudd. and *X. strictum* Scudd., from both of which species it differs in its smaller size, slenderer form and in colour.

Vertex or cone of the head not quite so broad and shorter than in *saltans*, its closest ally ; pronotum with the sides less bulging, and not reaching as low as in that species. Tegmina very short, only about one-third as long as the abdomen, with the shrilling organ of the male narrower and a little further removed from the base of the wing than in its allies. Posterior femora quite slender, of moderate length. Tip of male abdomen but slightly enlarged, the cerci elongate, tapering, a little curved outward and furnished with a rather long sub basal tooth. Ovi-