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The Canadian Entomologist.

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IS LIMENITIS ARTHEMIS A DOUBLE-BROODED SPECIES?

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

In Butterflies of N. A., Vol. 2, Part 8, 1879, I gave the history of *Arthemis*, and stated that it was single-brooded; that the first butterflies of the season appear in the Catskills about the end of June; that they are abundant during July; that the eggs are laid last of July and early in August; that the larvæ from these eggs pass two moults and then go into lethargy in cases of their own construction; that they come from these cases in spring and moult twice before chrysalis. I related my own experience in breeding, and I particularly say that the existence of the species is due to the eggs laid in July and early in August, because eggs laid later than this, *although by females of the same generation of the butterflies*, cannot give larvæ which shall be able to reach the hibernating stage before cold weather sets in.

Mr. Scudder, in a paper read before the Appalachian Club, at Jackson, N. H., July 12th, 1881, and printed in The Mountain Echo, 30th July, upon *Arthemis*, under the name of Basilarchia *Arthemis*, gives a very different account of the species, and declares it to be two-brooded. "Twice a year it runs the cycle of its changes . . . . As a general rule its first appearance here (in W. Mts.) is between the 16th and 20th of June, and its second late in August. . . . . About the middle of August the caterpillars now feeding will be rapidly changing to chrysalis, and in 10 or 12 days afterwards the butterfly will again be on the wing and the cycle recommences."

Mr. Scudder goes on to say: "The history I have now given does not agree with Edwards' account of the insect. He would make it out single-brooded, *having never seen or heard apparently of the September butterflies*"; adding these words in explanation of my error: "and so it probably is (i. e., single-brooded) in the southern part of its range, for all the butterflies taken south of this region of their abundance have been of the first brood; that they have not flown thither from these northern parts is proved

by their usually greater size." It is admitted then that the species is probably single-brooded in the southern part of its range, i. e., in the Catskills. It strikes me as very singular that *Arthemis* should be single-brooded to the southward, but double to the northward—and not so very far north, either, the Catskills being from 1° to 2° only south of the White Mts.,—exactly the reverse of what happens with every other species of butterfly.

On reading the paper spoken of, I wrote the author thus: "Do you know of any one who has raised a caterpillar of *Arthemis* from egg to chrysalis and imago the same season? Did you ever do it yourself?" To this the reply came: "I have bred *Arthemis* only from the wintering caterpillars, and I know of no one who has bred them from the egg in N. Hampshire, *but you cannot get away from a fresh September brood*, which I have on the authority of three or four persons, indeed myself."

Let us look into this matter of "a fresh September brood." I will first relate briefly the experience of Mr. Mead and myself with *Arthemis* and its co-form *Proserpina*, and so far as I know, we, with Mr. C. H. Roberts, formerly of Factory Point, Vt., are the only persons who are recorded to have bred *Arthemis* from the egg. In CAN. ENT., vii., p. 162, Mr. Mead states, that in July, 1875, he had 15 females of *Arthemis* and one female of *Proserpina* confined in boxes with growing branches of willow, at Hunter, N. Y., in the Catskills. That the *Arthemis* laid about 500 eggs and the *Proserpina* 35. I myself came to Hunter just at this time, arriving 25th July, and Mr. Mead gave me many larvæ from these eggs, and I brought them to Coalburgh while they were in their 2nd and 3rd stages, i. e., after 1st and 2nd moults, reaching home 17th August. These larvæ all went into cases, the last one on 20th August, not one going on to chrysalis. On 25th Aug., I received from Mr. Mead, who was still at Hunter, more larvæ in first stage, i. e., just out of egg, and these were making their cases 9th Sept., or three weeks later than the first lot. That represents the difference, or part of it, between the time of the emerging from chrysalis of the earlier and later butterflies of the same generation. There is a similar difference in the emerging of all species of butterflies, as every lepidopterist knows. All of these larvæ, though from eggs laid by different females, and during three weeks, behaved in the same way, all going into lethargy, and none to chrysalis. Mr. Mead had taken part of the brood to New York City and some to Ithaca, N. Y., and none went to chrysalis.

The next year, 1876, I was at Hunter from 19th Aug. to about 10th Oct. During the early part of this period a few *Arthemis* were on the wing, but they were exceedingly rare, though in July the species abounds. Mr. Mead has stated that in July, 1875, he did take 200 examples and might have taken 1,000. But this great flight was over when I reached the mountains, and only here and there was a single individual to be seen. I was out every day searching for them in order to obtain eggs. All our larvæ of 1875, excepting a small number, had died during the winter, and of these, three or four only reached chrysalis and imago in the spring of 1876, giving the form *Arthemis*. I was therefore anxious to repeat the experiment, with the hope of determining the relation of *Proserpina*, and I travelled far and wide to get females of one or both forms. With this result: on 21st Aug., I took 3 *Arthemis* ♀; on 22nd, 1 *Arthemis* ♀, 1 *Proserpina* ♀; on 24th, 2 *Arthemis* ♂, 1 *Proserpina* ♀; on 26th, 1 *Arthemis* ♀; 1st Sept., 1 *Arthemis* ♀. In all 9 butterflies, 7 ♀, 2 ♂. On 28th, I had ridden several miles among the hills, and found many Arg. *Atlantis* and other species, but I saw, but failed to take, only one *Arthemis*, a ♀, that day. Seven of the nine spoken of were taken in Stoney Clove, the coldest spot in these mountains, and the very one at which cool weather during early summer would retard the emerging of the butterflies.

It is plain that there is no "September brood" of *Arthemis* in the Catskills.

Of these females, all of which were shut up for eggs, one only laid, viz., *Proserpina* of 22nd Aug. I had kept her alive on sugar and apple, and the weather was so cold that during some days and most of the nights, I had to bring her into the house; but 1st Sept., she laid 11 eggs and died. The other females had meantime died, and on dissection were always found to contain a few nearly matured eggs, perhaps the remains of a large original stock. Though observations on other species of butterflies have led me to suspect that the latest females of a generation may develop but a very few eggs, and that these in the absence of males may generally prove sterile.

The larvæ from my *Proserpina* eggs hatched from 10th to 12th Sept., or in from 9 to 11 days. They began to reach 1st moult 18th Sept., and were all past 2nd moult 24th Sept. By 30th Sept., all were in their cases. As I stated in But. N. A., I should not have raised one of these larvæ to case had I not protected them in a warm room, and carefully preserved

food for them. The weather was cold, nights frosty and the leaves of their food plant (Aspen) were fallen to the ground before the cases were reached. I was confident at the time that the larvæ would have perished out of doors, and that the existence of the species wholly depended on the larvæ from eggs laid by the earlier emerging females. And I believe now that the late emerging females are either sterile, or if eggs are laid later than 20th August, the larvæ perish prematurely. In nine years out of ten, the equinoctial storms come on between 15th and 20th Sept., and what the weather is thereafter, all dwellers in the mountains well know. I have seen a foot of snow here in Virginia on 26th Sept.

Now in N. Hampshire, in the White Mts., I have never supposed the climate was milder than in the Catskills. Mr. Scudder makes his second brood of butterflies emerge from chrysalis about 1st Sept. How much time is to be allowed for the eggs to mature, and to be impregnated and laid, is not stated. My own opinion is that this would require not less than 20 days, even in mid-summer. I know it takes all of that in case of the allied species, *Disippus*. But we will say 10 days, lest winter be upon us. This brings us to about 10th September, when the eggs are laid. Ten days more before hatching, and we reach 20th, just in time to enjoy the equinoctial storms. Then if haply any larvæ survive, three weeks, at the very least, must be allowed for growth to the hibernating stage, and we are in October, clear, cold, windy, and very likely a good covering of snow upon the ground! And yet Mr. Scudder says the existence of this species is due to these September caterpillars—poor little belated, benumbed, frozen and perishing creatures!

If *Arthemis* is really double-brooded in the White Mts., with a flight in September, then of course it must be so in some part of Canada. We surely cannot be asked to believe that it could be double only in one locality out of its vast range. Therefore I have written several of the lepidopterists of Quebec and Ontario on this matter, and I give their replies.

1. Mr. H. H. Lyman, of Montreal, whom I requested to present the case to the members of the Natural History Society, and collect their testimony. "I was obliged to delay my answer till after the October meeting of our Society. I have never seen any specimens of *Arthemis* in the neighborhood of Montreal in Aug. or Sept., nor have any of our Montreal entomologists."

2. Rev. Thos. W. Fyles, of Cowansville, P. Q., writes: "*Arthemis*

is so abundant here that I have paid less attention to it than its beauty deserves. It disappears in August, but at what time of the month I cannot say."

3. Mr. J, Alston Moffatt, of Hamilton, Ont., writes: "Here are the dates of my captures of *Arthemis* for a series of years: 1873, 3rd July; 1874, June 29; 1875, June 29; 1876, July 7; 1877, June 23; 1878, June 27; 1881, July 1. They seem to fly 3 or 4 weeks, then gradually disappear. I have seen an odd one the middle of August, which I thought very late. I never saw, or heard of their being seen, in Sept., in this locality. Probably they are out a few days earlier than my first captures, but the last week in June and the first in July is when we expect them, according as the season has been late or early. I never saw or heard anything to cause the slightest suspicion of their being double-brooded."

4. Mr. Wm. Saunders, of London, Ont., writes: "With regard to *Arthemis*, it occurs with us late in June and during July, and I think early in August. I am satisfied that I have never seen one on the wing here as late as Sept., and do not think I have ever taken one after the first week in August."

I hardly think it necessary to call more witnesses from Canada.

Nor is the testimony from the Adirondacks, of New York, favorable to the existence of a second brood of *Arthemis*. Mr. W. W. Hill, of Albany, who has collected for many seasons in these mountains, which correspond in latitude to the W. Mts., says that while the species is excessively abundant in July, he has not met with it in September. In New Hampshire, Mr. C. P. Whitney, at Milford, writes: "*Arthemis* is rare in this vicinity. All told, I have not seen 25 examples, and none that I now recollect later than July."

I do not say that it is not possible for here and there a larva of *Arthemis* from eggs laid in July to go on to chrysalis and butterfly the same season. There is no evidence from breeding that they ever do so; on the contrary, all the evidence so far is the other way. I have bred many *L. Disippus*, and through many years. This is a three-brooded species here, and the caterpillars of the last brood make cases at either 2nd or 3rd moult, about two-thirds of them at 2nd. I have never known a caterpillar of any earlier brood stop at any stage and go into its case. But I have reason to know that L. *Ursula* behaves quite differently. I have myself never been able to get eggs of this species. It is common in our forest roads in June, but not common near my residence. After June

there are but few examples anywhere to be seen, but so late as August and September, I have occasionally taken a ♀, never a ♂. In some years two or three, in others none. I have always confined these females for eggs, but have failed to get any. On dissection a few nearly matured eggs would be found imbedded in fat, and I had some time ago concluded that these eggs probably were not impregnated, as I had seen no late males.

But this last September, I received from Mr. Lewis Ullrich, of Tiffin, Ohio, several hibernating cases of *Ursula* and a chrysalis. Mr. Ullrich wrote me that on 26th Aug., he obtained from a female tied in a bag over a branch of apple tree 13 eggs, from which he got 11 larvæ. Of these, 6 went into cases when half grown, 1 died when ¾ grown, and 4 went to chrysalis. Two of the chrysalids produced females, and these Mr. Ullrich sent me. I dissected one of them, and could discover no signs of eggs. Certainly there were no eggs formed. The other female I sent to Mr. C. S. Minot, who has not reported on its condition.

This then accounts for the late examples of *Ursula* seen on the wing. Part of a brood may go into winter cases, while some go on to chrysalis and imago. But the existence of the species does not depend on these late, or September butterflies. Far from it! *Disippus* does not behave like *Ursula* in this respect, as observations show, and there is no evidence that *Arthemis* does. And yet, if any *Arthemis*, in any locality, are to be found flying in September, their presence may be accounted for by supposing that here and there a larva has passed the hibernating stage and gone on to butterfly, without there being a "second brood."

NEW SPECIES OF TINEIDÆ.

BY MARY E. MURTFELDT, KIRKWOOD, ST. LOUIS, MO.

GELECHIA CHAMBERSELLA.—In some notes on the larvæ of certain Tineids, published in Vol. vi., No. 12 of the CANADIAN ENTOMOLOGIST, I referred to an interesting species found on *Ambrosia artemesiæfolia*, which I proposed soon to describe under the above name. The description was indefinitely delayed by a vexatious accident by which I lost all my perfect specimens. For several succeeding years I searched in vain for

the larvæ, and as the moth is not attracted by lamp-light, I began to despair of ever replacing the lost specimens. During the past summer, however, I was successful in taking several of the larvae, from which I obtained three imagines, and am thereby enabled to prepare the history of the insect for publication.

(My acknowledgments are here due to Mr. V. T. Chambers for the generic determination of this and the following species, and for much other assistance in my studies of this group of Micros. I am also indebted to Prof. O. S. Westcott, of Chicago, for valuable suggestions as to the selection and etymology of the names)

Imago: Alar expanse 0.35 inch, length 0.20 inch. General color of head and body cream-white, shading to buff on abdomen. Head variegated with fuscous scales; vertex roughened but scarcely tufted; palpi slightly exceeding the vertex, second joint brush-like, terminal joint smooth and slender; antennae rather short, dingy white, obscurely annulated with fuscous.

Ground color of primaries dingy white, thickly overlaid with fuscous scales arranged in eight or nine obscure vittae, most pronounced on apical third, with a more or less distinct fulvous spot on the outer edge of disk; outer margin dark; ciliae checkered white and fuscous. Secondaries silky, pale cinereous. Legs cream white, tibiae of hinder pair clothed with long, somewhat iridescent hairs; tarsi with fuscous annulations.

The larva inhabits a fusiform case formed by webbing together the slender divisions of the leaf, from which it eats the parenchyma of the upper surface, the latter being folded inside. Its average length is 0.35 inch; slender, cylindrical, sub-moniliform. Head small, polished, dark brown. The arrangement of colors on the body is striking and characteristic. First segment narrow, dark brown with small, transversely oblong, yellowish shield. Second and third and sixth and seventh segments velvety black or very dark brown, with conspicuous milk-white fold on posterior edge. Fourth and fifth segments uniform velvety black. Remaining segments similar with the addition of an oblique lateral white band on each anterior edge. Hairs fine, short and black. The larva makes several cases in the course of growth and changes to pupa within the last, enclosed in slight cocoon. The imago appears in July and early in September.

GELECHIA FORMOSELLA.—This species bears considerable resemblance to *G. maculimarginella* Cham., but is nearly one-half larger, the alar

expanse being from 0.70 to 0.75 inch. The colors are also much deeper, more contrasted and somewhat differently disposed.

Face golden buff, vertex dark silvery, second joint of palpi pale ochreous dusted with brown, terminal joint very acute dark brown, antennae pale purple-brown.

Thorax and primaries dark slate gray with purplish reflections and variegated with small irregular ochreous and dark purple dots. There is a conspicuous purple spot on the costa at the outer edge of the basal third, and obliquely forward and below this a large irregular purple discal spot with minute ochreous dots on its inner margin. The outer one-third is entirely dark brown with purplish reflections brightened by a distinct costal streak of cream white and a similar opposite dorsal streak. Ciliae pale brown. Secondaries cinereous, shading to pale brown on costal edge. Abdomen same color. Legs pale ochreous variegated with brown.

The larva feeds on the Laurel Oak in May, rolling the leaves. It is of a pearl gray color ornamented with eight fine longitudinal purple or dull red lines. Head polished black. First segment narrow and constricted, corneous, black; second segment velvety chocolate brown edged anteriorly and posteriorly with white, third segment also edged anteriorly with white. Venter and prolegs translucent greenish white. Thoracic legs black. Pupa enclosed in slight cocoon within folded leaf. Imago appears about the middle of June. Rather rare.

GELECHIA CINERELLA.—The general color of this species is ochreous cinereous in all its parts. Head and thorax paler than the wings, inclining to cream color. Palpi simple, not exceeding the vertex. Primaries variegated with a few longitudinal fuscous streaks and a marginal row of minute black dots at the base of the ciliae. Alar expanse 0.45 to 0.50 inch. Length 0.20 inch.

The larva may be found during June and July mining and crumpling the edges of the leaves of the Horse Nettle (*Solanum carolinense*), causing them to turn brown as though seared by fire. Inside the puffy mine the larva forms and inhabits a tough silken gallery to which the frass is attached externally and upon which the edge of the leaf is gathered. The larva is cylindrical, rather thick and about one-third of an inch in length at maturity. It is of a translucent green color, the thoracic segments acquiring a blue tint after the last moult. Piliferous spots glassy, giving rise to short light hairs. Head and shield bright brown. When ready to transform it deserts its mine and forms a tough, oval cocoon on the sur-

face of the earth. Imago appears in from twelve to fifteen days, and there are at least two successive broods.

GELECHIA BENEFICENTELLA.—Ground color of head, body and primaries pale buff or cream with ochreous shadings and a sparse dusting of blackish scales. Palpi exceeding the vertex, second joint thickened but smooth, terminal joint with two broad dusky bands. Primaries ornamented with numerous, rather indefinite maculae, of a blackish or dark steel gray color, producing on the light ground a somewhat checkered appearance. The dark color predominates toward the apex of the wing, and the outer border and ciliae are of the same dark shade. Secondaries broad, silky, cinereous with slight iridescence, ciliae a shade or two paler.

Legs cream color, dusted with blackish scales, tibiae of hinder pair densely tufted. Alar expanse from 0.70 to 0.75 inch.

The first brood of larvae may be found early in May folding the terminal leaves of *Solanum carolinense* into round, hollow balls, each of which forms the habitation of a single larva which feeds on the incipient flower buds and the infolded edges of the tender leaves. Length of larva from 0.50 to 0.60 inch, fusiform, greatest diameter 0.10. Color dull yellowish-green with dark-glaucous vesicular stripe. Head horizontal, cordate, about one-half the width of middle segments, black when young, later assuming an olive brown hue. Cervical shield corneous, rectangular, covering about two-thirds of the first segment, of an olive brown color. Piliferous plates minute, pale brown, each giving rise to a short light hair.

Pupa elongate, dark brown, without marked characteristics, suspended in the midst of a mass of fine, webby matter with which the mature larva fills its leafy domicile, an opening being also prepared through which the future moth can make its exit. Imago issues within two weeks. A second brood of larvæ soon follows.

The specific name for this insect was selected with reference to its services in the larva state, in preventing, to a considerable extent, the blossoming and fruiting of one of our most pernicious weeds.

LITHOCOLLETIS GREGARIELLA.—Ground color rich purple-brown with golden reflections. Two conspicuous golden-white fascia cross the basal and discal portions of the primaries. The apical one-third is ornamented with two white costal streaks and one dorsal streak opposite the inner costal one. Ciliæ dingy white. Secondaries very narrow, steel gray. Head purplish, iridescent, antennae dark purple conspicuously tipped with

white. Expanse 0.15 to 0.18 inch. This species is closely allied to *L. desmodiella* Clem., but Mr. Chambers notes the points of difference as follows: "There is a shade of difference in the ground color, face not white as in *desmodiella*, though with a silvery or opalescent lustre; the dark margins of the fasciae and streaks are less distinct; it has no distinct dorsal mark opposite the costal one before the ciliae, and the apical part of the wing is not darker than the remainder; it is also a little larger than *desmodiella*."

The larva belongs to the cylindrical group, is of a whitish green color, and attains a length of about 0.14 inch. It mines the leaves of the Wild Bean *(Phaseolus pauciflorus)*. Its chief peculiarity is found in its gregarious habit, from five to fifteen imagines sometimes emerging from the large tentiform mine. The parent moth places her eggs here and there upon the under surface of the leaf, upon which the work of the young miners is soon apparent in the form of numerous minute blisters, which as they are enlarged, become confluent, and the congregated larvae soon devour every particle of the green tissue of the leaf, which puffs out into a cylinder. When mature the larvae construct in common a loose hammock-like web, within which they change to slender honey-yellow pupae. The imagines of the midsummer brood appear in twelve or fourteen days from the change to pupae. The second brood hibernates in the pupa state.

MR. SCUDDER'S "BUTTERFLIES."

BY S. H. PEABODY, CHAMPAIGN, ILL.

This long promised and lately issued book wants little that the skill of artizan or the genius of artist can furnish. The Entomological brotherhood—those lovers of the net and flask, who, gentler than the historic angler, impale not even a worm until it has become insensible to pain—they and the general public will find some store of delightful reading within its pages. Whether, as has been more than hinted, there are notable omissions of valuable matter observed and reported, and bearing with force upon topics treated therein, or not, there is enough of what Mr. Scudder has himself seen, to make the volume a valuable addition to the literature of Psyche.

The fact that so many intelligent Entomologists have found themselves impelled to put on record their dissent from statements and theories found in this book, may, perhaps, be construed as a recognition of the high place which Mr. Scudder has held and still occupies as a scientific writer. The greater the authority borne by his words, the more earnest must be the protest of those who believe that in certain respects his utterances are misleading and mischievous. Reviewers in the New York Tribune, in the Nation, and elsewhere, have found in this work many points which invite trenchant criticism, in directions where the writer of this article does not care to follow. There remains, however, a topic upon which something should be said. We believe we shall be sustained by many of the foremost lepidopterists, when we express the opinion that this work is grieviously marred by a nomenclature that is singularly unscientific and confusing. If it shall appear that in the reproduction of this nomenclature, Mr. Scudder has acted not inadvertently, but in the face of positive and conclusive facts, which have demolished the foundation and razed the superstructure formerly constructed by him, then the terms by which we have characterized this nomenclature are not as explicit and as severe as they might well be made.

After Mr. Scudder had proposed his wholesale deformation of the nomenclature of American Butterflies, as published in his "Systematic Revision," in the Fourth Annual Report of the Peabody Academy of Sciences, we took occasion to review that Revision in the pages of the *Entomologist*. In that paper we attempted to show that the differences upon which, as criteria, Mr. Scudder had formed his new genera, even if, for argument's sake, these differences were admitted to be real, were not such as authorized the construction of new genera. As an example, applying the test of accurate and just comparison which every scientific discussion demands, we presented a tabulated statement of the characters of several of the proposed genera, collated from the printed diagnoses of these genera, and showing in parallel columns all the distinctions given. By this means we sought to show, as it seemed evident to ourselves, that the differences on which these genera were founded were both in fact and in statement evanescent and delusive, and not such as science could or should recognize as generic in their significance. We had prepared like synoptic tables of others of the proposed genera, and had found the innovations equally open to adverse criticism, but the specimen given seemed sufficient evidence of the quality of the whole. In the west, at

least, grain is bought and sold by sample. Let it not be understood that we refer to this paper, its arguments, or its conclusions, as in any respect binding upon the opinions or expressions of Mr. Scudder. Upon the question of the value of the criteria referred to, there was room for great difference of opinion, and perhaps the points made might have been conclusively answered, even though no answer has been offered in the five years that have since glided into the past.

But the insuperable objection was yet to come, one which appears to be conclusively and finally fatal to the farther recognition of Mr. Scudder's new genera.

This objection was that the criteria on which the new genera had been constructed, the differences described in the ratios of tibiæ, the venation of wings, etc., when tested by careful measurement did not exist, as the constant and distinguishing differences between the genera which they had been said to designate. These measurements were made with great care and in large numbers by Mr. Theodore L. Mead, and were described by him in the columns of this magazine (Can. Ent. vii., 232–238). They showed that on the points specified the range of variation in well identified and indubitable specimens of the same species, was greater than, and included all, the variation that had been given as differentiating the genera. The question was no longer one of argument or of opinion, but of fact. We had argued that the differences, if existing, are not generic; Mr. Mead demonstrated that they did not exist, as constant in genera, but as found in individuals, or in species of the same genus. Facts, however stupid and senseless they may seem to him whose theories they oppose, are yet stubborn. No man who claims to recognize scientific truth can gainsay or deny them.

We claim, then, that Mr. Scudder's persistent use of his nomenclature in the face of these demonstrations is unscientific. Removed from a scientific basis, the system which subdivides genera without stint, which transfers specific names from genus to genus, which disturbs and inverts the familiar sequences of tribes, genera and species, becomes utterly and inextricably confusing. We are thankful that the well known, and well worn, cuts from Harris are again in service to show us bewildered mortals what familiar forms are signified by the unrecognized cognomens. We are also grateful for a catalogue in the appendix, where, as in a court calendar, we may learn what was the maiden name of the lady who has acquired a new title by wedlock or otherwise.

Meanwhile we must express our sympathy for the "*Auctores*" who are so constantly quoted to be as constantly corrected. Poor fellows! They did know Lepidoptera so shockingly.

But Mr. Scudder does not seem to be content even with his own handiwork. Although he has cut a slice from a genus at this end, and a piece from that end, and a fragment out of the middle, and has given new names to pieces and relics alike, and in spite of swapping specific names, until they pass from hand to hand like soiled postal currency, he has yet a mission. He is seized with a certain Adamic afflatus, and begins the work afresh. Seated in his Eden he orders the Psyche phalanx to defile before him, and to each insect as it comes to a salute he presents a new name. Some are fairly suggestive; some on the principle of *Lucus a non lucendo;* some entirely fanciful; some singularly inapt; all unnecessary, and furnishing a still further element of confusion. Upon an erroneous assumption that *Danais Archippus* lives as an imago for a year and a half, it is dubbed the Monarch—certainly a ruler without a subject. If, as Mr. Edwards suggests, its longevity were proven, the insect might be called Patriarch; because of its wide and wandering range, we suggest that it were better with the name of Pilgrim, or possibly of Tramp. As the Monarch governs nobody, and *Limenitis Disippus* resembles him, no matter how, he must be Viceroy. Because the latter is tawny, and congeners are black, they are grouped as Purples. *Papilio Philenor*, which Say described—and Say had an eye for color—as black with green reflections, is called the Blue Swallow-tail. The genus once called Argynnis is broken up into several, but all receive the name Fritillaries. Diana remains Diana. Idalia becomes the Regal Fritillary; Cybele the Great Spangled Fritillary; Aphrodite the Silver-spot Fritillary; Atlantis the Mountain Silver-spot (not Fritillary); and Myrina is the Silver-bordered Fritillary. And so on to the end of the flitting, fluttering train.

Now, in the name of science, we seriously and earnestly protest against all this. Nearly every branch of natural history is cursed with a series of trivial or common names, which having no definiteness nor certainty of application, stand in the way of those which are accurate and significant. Birds, fishes, reptiles, plants have different names in localities not farther removed than adjacent counties, and one is always uncertain as to the species which is indicated. The scheme of Linnean nomenclature was devised to remedy this evil. English Entomologists have suffered their science to bear the burden of a double system of names,

and it has been an occasion of devout thankfulness that no attempt has been made until lately to import the "common" ones within our borders. Their introduction, if successful, will be found a blunder surpassed in atrocity only by the introduction of the English Sparrow.

With grim sarcasm, the Tribune says: "A sufficient reason why these terms [the proposed 'common' names] should be fixed and permanently adopted is found in the fact that the scientific nomenclatnre is so variable, fluctuating constantly as one system of classification supersedes another. The practice of Mr. Scudder illustrates this confusion. Five new genera now take the place of Papilio, while that name has been transferred to a subdivision of what has been called the genus Vanessa. Specific names are shifted with the same freedom. Under the circumstances common names will be found of great value in indicating what particular butterfly is meant, just as scientific names are used in Botany to identify any plant which is spoken of under one or another of its more popular names."

As if, after dear little Buttercup had "mixed those children up," she had proceeded to solve the problem of their misplaced identities by giving them a new set of names. Or, since Mr. Scudder has introduced into the nomenclature of our butterflies a confusion as complete as it is ingenious, he now deserves great credit for leading us out of this maze of his creation by way of a series of new names, freshly devised for the occasion.

BOOK NOTICES.

Papilio:

This valuable monthly serial, devoted entirely to Lepidoptera, has now reached its ninth number, with an average of about 20 pages per number. It is the organ of the New York Entomological Club, is well got up as to printing and paper, and is edited by the Secretary of the Club, Mr. Henry Edwards. A large portion of its space is devoted to descriptive Entomology, with occasional papers relating to the life history of species. In the September number, among other interesting papers, we find one by W. H. Edwards on the alleged abnormal peculiarities of *Argynnis myrina*, which was read before the Subsection of Entomology at the recent meeting of the American Association at Cincinnati. In this paper the author shows from records of careful observation that many of the remarkable statements made by Mr. Scudder on the abnormal peculi-

arities of this insect are incorrect. In the October number is a full description of the preparatory stages of *Thecla Henrici* by the same author; notes on an Aquatic Noctuid Larva, by J. H. Comstock, and descriptive papers by A. R. Grote, B. Neumoegen and Henry Edwards.

Bulletin No. 6, from the Department of the Interior, U. S. Entomological Commission, being a General Index and Supplement to the Nine Reports of the Insects of Missouri. By C. V. Riley; 8vo., pp. 177:

This useful pamphlet will add much to the value of the Missouri Reports, containing as it does a very complete index to all the matters contained therein. Following the introduction we have tables of the contents of the nine reports, then a list of errata, followed by a few pages of notes and additions; then follow descriptions of new species, descriptions of adolescent states, lists of illustrations, a copious general index and an index to plants and food plants.

On the Genera of Carabidæ, with Special Reference to the Fauna of Boreal America. By George H. Horn, M. D. From the Transactions of the Amer. Ent. Society, October, 1881, 105 pp., with eight plates:

In this paper the author dwells at some length on the value of the modifications of various organs of the body in the Carabidæ, for the purposes of classification, following with a complete classificatton of the tribes in this order, the points of difference being illustrated by examples in the excellent plates which accompany the text. Throughout this work there are many tables wherein the main points of difference are grouped in such a manner as to enable the student to readily recognise the many genera into which our numerous species are divided. This addition to our Entomological literature will prove a great help to Coleopterists, and only those who know the extent of this subject will be able to estimate the amount of labor and careful study required to produce such a work as that we have before us.

The Honey Ants and the Occident Ants. By Henry C. McCook, D. D.; 8vo., pp. 188, illustrated with thirteen plates, 1882:

This work, in the words of the author, is "a monograph of the architecture and habits of the honey-bearing ant, *Myrmecocystus melliger*, with

notes upon the anatomy and physiology of the alimentary canal; together with a natural history of the occident harvesting ants or stone-mound builders of the American plains." It is written in a charming and popular style, and the details of the curious habits of these interesting creatures are given in such a manner as to show that the author has studied them closely and is quite familiar with every aspect of the subject treated of, while the beautiful illustrations are a material aid towards the ready comprehension of the whole matter. This work is well worthy of a place in the library of every student of nature.

A MANUAL OF INJURIOUS INSECTS, *with Methods of Prevention and Remedy for their Attacks to Food Crops, Forest Trees and Fruit, and with a short Introduction to Entomology.* By Eleanor A. Ormerod, F. M. S., London, England, 1881:

It is with very great pleasure that we draw attention to Miss Ormerod's excellent work on Injurious Insects—the full title of which we have given above. It is the first effort that has been made in England to bring within the reach and comprehension of ordinary farmers and gardeners a complete account of the insect enemies that they have to deal with. The work begins with an introduction to Entomology, in which the reader is furnished with an account of the general life-history of insects during the various stages of their existence, beginning with the egg and going on through the larva and pupa to the imago. This is followed by a sketch of the classification of insects, based upon Prof. Westwood's division into thirteen orders, each of which is represented by wood-cuts of common species in order that it may be easily recognised by the reader. The book is divided into three parts, viz., Food Crops, Forest Trees and Fruit, with the insects that injure them respectively. In each part the various crops, trees, &c., are treated of as regards their insect enemies, in alphabetical order; for instance, the "Food Crops" begin with the Asparagus, Bean, etc., and end with Turnips, thus making it very easy to obtain information about any insect that happens to be prevalent. Every insect treated of in the book is made easily recognisable to the non-scientific reader by means of admirable wood-cuts, partly the work of the talented authoress herself, and partly reproductions of the beautiful illustrations in Curtis' Farm Insects. Each cut shows the insect in the various stages of its existence, while the letter-press gives an account of its life history. As

an example of Miss Ormerod's work we give two illustrations, selected almost at random :

P. 1—Asparagus Beetle, *Crioceris asparagi* Linn. (fig. 14).

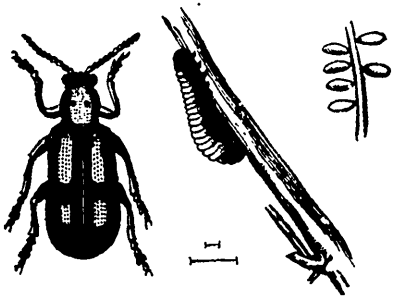

Fig. 14.

Asparagus Beetle, larva and egg ; all magnified. Natural length of egg and beetle shown by lines.

P. 123—Onion Fly, *Anthomyia ceparum* Bouché (fig. 15).

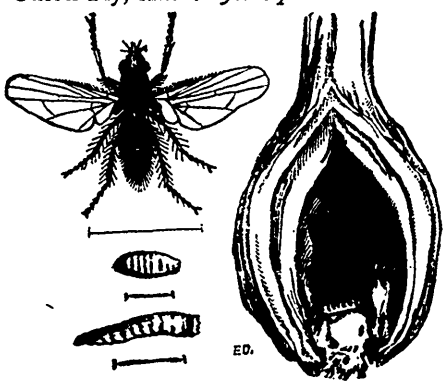

Fig. 15

Onion Fly, pupa and larva, all magnified. Onion-bulb showing pupa remaining in stored onion.

We cannot but congratulate Miss Ormerod upon the skillful manner in which she has accomplished her task, and we trust that her work will be fully appreciated by the farmers and gardeners of Great Britain, for whose special benefit it has been produced. The whole book is written in clear, simple language, free from all scientific terms and technicalities so far as they can be omitted, while the modes of prevention are such as have been

practically tested by competent persons, and cannot fail to be beneficial if intelligently followed. We hope to see many editions of the work called for, and to learn that the authoress has been amply rewarded for her labor of love.—[C. J. S. B.

Reports of the U. S. Commissioner of Agriculture for 1878 and 1879:

We have lately received copies of both of these valuable reports from the Department of Agriculture at Washington. There are in them, in addition to all the other useful papers on subjects relating to agriculture in the reports of the Entomologist of the Dept., much that is of great interest to Entomologists. In the report for 1878 we have, from the pen of C. V. Riley, Contributions on the Insects Injurious to the Cotton Plant; the Silk Worm, with Instructions for the Production of Silk; with descriptions also of a number of insects injurious to field crops and fruits, occupying in all fifty pages, and illustrated by seven full-page plates. In 1879, papers by J. H. Comstock on the Army Worm, Clover Insects, Insects Injurious to Orange Trees, and many other species which injure field crops, fruit and forest trees, occupying in all 75 pages, and illustrated by six full-page plates. This volume also contains an extensive report on insects injurious to the cotton plant, 84 pp., with 9 plates.

Ottawa Field Naturalists' Club:

The second volume of the transactions of this active body of naturalists is at hand. It is a neat pamphlet of 44 pages, 8vo., with one excellent plate illustrating a new species of *Porocrinus* from the Trenton lime stone, accompanied by a description, with some remarks on the genus by Dr. James Grant. In addition to the annual report of the Club, the volume contains the inaugural address of the talented President, James Fletcher, Esq.; a paper "On some Coleoptera Injurious to our Pines," by W. H. Harrington; one by Prof. J. Macoun, "On the Capabilities of the Prairie Lands of the Great North-west, as shown by their Fauna and Flora," and other interesting contributions. We congratulate our Ottawa friends on the good work they have done this year, and sincerely hope that their active efforts may have the effect of promoting a general love for natural history among the residents of the capital of our Dominion.

North American Moths, with a Preliminary Catalogue of Species of Hadena and Polia. By A. R. Grote, 8vo., 20 pp.; from the Bulletin of the Geological and Geographical Survey of the U. S., Vol. 6, No. 2:

In addition to the catalogues, this paper contains descriptions of twenty-eight new species.

The Insects of the Clover Plant. By J. A. Lintner, 8vo., 17 pp., with six cuts:

This excellent paper forms part of the fortieth annual report of the New York State Agricultural Society, and contains detailed descriptions of the insects most destructive to clover, with references to all the species known to feed on this plant.

PERSONAL.

It will interest our readers to know that our eminent American Coleopterist, Dr. John L. LeConte, of Philadelphia, has recently been elected an honorary member of the Deutsche Entomologische Gesellschaft. The number of members of that grade seems very restricted, for there are but seven others in the last catalogue, of whom the venerable Westwood is the only English-speaking one.

Mr. B. Pickman Mann, late of Cambridge, Mass., and so well known as editor of Psyche, has been appointed assistant Entomologist at the Department of Agriculture, Washington. His many correspondents will please bear in mind that his address in future will be Dept. of Agriculture, Washington.

Mr. K. L. Bramson, Member of the Imperial Society of Naturalists, of Moscow, who resides at Exaterinoslaw, Russia, desires to procure specimens of American Diurnal Lepidoptera, for which he offers in exchange European Coleoptera, Hymenoptera, Diptera and Lepidoptera. He has sent a list of his duplicates to the editor, who will be glad to send it to any one who may wish to make exchanges with this European Entomologist.

We have lately been favored with two letters from one of the founders of our Entomological Society of Ontario, Prof. H. Croft, formerly of Toronto, but now engaged in sheep farming in Texas, with his son, at Hermanitas Ranch, San Diego, Duval County. His many entomological friends will be glad to learn that he has carried his enthusiasm for natural history, and especially for insects, with him to his new home, and has promised shortly to send a communication on some of the Texan insects

for the ENTOMOLOGIST. He speaks enthusiastically of the many beautiful butterflies to be seen on the wing in that southern latitude, and refers also to some diabolical Hymenoptera, the females of which are wingless, that sting horribly; of another large species which kills and carries off the Tarantula, and other interesting insects. He says: "During the summer we had thousands of *Elater noctileucus*, also quantities of *Lampyrus;* the light of the former is much more blue, brilliant and persistent."

OBITUARY.

It becomes our sad duty to record the death of one of our much esteemed fellow-laborers in the Entomological field, J. D. Putnam, of Davenport, Iowa. Mr. Putnam had long taken an active interest in the Davenport Academy of Natural Sciences, and had for some time past held the position of President of that active association of naturalists. He was with us at our late meeting in Cincinnati, and took part in the proceedings of our Entomological meetings, where his uniformly courteous, affable and gentlemanly bearing endeared him to all who had the opportunity of forming his acquaintance. Notwithstanding that he has been for some years in delicate health, he has written some valuable papers on Entomology and Mineralogy. His removal will be deeply regretted by all who have been privileged to know him, and particularly will he be missed by those with whom he has labored in the Academy at Davenport. When parting in Cincinnati we had sincerely hoped to meet again, but it has been otherwise ordered; he has been taken from a noble field of labor below, to, we trust, a nobler one above.

CORRESPONDENCE.

DEAR SIR,—

I have lately received a specimen of *Macrosila cingulata* Fab., captured at Long Point. It is about the dimensions of a medium-sized *quinquemaculata.* The spots on the body pink, and a pink patch on the hind wing. I see in connection with it that it feeds on the Sweet Potato, indicating that it was originally a more southern species.

J. ALSTON MOFFAT, Hamilton, Ont.

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