

SOME NOTES AND QUERIES ABOUT MOTHS. I.

BY A. R. GROTE.

Recently, in conversation with Mr. Henry Edwards, I spoke about some curiously neglected species of our moths, and my friend suggested that I should write out my remarks for "PAPILIO." This must be my excuse for the present gossipy paper, and I thought that its appearance now might be opportune in connection with the issue of the "New Check List," in the preparation of which I went over the literature concerning the species here mentioned. Some things which I find occasion to say may explain the synonymy of the "List" and supplement notes given in its pages; so upon this and other accounts it will be best to arrange my remarks under the heading of the different Families of moths.

I. SPHINGIDÆ.

Ninety-one species of this family are cited in the check list and one of doubtful value: *Cablei*. Of this number one, *Procne*, will have to go, being probably founded on an example of the East Indian *Lucasii*. Instead, it is probable that Dr. Clemens' *Lyncea* is not the male of *Ficus*, as he suggested, but a distinct form. As we have *Ficus* from Key West, it is probable that its companion *Syces* (= *Inornata*, of Clemens and *Ficus* of Ménétries) will also occur in our territory. I have not identified *Cupressi* of Boisduval. The figure leads me to suspect an *Ellema* and perhaps we have to do with a variety of *Coniferarum*. The odd series of abdominal marks are not like *Ellema*. To the genus *Hemaris* must be probably referred two species described by Dr. Boisduval as *Etolus* and *Pyramus*; the latter, as Mr. Hy. Edwards suggests is probably = *Uniformis*, which is = *Ruficaudis*, Kirby, according to Mr. Walker. Mr. Walker's determination I am willing to consider correct, although Kirby's description has certain points of difference when compared with our species. *Gracilis* is a totally different species and does not belong to the same group with *Uniformis*. Mr. Hulst claims to have bred *Uniformis* and *Thysbe* from the same larvæ. He further unites *Buffaloensis* as a small and *Floridensis* as a large form or variety of the same species. As to *Buffaloensis* he takes no note that Prof. Lintner describes the larva, and also that the cell of forewings gives an apparent distinctional character. *Buffaloensis* is always a smaller insect than *Uniformis*, whether bred or captured specimens are considered, and a dwarfed *Uniformis* would still be distinguishable from *Buffaloensis*. The species are all near, *Gracilis* being the most easily identified, and they must be the subject of careful study before pronouncing decided opinions on the different forms, which are of extreme interest. The species of *Hemaris* will always be of uncertain standing until the larvæ are well understood. There was a distinct necessity for naming and

separating the different forms. Before we wrote upon them, all the different forms were called either "*Diffinis*" or "*Thysbe*," and though now there may be too many names, they must be carefully studied before being all thrown together again as varieties.

I close my notes on these *Sphingidæ*, by again explaining Dr. Boisduval's remark as to *Phaeton*, that we gave the name to the insect first in 1865, some two or three years before receiving specimens from himself, and that we were under the impression when we published this name that it was a MSS. one of his, which it now appears it was not, although the name given to an unpublished plate of the species when we described the insect in our Synonymical Catalogue. We again described the species and genus from Dr. Boisduval's specimen before the appearance of his name of *Erato*, which name, in his final work, Dr. Boisduval withdraws, and calls the insect *Phaeton*, which is its correct designation. The singular antennæ of this little Sphinx remind us of those organs in the still more aberrant form, *Arctonotus* of Boisduval,* and which I am the first to locate among the Macroglossians, I believe; in his last work Boisduval follows this example. The genus *Cautethia* replaces *Oenosanda* of Walker, there being already a genus *Oenosandra* when Walker published his name.

It contains three species, apparently, viz.: the type *Noctuiiformis*, from St. Domingo, which I have examined, and which is certainly different looking from our South Florida insect, *Grotei* of Mr. Edwards. The Cuban species was identified by Dr. Herrich Schæffer as *Noctuiiformis*, and he has figured it as such, but it is the same as our Florida form, very probably. The third species is Boisduval's *Spuria* from Mexico, larger but much like the other two. With regard to the queries as to our *Sphingidæ*, we have to find out the species described by Boisduval as *Pyramus*, *Etolus* and *Cupressi*, while the probability is that we have all three forms under other names. Mr. Butler's surmise that we did not know *Lugens* is incorrect, for at once I recognized its re-description as *Eremitoides* by Mr. Strecker. The student of the literature of the group will find that we were the first to recognize the character of the adhering scales on the vitreous fields of the wing in *Hemaris*, and that Mr. Strecker's account of the changing character of our views is fanciful. We were at first doubtful about the value of the character of the inner edge to the outer band on forewing, and hesitated to form species upon it. Now it is found that this character is reliable, but whether it characterizes dimorphic or true species is not clear. In the case of *Uniformis* we must admit, until Mr. Hulst's discoveries are contradicted, that it

*Incorrectly attributed to me in the Brooklyn List.

is a dimorphic form of *Thysbe* (*Pelagus*). Among the species in the typical group of *Hemaris* not examined by me are *Senta*, Str. and *Metathetis*, Butl. As catalogued by me, I think the species are correct so far as our knowledge goes; I regret that I placed *Floridensis* as a variety of *Uniformis*, until more material is received. Our type is, I think, in Central Park collection. A specimen I received from Florida had the margin of the band like *Floridensis*, but the abdomen like *Fuscicaudis*. Was this a dimorphic form of *Fuscicaudis*, equivalent to *Uniformis*?

When Clemens wrote, *Ampelophaga*, Boisd., was an unknown species; but I found that this was the equivalent of *Pandorus*, wrongly called *Satellitica* by Harris. Clemens has left us another query, viz: What is *Deilephila oxybaphi*? described by him in the larval stage only. Kirby's species in Coleoptera, no less than Lepidoptera, do not seem easily recognizable from his descriptions. He has described a *Deilephila intermedia*, that most authors seem to think cannot well be our common *Chamænerii*.

On pages 44 to 45 of our Synonymical Catalogue we give the names of the doubtful species. Some of the species, such as *Scyron* and *Fapix*, had been merely wrongly credited to our fauna by older writers. The debatable names at present are:

<i>Deilephila intermedia</i> , Kirby.	<i>Paonias pavoninus</i> , Geyer.
“ <i>oxybaphi</i> , Clemens.	<i>Macroglossa Etolus</i> , J. Leconte. •
<i>Pachylia Lyncea</i> , Clemens. •	<i>Macroglossa Pyramus</i> , Boisd. •
<i>Sphinx Cupressi</i> , Boisd. •	

Dr. Clemens' species of *Chærocampa*, described from specimens no longer in the Collection of the Academy at Philadelphia, are all extra limital. His *Macrosila Instita*, as published on page 14 of our Catalogue, is the same as *Ochus* of Klug, a species curiously neglected by Walker in the British Museum Lists.

With regard to the genera adopted in the “New Check List,” they have been thoroughly tested so far as priority is concerned. I cannot find an objection to one of them and I think they stand upon a strong scientific basis and ought not to be disputed without grave cause. That in a few cases, as the genera allied to *Smerinthus* and *Chærocampa*, certain of them are of subgeneric rather than generic value, may be still a matter of dispute. I think the student will find that this can only be properly questioned of two or three, and that, although there may be some prejudice against them, more will be lost than gained in lumping the species all together again. As they stand, they fall in with what has been observed by a student of the Sphinxes of the world, such as Mr. Butler, and, in great part, Dr. Boisduval. Where I differ from Mr. Butler, as in adopting *Dilophonota*, nearly

identical in time of publication with *Anceryx*, I do so because Burmeister's genus is more limited in extent and is conceived in the sense in which I employ it. Hubner's genus *Phlegethontius* is equivalent to *Macrosila* as used by Dr. Clemens; the type of the latter seems different and the older name is used for properly associated species.

When we compare our fauna with that of Europe, we find that it is twice as numerous in species—91 to 40. Ours contains no true *Macroglossæ* of the type of *Stellatarum*, and no species of *Acherontia*, though loose writers such as Maasen have credited Mexico with a species of the latter genus.

In the European genus *Deilephila* we are poor, having but two, representative of two European species, *Livornica* and *Galii*, but apparently sufficiently distinct. In the clear-winged *Macroglossæ*, belonging to *Hemaris* (and its subgenus *Hæmorrhagia*) we have many forms against two in Europe. In the typical Sphinges, genus *Sphinx* (= *Lethia*), of which *Ligustri* is typical while *Convolvuli* is to be referred to *Phlegethontius*, we are rich in closely allied species against one in Europe. We have at least one true *Smerinthus* from California, congeneric with the European *Ocellata*. Our species from the East diverge from this type and resemble the species *Kindermanni* of Lederer from Asia Minor; again we have in *Versicolor* a representative of the genus *Ampelophaga*, also from Eastern Asia. In *Calasymbolus*, *Paonias* and *Cressonia* we have three American structural types of *Smerinthus*, while *Triptogon* has a great number of Eastern Asiatic species, hardly more than races, so near do they run together.

Our fauna comes mainly from the South, whence we receive the Chærocampid forms. *Pachylia*, and perhaps *Argeus*, may breed in Florida and Southern Texas. The specimens taken occasionally on the coast and up the valley of the Mississippi are probably immigrants from the West Indies or Mexico. The *Manducæ* come to us largely from the South, and *Phlegethontius* is more numerous represented in South America. *Amphonyx Antæus* may be only an occasional visitant at Key West; the genus is West Indian and South American.

From Western and Northern Asia we receive *Hemaris*, *Deilephila*, *Smerinthus*, *Triptogon*, *Hyloicus* and *Sphinx*, though the development of the latter genus is North American. From the South we receive *Aellopos*, *Cautethia*, *Amphion*, *Enyo*, *Philampelus*, *Argeus*, *Pachylia*, *Daremma*, *Diludia*, *Amphonyx*, *Phlegethontius* and *Dilophonota*. With Eastern Asia we have *Eusmerinthus* and *Ampelophaga* in common. Genera peculiar to our fauna are *Lepisesia*, *Euproserpinus*, *Thyreus*, *Deidamia*, *Arctonotus*, *Everyx*, *Paonias*, *Calasymbolus*, *Cressonia*, *Ceratomia*, *Dolba*, *Ellema*, *Exedrium*; as a rule, genera containing single, compara-

tively striking and isolated forms. We may tabulate them as follows:

Genera of European and Asiatic Extraction.

	<i>No. Species.</i>
HEMARIS (typical).....	10
DEILEPHILA	2
AMPELOPHAGA.....	1
SMERINTHUS (typical).....	1
EUSMERINTHUS.....	2
TRIPTOGON	2
SPHINX	15
HYLOICUS.....	3
Total	36

This number loses its importance when we examine the species themselves. The forms of typical *Hemaris* are probably a little overstated. The development of *Sphinx* is *American*, rather than *European*. In Europe but one species, *Ligustri*, occurs. Our forms on my list, down to *Canadensis*, seven in number, are probably strictly typical; the remaining eight depart more or less, some approaching *Hyloicus*, however, a European type. Again, others are peculiarly American in appearance, but hardly give generic characters, such as *Gordius*, *Eremitus*, *Dollii*. On the whole, then, we have eight generic types coming from the Old World, the kinds of two of them, *Hemaris* and *Sphinx*, having multiplied and developed upon American ground. These types may be held as coming from the North, and as related to a former Circumpolar fauna.

Genera of Southern American Extraction.

NAMES OF GENERA.	<i>No. Species.</i>
AELLOPOS.....	2
CAUTETHIA.....	1
AMPHION.....	1
ENYO.....	2
PHILAMPELUS.....	4
ARGEUS.....	1
PACHYLIA.....	1
CHCEROCAMPA	1
DAREMMA.....	3
DILUDIA.....	3
AMPHONYX ...	1
PHLEGETHONTIUS	4
DILOPHONOTA.....	6
Total.....	30

We have thus thirteen generic types from the South, and although the species are less numerous than in the genera of Old World extraction, I have explained this circumstance away,

and this present category of our Sphingid genera includes the most powerful element in our fauna.

Genera peculiar to North America.

NAMES OF GENERA.	No. of Species
LEPISESIA.....	1
HAEMORRHAGIA.....	4
EUPROSERPINUS.....	1
THYREUS.....	1
DEIDAMIA.....	1
ARCTONOTUS.....	1
POGOCOLON.....	4
EVERYX.....	2
PAONIAS.....	1
CALASYMBOLUS.....	2
CRESSONIA.....	1
CERATOMIA.....	1
DOLBA.....	1
ELLEMA.....	3
EXEDRIUM.....	1
	—
	25

I think that the study in this way of the members of any one lepidopterous group will lead to interesting results. But such are only attainable when the material has been closely studied and arranged as I have tried to do with our *Sphingide*. Since my studies in the synonymy of the family, the results of which appeared in 1865, I have kept working on the genera and think these, as given in the "New Check List," have acquired a comparatively stable and final condition which will allow of conclusions as to geographical distribution being safely drawn. Especially interesting are such groups as *Hæmorrhagia*, which is an American development of an Old World type *Hemaris*, influenced apparently in the extension of the thorax by such South American types as *Aellopos*. But so long as writers call all or most of our *Caudiberbes* species of *Macroglossa*, it is evident that an erroneous idea is given at the outset to our fauna, which does not contain a single form really belonging to that Old World genus.

While the neuration is not greatly varied in the *Sphinges*, I find that it is most varied in the *Smerinthi*. Good characters are offered by which we may, for instance, distinguish *Cressonia*, in every way a strongly marked and peculiar form. That there is in this group considerable variation in antennal structure also is noticeable. We shall find that *all* the appendages vary in ultimate structure, accordingly as a group is plastic or subject to differences. The position of the wing in repose is also unusual in the *Smerinthi*, the hind wing being pushed upwards; several of the species look like curled and brown leaves. They are less obvious and more sluggish than the other *Sphinges*. Our most beautiful species is, I think, *Calasymbolus Astylus*.

Our greatest rarities from the East are *Flavofasciata*, *Cerisii*,

Luscitiosa and *Jasminearum*. The first named is taken in Canada, Northern New York and Maine, the last will probably be found more abundantly southward. The larva of *Catalpæ* has turned out to be very numerous in various localities in the South, but the Moth has proved difficult to rear. With several other Sphingidæ, I took *Versicolor* twice at sugar near Buffalo, N. Y.; from its flight I could easily tell it from *Myron* and *Choerilus*, which came abundantly to bait, but it was harder to "bottle." It had a different way of taking the bait from the difference in tongue. *Hageni* has been taken in some quantity in Kansas by Professor Snow, and seems to occur throughout the Southwest as well as in Texas; I have not heard of its being found near the Atlantic seaboard. Our commonest species seems to be *Lineata*, after this, *Celeus*; *Abbotii* is also very well distributed. The species of *Hemaris* are more local; *Thysbé* is found over the widest territory. Mr. Hy. Edwards speaks of *bushels* of *Achemon* larvæ found in California on the vines; it is rarer in the East, but on Staten Island vineyards it was more usual than *Pandorus*. Of late years *Inscripta* has become rarer. *Labruscæ* has been found as far North as New Jersey, borne on the winds from more southerly latitudes.

In his "Synopsis of North American Sphingidæ," a work somewhat ambitious in appearance, but not evincing a corresponding study of the literature of the group, Dr. Clemens describes the following species, which are not generally known:

Calliomma Volatica from Brazil; *Deilephila oxybaphi* (larva) from Penn.; *Chærocampa Procne* said to be from California, but probably = *C. Lucasi* from East Indies; *C. Thalassina*, of which Butler says: "Seems to be allied to *Amadis*;" *C. Versuta* from Mexico. Butler seems to have overlooked *Calliomma Volatica*. Whether the type has gone the way of that of *Procne* I do not know, but it is certainly probable.

THE PREPARATORY STAGES OF ARCTIA NAIS, DRURY.

BY G. H. FRENCH, CARBONDALE, ILL.

EGG.—Diameter, .03 inch, color, white; an obtuse cone, about as high as wide, flat at the base; smooth. These were found on a ripe strawberry in a single cluster, hatched 5 days after finding. They had the appearance of being freshly deposited so that it is probable this period is from 5 to 6 days.

YOUNG LARVA.—Length .06 inch, color dull pale gray, head black on the cheeks, a triangular space above the mouth of the same color as the body. On each joint there is a transverse row of tubercles, six distinguishable, black, from each arises a black



Grote, Augustus Radcliffe. 1882. "Some notes and queries about moths."
Papilio 2(9/10), 170–176.

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