

blackish-brown, the anterior portion of the wings and legs a little paler, while the spaces between these is somewhat yellowish, as also the parts between the terminal joints. Duration of this period from the time of beginning to spin nineteen days. The cocoon was loosely spun of fine white silk, and not enough of it to conceal the chrysalis. Two days passed from the time the larva began spinning to the time the last larva skin was moulted and the chrysalis was to be seen.

The eggs were deposited April 27th, and the moths hatched June 8th, making a period of forty-two days from the egg to the imago. Allowing three days from the time the moths emerge before eggs for another brood are deposited, would give us forty-five days as the whole period from egg to egg, though I am of the opinion that it is a few days longer, from the condition of the moth depositing the eggs from which the above notes were taken. This would give us two more broods of moths this season, with another brood of larvæ that probably hibernates in the chrysalis state, or four broods in a season. This is making little or no allowance for delays in some of the larvæ in passing from one state to another; in fact, those that were healthy were very regular in their moults. From larvæ found in the garden at different times there seems to be some irregularity, hence there would be in some cases of retarded development only three broods, while in others four.

The larvæ seemed to be easily affected by external conditions. Out of eighty passing the second moult, I obtained only four chrysalids, and only two of those produced imagines. It should be said, however, that about the period of the third and fourth moults the weather was rainy most of the time, and all my larvæ of other species were somewhat affected by it, but none so much as these. Larvæ found in the garden during that time were affected in the same way.

The food plant not being known, quite a number of tender leaves were at first offered the young larvæ. Among these parsnip, larkspur and clover were eaten, though towards the last, lettuce was given them, as they were found on that. They were, however, fed most of the time on parsnip leaves, as they seemed to prefer that plant.

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## “TINEIDÆ” OR “TINEINA.”

BY V. T. CHAMBERS.

I desire to offer a few remarks suggested by Lord Walsingham's paper in the May number of *PAPILIO*. I am so completely out of Entomology now, and have done so little in it for the last two or three years (beyond arranging some old notes for publication) that I do not feel qualified to discuss the subjects



embraced in Lord Walsingham's paper, and what I shall now write is simply the impressions left upon my mind by former studies.

I am perhaps too indifferent to nomenclature, and care nothing about whether we write TINEINA or TINEIDÆ. The name does not concern me so long as the thing named is understood, and I shall not enter upon the question as to which of these two names we shall use. But the question whether there is in nature a separate and distinct group of Lepidoptera of higher than generic rank to which either name can be appropriately applied, is one of more importance. Following the authors of the *Nat. Hist. Tin.*, Stainton, Zeller, Frey, Douglass and others (acknowledged authorities as to the insects in question), I have usually written TINEINA. Lord Walsingham, with the majority of entomologists, prefers to write TINEIDÆ, a name which in the *Nat. Hist. Tin.* is applied to a single family of the supposed group. Uniformity is better than priority, and I think it will be more easily achieved by following the authorities above named than by adhering to the older name of TINEIDÆ for all of the various and heterogeneous families forming the supposed group—if there is in nature such a group. Is there?

Lord Walsingham thinks there is. With great respect for the authority of so distinguished an entomologist, I differ with him, and whilst I have used the name TINEINA in a loose and general way for all small moths not clearly belonging to any of the higher groups, I do not believe that there is any such distinct group as TINEINA (or TINEIDÆ). The HETEROCERA are sufficiently distinct, perhaps, from the RHOPALOCERA, though there are "connecting links" even here; but, in my opinion, there is no line separating the TINEINA (I use the name through force of habit) from other HETEROCERA; and the belief that there is has hindered the study of these small moths. Because of their obscurity, and under the impression that they form a distinct group, a knowledge of which was not necessary to a knowledge of the higher HETEROCERA, students of the latter have generally neglected them. But in my opinion they are no more distinct from the higher HETEROCERA than these are from each other; and the *Tineidæ* (restricted), *Gelechidæ*, etc., take rank as families of HETEROCERA just as do the *Bombycidæ*, *Noctuidæ*, *Tortricidæ*, etc., and not as sub-families of a family TINEINA or TINEIDÆ. The line which separates the higher *Tineidæ*, *Gelechidæ*, etc., from the *Tortricidæ*, *Phycidæ*, etc. (sometimes very indistinct), is no more strongly marked than the lines which separate these latter from each other. The name *Tineidæ* probably came to be employed at a time when comparatively little was known about these small moths, and they perhaps appeared sufficiently distinct from the larger forms to give rise to the impression that they were, in fact, a distinct group; and the use of a name for such supposed group has perpetuated the belief



that it had a real existence. It is not my purpose, either now or hereafter, to give the facts and reasons which lead me to the conclusion that there is no such group, as in all probability this is my last contribution (such as it is) to entomological literature; but I wish to offer some remarks upon some of Lord Walsingham's suggestions on this subject in the paper in the May number of *PAPILIO*. I would have expressed my meaning more clearly and grammatically if I had written in the paper in the *Journal of the Cin. Nat. Hist. Soc.*, referred to by Lord Walsingham, "TINEINA is a name applied to a large group," etc., instead of "TINEINA is (sic) a large group," as quoted by his lordship. It may be as suggested by him (*in lit.*) that "is" is an error of the printer, but it is just as likely that it is the result of my own haste and carelessness in writing. This much, *en passant*, as to the grammar; my present object is to consider briefly some of his lordship's reasons for believing that such a group as the supposed "TINEIDÆ" higher than a genus has an actual recognizable existence as separate and distinct from the higher HETEROCERA.

Lord Walsingham writes (*loc. cit.*): "What is a family?" Regarding it in its accepted sense as "an assembly of genera," each of which possesses in greater or less degree the characteristic feature or features of one and all of them, we must ask ourselves whether any one, or more than one, characteristic generic feature pervades the whole group of genera which have of late been massed together under the name "TINEINA." For myself, I must answer that I do not now remember any such feature which is not equally characteristic of other HETEROCERA, unless indeed it be the small size of most of them. And even if size be regarded as of "family" importance, there are many insects usually included in TINEINA which greatly exceed in size a great many HETEROCERA of "higher" families. If we adopt size as the criterion of a right to be placed in TINEINA, then all species of Dr. Clemens' genus *Anaphora* will have to be excluded. My species *Blastobasis gigantella* will be excluded, whilst all other species of the genus will be included. These species of *Anaphora* and *B. gigantella* equal or exceed in size the average size of species of *Tortricidæ*, *Pyralidæ* and *Phycidæ*, and so do many other "TINEINA" which I have not time now to specify, and they equal in size many *Noctuidæ*. I cannot agree with Lord Walsingham that "it is surely easier at first sight to separate any of these ('Tineidæ') genera from those of other families than it is to determine with readiness and certainty the true position of a *Bombycid* (which approaches the *Noctuidæ*), a *Noctuid* (which approaches the *Pyralidæ*) or a *Pyralid* (which approaches the *Phycidæ*)." Indeed, to instance *Anaphora* again, it appears to me that at first sight I should rather refer it to the *Noctuidæ* than to the *Tineina*; and I confess myself, at first sight (for my examination of the insect was brief and incomplete) I was utterly unable to determine in



what family or group to locate the insect mentioned by me in the foot note on page 16 of the paper in the *Journal of the Cincinnati Nat. Hist. Soc.* Possibly it may be related to *Euplocamus*, and on account of its large size, and for other reasons, I have always doubted whether *Euplocamus* ought to be included in the *Tineina*. Lepidopterists are not by any means all agreed as to the upward limits of the *Tineina*. Species and genera which some place in *Tineina* are by others placed in *Tortricidæ*, *Pyralidæ* and other groups. Mr. Stainton and others place *Orthotelia* and *Phibalocera* in *Tineina*. Stephens and others have placed them in *Tortricidæ*, from which "at first sight" I see no reason to separate them. Other instances will doubtless occur to those who are familiar with the *Tineina*, but I write on the spur of the moment, after having read Lord Walsingham's paper, and from recollection only when I am no longer familiar with the subject, and without any special research. *Brenthia*, Clem., is the equivalent of *Limæthis*. With Dr. Clemens, I, on account of its size, cilia and ornamentation, placed it in *Tineina*, where it has been located by some other entomologists, though more commonly it is placed in *Pyralidæ*. *Hyale coryliella*, Cham., is probably *Menestra tortriciformella*, Clem., and was placed by both Dr. Clemens and myself in *Tineina*, where, I am now satisfied, it does not rightly belong.

Lord Walsingham continues: "Whether by their small size" (which we have seen fails to characterize them), "their long cilia" (which are wanting in many of the larger genera, and are not longer than in many *Tortricidæ* or *Phycidæ*), "their slender and upturned palpi" (though multitudes of them have drooping palpi or no palpi at all) "the leaf mining habits of the larvæ" (though a majority of them are not leaf miners at all, while some larvæ of *Tortricidæ*, etc., are at first), "the neuration of their wings" (differing widely among different genera as *Nepticula*, *Cuniostoma*, *Lithocolletis*, *Gelechia*, *Tinea*, etc., and in some of the higher genera differing little or not at all from that of *Tortricidæ*, *Pyralidæ*) "and ornamentation of their wings" (ranging from the brilliancy of *Lithocolletis* and *Lithaciopteryx* to the somber dullness of many *Tineidæ*), "there is in each genus associated with the Linnean name '*Tinea*' some peculiarity by which its members can without difficulty be recognized as possessing what I think may be properly called a family resemblance." It may be so, but I fail to detect the family resemblance of a *Phyllocnitis* on the one hand, and a *Tinea* or *Euplocamus* on the other, more easily than I can that between *Anophora* and many *Noctuidæ*, and when we come to trace their life histories and compare their larvæ, the attempt fails more completely still. All are LEPIDOPTERA HETEROCERA; to that extent there is resemblance, but that is about all that I find between numerous genera usually "associated with the Linnean name *Tinea*;" and I do not find as characterising the



so-called group *Tineina* any characteristic, or combination of characteristics, which I can "grasp" as constituting it a family or group of families. It appears to me to be a purely arbitrary and heterogeneous assemblage of families differing as widely from each other as they do from *Noctuidæ*, *Phycidæ*, etc. In size and form and neurulation, and other respects, they grade up from the smallest and lowest, passing as gradually into the higher groups *Tortricidæ*, etc., as the latter do in these respects into families still higher in the scale. And although by using the termination "idæ" instead of "ina" we secure a "termination uniform with *Sphingidæ*, *Bombycidæ*," etc., we do not secure a "family" of equal value with those families, but only a large heterogeneous group composed of numerous families (*Gelechidæ*, *Tineidæ* restricted, etc.,) the value of which is at present unproved.

It appears to me most probable that the small size, long cilia, etc., of such genera as have these characteristics are the results of degradation, not from a common form, but from a variety of originals, and in different directions; that the student will be greatly aided, to say the least, by a study of their early stages and development, and that this course is most likely to give us the key to their relationship—that is, to their natural classification. Such study, so far as I have prosecuted it, tends to the conclusion that instead of being a natural group of related families it contains at least five distinct families, degraded from as many distinct originals, and perhaps less related to each other than they are to some of the higher groups.

With great deference, therefore, for the opinions of so distinguished an entomologist as Lord Walsingham (and, no doubt, of many others), I am compelled to differ with him as to many statements in his interesting paper in *PAPILIO*, and I avail myself of this opportunity to state my own views more explicitly than I have elsewhere done. I will add that I have somewhere (I cannot now give the citation) seen some remarks by Mr. Stainton upon this subject, in which, as I remember, after briefly mentioning most of the characteristics of the supposed group alluded to by Lord Walsingham as above quoted, he concludes that the ciliation of the wings affords the best criterion, but admits that that fails sometimes. I think it is only a mark of degradation, and occurs just about in proportion as the species is more or less degraded, and does not indicate relationship.

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## NOTES ON *PAPILIO OREGONIA*.—EDW.

BY R. H. STRETCH.

During my recent trip to Washington Territory with Dr. Hagen I was fortunate enough, in conjunction with Mr. S. Henshaw, of the Boston Natural History Society, to take some



Chambers, Victor Toucey. 1882. "Tineidae or Tineina." *Papilio* 2(7), 115–119.

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