

AN ATTEMPT TO ELUCIDATE AND TO FIX THE TYPES OF
TORTRIX, *TINEA* AND *ALUCITA*,
 THREE OF THE LINNÆAN SUBDIVISIONS OF *PHALÆNA*, L.

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As Professor Grote has recently on more than one occasion confessed his inability to determine the types of these subdivisions, and as one of them seems to be used incorrectly, no apology is necessary for publishing the conclusions arrived at after careful study extending over several years, especially as it is hoped that the results obtained will have the merit of finality, being based on a strict application of the Law of Priority. The elucidation of these Linnæan subdivisions is attended with unusual difficulty, not only on account of the loose and illogical manner in which some of them have been treated by writers subsequent to Linnæus, but also because at the outset we have to face the much debated question whether these subdivisions can be accepted as *genera* attributable to Linnæus himself.

It is usually considered that Linnæus was the originator of that binomial system which is in use at the present day, and so far as the special name is concerned this assumption is certainly correct, but in the *Lepidoptera* (to which all these remarks apply *exclusively*) Linnæus cannot be said to have described a single genus—his assemblages of species under a distinctive heading are of *not less* ordinal value than the groups which are now called Families, and therefore the subdivisions of these heterotypical assemblages more nearly approximate what we now call a genus. From a modern point of view the so-called genera as well as their subdivisions are for the most part of no systematic value, and it is only the fact that these names obtained priority for groups of species whose sole claim to recognition rests in the restrictions made and the definitions applied to them by subsequent writers that renders it necessary to discuss them all.

If we regard the Linnæan names *Papilio*, *Sphinx* and *Phalæna* as genera, then it is obvious that those designations which were used in plural form in subdividing these three large assemblages were not considered as of equal value with the whole group of which they were component parts. Though confining this enquiry to three only of the subdivisions of *Phalæna*, the same arguments apply equally to the other trinomial subdivisions proposed by Linnæus.

It is certain that Linnæus did not consider these subdivisions as genera, for they are not numbered, whereas all the Linnæan *genera*

are numbered consecutively ; thus in the *Systema Naturæ* (edn. X), pp. 18-19, we find :—

“MAMMALIA—Generum Characteres compendiosi” (1 *Homo* to 39 *Delphinus*). On pp. 83-85 :—“AVIUM—Genera Characteres Avium” (40 *Vultur* to 102 *Caprimulgus*). On p. 196 :—“AMPHIBIA—Generum Characteres” (103 *Testudo* to 118 *Acipenser*). On pp. 242-3 :—“Characteres Piscium” (119 *Muræna* to 169 *Pegasus*). On pp. 342-4 :—“INSECTA” (170 *Scarabæus* to 243 *Julus*).

It will be observed that each of these headings differs in form : in the tabulation of the fishes we have only “Characteres Piscium,” both “PISCES” and “generum” being omitted, and in the Insecta, “Generum characteres insectorum” is left out ; but the names in these Orders were regarded as genera is evident from the fact that the numerical sequence is maintained throughout, and moreover, in a footnote to the twelfth edition under the INSECTA we find (p. 537 = †357) :—“*Genera Naturalia Auctorum metamorphosi demonstranda vitam scientiæ largiuntur,*” &c. This edition is practically the same as the tenth as regards its classification, but the numbers of the genera are somewhat higher through the introduction of additional genera, *e. g.*, *Scarabæus* is No. 189 (instead of 170), and *Julus* No. 274 (instead of 243).

To each of these *genera* a short diagnosis is appended, and by turning to the table we can see what Linnæus really regarded as *genera* in the *Lepidoptera*.

In the tenth edition, p. 343 (and in the twelfth, p. 538, but numbered 231-3) we find :—

(Order) “III. LEPIDOPTERA.”

(genera) “203 PAPILIO—Antennæ extrorsum crassiores. Alæ erectæ.

204 SPHINX—Antennæ medio crassiores.

205 PHALÆNA—Antennæ introrsum crassiores.”

It is therefore evident that Linnæus did not regard either *Bombyx*, *Noctua*, *Geometra*, *Pyralis*, *Tortrix*, *Tinea* or *Alucita* as genera, but employed them as subdivisions or subgenera, and this conclusion is borne out by a footnote on p. 496 of the tenth edition (edn. XII, 809) :—“*Phalænæ dividendæ, quo facilius inquirantur,*” &c., and here a brief diagnosis to each of these subdivisions is given.

If it be objected that the names of these subdivisions cannot be accepted as genera until they were so called by a subsequent author, then it follows that the term genus must be applied to the groups which we now call *Rhopalocera* and *Heterocera*, and that *Papilio* and *Phalæna* must be used in lieu of these names. It is obvious that in the *Lepidoptera* the term “genus” is not now used in the sense in

which it was applied by Linnæus, but are we to waste our time in argument about the meaning of the word "genus" and to endeavour to restore this term to the sense in which it was used by Linnæus, or are we to strive to bring the work of the author of the *Systema Naturæ* into line with modern thought and methods? Linnæus himself perceived the necessity for subdividing his so-called genera, and we shall not be wrong in following his lead. The names *Papilio* and *Phalæna* should be altered in termination in accordance with the value they are held to possess (but should be attributed to Linnæus), and should be substituted for *Rhopalocera* and *Heterocera* which they antedate, on the other hand the subdivisions of these Linnæan genera should be attributed to Linnæus as "genera" in the modern acceptance of the term.

TORTRIX, L.

Type—*Tortrix viridana*, L. (Stph., 1829).

TORTRICES, L., Syst. Nat., X, 496, 530 (1758).

The original definition as given on p. 496 is:—"Alis obtusissimis ut fere retusis, planiusculis," to which the following restriction is added on p. 530:—"Tortricum Larvæ contorquent & filo connectunt folia, quævorant & intra quæ se recipiunt."

The type of *Tortrix*, L., must be one of the species enumerated by Linnæus (Nos. 202 to 225), and it must conform to the original definition and to the restriction based on the habits of the larvæ that were then known. The subsequent writings of Linnæus did not affect the type of this genus.

Poda, Ins. Mus. Græc., 93 (1761), enumerated two species as belonging to *Tortrix*, of these *prasina*, Poda, = *quercana*, Schiff. (*bicolorana*, Fuessl.), and the other, *avellana*, Poda, is considered to represent *corylana*, F., both non-Linnæan species, consequently the type was not affected.

[Geoffroy entirely omits reference to *Tortrix*, L., and Fabricius in 1775, by an error of judgment, transferred the Linnæan name *Pyrallis* to the group which Linnæus had designated *Tortrix*, raising it to generic rank and enumerating nearly all the species known to Linnæus, but in his writings he did not indicate the type of his genus. Lamarck, Syst. An. sans Vert., 287 (1801), re-described *Pyrallis*, F. (*nec* L.), and cited *viridana*, L., as the type].

Toerner, Diss. Ac. Upsal., III, 259 (1801), raised *Tortrix* to generic rank under its own name, and re-described it thus:—"TORTRIX: antennæ filiformes. Alæ ampliata, obtusæ: margine exteriori curvo," but mentions no types. [N.B.—It is stated that Thunberg was really the author of these "Dissertationes."]

Haworth, Prod. Lp. Br., 15 (1802), removed *prasinana*, L. (= *fagina*, Hw.) to "Noctuæ viridæ," a very proper correction of a Linnæan error, unfortunately, however, Lp. Br., 394-6 (1812), he replaced it in *Tortrix*, but his previous restriction, which was justified, must be held to exclude this species from being a possible type of the genus.

Leach, Edinb. Encycl., 135 (1815), quotes *prasinana*, L. (= *fagina*, Lch.), as the type of *Tortrix*, but this species cannot be accepted as the type, for it does not conform to Linnæus' description of the habits of the larvæ of the genus, and it had been excluded by Haworth in 1802.

Frölich, Enum. Tortr. Würt., 9-11 (1828), and Treitschke, Schm. Eur., VII, 228-30 (1829): VIII, 45 (1830), do not affect the type, but Stephens, Cat. Br. Ins., II, 168 (1829), enumerates only one of the species included in the genus by Linnæus, which fixes the type as *VIRIDANA*, L., and in Ill. Br. Ent. Haust., IV, 66, 68 (1834), Stephens gives reasons for considering this species the type. In this he has been followed by all subsequent writers with the exception of Duponchel, who Hist. Nat. Lp. Fr., IX, 19 (1834), erroneously cited *cratægana*, Hb., as the type. It will be observed that whether we study this genus under its original Linnæan name or under that of *Pyralis*, F. (*nec* L.), the results are the same, *viridana*, L., is the type, and as it is an eminently typical species about which there has never existed any doubt, it is to be hoped that it will be impossible to assail its claims to be regarded as the type of *Tortrix*, L.

TINEA, L.

Type—*Tinea pellionella*, L. (F., 1775).

TINEÆ, L., Syst. Nat., X, 496 (1758).

"Alis convolutis fere in cylindrum, fronte prominula." On p. 497 it is remarked that the "Tineis subcutaneis" have only fourteen feet, but this is a mere note on the structural characteristics of a certain section of *Tinea*, L., and in no way affects the question of type.

In the Fauna Suecica, II (1761), Linnæus omits *Phalæna Tinea bella*, L., which therefore ceases to be a possible type, and in the same year Poda, Ins. Mus. Græc., 94 (1761), enumerated two only of the species placed in *Tinea* by Linnæus, *granella*, L., and *pellionella*, L. Linnæus, Mus. Lud. Ulr., 399 (1764), mentions only *Phalæna Tinea bella*, L., but his previous action and that of Poda prevent this species from being accepted as the type.

Poda's restriction (by elimination) of the generic name *Tinea* to the rough headed clothes' moths has been accepted by all subsequent authors. Both *granella*, L., and *pellionella* are quoted by Geoffroy, Hist. abrégé Ins. Paris, II (1762), but Fabricius, Syst. Ent., 655, 667 (1775), subdivided *Tinea*, L., into *Tinea* (L.), F., and *Alucita*, F. (*nec* L.), and while retaining *pellionella* in *Tinea* removed *granella* to his new genus, to which by an error of judgment he applied the Linnæan name *Alucita*. By this action PELLIONELLA, L., was constituted the type of the genus *Tinea*, and it was cited as such by Lamarck, Syst. An. sans Vert., 288 (1801).

There appears to be no reason for objecting to the acceptance of this species as the type, and if Linnæus' expression, "fronte prominula" were used in the *modern* sense it might be taken that he himself indicated that the true *Tineæ* with rough heads constituted the typical portion of his genus; it is possible, however, that he intended to refer to the projecting palpi of some of the species which he included, but as his expression is ambiguous, we are bound to accept the limitations of our predecessors, whose action restricted his assemblage of heterotypical species to that generic conception which we now know as *Tinea*, L.

ALUCITA, L.

Type—*Alucita pentadactyla*, L. (Poda, 1761).

ALUCITÆ, L., Syst. Nat., X, 496 (1758).

"Alis digitatis fissis ad basin." Poda, Ins. Mus. Græc., 94, pl. II, 14 (1761), enumerated and figured one species only of the possible types of this genus PENTADACTYLA, L., which action, three years after the publication of the name, definitely fixed the type of the genus.

Geoffroy, Hist. abrégé Ins. Paris, II, 24-5, 90-3 (1762), created the genus *Pterophorus* at the expense of *Alucita*, and placed the following species in his new genus: 1, *pentadactyla*, L.; 2, *monodactyla*, L. (= *didactyla*, Geoffr.); 3, *hexadactyla*, L.

Fabricius, Syst. Ent., 671 (1775), adopted Geoffroy's name, including Geoffroy's three types, but adding more species.

Lamarck, Syst. An. sans Vert., 288 (1801), re-described *Pterophorus*, citing as its type *pentadactylus*, L., F., &c., but this action was not admissible, this species having already been constituted the type of *Alucita*, L.

Latreille, Préc. Gen. Ins., 148 (1796), created the genus *Orneodes*, omitting to cite the type; subsequently, however, Hist. Nat. Crust. Ins., III, 418 (1802): XIV, 258 (1805), this omission was remedied,



Walsingham, Thomas de
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and Durrant, John Hartley. 1897. "An attempt to elucidate and fix the types of Tortrix, Tinea, and Alucita, three of the Linnaean subdivisions of Phalaena L." *The Entomologist's monthly magazine* 33, 37–42.

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