Andrzej S. Kostrowicki

Studies on the Palaearctic Species of the Subfamily Plusiinae
(Lepidoptera, Phalaenidae)

[With 154 text-figures]

The subfamily Plusiinae is a rather compact and well known group among the family Phalaenidae. Because of characteristic coloration of the forewings, the representatives of the subfamily under consideration seem to be easily distinguishable from each other. Very possibly, due to this fact, no thorough study on this group of insects has hitherto been done. Only in 1944 J. McDunnough made a systematic revision of the subfamily Plusiinae. However, that revision was based nearly exclusively on the species occurring in the Nearctic Region. In the present paper I try to give a systematic revision of the Palaearctic species of the group in question and to complete the McDunnough work for the Holarctic Region, where originated about 50% of species of Plusiinae.

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GENERAL PART

EXTERNAL ANATOMY

The members of the subfamily Plusiinae are medium-sized moths, the wingspan of which varies from 15 to 60 mm. Proboscis well developed. Labial palpi in most instances rather long; midjoint in many species markedly elongate, in some cases longer than apical joint plus basal joint. Face smooth, clothed with thick, hair-like scales, which, in many species, run concentrically towards the centre of the face and form an forward extending rather conical projection. Eyes fairly large, ovate, surrounded by more or less long ciliae. However, the species of the genus Caloplusia Sm., have eyes proportionately small and ellipsoidal. Antennae in most species filiform. Thorax broad, in most instances covered with two kinds of scales: hair-like and shovel-like, more rarely clothed with only hair-like scales. Mesothorax and metathorax of most species have tufts of long scales forming rather conical protuberances. Femur large, with outsiders clothed with long, thin scales. Tibia proportionately narrow and elongate; in the species of the genera: Caloplusia Sm., Syngrapha Hbn., Autographa McDunn., Rachiplusia HMPS., Trichoplusia McDunn. and Cornutiplusia n. g. with well visible, heavily sclerotized spines. The members of the remainder of the genera lack such spines. Tarsus with five joints, in all species covered with minute scales and heavily sclerotized spines. Wings large, developed normally in both sexes. Wing venation typical of the whole group of the subfamilies Plusiida (Quadrijinae auct.). Forewing with areola defined among r3 and r4. M2 in the hindwing well developed, at base close to m3 and cu1. Abdomen moderate, dorsal side in most cases with tufts of erect scales, which are well visible, especially on the segments 1 and 3. In the members of the genera: Anadevidia n. g., Argyrogramma Hbn., Chrysodeixis Hbn., and Trichoplusia McDunn., the sides of the segments 1—3 have tufts of strongly elongate scales, which, in some instances, reach nearly to the end of the abdomen.

Male genital armature of a basic Phalaenidae-type. Uncus in most instances decidedly elongate, clothed sparsely with short hairs. Penicillus narrow; tufts of long hairs very characteristic to other subfamilies of Phalaenidae lacking. Transtilla rather broad, in some species clothed with minute spikes. Juxta in most cases large; in members of genera: Caloplusia Sm., Syngrapha Hbn., and Anadevidia McDunn. with a heavily sclerotized, produced caudal projection. Valva of various armature. Clavus in some genera decidedly elongate, in others nearly totally reduced. Sacculus moderate. Ampulla in most genera strongly elongate, narrow. Clasper in some instances forms a large plate, which protrudes beyond valva. Cucullus ill-defined. Corona not developed. Aedeagus of various armature; vesica in most instances armed with numerous cornuti.

Female genitalia of a basic Phalaenidae-type. Papillae anales in most species
large. Gonapophyses anteriores and posteriores thin and rather short. Lamella antevaginalis and postvaginalis in most instances slightly developed. Ostium bursae broadened, in some cases fairly large. Ductus bursae in most instances proportionately short, but the members of the genera: *Trichoplusia* McDunn., and *Argyrogranna* Hbn., have the ductus bursae strongly elongate, sometimes longer than the total abdomen. Bursa copulatrix od various shape, sometimes with cervix bursae strongly developed.

Larvae rather large, usually lack hair. Head small. Mandibulæ in the genera *Abrostola* Ochs., and *Mouralia* Wkr., with an extending fold on the oral side; in the remainder of the genera smooth, without any fold. Chaetotaxy rather typical of the total family *Phalaenidae*, resembling that in the sub-families *Stictopterinae* and *Euteliinae*. Abdominal legs of the third and fourth abdominal segments developed only in the members of the genera *Abrostola* Ochs., and *Mouralia* Wkr., the claw of the prolegs in two rows are very characteristic of the subfamily under consideration. The generic differences of the larvae are very slight, with exception for the genera *Abrostola* Ochs., and *Mouralia* Wkr., only slight differences of the situation of the imaginal plates and setae of the groups VI, VII and VIII may to be observed. Nearly all the species of the group hibernate in the larval stage, with exception of the species of the genus *Abrostola* Ochs., which overwinter in the pupal stage. The larvae pupate freely underground, without a cocoon, or on the hostplant in a peculiar cocoon.

**ZOOGEOGRAPHY**

As far I know, more than 230 species of the subfamily *Plusiinae* are described (not including the species of the genera *Abrostola* Ochs. and *Mouralia* Wkr., which have been omitted in the present study). Of these, about 150 species occur in the Holartic Region and the remainder are distributed mainly in the Oriental and Ethiopian Regions. By zoogeographic criteria, the species considered here may be combined in four distinct groups as follows:

Group A. I place here the members of the genera: *Anadevidia* g. n., *Argyrogranna* Hbn., *Chrysodeixis* Hbn., and *Trichoplusia* McDunn. These species are characterized by the presence of elongate tufts of scales at sides of the abdomen.

Group B. To this group are referable the species of the genera: *Autoplusia* McDunn., *Cornutiplusia* g. n. and *Rachiplusia* Hmps. The presence of spines on tibiae and the strongly elongate clavus in the male genital armature are characteristic here.

Group C. This group is formed by the species of the genera: *Caloplusia* Sm., *Snygrapha* Hbn., and *Anagraphe* McDunn. All the species placed here have spines on the tibiae, but the clavus in the male genital armature is decidedly reduced.

1*
Group D. I include in this group the species belonging to all the genera but those referable to the three preceding groups. The members of this group differ from those of the groups A, B and C by the absence of the elongate tufts of scales from the sides of the abdomen and by the absence of spines from the tibiae.

The distribution of the species belonging to the above mentioned groups is shown in the table I.*

<table>
<thead>
<tr>
<th>Region</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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</thead>
<tbody>
<tr>
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<td>1</td>
<td>8</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>Oriental-Palearctic species</td>
<td>6</td>
<td></td>
<td>9</td>
<td></td>
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<tr>
<td>Species occurring in the Palearctic, Oriental, Ethiopian and</td>
<td>2</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Australian Regions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palearctic-Oriental-Ethiopian species</td>
<td></td>
<td>1</td>
<td>2</td>
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<tr>
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<td>25</td>
</tr>
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<td>Nearctic-Neotropical species</td>
<td>3</td>
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<tr>
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<tr>
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<td>14</td>
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<tr>
<td>Australian species</td>
<td>13</td>
<td></td>
<td>5</td>
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</tbody>
</table>

As is to be seen in the above table the differences between the individual groups of species are very distinct. The species belonging to group A are very characteristic to the tropical and subtropical regions of the Old World and they are rather poorly represented in the Holarctic Region, occurring there only in the south. Group B is very characteristic to Notogea. The group C may be named as exclusively Holarctic as only one species of this group occurs beyond the Holarctic Region (in the alpine zone of Andes, where the climatic conditions are rather similar to those in the Holarctic Region). The species of group D are also most numerous in the Holarctic Region, however, most species of this group occur in the Palearctic Region.

The quantitative relations between the individual groups in the Holarctic Region are shown in the table II.

* Possibly some species have been omitted, however, the author had not been able to study all the literature treating the subfamily under consideration especially in regard to the Australian and south African fauna. All the references have been taken from the Zoological Record and the Biological Abstracts.
Table II

<table>
<thead>
<tr>
<th>Region</th>
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<tr>
<td></td>
<td>B: 1</td>
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<td></td>
<td>C: 33</td>
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<tr>
<td></td>
<td>D: 81</td>
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<tr>
<td>Holarctic species occurring also in one or more regions</td>
<td>A: 13</td>
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<tr>
<td></td>
<td>B: 3</td>
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<tr>
<td></td>
<td>C: —</td>
</tr>
<tr>
<td></td>
<td>D: 16</td>
</tr>
<tr>
<td>Non-Holarctic species</td>
<td>A: 41</td>
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<td></td>
<td>B: 5</td>
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<td></td>
<td>D: 38</td>
</tr>
<tr>
<td>Total</td>
<td>A: 55</td>
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<tr>
<td></td>
<td>B: 9</td>
</tr>
<tr>
<td></td>
<td>C: 34</td>
</tr>
<tr>
<td></td>
<td>D: 135</td>
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</table>

The distribution of the species of the above mentioned groups in the Palaeartic Region is rather interesting. In the further discussion the group B will be omitted as it includes only one Palaeartic species, *Conutiplusia circumflexa* (L.), whilst the other groups are rather rich with the species. To explain the differences in the zoogeographic characters of the groups discussed, the isospecific lines of these are here given. They have been made upon the data in the literature and the material available for my study as well. This throws some light on the history of the dispersal of the group under consideration in the region considered. The isospecific line of the group A (fig. 1) points for its nonindigenous nature in the Palaeartic Region, but rather tropical origin. Two routes of migration of members of this group are to be observed. One of these, relatively more important, leads through Indochina and Southern China (or Assam), and the other route is along the Nile-valley and, most probably,
Fig. 2. Isospecific lines of the group C.
1 — 1 species, 2 — 2—4 species, 3 — 4—5 species.

Fig. 3. Isospecific lines of the group D.
along subcoastal West Africa as well. It seems to be possible that these migrations may have existed relatively rather late as the group did not form any species or even subspecies in the Palaeartic Region except for *Argyro-
gramma circumscripta* (FRR.), and, rather close to it, *Argyrogramma rutilifrons* (WKR.), which occurs in the Palaeartic Region and Southern China. The two species are considered by the writer to have a common ancestor (most probably of oriental origin), as they are very close to each other. At the present time some species extend their ranges northwards as long migrations of these are to be observed. Individual examples of tropical species have been captured in England [*Argyrogramma acuta* (WKR.)], Japan [*A. signata* (F.)] and in the Canaries Is. [*A. limbirena* (GUEN.) and *A. signata* (F.)]. Both *A. limbirena* (GUEN.) and *A. signata* (F.) probably established in the Canaries Is., or, in a short time will become established there. Most of the remaining species of the group *A* are widely spread beyond the Palaeartic Region and in the Notogea as well. Only *Argyrogramma accentifera* (LEF.) is a species of apparent African origin. That such a small number of species which immigrate to the Palaeartic Region from the Ethiopian Region is probably due to the difficult route through Sahara and Arabia. The only good route is the Nile-valley and the Atlantic coasts. The latter has probably been the route of *A. accentifera* (LEF.) which, beyond the Central Africa, is reported from Morocco and the subcoastal Medi-
 terranean Region. — The isospecific line of the group *C* (fig. 2) points to its obvious boreal-alpine and superficially circum-boreal origin. Judging by the existence of numerous local races occurring in the restricted mountain-
ranges, the members of this group most probably originated during the last Ice Age. On the other hand, the nomotypic races of those species are widely spread in the northern Palaeartic Region, mostly in the tundra, but also in the peat-bogs and marshes of the coniferous- and mixed-woods zones. Thus *Syngrapha interrogationis interrogationis* (L.) in the Pyrenees and Southern Alps gives a subspecies named *S. interrogationis cinerea* (WARR.). *Caloplusia hochenschwarthi lapponaris* SCHULTE, is widely spread in the north Palaeartic Region. This species, in the mountains of the west Palaeartic Region, appears as *C. hochenschwarthi hochenschwarth* (HCHW.), and, in the mountains of the Central Asia, as *C. hochenschwarthi altaica* (STGR.). It is of interest to note that the most widely spread species of the group, *Syngrapha interrogationis* (L.), besides its subspecies, gives several colour forms, which are confined to some special regions, e. g., *S. interrogationis* f. *orbata* WARR., which is the dominant form in north-western Europe from the Baltic coasts to the neighbourhood of Kazan and Vyatka. Judging by the considerable differentiation of the group in question observed in the Nearctic Region, the presence of common species in both Palaeartic- and Nearctic Regions, as well as by the isospecific lines of the species, one may suppose that the group originated in the north of the Nearctic Region and spread out in the Ice Age, or, it is indigenous to the north-eastern Palaeartic Region and its migrations have existed in two directions, eastwards and westwards. However, the first of the above suppositions is more probable
as there are only two Palaeartic species *Caloplusia devergens* (HBN.) and *Syngrapha aia* (HCHW.) which have no parallel species in the Nearctic Region. The remainder of the species are common to the two regions, or the Palaeartic species have parallel species in the Nearctic Region, for example, *Caloplusia hochewarthi* (HCHW.) and *O. tibetana* (StGR.) have in the North America a parallel species *C. ignea* (GR.) and *Syngrapha transbaicalensis* (StGR.) have a parallel *S. herschelensis* (BENJ.). — The isospecific line of the group D (fig. 3). This is the most numerous and the most differentiated group and the general pattern of its distribution is as clear as that of the preceding groups. The isospecific line of this group suggests that the eastern Palaeartic Region is the ancestral home of the species and genera belonging here. In that region there occurs most of species of the group and all its genera. It fact, in the western part of the Palaeartic Region there is no endemic species which has no parallel species in the eastern part of that region. Thus, the Sibirian species *Panchrysia ornata* (BR.) and *P. dives* (Ev.) have a parallel species *P. v-argenteum* (Esp.); the Sibirian *Polychrysia esmeralda* (OB.) has parallel European *P. moneta* (F.). The European *Plusia chrysitis* (L.) is very close to the eastern three species, namely *P. nadeja* (OB.), *P. stenochnysis* (Warr.), and, partially, *P. tutti* sp. n. Only the group of several species close to *Euchalcia dorsiflava* (STDF.) has no parallel species in the eastern Palaeartic Region; this group originated totally in Asia Minor. On the other hand, numerous species widely spread in the eastern Palaeartic Region, showing a rather slight variability there, give rise in Europe, to distinct subspecies. Most of the species of this group are confined to the forest and forest-steppe habitations and also to the mountains. In the steppes and semideserts, besides the ubiquitous species, there are only a small number of species of several genera, especially of the genus *Euchalcia* HBN. Numerous species of the group show a tendency to extend their ranges, especially to the west. At the present time, such a phenomenon may be observed in regard to such species as *Macedunnoughia confusa* (STPH.), *Chrysaespidea bractea* (SCHIFF. & D.), as well as to the species confined strictly to the steppes, e.g., *Euchalcia consona* (F.). This phenomenon, most probably, is due to the changes of the habitations owing to the activity of man, e.g., the transformation to the steppes of the major part of the Central Europe. However, in case of *Macedunnoughia confusa* (STPH.), the above factor seems to be not very important and the reasons for changes of the range of this species are rather obscure. The number of species becomes less and less from east to west, excepting the triangular region, the base of which is Ural and the top are the environs of Kazan. The number of species occurring in this area is decidedly greater than in the adjacent territories. It is to note, that the above evidence is not due to the poor records upon the group in question in the above mentioned territory. In fact, in this triangle there are borders of the ranges of numerous eastern Palaeartic, western Palaeartic and even southern Palaeartic species, and the faunas overlap. On the other hand, the smaller number of species reported from Korea than that
cited from Japan or Manchuria is, most probably, due to the lack of investigation in Korea. An analogous situation is observed in regard to Pamir. Further, judging by the well known fauna of Iran (especially in its northern part), one can suppose, that the number of species occurring there is considerably smaller than that appearing in the Central Asia or the Caucasus. Judging by this fact, it seems to be obvious that the migrations of the lowland and mountainous species have existed through the Ural Mts—Caucasus—Carpathians, and not through Altai—Pamir—Iran—Caucasus. Such a type of distribution is shown by Plusia zosimi (HBN.) or Chrysaspidia aemula (SCHIFF. et D.). The latter, most probably, originated in an isolation, during the Ice Age, in the Caucasus, from whence, in early postglacial period it extended its range to north and west, and when the climate became warmer, it retreated to the Ural Mts., Alps and Caucasus.

**PHYLOGENY**

Because of the lack of fossil remains in the group in question, all the conclusions considered here are only of hypothetical value. In fact, it would be impossible to prove without any doubt the true relationships among the living genera and species. However, judging by the geographical distribution of the individual species, the differences in the external anatomy in the individual species and genera, and also by the facies of the larvae, some suppositions upon the evolutionary directions in the group might be available.

The writer supposes that the subfamily Plusiinae derived from a hypothetical ancestral group which was morphologically close to the present Argyrogramma HBN. The members of the latter are generally confined to the tropical area, which were only very slightly influenced by the Glacial Ages. Most probably, the evolution of this genus has not been so rapid as in regard to the Holarctic genera. In fact, numerous species living in very distant areas and undoubtedly perfectly isolated for a very long time, e.g., Notogea and Ethiopian Region, have preserved many common characters in colour, wing-pattern, armature of the genitalia, or in the anatomy of the larvae. In addition, among the genus Argyrogramma HBN., several species appearing to be intermediate species, or even the primordial forms of all the remainder of the genera of the subfamily Plusiinae, are to be detected. Simultaneously, these species show the characteristic features of their genus. The differences in the male and female genitalia in the members of the genus Argyrogramma HBN., and, on the other hand, such differences in the species of the genera Trichoplusia McDunn., and Pseudoplusia McDunn., are obvious and perfectly distinct. However, the larvae of the species of the three above mentioned genera are strikingly similar to each other, having identical chaetotaxy and the imaginal plates. The representatives of the genus Chrysodeixis HBN. are nearly indistinguishable on the facies from some species of the genus Argyrogramma HBN.,
e. g., *A. acuta* (WKR.), *A. subsidens* (WKR.), or *A. agnata* (STGR.), but they are perfectly distinct on the armature of their genitalia. On the other hand, the members of the genus *Diachrysta* HBN. are very distinct on facies from all the species of the genus *Argyrogramma* HBN., but the genitalia in the species of the two genera have a rather considerable number of common features. One can detect many such examples. Thus, the genus *Argyrogramma* HBN. is considered by the writer to be the ancestral group of all the remaining *Plusiinae*; and the most related to *Argyrogramma* HBN. appear to be the genera *Trichoplusia* McDunn., *Pseudoplusia* McDunn. (with identical larvae), *Chryso-decis* HBN., *Macedunoughia* n. g., *Anadevidia* n. g. (similar facies), and *Diachrysta* HBN., (rather similar genital armature). The above mentioned genera, excepting *Diachrysta* HBN., and perhaps *Pseudoplusia* McDunn., seem to be rather isolated in their systematic position from other *Plusiinae*. *Diachrysta* HBN., a genus widely spread in the tropical regions, shows several common characters with the genus *Plusia* Ochs. and the American genus *Pseudoplusia* McDunn.; it has also a resemblance to the generally American genera *Auto-plusia* McDunn. and *Rachiplusia* McDunn. The features in facies which are common to the latter two genera and the genus *Pseudoplusia* McDunn. are rather ill-defined and appear to be only convergent ones. Judging by the similarity of the genitalia and facies, the strongly differentiated and widely spread genus *Plusia* Ochs. is, most probably, closest to the genera *Panchrysia* HBN. and *Euchalcia* HBN. In fact, the species *Plusia chrysiitis* (L.) and *Panchrysia deaurata* (Esp.) have a rather similar shape of wings, the wing-pattern and the armature of the aedeagus. The palpi in the genus *Plusia* Ochs. are rather long in relation to those in other genera of the group in question. This character appears also in the genera *Panchrysia* HBN. and *Euchalcia* HBN. The elongation of the palpi (especially of the apical joint) is progressive in the genus *Pollychrysia* HBN., which is close to *Panchrysia* HBN., and, in the genera *Plusidia* BtLr., *Chrysoptera* Latr. and *Pseudeva* Hmps., which show several common features with the genus *Euchalcia* HBN. These genera, most probably, originated in the early Quaternary, but in any case, after the Palaeartic and Nearctic Regions were broken. It is noticeable that these two regions lack common species of the above genera. *Plusidia* BtLr. and *Chrysoptera* Latr. are characteristic of the Palaeartic Region; and the genus *Pseudeva* Hmps., and perhaps *Eosphoropteryx* Dyar are characteristic of the Nearctic Region. The latter genus, however, is rather distinct from all the remaining genera of the group under consideration and is not comparable with any genus of this subfamily. The only Palaeartic genus having a representative in the Nearctic Region is *Pollychrysia* HBN. That species is *P. trabea* (Sm.) which is much like the eastern Palaeartic *P. esmeralda* (Ob.); the two are nearly indistinguishable from each other. Judging by the wide distribution of the latter in the north-western Palaeartic Region, and the striking similarity to the former, one can suppose without doubt, that the former is derivative of the latter, and perhaps *P. trabea* (Sm.) originated in the postglacial period.
The other American species hitherto considered to be a member of the genus *Polychrydia* HBN., namely, *P. morigera* (H. Edw.) is a typical representative of the genus *Pseudeva* HMPS. The genus *Euchalcia* HBN., which is supposed to be the ancestral form of the genera *Plusidia* BTLR. and *Chrysosorpa* LATR., has in both the Palaeartic and Nearctic Regions several representatives occurring in very similar habitats (steppes and semi-deserts). — Another large group deriving directly from the genus *Argyrogramma* HBN. consists of two genera, namely, *Autographa* HBN. and *Chrysaspisida* HBN. The two are rich in species and are widely spread in the Holarctic Region. They appear to have originated rather in the early Ice Age, just before the break between Asia and America, as there is a rather considerable number of species which are widely spread in the Palaeartic Region and have the parallel species in the Nearctic Region. As the examples of such twin-species may be given the following: *Chrysaspisida festata* (GRAES.) occurring in the eastern Palaeartic Region, and the Nearctic species *Ch. putnami* (GRT.); the Palaeartic *Ch. festucae* (L.) and the Nearctic *Ch. nichollae* (HMPS.); the Palaeartic *Ch. bractea* (SCHIFF. & D.) and the Nearctic *Ch. metallica* (GRT.); the Palaeartic *Autographa e-aureum* (HBN.) and *A. gamma* (L.) and the Nearctic *A. labrosa* (GRT.) and *A. californica* (SPEYER). The two genera show a rather considerable external variability within the individual species; on the other hand, the individual species of these genera are only slightly distinguishable by the genitalia. Thus, the species of the two genera rather overlap each other forming two series of the variabilities; in facies and in genitalia. Owing to this fact, there are considerable difficulties in the identification of the individual species from a material coming from a large area; on the other hand, the specimens of these species from only one restricted locality are rather easy to distinguish. — The genus *Chrysaspisida* HBN. in the Nearctic Region rise to a genus named *Chrysanyampa* GRT. with a single species, *Ch. formosa* GRT. The genus *Autographa* HBN. is, most probably, the primordial form of the latter group. It is of interest to note that the members of the two above mentioned branches show an identical common feature, namely, spines on tibiae. The first group including the genera *Rachiplusia* HMPS., and *Autoplusia* McDUNN., most probably originated in the Neotropical Region; the genus *Rachiplusia* HMPS. is closer to the genus *Autographa* HBN., and the genus *Autoplusia* McDUNN. appears to be derived from the genus *Rachiplusia* HMPS. as the facies and the armature of the genitalia of its members show. To this group is also referable the genus *Cornutiplusia* n. g. which does not occur in America; its facies is closest to that of the members of the genus *Autographa* HBN.; it is a rather intermediate stage between *Autographa* HBN. and *Rachiplusia* HMPS. The writer is unable to give any supposition concerning the region and time of the origin of this monospecific genus. — The other branch is formed by a series of genera which appear to be phylogenetically the youngest in the whole subfamily under consideration. All the species of these genera occur in the boreal zones and in the mountains of the whole Holarctic Region.
as well. The only exception is *Caloplusia virgula* (BLANCH.) which is distributed over the alpine zone of the Andes. The primordial genus of the group appears to be *Syngrapha* HBN. which shows several common characters with the genus *Autographa* HBN. Of these, the most important is the similar armature of the larva of the species of the two genera. On this base CRUMB grouped the Nearctic species of the above two genera in three genera, namely, the genus *Autographa* HBN., with three species, *A. biloba* (STEPH.), *A. praelectionis* (GUEN.) and *A. californica* (SPEYER), the "Genus No. 11" with two species, "*Syngrapha* rectangula" (KIRBY) and "S. celsa" (H. EDW.), and the third genus *Syngrapha* HBN. (including *Anagrapha* MCDUNN.), comprising the remainder of the species of the two above mentioned genera and the species *Anagrapha jaceifera* (KIRBY). However, the above division does not show a parallelism with the external characters of the species, but it points to the close relationships of the

Table III

A scheme of relationships among *Plusiinae*
genera *Autographa* HBN. and *Syngrapha* HBN. The latter shows a considerable variability of both facies and genitalia, and it includes intermediate species to the genus *Caloplusia* HBN., and, on the other hand, to the genus *Anagraphe* McDunn. Such an intermediate species to the genus *Caloplusia* Sm. seems to be *Caloplusia devergens* (HBN.), which has a coloration resembling that in the remaining species of the genus *Caloplusia* Sm. and of some species of the genus *Syngrapha* HBN. This species has the spines on tibiae of all the legs what is characteristic to the genus *Caloplusia* Sm., however, those spines are very minute and difficult to detect (especially on the fore-legs). Because of the latter fact McDUNNOUGH included *C. devergens* (HBN.) to the genus *Syngrapha* HBN. Other species of the genus *Caloplusia* Sm. have the spines on tibiae large and distinct. The armature of the genitalia in the *C. devergens* (HBN.) shows the features typical of the genus *Caloplusia* Sm., but of *Syngrapha* HBN. as well. — The intermediate species to the genus *Anagraphe* McDunn. seems to be *Syngrapha orophila* HMPS. and *S. epigaea* (GRT.), the armature genitalia of these resemble those in the members of the genus *Anagraphe* HBN. Perhaps the latter genus should be rejected and included in the genus *Syngrapha* HBN. The relationships among the genera are shown in the Table III.

**TAXONOMY**

The first species of the subfamily *Plusiinae* was described by Linnaeus under the name *Phalaena Noctua*, which has commonly been accepted for all the species of the family *Noctuidae*. In 1816, for these species, Ochsner-heimer erected two new genera, *Plusia* Ochs. and *Abrostola* Ochs. The former included 19 species. Of these, the species *Plusia chrysis* (L.) was designated by Duponchel as the generic type of the genus *Plusia* Ochs. The latter genus comprised four species. Hübner, in 1821, upon the evidence of the external characters, divided the species known to him, to a series of genera, namely, *Argyrographa* HBN., *Chrysodeixis* HBN., *Chrysaspidea* HBN., *Diachrysia* HBN., *Panchrysia* HBN., *Agrapha* HBN., *Euchalicia* HBN., *Polychrysia* HBN., *Autographa* HBN. and *Syngrapha* HBN. These names, with a few exceptions, were neglected by the subsequent workers, who placed all the species of the subfamily *Plusiinae* in the genera *Plusia* Ochs. and *Abrostola* Ochs. The only validated Hübner genus was *Polychrysia* HBN.; in 1825 Latreille divided it to two genera, *Polychrysia* HBN., with the generic type, *P. moneta* (F.); and *Chrysoptera* Lat. with the generic type, *Ch. c-aureum* (Kn.). In 1913 Hampson in his famous work, „Catalogue of the Lepidoptera Phalaenæ in the British Museum“ gave the following division of the subfamily under consideration: 1. *Omorphina* Alph., generic type, *O. aurantiaca* Alph. 2. *Autographa* HBN., generic type, *Noctua parilis* HBN. 3. *Caloplusia* Sm., generic type, *Phalaena Noctua hochenwarthi* Hchw. 4. *Rachiplusia* HMPS., generic

Only in 1944 J. McDUNNOUGH prepared a more modern revision of the subfamily Plusiinae. His work was based on both facies and the genitalia of the species and the accepted by him generic division seems to be correct. That division is generally based on two features: The presence or absence of the spines of tibiae, and on the shape and size of clavus in the male genital armature. McDUNNOUGH divided Plusiinae into three groups. The first of these groups includes the genera, the members of which have spines on tibiae and the clavus is vestigial and rather cylindrical. The second group is represented by species with clavus much elongated. The third group includes species with clavus decidedly reduced and with spines absent from tibiae. The first group includes the genera *Caloplusia Sm.* with the generic type, *Phalaena Noctua hocheniwarthi Hchw.; Syngapha Hbn.* with the generic type *Noctua deorogens Hbn.*; and *Anagrapha McDUNN.* with the generic type, *Plusia falcifera Kirby.* The second and the third groups include: *Autoplusia McDUNN.*, with the generic type, *Plusia ni var. brassicae Riley; Argyrogramma Hbn.*, with the generic type *Argyrogramma omega Hbn.; Pseudoplusia McDUNN.*, with the generic type *Phalaena oo Cram.; Rachiplusia Hmps.*, with the generic
type *Plusia nu* GUEN.; *Chrysaspidaia* HBN., with the generic type *Phalaena Noctua festucae* L.; *Autographa* HBN., with the generic type *Phalaena Noctua gamma* L.; *Chrysanympha* GRt., with the generic type *Leptina formosa* GRt.; *Eoschoropteryx* DYAR, with the generic type *Plusia thyatroides* GUEN.; *Polychrysa* HBN., with the generic type *Noctua moneta* F.; *Pseudova* Hmps., with the generic type *Deva purpurigera* Wkr.; *Deva* McDunn., with the generic type *Autographa albavitta* Ottol.; *Plusia* Ochs., with the generic type *Phalaena Noctua chrysitis* L.; *Agrapa* HBN., with the generic type *Agrapa aerea* HBN. — Unfortunately the McDunnough work treats only the Nearctic species of the subfamily Plusiinae. In consequence some conclusions of McDunnough are doubtful in regard to the Holarctic fauna of the group in question. McDunnough considers (after Grote) incorrectly the species *Caloplusia devergens* (HBN.) to be the generic type of the genus *Syngrapa* HBN. *Caloplusia devergens* (HBN.) is an obvious member of the genus *Caloplusia* Sm. as is shown by the presence of spines on tibiae in that species. Judging by the McDunnough work, those spines have been overlooked by its author. The establishing of a new genus *Adeva* McDunn. is incorrect as the species included by McDunnough in that genus apparently belong to the genus *Euchalcia* HBN. which is widely spread in the Palaeartctic Region. The McDunnough work has been criticized by some American workers. Forbes proposed to reject the McDunnough genera to subgeneric rank as the differences between the individual genera considered by McDunnough seem to be too small. However, the author does not agree with the Forbes opinion in this matter as besides the above mentioned differences, some others concerning the zoogeography and the ecology of the individual genera are to be observed. In addition, the character of the generic differences observed in the male genital armatures is of a similar level as regard to other subfamilies of the family *Phalaenidae*. The treating of the McDunnough genera as only subgenera would introduce quite unnecessary inequalities with other subfamilies of *Phalaenidae*. The studies on the anatomy of the larvae of *Phalaenidae* made by Crumb proved that all the larvae of this family are very similar to each other except for those of the genera *Abrostola Ochs.* and *Mouralia* Wkr. Crumb proposed the following division of the American species of the subfamily Plusiinae: A. Genus *Abrostola* Ochs. B. Genus *Mouralia* Wkr. C. Genera: *Argyrographa* HBN., *Trichoplusia* McDunn., *Pseudoplusia* McDunn. D. Genera: *Autoplusia* McDunn., *Rachiplusia* Hmps. E. Genera: *Plusia* Ochs., *Agrapa* HBN. F. Genus *Polychrysa* HBN. G. Genus *Autographa* HBN. H. „Genus No. 11“ including two species placed by McDunnough in the genus *Syngrapa* HBN., namely, *S. rectangula* (Kirby) and *S. celsa* (H. Edw.). I. Genus *Chrysaspidaia* HBN. J. Genus *Caloplusia* Sm. K. Genera: *Syngrapa* HBN., *Anagraphe* McDunn. — The division proposed by Crumb is generally correct and does not differ much from that given by McDunnough; it throws much light on the relationships between the individual genera of the subfamily under consideration. Some of the Crumb propositions are quite acceptable in the light of the study on
the Palaeartic species of the group in question, e.g., synonymy of the genera *Plusia Ochs.* and *Agrapha Hbn.* Other CRUMB’s opinions are in need of a re-
vision, e.g., the synonymy of the genera *Trichoplusia McDunn., Argyrogramma Hbn.,* and *Pseudoplusia McDunn.* The mysterious "Genus No. 11" needs further study as the two species comprising that genus in facies agree with the remainder of the species of the genus *Syngrapha Hbn.* — The first authors who accepted the McDUNNOUGH division in regard to the Palaeartic fauna, were AUBERT and BOURSIN (the list of the *Phalaenidae* of the Jura Dept.). Unfortunately these authors based only upon the data in the literature without of their own records. In consequence, some species have incorrectly been placed in regard to the generic position. It is of interest to note that AUBERT and BOURSIN themselves gave at some species listed: "Position provisoire".

The author of this paper will try to extend the conceptions of McDUNNOUGH for the Holarctic Region and to revise some McDUNNOUGH’S and CRUMB’S propositions, which seem to be incorrect.

The genera *Abrostola Ochs.* and *Mouralia Wkr.* are omitted in the sys-
tematic part of this paper as a World-revision of those is just in preparation by G. DUFAY. These genera are, however, very distinct from the remainder of the subfamily *Plusiinae* and the omittance of those should not obscure the questions considered in the present paper.

**SYSTEMATIC PART**

Hitherto 107 species of the subfamily *Plusiinae* have been known in the Palaeartic Region. Of these, three species (mentioned in the General Part) are not indigenous to the Palaeartic fauna, being there accidental immigrants. Seven species belong to the genus *Abrostola Ochs.* which is omitted in the present study. The author has rejected eight species, which are only sub-
species of the known species or only colour forms of these; these are: *Syn-
grapha cinerea Warr.* (= *S. interrogationis* ssp. *cinerea Warr.*); *S* groenlandica
(*) (= *S. interrogationis* ssp. *groenlandica* (*Stgr.)); *Plusidia separanda Warr.* (= *P.* cheiranthi f. *separanda Warr.*); *Chrysoptera micadina Btlr.* (= *Ch.* *c-aureum* f. *micadina Btlr.*); *Plusia generosa Stgr.* [ (= *P. chrysitis f.* *generosa* (*Bryk.)); *Phytometra parabactea Hmpfs.* = [ *Chrysaspidia coelos*
ssp. *parabactea* (*Hmpfs.*)]; *Plusia paulina Stgr.* = [ *Euchalcia emichi f.* *paulina* (*Stgr.*)].

Four forms or subspecies are considered by the author to be distinct species; these are: *Chrysodeixis eriosoma* (*Dbil.*), *Polychrysia esmeralda* (*Ob.*), *Euchalcia italic* (*Stgr.*) and *Syngrapha transbaicalensis* (*Stgr.*). One species is described as new, *Plusia tutti* n. sp. Eight species are unrecognized in regard to their generic position, namely, *Plusia v-minus Ob.*, *P. terrasota Hmpfs.*, *P. sica Graes.*, *P. jessica Btlr.*, *P. hebetata Btlr.*, *P. hampsoni Leech* and *P. pu-
rissima Btlr.*
KEY FOR THE IDENTIFICATION OF THE PALAEARCTIC GENERA OF THE
SUBFAMILY PLUSIINAE

1. Forewing with decidedly erect tufts of scales at outer side of discal cell
and below vein Cu. .................. Abrostola Ochs. .......................... 2.
— Forewing with tufts of erect scales absent .................. 2.
2. Clavus in male genital armature elongated, in most instances with ter-
  minal portion club-shaped, sometimes linked to sacculus only with a trans-
  parent membrane .................. 3.
— Clavus short and cylindrical, in some instances nearly totally reduced. 13.
3. Tibiae of hindlegs clothed with spines .................. Cornutiplusia n. g.
— Tibiae of hindlegs lack spines .................. 4.
4. Males with tufts of very long scales on sides of abdomen .................. 5.
— Males with tufts of very long scales on sides of abdomen wanting .................. 7.
5. Ampulla long, hook-like curved upwards .................. Trichoplusia McDunn.
— Ampulla in most instances short and straight .................. 6.
6. Vinculum thin with apex rounded or truncate; rather U-shaped or H-
  shaped .................. Argyrogramma HBn.
— Vinculum broad with apex acuminate; rather V-shaped .................. Chrysodeixis HBn.
7. Palpus strongly elongated; apical joint with front clothed with long, hair-
  like scales .................. Polychrysis HBn.
— Palpus of medium size; apical joint covered only with adherent shovel-
  like scales .................. 8.
8. Apical joint of palpus elongate with apex acuminate. Valva broad with
  apex rounded .................. Panchrysis HBn.
— Apical joint of palpus short with apex rounded. Valva of various armature
  with apex not rounded .................. 9.
— Vinculum in most instances short, rather V-shaped .................. 11.
10. Vinculum U-shaped. Sacculus caudally with a large, sheet-like process
  pointing beyond valva .................. Macdunnoughia n. g.
11. Forewing with a golden or silvery speck, rather γ shaped .................. 11.
— Forewing with no golden or silvery speck γ-shaped .................. 12.
12. Valva with apical portion rather triangular, gradually tapering basad.
  Vesica armed with few separate cornuti .................. Chryssaspidea HBn.
— Valva with apex acuminated, expanding gradually basad. Plusia Ochs. .......................... 12.
13. Tibiae of all the legs with spines absent .................. 14.
— Tibiae of all the legs, or only tibiae of hindlegs provided with spines. 17.
14. Ampulla lacking .................. Anadevidia n. g.
15. Apical joint of palpus decidedly curved with apical portion clothed with long, thin scales. .................. *Chrysoptera* LATR.
— Apical joint of palpus straight, clothed only with minute, shovel-like scales .................. 16.
16. Patagia and tegulae with caudal portions covered with broad, shovel-like scales .................. *Plusidia* BTBR.
— Patagia and tegulae with caudal portions covered with thin, hair-like scales .................. *Euchalcia* HBN.
17. Tibiae of all the legs covered with spines .................. *Caloplusia* SM.
— Tibiae of hindlegs covered with spines, tibiae of fore- and midlegs with spines wanting .................. *Syngrapha* HBN.

**Genus: Anadevidia gen. n.**

*Plusia* acut. (nec OCHSENEHMER, 1817), partim
*Phytometra* HAMPSON (nec HAWORTH, 1809), partim.

**Typus generis: Noctua peponis Fabricius**

Labial palpus rather short; apical joint rounded terminally. Forewing broad. Tibiae of all the legs lack spines. Abdomen large, with dorsal and lateral sides of the first and third segments provided with ill defined tufts of scales.

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![Geographical distribution of the Palaeartctic species of the genus Anadevidia gen. n.
1 — *A. peponis* (F.), 2 — *A. pyropia* (BTBR.)](image-url)
Male genital armature: Uncus long, with apex hook-like curved. Valva gradually tapering caudad; over total surface clothed with individual, rather long hairs. Clavus small, cylindrical. Ampulla not developed. Vinculum strongly elongate. Aedeagus with lightly sclerotized, small brush at the apical portion.

Female genitalia: Papilla analis large, covered with not numerous, long hairs. Gonapophysis anterioris and posterioris long, with apices rounded. Ductus bursae heavily sclerotized near bursa copulatrix. The latter elongate; no signum present.

Distributed generally in the Oriental Region. However, two members of Anadevidia gen. n. occur in the south-eastern part of the Palaearctic Region, where they have the northern borders of their ranges. The distribution of the species of this genus is shown in fig. 4.

Anadevidia peponis (Fabricius), comb. n.

Noctua peponis Fabricius, 1775, Syst. Ent.: 608
Plusia agranum Guenee, 1852, Noct. 2: 337, 1136
Plusia fumifera Graeser, 1889, Berlin. ent. Z. 33: 83.

The specimens of A. peponis (F.) coming from the Palaearctic Region are very constant in facies and in the structure of genital armatures. The specimens from Java and Australia somewhat differ on facies from each other.

Male genital armature is shown in fig. 32, that of female in fig. 105.

In the Palaearctic Region, this species has as yet been reported from Ussuri, whole of China and Japan. Beyond the Palaearctic Region, it occurs in Indo-China, India, Ceylon, Andamany IIs., Nicobary IIs., whole Indonesia, New Guinea and in the northern part of Australia.

The larvae feed on various species of Cucurbitaceae.

Anadevidia pyropia (Butler), comb. n.


This species differs considerably in facies from A. peponis (F.) and resembles rather representatives of the genus Macdunnoughia gen. n. and some species of the genus Argyrogramma Hbn. Judging by the genitalia and facies, the species under consideration seems to be most related to the Oriental species A. pannosa (Wkr.).

The male genital armature is shown in fig 33; it is distinct from that of the preceding species on size, the high vaulted anterior edge of valva, and lack of cornuti.

A. pyropia (Btlr.) is reported from China, Korea, Japan, as well as from
Kashmir and Punjab. It appears in two generations a year. (Beyond the Pa-
laearctic Region, this species is known from Northern India, Nepal, Assam,
Naga and Sikkim).

The larvae feed on various species of the family Cucurbitaceae.

**Genus: Chrysodeixis** Hübner, 1821

*Plusia Ochsenheimer, 1816, partim*

*Phytometra, Hampson, 1913 (nec Haworth, 1809), partim.*

**Typus generis: Noctua chalcytes Esper**

Palpus rather short; apical joint with apex rounded. Face flat, clothed
with long, extending forward scales. Antenna filiform. Forewing elongate.
Dorsal margin of forewing slightly bowed, delicately sinuate. Tibiae of all
the legs lacking spines. Dorsal side of the abdominal segments 1—3 provided
with rather large tufts of scales. Outer sides of the first and second abdominal
segments with tufts of long scales.

Male genital armature: Uncus proportionately short, broad, with base
distinctly dilated. Valva very narrow, decidedly elongate, with tufts of hook-
like bristles at apices. Ampulla rather small, straight, situated rather near
the base of valva. Clavus very long, lightly sclerotized. Vinculum narrow,
elongate. Aedeagus large, provided with numerous spines. The total armature

![Image](image.png)

*Fig. 5. Geographical distribution of the Palearctic species of the genus Chrysodeixis HBN.*

1 — *Ch. chalcytes* (Esp.), 2 — *Ch. eriosoma* (DBL.).
surrounded with a structure similar to a pouch, consisting of heavily sclerotized, minute bars.

Female genital armature: Papilla analis large, scarcely clothed with hair. Gonapophysis anterioris and posterioris decidedly elongate. Ostium bursae broad, lightly sclerotized. Bursa copulatrix elongate.

This genus is widely spread over the tropical and subtropical parts of the Old World and in the southern part of the Holarctic Region. Three species occur in the temperate regions of the northern hemisphere. Of these, Ch. basigera WKR. is indigenous to the Nearctic Region and the remaining two species are distributed exclusively in the Palaearctic Region. The distribution of the Palaearctic species is shown in fig. 5.

**Chrysodeixis chalcites** (Esper), **comb. n.**

*Noctua chalcites* Esper, 1789, Eur. Schmett. 4: 447, pl. CXLI, f. 3
*Noctua questionis* Fabricius, 1794, Ent. Syst. 3: 81
*Nonetia bengalensis* Rossi, 1794, Mant. Ins. 2: 22, pl. III, f. 1

The facies of this species is very variable, however, no distinct geographical races have as yet been observed. The most variable is the colour of the metallic suffusion in the forewing; it is red-golden, golden-yellow, or, even greenish-golden. Very variable is also the shape and the size of the stigma in the forewing.

Male genital armature is shown in fig. 34, that of female in fig. 106.

This species is widely spread in the tropical and subtropical part of the Old World, over whole of Africa, in the south of Asia, in Australia and Oceania. In the Palaearctic Region, it occurs along the Mediterranean Sea coasts, in Asia Minor, Caucasus, Southern Ukraine, Iran, Afghanistan and nearly over whole of China, Japan and Korea.

**Chrysodeixis eriosoma** Doubleday

*Plusia eriosoma* Doubleday, 1843, Dieffenbach's New Zealand Exp. 2: 285
*Plusia verticillata* Guenée, 1852, Noct. 2: 344
*Plusia dinaxa* Bethune-Baker, 1906, Novit. zool. 13: 270
*Plusia cohaerens* Schultz, 1907, Int. ent. Zeit. 1: 32.

This species has hitherto been combined with *Ch. chalcites* (Esp.). It is easily distinguishable on facies by the better marked pattern and the chocolate-brown ground colour of the forewing. No distinct geographical races have as yet been observed.

Male genital armature is shown in fig. 35, that of female in fig. 107. From *Ch. chalcites* (Doubl.), separable mostly by the decidedly larger and more differentiated cornuti.
Ch. eriosoma (Doubl.) is distributed in the tropical and subtropical regions of the Old World. There are only few records of this species from the Palaeartic Region: Cairo, Syria, Pekin, Japan. It is due to the confusion [with Ch. chalcyes (Esp.)] in which this species has hitherto been.

Larvae feed on the species of Ficus L.

Genus: Argyrogramma Hübner, 1821

Plusia auct. (nec. Ochsenheimer 1816), partim
Phytometra Hampson, 1813 (nec Haworth, 1809), partim.

Typus generis: Argyrogramma omega (HBN.)

Palpus short; mid joint with apex rounded. Face flat. Antenna filiform. Forewing proportionately short and fairly broad. Tibiae of all the legs lacking spurs. Dorsal side of abdomen on the first and the third segments with two tufts of erect scales; outerside with tufts of elongate scales.

Male genital armature: Uncus long and thin. Valva narrow and elongate with apices club-like dilated. Ampulla short. Ventral edge of valva provided with numerous spines. Clavus decidedly elongate, thin. Vinculum long, broad,

Fig. 6. Geographical distribution of the Palaeartic species of the genus Argyrogramma HBN.
1 — A. accentijera (Lef.), 2 — A. doubeii (Bsd.), 3 — A. ornateissima (Wkr.), 4 — A. albostriata (Br. & Gr.).

Female genital armature: Papilla analis broad. Gonapophysis anterioris and posterioris elongate. Ostium bursae dilated. Ductus bursae narrow, elongate, with proximal portion more heavily sclerotized and broader than distal portion. Bursa copulatrix large, broad.

This genus is widely spread, mainly in tropical and subtropical areas of the Old and New World. The Palaeartic Region includes nine species, the distribution of which is shown in fig. 6 and 7.

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**Fig. 7. Geographical distribution of the Palaeartic species of the genus Argyrogramma HBN.**

1 — *A. circumscripta* (FRR.), 2 — *A. rutilifrons* (WKR.), 3 — *A. ochrata* (WKR.), 4 — *A. aquisana* (STGR.).

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**Argyrographa ornatissima** (WALKER), comb. n.


*Plusia locuples* OBERTHÜR, 1881, Ét. ent. 5: 85, pl. 9, f. 3.

In facies much as aberrant specimens of *Chrysodeixis eriosoma* (DOUBL.). No distinct geographical races have as yet been observed.

Male genital armature is shown in fig. 36; in structure it is closest to *A. verrucata* (F.) (= *A. omega* HBN.) which is the generic type of the genus under consideration. The two differ from each other only in few details.

Female genital armature unknown to me.

This species is recorded from isolated localities in southern-eastern parts of the Palaeartic Region (Amur, Ussuri, Sichote-Alyn, Pekin, Korea, Central
China, Shen-si, Szechuan) as well as from Nepal, environs of Delhi and from Punjab.
Early stages unknown.

**Argyrogramma circumscripta** (Freyer)

*Plusia circumscripta* Freyer, 1831, Neue Beitr. 1: 42, pl. 23, f. 2.

This species shows no variability in its facies, as well as in genital armature. Male genital armature shown in fig. 37, that of female in fig. 108. Male genital armature greatly distinct from that in the preceding species. Uncus long. Valva proportionately narrow and elongate. Vinculum narrow and elongate, whereas in *A. ornatissima* Wkr. it is broad, rather shovel-like. Aedeagus with numerous, minute cornuti.

*A. circumscripta* (Frr.) is reported from the northern and eastern shores of the Mediterranean Sea, from the Sicily, Malta, Southern Greece, Southern Anatolia, Syria, Palestine and Egypt.
Early stages unknown.

**Argyrogramma rutilifrons** (Walker)

*Plusia argenteoguttata* Poujol, 1887, Bull. Soc. ent. Fr. (6) 7: LXVIII

This species is nearly indistinguishable on the facies and the armature of the genitalia from *A. circumscripta* (Frr.). The only difference distinguishing the two is the stronger reduction of the tufts of scales at outer sides of the abdomen in the species under consideration. Possibly, this species is only a geographical race of the preceding species.
Male genital armature is shown in fig. 38. It differs from that in the preceding species by the shorter uncus and somewhat larger spines on the aedeagus.
The female of this species is unknown to me.
*A. rutilifrons* (Wkr.) is reported from very many localities in the Northern China, Manchuria, Korea, Japan, Sakhalin, Chabarowski Land and Ussuri.
Early stages unknown.

**Argyrogramma accentifera** (Lefebvre), comb. n.

*Plusia accentifera* Lefebvre, 1827, Ann. Soc. linn., Paris 1827: 94, pl. 5, f. 1
*Plusia l-aureum* Freyer, 1831, Neue Beitr. 1: 43, pl. 23, f. 9
*Plusia hieroglyphica* Freyer, 1831, Neue Beitr. 1: 45.

This species is rather distinct from the remaining species of its genus. It is characterized by rather small size and rather uniform, grey-violet ground colour of forewing.
Male genital armature shown in fig. 39. Valvae narrow, with apical portions club-like broadened; ventral margins covered with rather large spines. Vesica armed with numerous, fairly large cornuti.

Female genital armature is shown in the fig. 109.

A. accentijera (Lef.) is distributed along the Mediterranean Sea coasts, in Portugalia, Azores and over nearly whole of Africa.
The larvae feed on various species of Mentha L.

**Argyrographa ochreata** (Walker), **comb. n.**


*Plusia cornucopiae* Snellen, 1880, Tijdschr. Ent. 23: 72, pl. 6, f. 3.

Unfortunately I have had no opportunity to examine any specimen of this species. Judging by the original description and figures it appears to be a member of the genus under consideration.

A. ochreata (Wkr.) occurs in the Eastern Palaearctic Region, nearly over all of the Oriental Region and in Australia.

Early stages unknown.

**Argyrographa agnata** (Staudinger), **comb. n.**

*Plusia agnata* Staudinger, 1892, in Romanoff, Mém. Lép. 6: 547


The species is in its facies strikingly similar to *Chrysodeixis eriosoma* (Doubl.), being somewhat lighter and having a little more uniform pattern.

Male genital armature is shown in fig. 40. It is characterized by the very heavily sclerotized, nearly black, large spines covering nearly all of sacculus and the ventral margin of the valva.

The female of this species is unknown to me.

A. agnata (Stgr.) is a common species occurring in the Northern China, Eastern China, Chabarowski Land, Ussuri, Korea, Southern Sakhalin and over all of Japan. The data on the occurrence of the species under consideration in Teneriffa appear to be misidentifications of other species, most probably of the aberrant examples of *Ch. chalecytes* (Esp.) or *Ch. eriosoma* (Doubl.).

Early stages unknown.

**Argyrographa albostriatia** (Bremer & Grey), **comb. n.**

*Plusia albostriatia* Bremer & Grey, 1853, Beitr. Schmett. Nord China p. 18


*Plusia oxygramma* Hampson, 1894, Moth Ind. 2: 575 (nee Geyer, 1832).
Because of its facies, the species in question comes very near North American *A. oxygramma* (Geyer), being distinct from it in that the spines on valvae are decidedly less heavily sclerotized and the aedeagus is thinner and longer. Male genital armature is shown in fig. 110.

*A. albostriata* (Br. & Grey.) is distributed over all the Oriental Region and in Australia. From the Palaeartic Region it has been reported from China, Korea, Ussuri and Japan.

Early stages unknown.

**Argyrogramma daubei** (Boisduval), comb. n.

*Plusia daubei* Boisduval, 1840, *Gen. Ind. Meth.* p. 159


*Plusia g-roseum* Guenee, 1862, Maillard’s Réunion Lep. p. 42.

This species shows some variability. The specimens coming from Africa [*A. daubei* ssp. *indicator* (Wkr.)] are somewhat larger and of a little different colour than those from the Palaeartic Region.

Male genital armature is shown in fig. 42. It is characterized by proportionately narrow valva with irregularly dentate-sinuate ventral margin. No spines on valva present. Aedeagus thin, strongly elongate.

Female genital armature is shown in fig. 111.

*A. daubei* (Bsd.) appears in two subspecies: *A. daubei* ssp. *daubei* (Bsd.) is known nearly from all of the Southern Palaeartic Region and India; *A. daubei* ssp. *indicator* (Wkr.) appears in the steppe and semi-desert areas of Africa and in Réunion, Madagascar, the Seychelles and Mauritius.

Larvae feed on several species of the genus *Sonchus* L.

**Genus: Trichoplusia** McDunnough, 1944

*Plusia Ochsenheimer, 1816. partim*

*Phytometra* Hampson, 1913 (nec Haworth, 1809), partim.

Typus generis: *Plusia brassicae* Riley

Palpi short; apical joint with apex rounded. Face flat, covered with thin, rather short scales. Antenna filiform. Wings narrow, elongate. Tibiae on all the legs without spines. Dorsal and outer side of 1—3 abdominal segments with tufts of erect scales.

Female genital armature: Papilla analis fairly small, covered with long hairs. Gonapophysis anterioris and posterioris thin and elongate. Ostium bursae funnel-shaped. Ductus bursae abnormally strongly elongate, it whole length about one and one half times the length of abdomen. Bursa copulatrix large, round.

I place here only one species, namely, *Trichoplusia ni* (HBN.). McDunnough places in this genus also the South-American species *Argyrogramma oxygramma* (Geyer), however, this opinion is incorrect as that species shows only external resemblance to *Trichoplusia ni* (HBN.), but on its genitalia is closest to *Argyrogramma albostriata* (Br. & Gr.) and *A. daubei* (Bsd.). In fact, *A. oxygramma* (Geyer) is referable to the genus *Argyrogramma* HBN., I believe.

The distribution of *Trichoplusia ni* HBN. is shown in fig. 8.

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Fig. 8. Geographical distribution of the Palaeartctic species of the genus *Trichoplusia* McDunn.

1 — *T. ni* (HBN.).

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*Trichoplusia ni* (Hübner)

*Noctua ni* Hübner, 1802, Eur. Schmett. Noct. f. 284


*Plusia brassicae* Riley, 1870, 2nd Rept. Ins. Mo., p. 110, f. 81

*Plusia echinocystis* Behr, 1874, Streck. Lepid. p. 94

*Plusia comma* Schultz, 1907, Int. ent. Z. 1: 32.
The pattern of the forewing more or less well defined, the colour also very variable. The male and female genital armatures do not show any variability. Male genitalia armature is shown in the fig. 43, that of female in the fig. 112.

Trichoplusia ni (HBN.) appears in two subspecies: T. ni ssp. ni (HBN.) occurs over all of the Southern Palearctic Region, in Africa and nearly over all of the Oriental Region. The other subspecies, namely, T. ni ssp. brassicae (RILEY) is spread over all of North America from where it migrates to Central America, and even to South America.


**Genus: Diachrysia Hübner, 1821**

*Plusia Ochsenheimer, 1816, partim
Phytometra Hampson, 1913 (nec Haworth, 1809), partim.*

**Typus generis: Noctua orichalcea Fabricius**

Palpi fairly long. Face flat, clothed with short, proportionately broad scales. Antennae filiform. Forewing narrow, elongate, with apices acuminate. No spines on tibiae of all the legs. Abdomen large, with slightly developed tufts of scales on dorsal side.

![Geographical distribution of the Palearctic species of the genus Diachrysia HBN. 1 — D. intermixta (Warr.), 2 — D. orichalcea (F.), 3 — D. orichalcea (F.), isolated localities.](image-url)

Female genital armature: Papilla analis broad with terminal portions clothed with dense, minute hair. Gonapophysis anterioris and posterioris long. Ostium bursae funnel-shaped. Ductus bursae elongate, thin, with basal portion heavily sclerotized. Bursa copulatrix large with well defined laminae dentatae.

This genus is very close to Argyrogramma Hbn. The relationship of the two is shown especially by the armature of the genitalia. However, the absence of the tufts of scales on the outer sides of the abdomen and quite distinct coloration and pattern of the forewings indicate the distinctness of the genus under consideration.

Here belong three species. Of these, D. florina (Guen.) occurs only in the Ethiopian Region and the two remaining ones appear also in the Palaearctic Region. The distribution of the two latter species is shown in the fig. 9.

**Diachrysis orichalcea** (Fabricius), comb. n.

*Noctua orichalcea* Fabricius, 1775, Syst. Ent. p. 607
*Noctua chryson Esper, 1786, Schmett Eur. 4, pl. 141, f. 2
*Noctua chrysytina* Martyn, 1797, Psyche, pl. 21, f. 56

Forewings elongate, brown-golden. Only slight variability of the coloration has been observed; only the colour of the golden spot is somewhat variable.

Male genital armature is shown in fig. 44, that of the female in fig. 113.

This species is widely spread in the tropical and subtropical areas of the Old World. In the Palaearctic Region it appears along the sea-shores of the Mediterranean Sea, in Madeira, the Azores, the Canaries IIs, over all of Asia Minor, in Iran, Afghanistan, Kashmir, as well as in some localities in China and Japan. The individual examples of the species at times migrate very far northwards, to Northern England, Central Germany, and along Volga to Kazan.

The larvae feed on various species of the genera Coreopsis D. C., Salvia L. and Foeniculum Mill.

**Diachrysis intermixta** (Warren) comb. n.

*Phytometra intermixta* Warren, 1913, in Seitz, Grossschmett. d. Erde. 3: 357, pl. 64 g
*Phytometra brachychalcea* Hampson, 1913, Cat. Lep. Phal. Brit. Mus. 13: 481, pl. 237, f. 181-

In facies much like the preceding species, but being distinct on the shape of the golden spot in the forewing. Judging by the original description and the figure, the Hampson species *Phytometra brachychalcea* Hmps. is synonymous with the species under consideration, however, HAMPSON states that his Phy-
tometa brachychalcea Hmps. has the tufts of elongate scales on the outer sides of the abdomen, analogical to those in the species of the genus Argyrogramma Hen. The specimens of Dichryisia internixa (Warr.) which I have seen lack those tufts of scales. Unfortunately I have had no opportunity to examine the Hampson type-specimens. Without a study of that material I am unable to solve definitely this question. Perhaps the Hampson species should preserve its specific distinctness.

Male genital armature is shown in the fig. 45. It is characterized by much thinner valva, longer ampulla and smaller cornuti from those in Dichryisia orichalea (F.).

The female of this species is unknown to me.

The species is distributed over all of China, in Korea, Japan, Indo-China and in India.

Early stages unknown.

Genus: Plusia Ochsenheimer, 1816

Agrapha Hürner, 1821
Phylometra Hampson 1913 (nee Haworth, 1809), partim.

Typus generis: Phalaena Noctua chrysis Linnaeus

Palpi fairly long with apical joint elongate with apex rounded. Face flat. Antenna filiform. Forewing broad and proportionately short. No spines on

Fig. 10. Geographical distribution of the Palaeartic species of the genus Plusia Ochs. 1 — P. tutti spec. nov., 2 — 4 — Localities where P. tutti sp. n. and P. chrysis (L.) occur together, 5 — P. chrysis (L.).
Fig. 11. Geographical distribution of the Palaearctic species of the genus *Plusia* Ochs.
1 — *P. zosimi* (Hbn.), 2 — *P. stenochrysis stenochrysis* (Warr.), 3 — *P. stenochrysis multauri* (Bryk.), 4 — *P. leonina* (Ob.).

Fig. 12. Geographical distribution of the Palaearctic species of the genus *Plusia* Ochs.
1 — *P. chryson*, 2 — *P. nadeja* Ob., 3 — *P. nadeja* Ob., isolated localities.
tibiae of all the legs. Abdomen large with more or less erect tufts of scales on its first and third segments.


This genus is distributed exclusively over the Holarctic Region. In the Nearctic Region appear three species, namely, *Plusia aeroides* GRT., *P. aerea* (HEB.) and *P. balluca* GEYER. The Palaearctic Region includes seven species; their distribution is shown in the figs. 10, 11 and 12.

**Plusia chrysitis** (LINNAEUS)

*Phalaena Noctua chrysitis* LINNAEUS, 1785, Syst. Nat. ed. 10, p. 513
*Plusia juncta* TUTT, 1892, Brit. Noct. 4: 25
*Plusia generosa* STAUNDINGER, 1900, D. e. Z. „Iris“ 12: 380, pl. VI, f. 8.

The species with the pattern in the forewing very variable. The typical form shows the median fascia, which separates both metallic green areas, and is complete. The aberrant examples have the median fascia more or less broken and the metallic areas are connected with each other with a concolorous bridge. The colour of the metallic areas is also variable; in the typical form it is metallic golden-green, but in the aberrant specimens it is silvery-green, pure golden and in the *f. generosa* STGR. brown-golden.

Male genital armature is shown in the fig. 46 and 47; female genitalia in the fig. 114.

This species appears exclusively in the western part of the Palaearctic Region, from Iberian Peninsula and the British Islands to Ural in the north and Iran in the south.

Larvae polyphagous feed on numerous species of herbs.

**Plusia tutti** sp. n.

*Plusia chrysitis*, auct. nec LINNAEUS, 1758, partim
*Plusia juncta* TUTT, 1892, Brit. Noct. 4: 25, partim.

Head and thorax sand-brown. Wingspan 32 mm. The base of the forewing is light brown. The light grey-brown median area reduced, appearing only around the reniform and round spot, as well as at a rather small spot at the dorsum. The outer area, between the outer fascia and the termen, is straw-
-grey with a faint metallic hue. The remainder of the forewing is metallic green. Hindwing greybrown with outer fascia darker.

Male genital armature (fig. 48): Uncus long and thin. Valva broad with terminal portion obliquely truncate. Ventral margin irregularly dentate-sinuate. Ampulla thin and proportionately short. Clavus thin, elongate. Vinculum rather long, V-shaped. Terminal part of vesica armed with heavily sclerotized plates clothed with minute cornuti; a single, minute, terminally rounded cornutus in the middle of vesica is present.


The new species has hitherto been confused with Plusia chrysitis (L.), especially with P. chrysitis f. juneta Tutt. Both the new species and P. chrysisit ab. juneta Tutt. are distinct on the pattern of the forewing: The bridge linking both metallical spots is much broader in the former than in the latter. The new species resembles P. nadeja Ob. In addition, the specimens of the new species are much smaller than the examples of P. chrysitis (L.). This is well visible while studying long series of the two species. The colour of the forewing (especially that of the metallic spots) in the new species is very variable. The metallic spots are metallic-green, silvery-green, golden-green, or even golden as in the form aurea Huene.

Male genital armature of both new species and P. chrysitis (L.) are perfectly distinct from each other. In the new species the valva is rather evenly wide at considerable distance and the ventral edge of the valva is curved apicad, in consequence the caudal edge of the valva is well developed. In P. chrysitis (L.) valva tapering gradually caudad, its ventral edge not curved apicad. In P. tuti sp. n. ampulla is somewhat longer and the single cornutus in the vesica is shorter and of different shape than in the second species.

The differences in the female genital armatures (fig. 115) of the two species are less distinct. In P. tuti sp. n. papilla analis more rounded and ductus bursae longer and more heavily sclerotized than in P. chrysitis (L.).

The writer considers the above mentioned differences between the two species to be of specific significance as the characters of the armature of the genitalia correspond with those in facies in both species. Such an opinion is
based on a study of the male genital armatures of about sixty specimens of both species coming from the whole area of their distribution. All the specimens showing the complete median fascia in the forewing have the genital armatures of a basic-chrisitis-type. On the other hand, the specimens with the fascia strongly reduced, have their genitalia typical of P. tutti sp. n. The thorough analysis of the range of both P. chrysis (L.) and P. tutti sp. n. points to separate the two. Studying the populations of both species, one can see, that in the Western Europe, most specimens belong to P. chrysis (L.) Eastwards, the number of the specimens of the latter becomes lesser. In the Central-Eastern Europe, the populations of P. tutti sp. n. are decidedly more numerous than those of P. chrysis (L.). In Eastern Europe, one can observe only single specimens of the latter species. In the Asiatic part of the Palaearctic Region (with exception for Asia Minor, Caucasus and Iran) occurs only P. tutti sp. n. and the second species is wanting there. The most eastern record of P. chrysis (L.) is from Krasnoufimsk, Ural, and Kotlas, Oparino and Vyatka in the European part of the USSR. In Asia Minor, Caucasus and Iran the dominant species is P. chrysis (L.). It appears there in numerous colour forms, e.g. P. chrysis ab. generosa Stgr. The quantitative relation of both species is shown in fig. 10. The data on which that distribution-table has been made are after the faunistic papers in which the quantity of the populations of the species are considered. However, the data concerning Poland and a part of Germany are based on the material which has been at the author disposal.

Early stages unknown.

*Plusia stenochrysis* Warren

*Plusia stenochrysis* Warren, 1913, in Seitz, Grossschmett. d. Erde 3: 348, pl. 64

*Phytometra multauri* Bryk, 1942, Dtsch. ent. Z. Iris 56: 57.

This species in facies comes very near P. tutti sp. n., but differing by the decidedly greater wingspan and different shape of the spot at the costa of the forewing.

The male of this species is unknown to me.

Female genital armature is shown in fig. 116.

The species occurs in the Eastern Seberia, Khina, Korea and Japan [P. stenochrysis stenochrysis (Warr.)] and in the Kuri Ilis and Hokkaido [P. stenochrysis multauri (Bryk)].

Early stages unknown.

*Plusia nadeja* Oberthür

*Plusia nadeja* Oberthür, 1880, Ét. entom. 5: 84, pl. 3, f. 10

This species is very similar in facies to *P. tutti* sp. n., but distinct on
decidedly smaller size and the colour of the outer area of the forewing, which
is metalically green in the former and sand-grey in the latter.

Male genital armature (fig. 49) proportionately very large. Uncus relatively
short, valva in basal half broad, further on strongly narrowed; apical portion
somewhat broadened, forming a distinct cucullus. Ampulla large. Clavus thin
and elongate. Cornutus lacking.

The female of this species is unknown to me.

The distribution of this species is rather poorly known. It is common
eastwards from Altai up to Japan, Kuri IIs and Central China. Westwards
from Altai, the species is reported from Kazan, Vjatka and from Kishyniev
and Bularda, Bessarabia.

Early stages unknown.

*Plusia zosimi* (Hübner)


In facies resembling preceding species (especially *P. tutti* sp. n.). Male
genital armature (fig. 50) is characterized by the narrow and elongate valva with
a distinct angle at the ventral margin, similar to that in *P. nadeja* On., and
by the very large ampulla and elongate vinculum.

Unfortunately I have had no opportunity to examine the female of this
species.

The distribution of *P. zosimi* (HBN.) is very interesting. It occurs locally
in the mountainous areas and foot-hills in Central Europe, in the Alps, the
Carpathians, the Balkans, Hungary, Dobrudsha, Moldavia. In the east the
species is known from the mountains (Caucasus, Ural, Altai) and from the
lowland, in the mixed- and deciduous-forest-zone from Astrachan and Kazan
in the west to Japan and Kuril IIs in the east.

Caterpillars feed on numerous species of the genus *Sanguisorba* L.

*Plusia chryson* (Esper)

*Noctua chryson* Esper, 1789. Eur. Schmett. 4: 446, pl. 141, f. 2


*Noctua aeriferata* Sowby, 1805, Brit. Misc. pl. 29.

Both this and following species are rather distinct on facies and genitalia
from the preceding species and resemble (especially in male genital armatures)
the members of the genera *Panchryisia* HBN. and *Chrysaspidia* HBN. However,
judging by several external (similar shape of wing pattern, presence of metallic
green spots in forewing) and genital characters (absence of the large cornuti,
irregularly dentate-sinuate ventral margin of valva), these species appears
to be referable to the genus *Plusia* Ochs.
Male genital armature (fig. 51). Valva proportionately short, with apical portion somewhat tapering. Ampulla elongate. Clavus with apex club-shaped.

Female genital armature is shown in fig. 117.

*P. chryson* (Esp.) is widely spread in nearly whole Palaeartic Region. It appears in the mixed- and deciduous-forest zone, in lowland and in mountains as well. It is of interest to note the absence of this species in the western and central parts of the European USSR, and in the lowland of Poland and Eastern Germany. The species is rather markable and should not have been omitted by the Polish or Russian lepidopterists. In Japan and Korea appears *P. chryson coreae* STRAND. Unfortunately I have had no opportunity to examine any specimen of that form. However, judging by the original description and the occurrence of that form within the range of the typical form, *P. chryson coreae* STRAND appears to be only an aberration of *P. chryson* (Esp.) and not a subspecies.

Caterpillars feed on various species of genera: *Eupatorium* L., *Salvia* L. and *Mentha* L.

**Plusia leonina** OBERTHÜR

*Plusia leonina* OBERTHÜR, 1884, Œt. entom. 10: 26, pl. 3, f. 11
*Plusia bieti* OBERTHÜR, 1884, Œt. entom. 10: 27

In facies very similar to the preceding species, but differing by the lack of the metallic green spot in the forewing.

Male genital armature (fig. 52): Uncus thick. Valva broad with apex truncate. Ampulla proportionately short.

The female of this species is unknown to me.

*P. leonina* Ob. appears in the mixed-wood zone (especially near marshes and rivers) in the eastern part of the Palaeartic Region; it ranges from Bajkal to Central China, Japan and Kuril Is. Two subspecies have been observed: *P. leonina leonina* Ob. appears in the north and *P. leonina bieti* Ob. occurring rather in the south.

Early stages unknown.

**Genus: Macdunnoughia** gen. n.

*Plusia* auct. (nee OCHSNERHEIMER, 1816, partim)
*Phytometra* HAMPSON, 1913 (nee HAWORTH, 1809, partim).

Typus generis: *Plusia confusa* STEPHENS

Palpus short; third joint with apex rounded. Face flat. Antenna filiform. Forewing broad, in all the species with more or less distinct, silvery stigma. Tibiae of all the legs lack spines. Abdomen proportionately short; with rather small tufts of scales on the dorsal side of the segments 1—3.


The members of this genus are distributed nearly exclusively in the eastern part of the Palaeartic Region. So far, four species are known; the distribution of these is shown in fig. 13.

Fig. 13. Geographical distribution of the Palaeartic species of the genus *Macdunnoughia* gen. n.

1 — *M. confusa* (Steph.) present borders, 2 — *M. confusa* (Steph.) borders till 1890, 3 — *M. crassisigna* (Warr.), 4 — *M. camplosea* (Hmps.), 5 — *M. schalisema* (Hmps.).

**Macdunnoughia confusa** (Stephens), comb. n.

*Noctua circumflexa* Esper, 1788, Eur. Schmett. 4, pl. 111, nom. praeocc.
*Plusia gutta* Guenée, 1852, Noct. 2: 346
*Plusia bigutta* Staudinger, 1892, in Romanoff, Mém. Lépid. 6: 545.
This species shows great variability of the colour and the intensity of the wing pattern. The shape and size of the forewing stigma is very variable, it is, in some instances, widely spread, in other cases broken into two separate spots, or, nearly completely reduced.

Male genital armature (fig. 53) is also very variable, especially in the shape of the cucullus and the sheets of the sacculus.

Female genital armature is shown in fig. 118.

*M. confusa* (STEPH.) till 1918 has been reported from Eastern Europe and the whole Asiatic part of the Palaeartic Region. In addition, the species has been reported from Austria, Southern Germany and Hungary. After 1918, a very quick expansion of this species into Central and Western Europe has been observed. In 1919 DU BOIS REYMOND had captured a specimen of this species in Królewiec and in 1926 the species appeared to be there pretty common. At that time, the individual examples of the species under consideration have been observed in Virton, Belgium and in the Aube Departament, France. Some time after the above records, *M. confusa* (STEPH.) has appeared commonly in the whole France, Northern and Central Italy, North and Central Spain and in the British Islands. At the present time, the species is known from nearly all the temperate part of the Palaeartic Region with exception for Northern Africa and southern shores of the Iberian Peninsula.

Caterpillars feed on numerous species of the genera *Achillea* L., *Matricaria* L., *Urtica* L., and *Mentha* L.

*Macdunnoughia crassigna* (WARREN), comb. n.

*Phytometra crassigna* WARREN, 1913, in SEITZ, Grossschmett. d. Erde, 3: 352, pl. 65 b


In facies and genitalia similar to the preceding species, but distinct on the presence of the silvery spot situated at the outer margin of the renular spot.

The male of this species is unknown to me.

Female genital armature is shown in fig. 119.

*M. crassigna* (WARR.) appears in the whole of China, in Japan, Korea, Ussuri, Northern and Central India, Assam, Naga and Tibet.

Early stages unknown.

*Macdunnoughia camptosema* (HAMPSON), comb. n.


Distinct from the preceding species on the rusty-red colour of the median fascia in the forewing and the dull yellowish stigma.

Male genital armature (fig. 54). Cucullus of different armature than in *M. confusa* (STEPH.) and cornuti much smaller.
The female of this species is unknown to me. 

_M. camptosema_ (HMPS.) was described from Deosai Plains, Kashmir. In the collection of the Zoological Museum of the Humboldt University in Berlin there are several specimens of this species from Japan and in the collection of the Zoological Museum of the University in Wroclaw there are several specimens from Amur. 

Early stages unknown.

_Macdunnoughia schalisema_ (HAMPSON), comb. n.


I have had no opportunity to examine any example of this species. However judging by the original description and HAMPSON's figure, the species appears to be a member of the genus _Macdunnoughia_ gen. n.

_M. schalisema_ (HMPS.) is known from only Huang-Mu-Chang, Western China.

Early stages unknown.

**Genus: Polychrysis** Hübner, 1821

_Plusia_ Ochsenheimer, 1816, partim
_Chrysoptera_ Latreille, 1815, partim
_Deua_ Smith, 1893 (nee Walker, 1857), partim.

Typtus generis: _Noctua moneta_ Fabricius

Palpus long; third segment elongate with apex acuminate; ventral side clothed with thin, long, hair-like scales. Face flat. Antenna filiform, in males slightly serrate. Wings large and broad. Tibiae of all the legs lack spines. Abdomen rather large, with erect tufts of scales on dorsal side.


The genus shows exclusively Holarctic range. In the Nearctic Region occurs only one species, namely, _P. trabea_ Sm. [(P. morigera (H. Edw.) occurring also in the Nearctic Region appears to be referable to the genus _Pseudeva_ HMPS. and not to _Polychrysis_ (HBN.). In the Palaeartic Region there are five species of the genus in question. They are distributed mainly in the eastern part of the region. The distribution of those species is shown in fig. 14.
Fig. 14. Geographical distribution of the Palaearctic species of the genus Polychrysis Hbn.
1 — P. moneta (F.), 2 — P. esmeralda (Or.), 3 — P. aurata (Stgr.), 4 — P. splendida (Btlr.),
5 — P. aureus (B.-H.).

Polychrysis moneta (Fabricius)

Noctua moneta Fabricius, 1787, Mant. Ins. 2: 162
Noctua flavago Esper, 1787, Schmett. 4, pl. 112, f. 1
Noctua napelli Villers, 1789, Ent. Linn.: 278, pl. 5, f. 21
Noctua argyritis Esper, 1792, Schmett. 4: 218.

A rather variable species, especially in the forewing colour and the intensity of
the silvery and golden irrorations.

Male genital armature is shown in fig. 55, that of female in fig. 120.
The species occurs in nearly whole of Europe, in Caucasus, Armenia and
Azerbaijan.

Caterpillars feed on numerous species of the genera: Aconitum L., Delphinium L., Trollius L., Helianthus L. and Cucumis L.

Polychrysis esmeralda (Oberthür)

Plusia esmeralda Oberthür, 1880, Ét. entom. 5: 85

This species has hitherto been considered as a subspecies of P. moneta (F.).
Both P. moneta (F.) and P. esmeralda (Or.) are distinct from each other on
their facies and on the genitalia as well. The iroration in forewing is silvery
in the latter, being golden in the former.
Male genital armature (fig. 56). The valva is considerably narrower than in *P. moneta* (F.); the bowed ampulla and the cornutus broader at base are characteristic.

Female genital armature is known to me only from a description. It is distinct from that in *P. moneta* (F.) on the decidedly more heavily sclerotized ductus bursae and more narrowed bursa copulatrix (especially at polus bursae).

This species occurs in the eastern part of the Palaearctic Region. The most eastern localities are: the environs of the river Ural, Kazan, Vjatka and Northern Ural Mts. In the Toll collection there is a specimen apparently belonging to *P. esmeralda* (Ob.), taken in Finnland.

Early stages unknown.

**Polychrysis splendid**a (*Butler*), **comb. n.**


On facies decidedly distinct from the preceding species. Forewing in this species is reddish-brown with a very distinct median fascia.

Male genital armature (fig. 57) rather resembling those in the preceding species, however, with valva somewhat narrower (especially at base) and with a very long cornutus.

The female of this species is unknown to me.

*P. splendid*a (*Butler*) ranges from the environs of Bajkal, through Northern Mongolia, whole of Manchuria, up to the southern Sakhalin, Kuril IIs, Japan and the environs of Pekin.

**Polychrysis aurata** (*Staudinger*), **comb. n.**


This species is characterized by the strongly reduced wing pattern and by the metallic-green ground colour of the forewing.

The male of this species is unknown to me.

Female genital armature (fig. 121) much like that in *P. moneta* (F.), differing in that the ductus bursae is somewhat broader and the bursa copulatrix is more elongated. These characters and the wing pattern of the forewing point to place the species in the genus *Polychrysis* Hbn.

*P. aurata* (*Stgr.*.) appears in the coniferous- and mixed-wood zone of the Eastern Siberia, Northern China, Korea, Sakhalin, Japan and Kuril IIs.

Early stages unknown.
Polychrysis aureus (Bang-Haas), comb. n.


Unfortunately I have had no opportunity to examine any specimen of this species. Judging by the original description this species is referable to the genus under consideration.

P. aureus (B.-H.) is as yet reported only from Tsekou in the Eastern Tibet. Early stages unknown.

Genus: Panchrysis Hübner, 1821

Plusia Ochsenheimer, 1816, partim
Phytometra, Hampson, 1913 (nee Haworth, 1809), partim.

Typus generis: Noctua deaurata Esper

Palpus long, slightly curved. Apical joint elongate with apex faintly acumin ate. Face flat. Antenna filiform. Wings broad. Tibiae of all the legs wanting spines. Abdomen large with a distinct tuft of elongate scales on dorsal side of the first segment.


Fig. 15. Geographical distribution of the Palaearctic species of the genus Panchrysis Hbn.
1 — P. deaurata (Esp.), 2 — P. v-argenteum (Esp.), 3 — P. dives (Ev.), 4 — P. ornata (Br.).
moderate. Vesica armed with numerous minute cornuti and a single long cornutus.


The species referable to this genus, with exception of the Ethiopian *P. sestertia* (Feild.), are distributed only in the Palaeartic Region. The geographical distribution of the Palaeartic species of the genus under consideration is shown in fig. 15.

**Panchrysia deaurata** (Esper), **comb. n.**

*Noctua deaurata* Esper, 1787, Eur. Schmett. 4, pl. 110, f. 6
*Noctua chryson* Borkhausen, 1792, Eur. Schmett. 4: 767
*Plusia semiargentea* Alphéraky, 1889, in Romanoff, Mém. Lép. 5: 179.

The colour and size is rather variable. Forewing in most instances golden-yellow with a faint pinkish hue, more rarely golden-brown or light yellow. Male genital armature is shown in fig. 58, that of female in fig. 122.

*P. deaurata* (Esp.) occurs in the steppe and xerothermic areas of Europe and Central Asia, from the southern-western coasts of the Iberian Peninsula to Pamir, Ala-Tau and Altai.

The caterpillars feed on numerous species of the genus *Thalictrum* L., but especially on *T. flavum* L. and *T. aquilegiifolium* L.

**Panchrysia dives** (Eversmann), **comb. n.**


Forewing chocolate-brown with numerous silvery spots. Hindwing yellow with dark grey outer fascia.

Male genital armature (fig. 59) is characterized by the narrow valva, the lack of the cornuti and somewhat smaller vinculum.

Female genital armature unknown to me.

*P. dives* (Evers.) appears in the coniferous and mixed-wood zone of the eastern part of the Palaeartic Region, from Altai and Tibet in the west to Kamtchatka, Sakhalin and Ussuri in the east.

Early stages unknown.

**Panchrysia v-argenteum** (Esper), **comb. n.**

*Noctua v-argenteum* Esper, 1795, Eur. Schmett. 4, pl. 188, f. 3

Forewing chocolate-brown; pattern well defined, red and black and several silvery spots.
Male genital armature (fig. 60) is characterized by the broad valva with apical portion truncate, the small ampulla and the vinculum distinctly U-shaped.

Female genital armature is shown in fig. 123.

_P. v-argenteum_ (Esp.) occurs in the Alps from 1900 m. alt. upwards; in the alpine zone of Dalmatia, Macedonia and on the mount Olimp.

Caterpillars feed on the species of the genus _Isopyrum_ L. and on _Thalictrum foetidum_ L. as well.

_Panchrysia ornata_ (Bremer), _comb. n._

_Plusia ornata_ Bremer, 1864, Lep. Ost.-Sib.: 103, pl. 8, f. 15.

The shape of the pattern of the forewing resembles that in _P. v.-argenteum_ (Esp.). The colour of the forewing is light grey with pattern darker and some silvery spots.

Male genital armature (fig. 61) resembling that in _P. v.-argenteum_ (Esp.), but distinct on the broader valva, the smaller ampulla and the greater number of the cornuti.

The female of this species is unknown to me.

_P. ornata_ (Br.) appears in the steppes, forest-stepp zone and in the mixed-woods of the eastern part of the Palaearctic Region, from Pamir, Ala-Tau, Ili and Altai to Sakhalin and the Pacific coasts.

Early stages unknown.

**Genus: Chrysoptera** Latreille, 1825

_Plusia_ auct. (nee Ochsenheimer, 1816), partim

_Deca Walker_, 1857, partim.

_Typus generis: Phalaena Noctua e-aureum Knoch_

Palpus long; apical joint elongate, covered with long, hair-like scales on the ventral side. Face flat. Antenna filiform. Tibiae of all the legs without spines. Abdomen small and thin, with several minute tufts of erect scales on dorsal side.


Fig. 16. Geographical distribution of the Palaeartic species of the genus Chrysoptera Latr.

1 — Ch. c-aureum (Kn.), 2 — Ch. c-aureum micadina (Btlr.).

The genus Chrysoptera Latr. includes only one species occurring exclusively in the Palaeartic Region. The distribution of this species is shown in fig. 16.

Chrysoptera c-aureum (KnOch)

Phalaena Noctua c-aureum KnOch, 1781, Beitr. Lep. 1: 7, pl. 1, f. 2

In facies and genitalia much like the species of the Nearctic genus Pseudeva Hmps. Colour of forewing rather variable, in most instances violet-black with large, golden spots.

Male genital armature is shown in fig. 62, that of female in fig. 124.

Ch. c-aureum (KnOch) appears in two subspecies. Ch. c-aureum c-aureum (KnOch) appears locally, in mixed-woods and forest-steppe areas, or, even in the steppes of the western part of the Palaeartic Region. It ranges from about Central France and Northern Italy to Ural Mts. and Armenia. The other subspecies, namely, Ch. c-aureum micadina (Btlr.) occurs from Altai throughout Eastern Siberia, Mongolia and China to Japan, Kuril Ils and Southern Kamtchatka.

Caterpillars feed on Thalictrum aquilegiifolium L. and on Aquilegia vulgaris L.
Genus: *Plusidia* Butler, 1879

*Plusia* auct. (nec Ochsenheimer, 1816), partim.

**Typus generis: Noctua cheiranthi Tauscher**

Palpus long, slightly curved dorsad; apical joint elongate with apex acuminate. Face flat. Antenna faintly serrate. Forewing rather broad and proportionately short. Tibiae of all the legs wanting spines. Abdomen small with tufts of long scales on dorsal side of the first and third segments.

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**Fig. 17. Geographical distribution of the Palearctic species of the genus *Plusidia* Btlr.**

1 — *P. cheiranthi cheiranthi* (Tausch.), 2 — *P. cheiranthi separanda* (Ware.), 3 — *P. imperatrix* (Drt.).


This genus includes two species occurring exclusively in the Palearctic Region. The distribution of the two is shown in fig. 17.
**Plusidia cheiranthe** (TAUSCHER)

*Noctua cheiranthe* TAUSCHER, 1809, Mém. Soc. Natural. Moscou 2: 322, pl. 20, f. 6  
*Plusia eugenia* EVERSMANN, 1841, Bull. Soc. Nat. Moscou 1: 32, pl. 3, ff. 3 & 4  

This species is relatively little variable. Forewing yellowish-brown with white and dark chocolate pattern.  
Male genital armature is shown in figs. 63, 64, that of female in fig. 125.  
*P. cheiranthe* (TAUSCH.) appears in two subspecies. *P. cheiranthe cheiranthe* (TAUSCH.) occurs in the Eastern Europe and the Western Asia. *P. cheiranthe separanda* WARR. is known from the Eastern Siberia, Northern China, Korea, Japan and Sakhalin.  
Caterpillars feed on numerous species of the genera *Thalictrum* L. and *Aquilegia* L.

**Plusidia imperatrix** DRAUDT


This species is unknown to me, however, it belongs obviously to the genus under consideration. It is known only from Li-kiang and Tai-pei-shan, Western China.  
Early stages unknown.

**Genus: Euchalcia** HÜBNER, 1821

*Plusia* OCHSHEIMER, 1816, partim  
*Phytometra* HAMPSON, 1913 (nee HAWORTH, 1809), partim  
*Adea* McDUNNOUGH, 1944.

*Typus generis: Noctua variabilis* PILLER

Palpus rather short, decidedly curved dorsad; apical joint short with apex rounded. Face flat. Antenna filiform or slightly serrate with exception of *E. gerda* (PGLR.), which has antenna bipectinate. Forewing proportionately broad with apex faintly acuminate. Tibiae of all the legs wanting spines. Abdomen with large, decidedly erect tufts of scales situated on the dorsal side of the segments 1—3.  
Fig. 18. Geographical distribution of the Palaeartic species of the genus *Euchaleia HBn.*
1 — *E. variabilis variabilis* (Pill.), 2 — *E. variabilis mongolica* (Stgr.), 3 — *E. uralensis* (Ev.), 4 — *E. cashmirensis* (Mr.).

Fig. 19. Geographical distribution of the Palaeartic species of the genus *Euchaleia HBn.*
1 — *E. modesta modesta* (HBn.), 2 — *E. modesta viridis* (Stgr.), 3 — *E. berrichi* (Stgr.),
4 — *E. renardi* (Ev.).
Fig. 20. Geographical distribution of the Palaeartic species of the genus Euchaloeia Hbn.
1 — E. consona consona (F.), 2 — E. consona taurica (Osth.), 3 — E. siderifera (Ev.), 4 —
E. italica (Stgr.).

Fig. 21. Geographical distribution of the Palaeartic species of the genus Euchaloeia Hbn.
1 — E. emicht (Rothfr.), 2 — E. dorsiflava (Stdf.), 3 — E. maria (Stgr.), 4 — E. augusta (Stgr.).

This genus is distributed nearly exclusively in the Palaeartic Region. The members of Euchalcia Hbn. are confined to the xerothermic localities like steppes and semi-deserts. There is only one species that does not occur in the Palaeartic Region, namely, E. albaritta (Ottol.) appearing in the steppes and semi-deserts of the California, Texas, Arizona and Nevada. E. cashmirensis Mr. known from the southern slopes of the Himalayas is known also from the Palaeartic Region.

The distribution of the Palaeartic species of the genus Euchalcia is shown is figs. 18—22.

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Fig. 22. Geographical distribution of the Palaeartic species of the genus Euchalcia Hbn. 1 — E. tancrei (Stgr.), 2 — E. lenzeni (Drt.), 3 — E. inconspicua (Græus.), 4 — E. gerda (Pillr.).

Euchalcia variabilis (Piller)

Noctua variabilis Piller, 1783, Iter. Slav. Prov. 1783: 70, pl. 6, f. 3
Noctua illustris Fabricius, 1787, Mant. Ins. 2: 164
Noctua cuprea Esper, 1787, Schmett. Eur. 4: 199, pl. 110, f. 4
Plusia sergia Oberthür, 1884, 10: 27, pl. 3, f. 9
Plusia uralensis Staudinger, 1892 (ne Eversmann, 1842), in Romanoff, Mém. Lépid. 6: 538
This species is in colour very variable. Forewing olive-green with more or less well defined black and pink pattern.

Male genital armature is shown in fig. 65, that of female in fig. 126.

_E. variabilis_ (Pill.) appears in two subspecies. _E. variabilis variabilis_ (Pill.) appears locally in the Central and Southern-Eastern Europe, mainly in the mountains. In addition, this subspecies occurs in the coniferous- and mixed-woods of the Northern and Eastern Europe from Finlann, throughout Northern Russia and Ural to Altai. _E. variabilis mongolica_ (Stgr.) occurs in the eastern part of the Palaearctic Region from the Bajkal Lake and Mongolia throughout Northern China to Korea, Sakhalin and Hokkaido. The Hampshire data on the occurrence of this subspecies in Carinthia appears to be erroneous as all the examined by me specimens (about is) from Carinthia belong to the typical form. _E. variabilis sergia_ (Ob.) is only a colour aberration and not a subspecies as considered by some workers.

Caterpillars feed on _Aconitum lyconotum_ Rchb., _A. tauricum_ We. and on _Thalictrum aquilegifolium_ L.

_Euchalcia uralensis_ (Ev.)

_Plusia uralensis_ Eversmann, 1842, Bull. Soc. Nat. Moscow 3: 553  
_Plusia uralensis_ Freyer, 1842, Neue Beitr. 5: 11, pl. 389, f. 4.

In facies and genitalia very close to the preceding species.  
Male genital armature (fig. 66) with ampulla thin and cornutus proportionately minute.

The female of this species is unknown to me.

_E. uralensis_ (Ev.) occurs in Ural, environs of Kazan and the Jablonove Mts. Early stages unknown.

_Euchalcia cashmirensis_ Moore


I have had no opportunity to examine any specimen of this species. Judging by the original description and the figure of Moore the species is referable to the genus under consideration.


Early stages unknown.

_Euchalcia modesta_ (Hübner)

_Noctua modesta_ Hübner, 1786, Beitr. Schmett. 1: 3, pl. 1, f. A  
_Noctua cuprea_ Esper, 1787, Schmett. Eur. 4: 199, pl. 110, f. 3  
In facies resembling the two preceding species. Forewing olive-green with pattern whitish and grey.

Male genital armature (fig. 67) with valva not very broad, ampulla curved and cornutus broad, short and with apex blunt.

Female genital armature is shown in fig. 127.

This species appears in two subspecies. *E. modesta modesta* (HEX.) occurs locally in the wooded areas and forest-steppes parts of the Central and Eastern Europe, in Siberia and in the Northern Mongolia and Manchuria. The other subspecies, *E. modesta viridis* (STGR.) is distributed in Asia Minor, Iran and in the mountains of the Central Asia.

Caterpillars feed on numerous species of the genera *Pulmonaria* L., *Arum* L. and *Pterotheca* Bernh.

**Euchalcia consona** (FABRICIUS)


The facies of this species is relatively little variable. Forewing olive-green with pattern well defined, brown.

Male genital armature (fig. 68) is characterized by the broad valva, the thin and straight ampulla and the short cornutus.

Female genital armature is shown in fig. 128.

*E. consona* (F.) appears in two subspecies. *E. consona consona* (F.) occurs in the steppes and grassy mountainous slopes from the Alps throughout all of the Southern-Eastern Europe, Central and Eastern Asia up to the eastern border of Mongolia. *E. consona taurica* (OSTH.) occurs only in Asia Minor.

Caterpillars feed on various species of the genus *Pulmonaria* L. and on *Nonnea pulla* (L.) D. C. as well.

**Euchalcia siderifera** (EVERSMANN), comb. n.

*Plusia siderifera* EVERSMANN, 1856, *Bull. Soc. Nat. Moscou* 1, pl. 3, f. 4


Externally close to the preceding species. A considerable variability, especially in the armature of the genitalia, is observed.

Male genital armature (fig. 69) is characterized by the broad uncus, small valva, variously armatured ampulla and two thick cornuti. The differences in the genital armatures do not correlate with the differences in the facies, appearing in the identical specimens of the same population.

The female of this species is unknown to me.
E. siderifera (Ev.) occurs in the steppes and semideserts of the Central Asia and Iran.
Caterpillars feed on Rinderia tritaspis D. C.

**Euchalcia italic**a (STAUDINGER), **comb. n.**

_Plusia italic_a STAUDINGER, 1882, Ent. Nachr. 8: 293
_Plusia caliberlae_ STANDFUS, 1884, Ent. Ztg. Stettin 44: 199

Since the HAMPSON publication, _E. italic_ a (Stgr.) has been considered only as an aberration of the preceding species. However, judging by the distinct differences appearing in the facies, the armature of the genitalia, the colour of the larvae and the hostplants of the two, both _E. siderifera_ (Ev.) and _E. italic_ a (Stgr.) are obviously distinct species.

Male genital armature (fig. 70). The characteristic features are: Valva short with apical portion blunt, ampulla straight, cornuti of quite different armature than in the preceding species.

Female genital armature is shown in fig. 129.
_E. italic_ a (Stgr.) appears along the northern and eastern coasts of the Mediterranean Sea, in Asia Minor and in Syria.
Caterpillars feed on various species of the genus _Cynoglossum_ L.

**Euchalcia herrichi** (STAUDINGER), **comb. n.**

_Plusia renardi_ LEDERER, 1855, Verh. zool.-bot. Ges. 5: 112 (nom. praecoc.)
_Plusia uralesis_ BELLIER, 1859, Ann. Soc. ent. Gr. 1859: 192, pl. 5, figs. 7 & 8 (nec EVERS MANN, 1842) (nom. praecoc.)
_Plusia herrichi_ STAUDINGER, 1861, Ent. Ztg. Stettin 41: 288
_Plusia evermanni_ STAUDINGER, 1896, Dtsch. ent. Z. Iris 9: 372
_Plusia bellieri_ KIRBY, 1900, Butt. & Moths. Eur.: 269.

In facies and shape of pattern close to the preceding species; colour and pattern very variable.

Male genital armature (fig. 71). Valva broad with caudal margin incised, ampulla thin, cornutus heavily sclerotized.

Female genital armature is shown in fig. 130.
_E. herrichi_ (Stgr.) appears mainly in the steppes and in mountains of the Central Asia from Armenia and the river Ural in the west to Mongolia and Manchuria in the east. In addition, this species is reported from Alps in France (Basses Alpes and Alpes Maritimes). Unfortunately I have had no opportunity to examine the examples coming from France. Most probably they belong to another, distinct species.
Caterpillars of the French population feed on _Aconitum anthora_ (L.) D. C. and the caterpillars of the Asiatic population are unknown.
Euchalcia renardi (Eversmann), comb. n.


This species, by external characters, comes very near E. herrichi (Stgr.) differing in that the pattern in the forewing is more distinct and decidedly darker.

Male genital armature (fig. 72). Valva broad and large, ampulla large and curved, clavus fairly large and conical.

The female of this species is unknown to me.

E. renardi (Ev.) is reported from isolated localities in Ala-Tau, Caucasus, the environs of Bajkal Lake, Mongolia and the Northern Manchuria.

Early stages unknown.

Euchalcia emichi (Rogenhofer), comb. n.

Plusia emichi Rogenhofer, 1873, Verh. zool.-bot. Ges. 1873: 569
Plusia paulina Staudinger, 1891, Dtsch. ent. Z. Iris 4: 310, pl. 2, f. 3.

This species is very distinct from the preceding one on its size and the colour as well. Forewing light chocolate-brown with more or less well defined whitish pattern.

Male genital armature (fig. 73). Uncus thin, valva very broad, clavus proportionately long.

Female genital armature is shown in fig. 131.

E. emichi (Rghfr.) occurs in Asia Minor, Palestine, Mesopotamia and Iran. Besides these localities the species is reported from Petrina Planina in Macedonia.

The Staudinger species Plusia paulina Stgr. does not show any feature of specific significance and I consider it as only a colour form of the species under consideration.

Early stages unknown.

Euchalcia dorsiflava (Staudfuss), comb. n.

Plusia dorsiflava Staudfuss, 1891, in Romanoff, Mém. Lép. 6: 666, pl. 15, f. 6.

In facies resembling preceding species, however, differing from it by the presence of a yellowish lightening at the dorsal margin of the forewing.

Male genital armature (fig. 74). Valva tapering caudad, aedeagus small, cornutus lacking.

Female genital armature is shown in fig. 132.

Euchalcia dorsiflava (Stdf.) appears in the eastern part of the Asia Minor.

Early stages unknown.
**Euchalcia augusta** (Staudinger), comb. n.

*Plusia augusta* Staudinger, 1891, Dtsch. ent. Zeit. Iris. 4: 309, pl. 4, fig. 5.

Externally close to the preceding species, being distinct from them on the smaller size and the silvery-grey colour of the forewing.
Male genital armature (fig. 75). Uncus short, valva broad, ampulla fairly long, cornuti in a broad, irregular band.
The female of this species is unknown to me.
*E. augusta* (Stgr.) appears mainly in semi-deserts of the Near East from Palestine and Syria to the Central Iran.
Early stages unknown.

**Euchalcia maria** (Staudinger), comb. n.


Externally closest to *E. emichi* (Rghfr.), being distinct from it on somewhat different pattern in the forewing.
Male genital armature (fig. 76). Uncus small, valva rounded, ampulla long, cornutus small.
The female of this species is unknown to me.
*E. maria* (Stgr.) occurs in the semi-deserts of Asia Minor, Syria, Palestine and Mesopotamia.
Early stages unknown.

**Euchalcia inconspicua** (Graeser), comb. n.

*Plusia inconspicua* Graeser, 1892, Berlin, ent. Z. 38: 315.

Externally comes near *E. variabilis* (Pill.), however, being distinct on its genital armature from all the species of the genus under consideration.
Male genital armature (fig. 77). Uncus short, valva broad with apical portion abruptly truncate, saeculus with characteristic processes in the outer side of the saeculus. Vinculum decidedly longer than in the preceding species, cornuti of a different armature.
Female genital armature (fig. 133).
*E. inconspicua* (Graes.) occurs in the mountains of the Central Asia, in Pamir, Ala-Tau, Ili, Hindukush and Tibet.
Early stages unknown.
Euchalcia tancrei (Staudinger), comb. n.

Plusia tancrei Staudinger, 1895, Dtsch. ent. Z. Iris 8: 328, pl. 6, f. 14.

This species is rather distinct from the preceding one. Perhaps it is in need to be placed in a subgenus of its own. However, because of the very little material that I have had at my disposal (one male), the generic position of the species in question is doubtful.

Male genital armature (fig. 78) shows many features common with those in the remaining species of the genus, i. e., the uncus is proportionately short and thick, the valva is broad, however, decidedly tapering caudad; the armature of the clavus and rather similar cornuti.

Unfortunately I have had no opportunity to examine the female of this species.

E. tancrei (Stgr.) occurs in Tibet and in the mountains of the Southern-Western China (prov. Szechuan and Shen-si) as well.

Early stages unknown.

Euchalcia lenzeni (Draudt), comb. n.


Unfortunately I have had no opportunity to examine any example of this species. Judging by the original description and the photograph in the description, the species comes very near E. tancrei (Stgr.).

E. lenzeni (Drt.) is as yet known only from Tai-pei-shan, Southern-Western China.

Early stages unknown.

Euchalcia gerda (Püngeler), comb. n.

Plusia gerda Püngeler, 1907, Dtsch. ent. Z. Iris 19: 224, pl. 8, f. 8.

This species in unknown to me, however, judging by the original description and the figures of Püngeler, it is referable to the genus Euchalcia Hbn.

E. gerda (Pglr.) is known only from the environs of the Kuku-Noor lake in Tibet.

Early stages unknown.

Genus: Chrysaspidea Hübner, 1821

Plusia Ochsenheimer, 1816, partim
Euchalcia Dyar, 1902, nec Hübner, 1821
Phytometra Hampson, 1913 (nec Haworth, 1809), partim
Palaeoplusia Hampson, 1913.
Typus generis: *Phalaena Noctua festucae Linnaeus*

Palpus short, slightly curved dorsad; apical joint short with apex rounded. Face flat. Antenna filiform. Forewing elongate. Tibiae of all the legs lack spines. Abdomen large with strongly reduced tufts of scales on dorsal side of segments 1—3.


The members of this genus appears nearly exclusively in the Holarctic Region. Only one species, namely, *Ch. argyrosigna* (Mr.) is indigenous to the tropical areas, however, it appears also in the Palaeartic Region. In the Nearctic Region occur four species, namely, *Ch. venusta* (Wkr.), *Ch. putnami* (Grt.), *Ch. nichollae* (Hmps.) and *Ch. contexta* (Grt.). The distribution of the Palaeartic species of the genus in question is shown in figs. 23 and 24.

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**Fig. 23. Geographical distribution of the Palaeartic species of the genus Chrysaspidia Hbn.**

1 — *Ch. festucae festucae* (L.), 2 — *Ch. festucae marocceana* (Runge), 3 — *Ch. festucae kamczadala* (Bryk.), 4 — *Ch. festucae kurilensis* (Bryk.), 5 — *Ch. festucae japonibia* (Bryk.), 6 — *Ch. festata* (Græs.), 7 — *Ch. barbara* (Warr.).
Fig. 24. Geographical distribution of the Palaearctic species of the genus *Chrysaspidea* HBN.
1 — *Ch. bractea* (SCHIFF. & D.), 2 — *Ch. aemula* (SCHIFF. & D.), 3 — *Ch. excelsa excelsa* (KR.),
4 — *Ch. excelsa parabraeita* (HMP.), 5 — *Ch. argyro/igna* (MR.).

*Chrysaspidea festucae* (LINNAEUS)


This species is very variable. Numerous colour aberrant forms are observed; they are, in many instances, differentiated depending on the geographical area. Male genital armature is also variable.

Male genital armature is shown in fig. 79, that of female in fig. 134.

*Ch. festucae* (L.) is widely spread nearly in the whole Palaearctic Region. Perhaps several colour forms need to be separated in distinct subspecies. The specimens coming from Amur are distinct on facies and the genitalia, being externally strikingly similar to those described by BRYK from Kamtchatka. The latter are named *Ch. festucae kamezadala* (BRYK). BRYK described also several other colour forms of the species under consideration. Perhaps they are subspecies or even distinct species. Only further study of this question might solve the problem. In general, the geographical distribution of *Ch. festucae* (L.) is as follows: In Morocco appears *C. festucae marociana* (RUNGS); in whole of Europe, in Asia Minor and Central Asia to the river Lena occurs typical form; eastwards from Lena is known *Ch. festucae kamezadala* (BRYK). In the map of the distribution of this species are given also the localities of other
Bryk's subspecies of *Ph. festucae* (L.), which, most probably, are only colour forms of *Ch. festucae kamezadalal* (Bryk).


**Chrysaspidia festata** (Graeser), **comb. n.**

*Plusia festata* Graeser, 1889, Berl. ent. Z. 33: 262
*Plusia putnami* auct. (nee Grote, 1873).

In colour and pattern very similar to the preceding species, differing by somewhat different shape of the silvery spot in the forewing.

Male genital armature (fig. 80) resembles that of the preceding species. Uncus long, valva rather broad. Ampulla long. Clavus shorter than in *Ch. festucae* (L.). Cornuti decidedly smaller than in *Ch. festucae* (L.).

Female genital armature unknown to me.

*Ch. festata* (Graes.) occurs in the eastern part of the Palaearctic Region from Kasan to Japan and the Southern-Western China.

Early stages unknown.

**Chrysaspidia barbara** (Warren)

*Phytometra barbara* Warren, in Seitz, Grossschmett. d. Erde 3: 347, pl. 64 d.

This species was described from a unique female specimen taken in Mazagan, Morocco. Externally it comes near the preceding species. Perhaps *Ch. barbara* (Warr.) is only a form of *Ch. festucae marocccana* (Rungs). Only the study of more material of both sexes might solve this question.

Early stages unknown.

**Chrysaspidia aemula** (Schiffermüller & Denis), **comb. n.**

*Noctua aemula* Schiffermüller & Denis, 1775, Wien. Verz.: 315
*Noctua lumina* Fabricius, 1787, Mant. Ins. 2: 161
*Noctua chrysomelas* Borkhausen, 1792, Eur. Schmett. 4: 778.

This species is considerably distinct from the preceding ones on size and colour as well.

Male genital armature (fig. 81). Valva narrow. Ampulla thin and faintly curved. Cornutus large.

Female genital armature is shown in fig. 135.

*Ch. aemula* (Schiff. & D.) occurs in the mountains of the western part of the Palaearctic Region, in the Alps, Caucasus and Ural. The Eversmann
data on the occurrence of this species in Latvia is erroneous as based on the misidentification of the specimens of *Ch. bractea* (SCHIFF. & D.).

Caterpillars feed on many species of the genera *Leontodon* L., *Hieracium* L. and *Plantago* L.

**Chrysaspidia bractea** (SCHIFFERMÜLLER & DENIS), comb. n.

*Noctua bractea* SCHIFFERMÜLLER & DENIS, 1775, Wien. Verz.: 314
*Noctua securis* VILLERS, 1789, Linn. ent. pl. 5, f. 10.

This species is very variable in colour and in armature of the genitalia as well. The most variable part of the male genitalia is shape of the valva; owing to that fact the male genitalia of the species in question are, in some instances, strikingly similar to those in *Ch. excelsa* (KR.). However, judging by the stability of the colour in *Ch. excelsa* (KR.), the absence of the intermediate forms between the two species and the overlap of the ranges of the two, both *Ch. bractea* (SCHIFF. & D.) and *Ch. excelsa* (KR.) seem to be very close but distinct species.

Male genital armature (fig. 82). Uncus long. Valva large with apex broadened. Cornutus long.

Female genital armature is shown in fig. 136.

*Ch. bractea* (SCHIFF. & D.) occurs in the wooded areas, mainly in the mountains. It is reported from nearly whole of Europe with the exception for the extreme south. In addition, the species is known from the Western Asia from Ural to Altai. The data on the occurrence of *Ch. bractea* (SCHIFF. & D.) in the Eastern Asia is a misidentification of the examples of *Ch. excelsa* ssp. parabractea (HMPS.).

Caterpillars feed on various species of the genera *Eupatorium* L., *Urtica* L., *Taraxacum* L. and *Hieracium* L.

**Chrysaspidia excelsa** (KRETSCHMAR), comb. n.

*Plusia excelsa* KRETSCHMAR, 1862, Berl. ent. Z. 6: 135, pl. 1, f. 5
*Plusia metabractea* BUTLER, 1881, Trans. ent. Soc. Lon., 1881: 190

In facies and genitalia very close to the preceding species.

Male genital armature (fig. 83) strikingly similar to that in *Ch. bractea* (SCHIFF. & D.), being distinct from it only on the somewhat broader terminal portion of the valva.

Female genital armature is shown in fig. 137.

This species appears in two subspecies. *Ch. excelsa excelsa* (KR.) occurs from Scandinavia, throughout the northern part of the Eastern Europe and throughout Siberia to Kamchatka, Kuril IIs and Hokkaido. *Ch. excelsa parabractea* (HMPS.) is known from China, Korea and Honshu and Kiushu, Japan. Early stages unknown.
Chrysaspidia argyrosigna (Moore), comb. n.

Plusia argyrosigna Moore, 1822 Lep. Atk.: 149.

Unfortunately I have had no opportunity to examine any specimen of this species. Most probably, it is referable to the genus Chrysaspidia Hbn. Ch. argyrosigna (Moore) appears in the Southern Pamir, Hindukush, Kashmir and Punjab.
Early stages unknown.

Genus: Autographa Hübner, 1821

Plusia Ochsenheimer, 1816, partim
Phytometra Hampson, 1913 (nec Haworth, 1809), partim.

Typus generis: Phalaena Noctua gamma Linnaeus

Palpus short; apical joint short with apex rounded. Face flat. Antenna filiform. Wings narrow and elongate with more or less distinct, silvery stigma. Tibiae of all the legs lack spines. Abdomen long with distinct tufts of scales on the dorsal side of the segments 1—3.
Male genital armature. Uncus long. Valva narrow and elongate, gradually

Fig. 25. Geographical distribution of the Palaearctic species of the genus Autographa Hbn. 1 — A. gamma (L.), 2 — area with data referable to A. gamma (L.), but according to Leech referable to A. nigrisigna (Wkr.), 3 — A. nigrisigna (Wkr.), 4 — A. purpureofusa (Hmps.).
Fig. 26. Geographical distribution of the Palaeartic species of the genus Autographa Hbn.
1 — *A. v-aureum v-aureum* (Hbn.), 2 — *A. v-aureum buraticola* (Stgr.), 3 — *A. v-aureum urupina* (Bryk.), 4 — *A. jota jota* (L.), 5 — *A. jota anatolica* (Schwing.).

Fig. 27. Geographical distribution of the Palaeartic species of the genus Autographa Hbn.
1 — *A. macrogamma* (Ev.), 2 — *A. mandarina* (Frr.)


This genus includes numerous species; it is widely spread, mainly in the Holarctic Region. In the Nearctic Region appear about twenty species belonging to this genus. In the Palaeartic Region is known seven species, the distribution of these is shown in figs. 25—27.

**Autographa gamma** *(Linnaeus)*

*Phalaena Noctua gamma* *Linnaeus*, 1758, Syst. Nat. ed. 10: 513

*Noctua pulchrina* *Haworth*, 1809, Lep. Brit.: 255

*Plusia gamminna* *Staudinger*, 1901, Cat. Lep. Pal.: 238.

In colour and wing pattern very variable.

Male genital armature is shown in fig. 84, that of female in fig. 138.

*A. gamma* (L.) occurs in whole of Palaeartic Region including extreme south and north. The species does not form the geographical subspecies, with exception for *A. gamma gamminna* (Stgr.) from the Balkans. However, this sub-species shows the genitalia similar to those in the typical form; in addition, intermediate forms between the two are observed. The individual examples of the species migrate to North America and the Antilles.

Caterpillar polyphagous; feeds on numerous species of herbs of several genera.

**Autographa nigrisigna** *(Walker)*, **comb. n.**


*Plusia gamma* auct. (nee Linnaeus, 1758).

This species is strikingly similar to the preceding one, but distinct by the rather black pattern in the forewing.

The male of this species is unknown to me. Female genitalia are shown in fig. 139.

*A. nigrisigna* (Wkr.) occurs in the southern-eastern part of the Palaeartic Region, from Kashmir throughout Tibet, China to Japan. In addition, it is reported from the northern part of the Indian peninsula. The species has been in a strong confusion with *A. gamma* (L.). According to the LEECH opinion, all the specimens coming from the far east, identified as belonging to *A. gamma* (L.), belong to the species under consideration.

Early stages unknown.
**Autographa purpureofusa** (HAMPSON), **comb. n.**

*Plusia purpureofusa* HAMPSON, 1894, Moths Ind. 2: 570.

I have had no opportunity to examine any specimen of this species. However, judging by the original description, it may be supposed to be a member of the genus *Autographa* HBN.

*A. purpureofusa* (Hmps.) occurs in Tibet, Southern-Western China, Sikkim and Assam.

Early stages unknown.

**Autographa v-aureum** (HÜBNER), **comb. n.**

*Noctua v-aureum* HÜBNER, 1802, Eur. Schmett. Noct. f. 281

*Noctua jota* HÜBNER, 1802, Eur. Schmett. Noct. f. 282 (see LINNAEUS, 1758), (n. præocc.)


*Plusia gammoides* SPEYER, 1875, Ent. Ztg., Stettin 36: 103

*Plusia percontatrix* STAUDINGER, 1888, Nord. Fjir.: 181

*Plusia buraeticana* STAUDINGER, 1892, Dtsch. ent. Z. Iris 5: 370.

This species shows a great variability of colour. Several colour aberrations are observed.

Male genital armature (fig. 85, 86). Uncus long, valva strongly elongate with tip broadened, cornutus large on a broad base.

Female genital armature is shown in fig. 140.

*A. v-aureum* (HBN.) appears in nearly whole of Palaeartic Region, with exception for the extreme south. Three subspecies were described. *A. v-aureum v-aureum* (HBN.) is known from all of Europe from the Iberian Peninsula up to Ural. *A. v-aureum buraeticana* (STGR.) ranges from Ural to the Pacific Ocean. The third subspecies, namely, *A. v-aureum urupina* BRYK occurs in the Kuril Is and Hokkaido, Japan.

Caterpillars polyphagous; they feed on several species of herbs.

**Autographa jota** (LINNAEUS), **comb. n.**


*Noctua protea* STOLL, 1782, Pap. Exot. 4: 244, pl. 100, f. M

*Noctua inscripta* ESPEER, 1787, Schmett. Eur. 4: 229, pl. 113, f. 5

*Noctua percontationis* TERRITSCHE, 1826, Eur. Schmett. 5 (3): 184

*Noctua ancora* FREYER, 1833, Neue Beitr. 1: 89, pl. 47


*Plusia monogramma* ALPHÉRACKY, 1887, Ent. Ztg. Stettin 47: 171

*Plusia amuraica* STAUDINGER, 1892, in ROMANOFF, Mém. Lépidop. 6: 549.
This species is very variable in its colour and the intensity of the wing pattern.

Male genital armature (fig. 87) resembling that of the preceding species. It is characterized by the strongly broadened apical portion of the valva and shorter clavus.

Female genital armature is shown in fig. 141.

_\textit{A. jota} (L.)_ appears in two subspecies which are spread nearly over all of the Palaearctic Region. \textit{A. jota jota} (L.) ranges from Spain throughout all of Europe, Central Asia and Siberia to Pacific Ocean. The other subspecies, namely, \textit{A. jota anatolica} (SCHWING.) is known from Asia Minor and Iran.

Caterpillars polyphagous, feed on numerous species of herbs.

**Autographa mandarina** (Freyer), comb. n.

\textit{Noctua mandarina} Freyer, 1846, Neue Beitr. 5: 164, pl. 479, f. 4


\textit{Plusia obscura} Oberthür, 1884, Ét. entom. 10: 27, pl. 3, f. 13.

Somewhat smaller and darker than the preceding species.

Male genital armature (fig. 88) is characterized by the proportionately narrow valva and small cornutus.

Female genital armature is shown in fig. 142.

_\textit{A. mandarina} (Frr.)_ appears in the wooded and forest-steppe areas in the central and eastern part of the Palaearctic Region. It ranges from Ural to Japan, Kuril Ilı and Kamtchatka. The most wetern localities of the species are environs of Kazan and Viatka.

Early stages unknown.

**Autographa macrogamma** (Eversman), comb. n.


\textit{Noctua sebastina} Freyer, 1842, Neue Beitr. pl. 455, f. 5.

This species is most resembling \textit{A. jota} (L.), differing by the more metallic olive ground colour of the forewing.

Male genital armature (fig. 89) is characterized by the broad valva, the elongate ampulla and the large cornutus with apex rounded.

Female genital armature is shown in fig. 143.

_\textit{A. macrogamma} (Ev.)_ occurs in the northern part of the Palaearctic Region. It ranges from Sweden and Lapland throughout the Northern-Eastern and Eastern Europe, Siberia to Pacific Ocean. The species is a typical member of the tajga fauna. In the Toll collection there is one male of the species under consideration labelled: „Syrien“. Most probably that specimen was mislabelled.

Early stages unknown.

Acta Zoologica nr 10
Genus: Cornutiplusia gen. n.

Plusia auct. (nec OCHSENHEIMER, 1817), partim
Phytometra HAMPSHON, 1913 (nec HAWORTH, 1809), partim.

Typus generis: Phalaena Noctua circumflexa LINNAEUS


Female genital armature. Papilla analis small, rounded. Gonapophysis anterioris and posterioris long. Ostium bursae broad with lamella postvaginalis distinct. Ductus bursae narrow, short. Bursa copulatrix thin, elongate; caudal portion with an elongate projection, so called pseudobursa.

This genus in facies and genitalia comes rather near the genus Autographa HBN.; it includes a single species, namely, C. circumflexa (L.). The distribution of this species is shown in fig. 28.

Fig. 28. Geographical distribution of the Palaearctic species of the genus Cornutiplusia gen. n. 1—C. circumflexa (L.).
Cornutiplusia circumflexa (Linnaeus), comb. n.

Phalaena Noctua circumflexa Linnaeus, 1767, Syst. Nat. ed. 12: 844
Plusia daubii Freyer, 1845, Neue Beitr.: 90, pl. 256, f. 2

This species shows a great variability of its colour and size.
Male genital armature is shown in fig. 90, that of female in fig. 144.
C. circumflexa (L.) appears in the steppes, semideserts and subtropical areas of the western part of the Palaearctic Region. In addition, the species is known from the savannas and semideserts in all of Africa and in India.
Caterpillars polyphagous, feed on numerous species of the family Solanaceae.

Genus: Syngrapha Hübner, 1821

Plusia Ochsenheimer, 1816, partim
Autographa Hampson, 1913 (nec Hübner, 1821).

Typus generis: Phalaena Noctua interrogationis Linnaeus


Fig. 29. Geographical distribution of the Palaearctic species of the genus Syngrapha Hbn. 1 — S. interrogationis interrogationis (L.), 2 — S. interrogationis groenlandica (Stgr.), 3 — S. interrogationis cinerea (Warr.), 4 — S. transbaicalensis (Stgr.), 5 — S. parilis (Hbn.)


A typical Holarctic genus. Its members show the borealpine distribution. Most of the species occurs in the Nearctic Region. The distribution of the Palaearctic species is shown in figs. 29 and 30.

![Geographical distribution of the Palaearctic species of the genus Syngrapha Hbn.](image)

Fig. 30. Geographical distribution of the Palaearctic species of the genus Syngrapha Hbn. 1 — S. aën (Hchw.), 2 — S. microgamma (Hbn.), 3 — S. diasema (Bsd.), 4 — S. sachalinensis (Mts.), 5 — S. nyiwnis (Mts.).

**Syngrapha interrogationis** (**LINNAEUS**)  

*Phalaena Noctua interrogationis LINNAEUS*, 1758, Syst. Nat. ed. 10: 513  
*Noctua aemula FARRICUS*, 1787, Man. Ins.: 162  
*Phalaena aurosignata DONOVAN*, 1808, Brit. Ins. 13, pl. 453, f. 1  
*Plusia borealis REUTER*, 1893, Acta Soc. Fauna Flora fenn. 9: 57  
*Syngrapha cinerea WARREN*, 1913, in SEITZ, Grossschmett. d. Erde 3: 346, pl. 64 b  

This species shows a great variability in its facies and genital armature as well. In most instances, this variability has an individual character and appears in the individual populations.
Male genital armature (figs. 91—93) is very variable, but especially the shape of the valva, the size of the ampulla and the armature of the cornuti.

Female genital armature is shown in fig. 145.

*S. interrogationis* (L.) appears in the marshes, peat-bogs and damp forests over all of the northern part of the Holarctic Region. The species shows several colour forms and four distinct geographical subspecies, namely, *S. interrogationis herschelensis* BENJ. from Canada, *S. interrogationis groenlandica* (STGR.) from Iceland and the two remaining subspecies occur in the Palaeartctic Region. The first of these, *S. interrogationis interrogationis* (L.) ranges from France and British Islands throughout the Northern and Central Europe and Siberia to Kamchatka, Hokkaido and Korea. The other subspecies, *S. interrogationis cinerea* WARR., occurs in the Pyrenees and the Southern-Western Alps (Lago Maggiore and Aosta).

Caterpillars feed on numerous species of the genera *Vaccinium* L., *Erica* L., *Calluna* L. and *Urtica* L.

**Syngrapha transbaicalensis** (STAUDINGER)

*Plusia transbaicalensis* STAUDINGER, 1892. Dtsch. ent. Z. Iris 5: 371


This species has hitherto been considered to be a subspecies of the preceding species. However, judging by the morphological differences and the distribution of the two, they are distinct from each other.

Male genital armature (fig. 94) is characterized by the more pointed valva, the smaller ampulla and V-shaped vinculum.

Female genital armature is shown in fig. 146.

*S. transbaicalensis* (STGR.) ranges from the basin of Lena and Baikal Lake to Kamchatka, Kuril IIs, Sakhalin and Ussuri.

Early stages unknown.

**Syngrapha parilis** (HÜBNER)

*Noctua parilis* HÜBNER, 1808, Eur. Schmett. Noct. f. 422


Because of the differences in the size of eyes and of the lack of the tufts of scales on tornus, HAMPSON excluded this species from the genus *Syngrapha* HBN. However, the above characters show a considerable variability in the individual specimens of the species. On the other hand, the genital armature is of a basic *Syngrapha*-shape. In fact, the species seems to be a member of the genus *Syngrapha* HBN.

Male genital armature is characterized (fig. 95) by the thick uncus, proportionately short valva and broad ampulla.

Female genital armature is shown in fig. 147.
S. parilis (HBK.) is a circumpolar species. In the Palaearctic Region the species is reported from Iceland, Sweden, Finnland, Arctic Ocean coasts and Novaja Zemlya.

Early stages unknown.

**Syngrapha diasema** (Boisduval)

*Plusia diasema* Boisduval, 1829, Ind. Meth.: 93


A circumpolar species.

Male genital armature (fig. 96) is characterized by the short uncus, small and broad valva, large ampulla and large, finger-like cornutus.

Female genital armature is shown in fig. 148.

*S. diasema* (BSD.) occurs in the Northern and Central Scandinavia, in the basin of Amur, in Kamchatka and the Thian-Shan Mts., where it comes over 2500 m. alt. Most probably, the species is very widely spread in the northern part of the Palaearctic Region, however, so far, the data on its occurrence are rather poor. In the Nearctic Region, *S. diasema* (BSD.) is reported from Labrador, Northern Canada and Alaska.

Caterpillars feed on various species of *Betula* L. and *Populus* L.

**Syngrapha a in** (Hochenwarht)


This species in facies comes near the preceding species, being distinct from it on the forewing pattern and the distinctly yellow hindwing.

Male genital armature (fig. 97) is characterized by the long uncus, narrow valva, symmetrical ampullae and very large and prong-shaped cornutus.

Female genital armature is shown in fig. 149.

*S. a in* (Hchw.) is a monophagous species confined to the species of the genus *Larix* L. The species occurs in the mountains of the Central Europe, in the Eastern Germany, Poland, and over all of Siberia in the mountains and the lowlands as well. In addition, it appears in the mountaineous forests of the Central Asia.

Caterpillars feed on various species of the genus *Larix* L.

**Syngrapha microgamma** (Hübner)


The species shows a rather considerable variability of the facies. Especially variable is the colour and the intensity of the wing pattern.

Male genital armature (fig. 98) is characterized by the narrow valva,
strongly broadened (especially at base) ampulla, and the large and heavily sclerotized cornutus.

Female genital armature is shown in fig. 150.

*S. microgamma* (HBN.) appears in two subspecies. *S. microgamma microgamma* (HBN.) appears locally in the Eastern Germany, Northern Poland, Scandinavia, the eastern coasts of the Baltic Sea, in Ural, in the mountains of the Central Asia and in Kamtchatka. Very possibly, this subspecies occurs throughout the Northern-Eastern Europe and in Siberia, however, so far we have no data to confirm this supposition. The other subspecies, namely, *S. microgamma nearctica* Ferg. occurs in Labrador and over all of the Western Canada.

Caterpillars feed on *Salix myrtilloides* L. and *S. rosmarinijolia* L.

**Syngrapha sachalinesis** (MATSUMURA), comb. n.


Unfortunately I have had no opportunity to examine any specimen of this species. Judging by the original description, the species comes near *S. interrogationis* (L.). Perhaps it is only a colour form of the latter.

*S. sachalinensis* (Mts.) has as yet been reported only from Ichinosawa and from Southern Sakhalin.

Early stages unknown.

**Syngrapha nyiwonis** MATSUMURA


This species is unknown to me. Judging by the original description, *S. nyiwonis* Mts. comes very near the preceding species.

*S. nyiwonis* Mts. is known from the Northern Sakhalin.

Early stages unknown.

**Genus: Caloplusia** SMITH, 1891

*Plusia* OCHSENHEIMER, 1816, partim.

Typus generis: *Phalaena hochewarthis* HOCHENWARTH

Palpus rather long; third joint short with apex rounded. Face convex. Antenna filiform. Forewing proportionately narrow. Tibiae of all the legs covered with spines. Abdomen broad, faintly flattened, with erect tufts of scales on segments 1—4.


Female genital armature. Papilla analis small. Gonapophyses anterioris

The genus is not numerous, occurring in the north of the Holarctic Region and in the high mountain ranges. The only non-Holarctic species is C. virgula (Blanch.) appearing in the Andes. Two species are known from the Nearctic Region, namely, S. inega (Grn.) and S. alticola (Wkr.). The distribution of the Palaearctic species of the genus in question is shown in fig. 31.

Fig. 31. Geographical distribution of the Palaearctic species of the genus Caloplusia Sm.
1 — C. hochenwarthi hochenwarthi (Hchw.), 2 — C. hochenwarthi lapponaris Schulze, 3 — C. hochenwarthi alaica (Galy.), 4 — C. devergens (Hbn.), 5 — C. composita (Warr.), 6 — C. tibetana (Stgr.).

Caloplusia hochenwarthi (Hochenwarth)

Noctua devergens Fabricius, 1787, Mant. Ins. 2: 162

Because of the strongly disjunctive distribution, the species shows considerable differentiation of its facies and the genitalia.

Male genital armature (figs. 99—101) is characterized by the long uncus, rather variable shape of the valva and variable ampulla.

Female genital armature is shown in figs. 152, 153.

C. hochenwarthi (Hchw.) appears in three subspecies differing from each other on the facies and the armature of the genitalia as well. C. hochenwarthi hochenwarthi (Hchw.) occurs in the Alps, Macedonia, Armenia, Caucasus, Ural,
the Northern-Eastern Siberia and in Kamchatka. *C. hochenwarthi lapponarisis* Schulze is known from Scandinavia. The third subspecies, namely, *C. hochenwarthi altaica* (Galy.) occurs in the mountains of the Central Asia from Thian-Shan, throughout Altai, Baikal Lake to the Central Amur.

Caterpillars feed on various species of the family *Umbelliferae*.

**Caloplusia composita** Warren


In genitalia similar to *C. hochenwarthi* (Hchw.), but decidedly distinct on facies, especially on the shape of the wing pattern.

Male genital armature (fig. 102) is characterized by the distinctly narrower valva, thinner ampulla and larger aedeagus than in the preceding species. Female genital armature is shown in fig. 153.


**Caloplusia tibetana** (Staudinger)

*Plusia tibetana* Staudinger, 1895, Dtsch. ent. Z. Iris 8: 329


This species comes very near *C. hochenwarthi* (Hchw.) and has been for a long time considered as only its subspecies.

Male genital armature (fig. 103) is characterized by the short uncus, narrow and elongate valva, and the juxta of somewhat different armature.

The female of this species is unknown to me.

*C. tibetana* (Stgr.) occurs throughout Tibet and in Kashmir. Early stages unknown.

**Caloplusia devergens** (Hübner)


This species is decidedly distinct on the facies and the genitalia from the remaining species of the genus; it appears to be a rather intermediate species between the genera *Syngrapha* Hbn. and *Caloplusia* Sm.

Male genital armature (fig. 104) is characterized by rather broad valva, conical and straight ampulla and small aedeagus.

Female genital armature is shown in fig. 154.

*C. devergens* (Hbn.) occurs in Lappland, Alps, Thian-Shan, Ala-Tau, Alai and Ili.

Caterpillars feed on numerous species of the genera *Silene* L., *Viola* L., *Plantago* L. and *Gewum* L.
Fig. 32—35. Male genital armatures: 32 — *Anadevidia peponis* (F.). „Japan“; 33 — *Anadevidia pyropia* (Btlr.). „Naga Hills“; 34 — *Chrysodeixis chalybes* (Dbt.). „Lombok, Sapit, 2000“, V—VI. 1896“. 
Fig. 36—39. Male genital armatures: 36 — Argyrogramma ornatissima (WKR.) „Java, Pen-galongan“, 37 — Argyrogramma circumscripta (Ffr.) „Sicilien“, 38 — Argyrogramma rutili-frons (WKR.) „Amurland“, 39 — Argyrogramma accentifera (LEF.) „Catalonien“.
Fig. 40—43. Male genital armatures: 40 — Argyrogramma agnata (Stgr.). „Amurland“, 41 — Argyrogramma albostriata (Br. & Gr.). „Java occident., Mons Gede, 4000‘. 1896“, 42 — Argyrogramma daubei (Bsd.). „Montpellier“, 43 — Trichoplusia ni ni (Hbn.). „Malaga“.
Fig. 44—47. Male genital armatures: 44 — *Diachrysia orichalcea* (F.). „Canarische Ins.“, 45 — *Diachrysia intermixta* (WARR.). „Sikkim“, 46 — *Plusia chrysitis* (L.). Typical form. „Podole, Rakulowa“, 47 — *Plusia chrysitis* (L.) ab. *generosa* STGR. Type. „Zeitan, Haradj. 1897“.
Fig. 48–51. Male genital armatures: 48 — *Plusia tutti* sp. n. „Podole, Rakulowa“, 49 — *Plusia nadeja* Os. „Ussurigebeit, 50 — *Plusia zosimi* (HBN.), „Podhorce k. Stryja. 15. VII. 1904“, 51 — *Plusia chryson* (Esp.). „Breslau. 1. VII. 1922“.
Fig. 56—59. Male genital armatures: 56 — Polychrysis esmeralda Or. „Siberia or. Chitaizki-Sterena”, 57 — Polychrysis splendidia (Btlr.). „Ussuri. 1907“, 58 — Panchrysis deaurata (Esf.). „Ungarn“, 59 — Panchrysis dives (Ev.). Patria ignota.
Fig. 60—63. Male genital armatures: 60 — *Panchry sia v-argenteum* (Esp.). „Schweiz“, 61 — *Panchry sia ornata* (Br.). „Amur“, 62 — *Chrysoptera c-aureum* (Kn.). „Berlin Umg. 7. VI. 1934“, 63 — *Plusidia cheiran thi cheiran thi* (Tausch.). „Zawiercie, ad lucem. 17. VII. 1923“. 

*Acta Zoologica nr 10*
Fig. 64—67. Male genital armatures: 64 — Plusidia cheiranii separanda (Warr.). „Amur“, 65 — Euchalcia variabilis (Pill.). „Ungarn“, 66 — Euchalcia uralensis (Ev.). „Uralsk“, 67 — Euchalcia modesta (Hbn.). „Ural“.
Fig. 72—75. Male genital armatures: 72 — Euchaleia renardi (Ev.), „Altai“, 73 — Euchaleia emichi (ROHFR.). „Pontus, Amasia“, 74 — Euchaleia dorsiflava (STDF.). Type. „Marden, Manés. 1891“, 75 — Euchaleia augusta (STGR.). Type. Patria ignota.
Fig. 76—79. Male genital armatures: 76 — *Euchalcia maria* (Stgr.). Type. „Jerusalem, Paulis. 1891“. 77 — *Euchalcia inconspicua* (Graes.). „Turkestan“, 78 — *Euchalcia tancrei* (Stgr.). „Kuku-Noor“, 79 — *Chrysaspidea festucae* (L.). „Karyntja, Celowiec. 1914“.
Fig. 84—87. Male genital armatures: 84 — Autographa gamma (L.). „Klütz, Pommern. 10. VIII. 1925“, 85 — Autographa v-aureum (Hbn.). „Karyntja, Celowiec. 1914“, 86 — Autographa v-aureum buraetica (Stgr.). „Chikoi“, 87 — Autographa jota (L.). „Karyntja, Celowiec“.
Fig. 88—91. Male genital armatures: 88 — *Autographa mandarina* (Frr.). „Ural“, 89 — *Autographa macrogamma* (Ev.). „Norway pol.“, 90 — *Cornuiplusia circumflexa* (L.). „Rossia merid. 1. IV. 1872“, 91 — *Syngrapha interrogationis interrogationis* (L.). „Tirol, Pitztal, 1350 m. 22. VII. 1931“.
Fig. 92—95. Male genital armatures: 92 — Syngapha interrogationis groenlandica (Stgr.). „Grönland“, 93 — Syngapha interrogationis cinerea Warr. „Spanien“, 94 — Syngapha transbaicalensis (Stgr.). „Transbaikal“, 95 — Syngapha paribis (Hbn.). „Labrador“.
Fig. 96—99. Male genital armatures: 96 — *Syngrapha diastema* (Bsd.), „Lapponia, Porjus Lulea. VII. 1914“; 97 — *Syngrapha ain* (Hchw.), „Sonnblickgebiet, Fleiss. 20. VII. 1938“; 98 — *Syngrapha microgamma* (Hbn.), „Antony, pow. Święciany. 8. VI. 1937“; 99 — *Caloplusia hochenwarthi hochenwarthi* (Hchw.). „Davos“.
Fig. 100—103. Male genital armatures: 100 — Caloplusia hochenwarthi lapponaris Schulte. „Lapponia finl. Muonio. 22. VII. 1928“, 101 — Caloplusia hochenwarthi altaica (Stcr.). „Kuku-Noor. 1908“, 102 — Caloplusia composita Warr. „Samarkant. 1909“, 103 — Caloplusia tibetana (Stcr.). „Tibet, Siminin Alp“. 
Fig. 104. *Caloplusia devergens* (Hbn.). „Davos“. Male genital armature.

Fig. 115—117. Female genital armatures: 115 — *Plusia tutti* sp. n. Paratype. „Strzałków. 11. VIII. 1917, leg. F. Schille“, 116 — *Plusia stenochrysis* (WARR.). „Amurland“, 117 — *Plusia chryson* (ESP.). „Italien".
Fig. 118—121. Female genital armatures: 118 — Macdunnoughia confusa (Steph.). "Pforzheim. 1928", 119 — Macdunnoughia crassiglina (Warr.). "Amurian", 120 — Polychrysis moneta (F.). "Carlsbad", 121 — Polychrysis aurata (Stgr.). Type. "Ussuri".
Fig. 126—129. Female genital armatures: 126 — *Euchalcia variabilis* (Pill.), „Frankreich“, 127 — *Euchalcia modesta* (Hbk.), „Ofen“, 128 — *Euchalcia consona* (F.), „Naumburg-Thüringen. 25. VI. 1929“, 129 — *Euchalcia italic* (Stgr.), „Abruzzen. 7000, 1882“.
Fig. 130—133. Female genital armatures: 130 — *Euchalcia herrichi* (Stgr.), "Ili, Centr. Asien", 131 — *Euchalcia emichi* (Rghfr.), "Taurus", 132 — *Euchalcia dorsiflava* (Stdf.), "Kurdistan", 133 — *Euchalcia inconspicua* (Graes.), "Alexandergebirge".
Fig. 134—137. Female genital armatures: 134 — *Chryspanidia festucae* (L.). „Podole, Rakulowa“, 135 — *Chryspanidia aemula* (Schiff. & D.). „Hochschwab“, 136 — *Chryspanidia bractea* (Schiff. & D.). „Tirol, Pitztal, 1350 m.“, 137 — *Chryspanidia excelsa* (Kr.). „Siberia orient., Chitaiziki Sterena“.
Fig. 138—140. Female genital armatures: 138 — *Autographa gamma* (L.), „Zawiercie. 25. VIII. 1923“, 139 — *Autographa nigrisigna* (Wkr.), „Japan“, 140 — *Autographa v-aureum* (Hbn.), „Oesterreich“.
Fig. 141—143. Female genital armatures: 141 — *Autographa jota* (L.). „Simplon. 15. VII. 1901“, 142 — *Autographa mandarina* (Frr.). „Kentey“, 143 — *Autographa macrogamma* (Ev.). „Norway pol.“.
Fig. 144—146. Female genital armatures: 144 — *Corutiplusia circumflexa* (L.). „Armenia“, 145 — *Syngrapha interrogationis interrogationis* (L.). „Hel, Jastarnia. 4. VIII. 1937“, 146 — *Syngrapha transbaicalensis* (STGB.). „Amur“. 
Fig. 147—150. Female genital armatures: 147 — *Syngapha parilis* (HBN.). „Labrador“, 148 — *Syngapha diasema* (Bsd.). „Doverfjeld, Kongsvold, 1895“, 149 — *Syngapha ain* (Hcnw.). „Sonnblickgebiet, Fleiss. 20. VII. 1938“, 150 — *Syngapha microgamma* (HBN.). „Rossia pol., 1895“. 
Fig. 151—154. Female genital armatures: 151 — Caloplusia hochenwarthi hochenwarthi (HCHW.). „Oberengadin“, 152 — Caloplusia hochenwarthi lapponaris SCHULTE. „Fennia, Petsamo. 2. VII. 1929“, 153 — Caloplusia composita WARR. „Alai-tal, am Koksu“, 154 — Caloplusia devergens (HERN.). „Zermatt. VIII. 1921“. 
REFERENCES


Note. All the faunistic papers are omitted in the above references.

STRESZCZENIE

Предъявляемая работа является систематической разработкой палеарктических видов Plusiinae и заодно дополнением и растирением работы McDunnoughа на всю территорию Голарктики. Автором дан зоогеографический анализ описываемой группы, ее филогенез и критический анализ предыдущих систем. Работу завершает систематический просмотр видов. Описаны три новые рода: Anadevidia gen. n. с родовым типом Noctua peponis F., Macdunnoughia 'gen. n. с родовым типом Plusia confusa Steph. и Cornutiplusia gen. n. с родовым типом Phalaena Noctua circumflexa Z. Кроме того автор описывает один новый вид Plusia tutti sp. n., до сих пор спутываемых с очень сходным P. chrysitis (L.). Род Abrostola Ochs. в работе опущен.
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