

A C T A Z O O L O G I C A
C R A C O V I E N S I A

Tom VI

Kraków, 15 XI 1961

Nr 10

Andrzej S. KOSTROWICKI

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

[With 154 text-figures]

Badania nad palearktycznymi gatunkami podrodziny *Plusiinae* (*Lepidoptera*, *Phalaenidae*)

**Исследования палеарктических видов подсемейства *Plusiinae*
(*Lepidoptera*, *Phalaenidae*)**

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*.

My thanks are due to Dr. J. JANISZEWSKA, the Director of the Zoological Museum of the Wrocław University, Dr. W. BAZYLUK, the Keeper of the Department of Entomology of the Institute of Zoology of the Polish Academy of Sciences in Warszawa, Dr. H. J. HANNEMANN, the Keeper of the Department of Lepidoptera of the Zoological Museum of the Humboldt University in Berlin, Dr. J. McDUNNOUGH of the Nova Scotia Museum of Science, Dr. S. TOLL of Katowice and Dr. G. WARNECKE of Hamburg, for the loan of specimens and for the helpful suggestions.

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 elipsoidal. 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 outside 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* (*Quadrifinae* auct). Forewing with areola defined among *r*3 and *r*4. *M*2 in the hindwing well developed, at base close to *m*3 and *cu*1. 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 caudad 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. Aedoeagus 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 *Argyrogramma* HBN., have the ductus bursae strongly elongate, sometimes longer than the total abdomen. Bursa copulatrix of various shape, sometimes with cervix bursae strongly developed.

Larvae rather large, usually lack hair. Head small. Mandibulae 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 subfamilies *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., *Argyrogramma* 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., *Syngrapha* HBN., and *Anagrapha* McDUNN. All the species placed here have spines on the tibiae, but the clavus in the male genital armature is decidedly reduced.

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 I

Region	Group			
	A	B	C	D
Exclusively Palaearctic species	1	—	8	56
Oriental-Palaearctic species	6	—	—	9
Species occurring in the Palaearctic, Oriental, Ethiopian and Australian Regions	2	—	—	1
Palaearctic-Oriental-Ethiopian species	—	1	—	2
Palaearctic-Ethiopian species	1	—	—	—
Holarctic-Oriental-Ethiopian species	1	—	—	—
Exclusively Nearctic species	—	1	21	25
Nearctic-Neotropical species	3	2	—	3
Nearctic-Neotropical-Australian species	—	—	—	1
Neotropical species	—	5	1	6
Oriental species	5	—	—	13
Oriental-Australian species	3	—	—	—
Oriental-Ethiopian-Australian species	2	—	—	—
Oriental-Ethiopian species	3	—	—	—
Ethiopian species	15	—	—	14
Australian species	13	—	—	5

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 Palaearctic 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

Region	Group			
	A	B	C	D
Exclusively Holarctic species	1	1	33	81
Holarctic species occurring also in one or more other regions	13	3	—	16
Non-Holarctic species	41	5	1	38
Total	55	9	34	135

The distribution of the species of the above mentioned groups in the Palaearctic Region is rather interesting. In the further discussion the group B will be omitted as it includes only one Palaearctic species, *Cornutiplusia 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 Palaearctic 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,

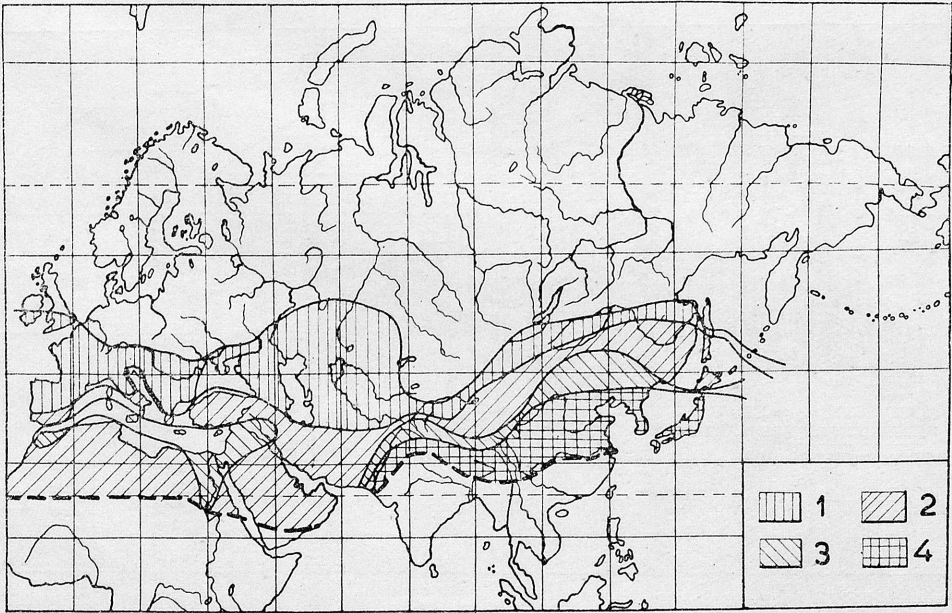


Fig. 1. Isospecific lines of the group A.

1 — >3 species, 2 — 3—8 species, 3 — 8—10 species, 4 — <10 species.

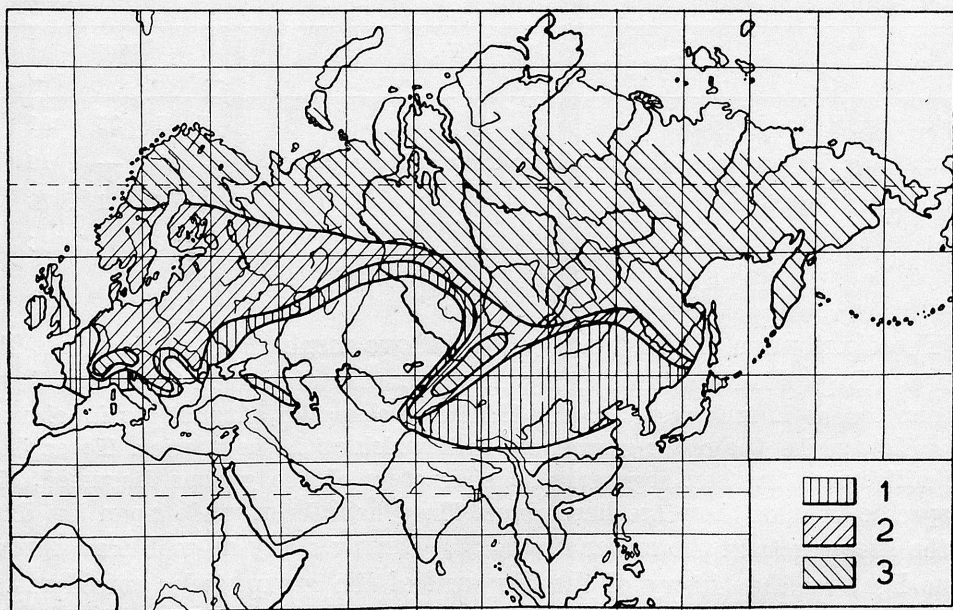


Fig. 2. Isospecific lines of the group C.
1 — 1 species, 2 — 2—4 species, 3 — 4—5 species.

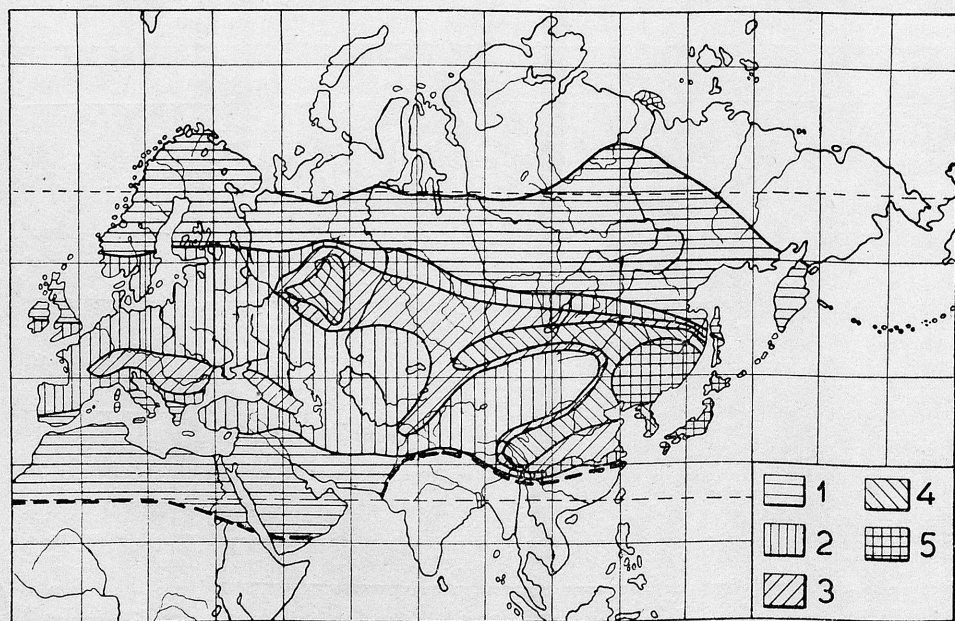


Fig. 3. Isospecific lines of the group D.
1 — <25 species, 2 — 20—25 species, 3 — 15—20 species, 4 — 10—15 species, 5 — >10 species.

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 Palaearctic Region except for *Argyrogramma circumscripta* (FRR.), and, rather close to it, *Argyrogramma rutilifrons* (WKR.), which occurs in the Palaearctic 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 Ids [*A. limbirena* (GUEN.) and *A. signata* (F.)]. Both *A. limbirena* (GUEN.) and *A. signata* (F.) probably established in the Canaries Ids., or, in a short time will become established there. Most of the remaining species of the group A are widely spread beyond the Palaearctic 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 Palaearctic 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 Mediterranean 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 Palaearctic 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 hohenwarthi lapponaris* SCHULTE, is widely spread in the north Palaearctic Region. This species, in the mountains of the west Palaearctic Region, appears as *C. hohenwarthi hohenwarthi* (HCHW.), and, in the mountains of the Central Asia, as *C. hohenwarthi alaica* (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 Vjatka. Judging by the considerable differentiation of the group in question observed in the Nearctic Region, the presence of common species in both Palaearctic- 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 Palaearctic 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 Palaearctic species [*Caloplusia devergens* (HBN.) and *Syngrapha ain* (HCHW.)] which have no parallel species in the Nearctic Region. The remainder of the species are common to the two regions, or the Palaearctic species have parallel species in the Nearctic Region, for example, *Caloplusia hochewarhi* (HCHW.) and *C. tibetana* (STGR.) have in the North America a parallel species *C. ignea* (GRT.); 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 Palaearctic 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. In fact, in the western part of the Palaearctic Region there is no endemic species which has no parallel species in the eastern part of that region. Thus, the Siberian species *Panchrysia ornata* (BR.) and *P. dives* (EV.) have a parallel species *P. v-argenteum* (ESP.); the Siberian *Polychrysia esmeralda* (OB.) has parallel European *P. moneta* (F.). The European *Plusia chrysis* (L.) is very close to the eastern three species, namely *P. nadeja* (OB.), *P. stenochrysis* (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 Palaearctic Region; this group originated totally in Asia Minor. On the other hand, numerous species widely spread in the eastern Palaearctic 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 *Macdunnoughia confusa* (STEPH.), *Chrysaspidia 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 *Macdunnoughia confusa* (STEPH.), 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 Palaearctic, western Palaearctic and even southern Palaearctic 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.

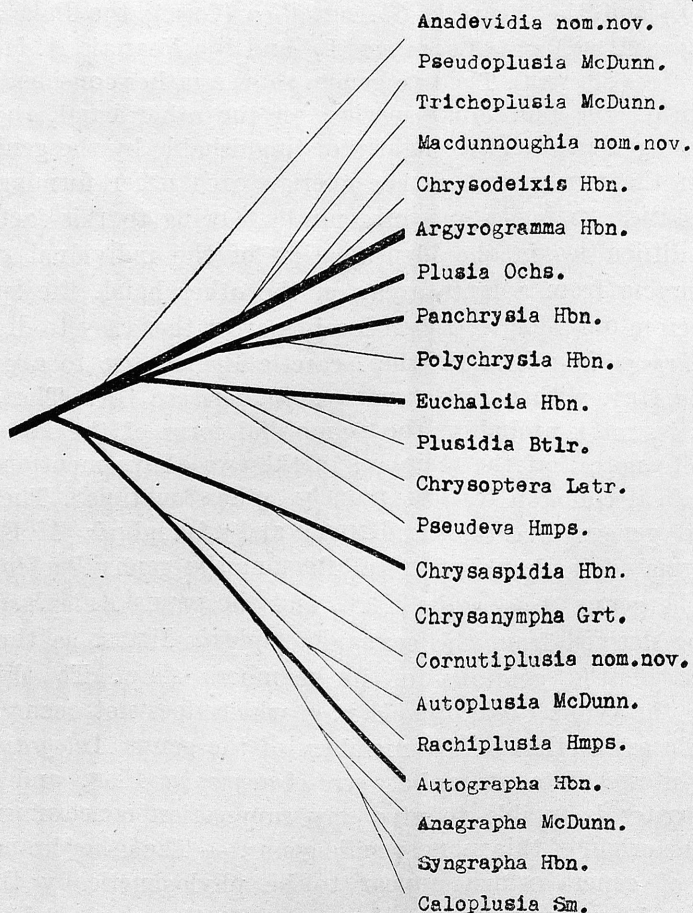
The writer supposes that the subfamily *Plusiinae* derived from a hypothetical ancestral group which was morphologically close to the present *Argyrogramma* HBN. The members of the latter are generally confined to the tropical area, which were only very slightly influenced by the Glacial Ages. Most probably, 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 *Diachrysia* 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), *Chrysodeixis* HBN., *Macdunnoughia* n. g., *Anadevidia* n. g. (similar facies), and *Diachrysia* HBN., (rather similar genital armature). The above mentioned genera, excepting *Diachrysia* HBN., and perhaps *Pseudoplusia* McDUNN., seem to be rather isolated in their systematic position from other *Plusiinae*. *Diachrysia* 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 *Autoplusia* 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 chrysitis* (L.) and *Panchrysia deaurata* (ESP.) have a rather similar shape of wings, the wing-pattern and the armature of the aedoeagus. 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 *Polychrysia* 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 Quarternary, but in any case, after the Palaearctic 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 Palaearctic 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 Palaearctic genus having a representative in the Nearctic Region is *Polychrysia* HBN. That species is *P. trabea* (SM.) which is much like the eastern Palaearctic *P. esmeralda* (OB.); the two are nearly indistinguishable from each other. Judging by the wide distribution of the latter in the north-western Palaearctic 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 *Polychrystia* 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 *Chrysoptera* LATR., has in both the Palaearctic 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 *Chrysaspidia* 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 Palaearctic Region and have the parallel species in the Nearctic Region. As the examples of such twin-species may be given the following: *Chrysaspidia festata* (GRAES.) occurring in the eastern Palaearctic Region, and the Nearctic species *Ch. putnami* (GRT.); the Palaearctic *Ch. festucae* (L.) and the Nearctic *Ch. nichollae* (HMPS.); the Palaearctic *Ch. bractea* (SCHIFF. & D.) and the Nearctic *Ch. metallica* (GRT.); the Palaearctic *Autographa v-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 *Chrysaspidia* HBN. in the Nearctic Region rise to a genus named *Chrysanympa* 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. praeccationis* (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 falcifera* (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 *Caloptusia* HBN., and, on the other hand, to the genus *Anagrapha* McDUNN. Such an intermediate species to the genus *Caloptusia* SM. seems to be *Caloptusia devergens* (HBN.), which has a coloration resembling that in the remaining species of the genus *Caloptusia* 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 *Caloptusia* 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 *Caloptusia* 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 *Caloptusia* SM., but of *Syngrapha* HBN. as well. — The intermediate species to the genus *Anagrapha* McDUNN. seems to be *Syngrapha orophila* HMPS. and *S. epigaea* (GRT.), the armature genitalia of these resemble those in the members of the genus *Anagrapha* 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 Nuctua*, which has commonly been accepted for all the species of the family *Noctuidae*. In 1816, for these species, OCHSENHEIMER erected two new genera, *Plusia* OCHS. and *Abrostola* OCHS. The former included 19 species. Of these, the species *Plusia chrysitis* (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, *Argyrogramma* HBN., *Chrysodeixis* HBN., *Chrysaspidia* HBN., *Diachrysia* HBN., *Panchrysia* HBN., *Agrapha* HBN., *Euchalcia* 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* LATR. with the generic type, *Ch. c-aureum* (KN.). In 1913 HAMPSON in his famous work, „Catalogue of the *Lepidoptera Phalaenae* 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. *Caloptusia* SM., generic type, *Phalaena Noctua hochenwarthi* HCHW. 4. *Rachiplusia* HMPS., generic

type, *Plusia nu* GUEN. 5. *Syngrapha* HBN., generic type, *Noctua ain* HCHW. 6. *Plusiopalpa* HOLL., generic type, *Plusia adrasta* FELD. 7. *Chrysoptera* LATR., generic type, *Phalaena c-aureum* KN. 8. *Eosporopteryx* DYAR, generic type, *Plusia thyatyroides* GUEN. 9. *Pseudeva* HMPS., generic type, *Deva purpurigera* WKR. 10. *Plusidia* BTLR., generic type, *Noctua cheiranthi* TAUSCH. 11. *Phytometra* HAW., generic type, *Phalaena Noctua festucae* L. 12. *Paleoplusia* HMPS., generic type *Plusia venusta* WKR. 13. *Abrostola* OCHS., generic type, *Phalaena Noctua triplasia* L. 14. *Mouralia* WKR., generic type, *Abrostola tinctoides* GUEN. 15. *Episema* TR., generic type, *Bombyx caeruleocephala* L. — The diagnosis of the species considered by HAMPSON and the keys to the identifications of the species are perfect, but the systematic division and the nomenclature is, in most instances, erroneous. The greatest error of this work was quite non arbitrary and against the rules of the designation of the generic types. In consequences, WARREN and DRAUDT, who accepted the HAMPSON propositions, made several errors. The errors made by HAMPSON are as follows: 1°. The genus *Omorphina* ALPH., does not belong to the subfamily *Plusiinae*, but is referable to *Erastrinae*. 2°. The designation of the species *Noctua parilis* HBN., as the generic type of the genus *Autographa* HBN., is incorrect as the generic type of that genus is *Phalaena Noctua gamma* L. 3°. The designation of the species *Noctua ain* HCHW. as the generic type of the genus *Syngrapha* HBN., is incorrect as CURTIS designated *S. interrogations* (L.) as the type of *Syngrapha* HBN. 4°. The designation of the species *Phalaena Noctua festucae* L., as the generic type of the genus *Phytometra* HBN., is the most important error in the work discussed as HAWORTH himself designated *Noctua viridaria* SCHIFF. & D. as the generic type of his genus; it is noticeable that *Noctua viridaria* SCHIFF. & D. is referable to the subfamily *Erastrinae*. The HAMPSON designation made a chaotic situation in the synonymy of the group in question.

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 hohenwarthi* HCHW.; *Syngrapha* HBN. with the generic type *Nuctua devergens* HBN.; and *Anagrapha* MCDUNN. with the generic type, *Plusia fal-cifera* 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.; *Chrysaspidia* 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.; *Eosphoropteryx* DYAR, with the generic type *Plusia thyatyroides* GUEN.; *Polychrysia* HBN., with the generic type *Noctua moneta* F.; *Pseudeva* HMPS., with the generic type *Deva purpurigera* WKR.; *Adeva* McDUNN., with the generic type *Autographa albavitta* OTTOL.; *Plusia* OCHS., with the generic type *Phalaena Noctua chrysitis* L.; *Agrapha* HBN., with the generic type *Agrapha 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) incorrrectly the species *Caloplusia devergens* (HBN.) to be the generic type of the genus *Syngrapha* 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 Palaearctic 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: *Argyrogramma* HBN., *Trichoplusia* McDUNN., *Pseudoplusia* McDUNN. D. Genera: *Autoplusia* McDUNN., *Rachiplusia* HMPS. E. Genera: *Plusia* OCHS., *Agrapha* HBN. F. Genus *Polychrysia* HBN. G. Genus *Autographa* HBN. H. „Genus No. 11“ including two species placed by McDUNNOUGH in the genus *Syngrapha* HBN., namely, *S. rectangula* (KIRBY) and *S. celsa* (H. EDW.). I. Genus *Chrysaspidia* HBN. J. Genus *Caloplusia* SM. K. Genera: *Syngrapha* HBN., *Anagrapha* 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 Palaearctic 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 revision, 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 Palaearctic 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 systematic 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 ommitance 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 Palaearctic Region. Of these, three species (mentioned in the General Part) are not indigenous to the Palaearctic fauna, being there accidental immigrants. Seven species belong to the genus *Abrostola* OCHS. which is ommitted in the present study. The author has rejected eight species, which are only subspecies of the known species or only colour forms of these; these are: *Syngrapha cinerea* WARR. (= *S. interrogationis* ssp. *cinerea* WARR.); *S. groenlandica* (STGR) [= *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 parabractea* HMPS. = [*Chrysaspidia excelsa* ssp. *parabractea* (HMPS.)]; *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* (DBL.), *Polychrysis esmeralda* (OB.), *Euchalcia italica* (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* HMPS., *P. sica* GRAES., *P. jessica* BTLR., *P. hebetata* BTLR., *P. hampsoni* LEECH and *P. purissima* 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.
- Forewing with tufts of erect scales absent 2.
2. Clavus in male genital armature elongated, in most instances with terminal portion club-shaped, sometimes linked to sacculus only with a transparent 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.
9. Vinculum strongly elongated, rather U-shaped or I-shaped 10.
- 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.
- Vinculum I-shaped. Sacculus without a sheet-like process.
. *Diachrysis* HBN.
11. Forewing with a golden or silvery speck, rather γ shaped
. *Autographa* HBN.
- 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. *Chrysaspidia* HBN.
- Valva with apex acuminate, expanding gradually basad. *Plusia* OCHS.
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 15.
- Ampulla well defined. *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* BTLR.
 —. 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 OCHSENHEIMER, 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.

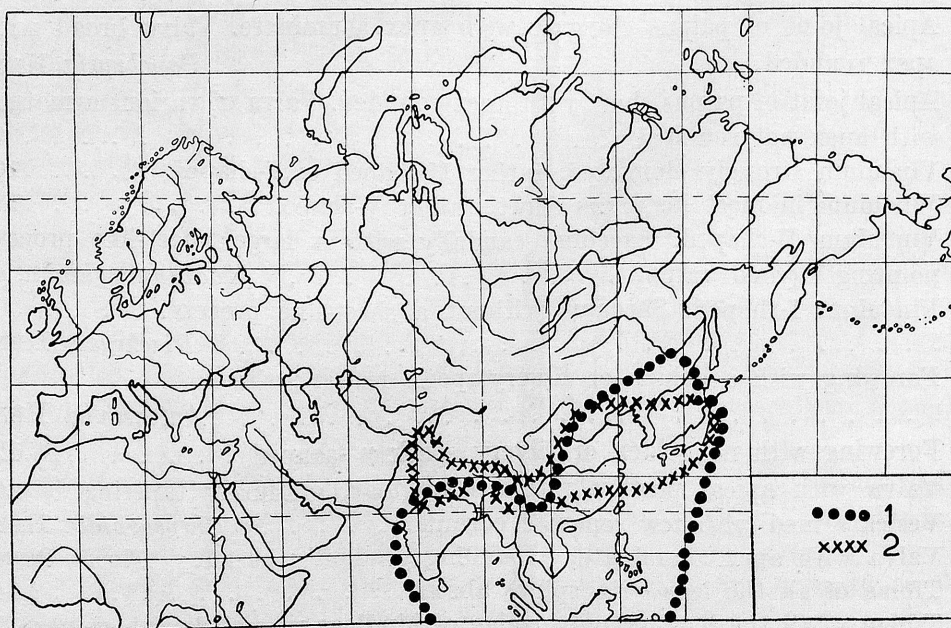


Fig. 4. Geographical distribution of the Palearctic species of the genus *Anadevidia* gen. n.
 1 — *A. peponis* (F.), 2 — *A. pyropia* (BTLR.)

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 agramma GUENÉE, 1852, Noct. 2: 337, 1136

Plusia inchoata WALKER, 1865, Cat. Lep. Het. Brit. Mus. 33: 841

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.**

Plusia pyropia BUTLER, 1879, Ann. Mag. nat. Hist. (5) 6: 367.

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 Palearctic 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

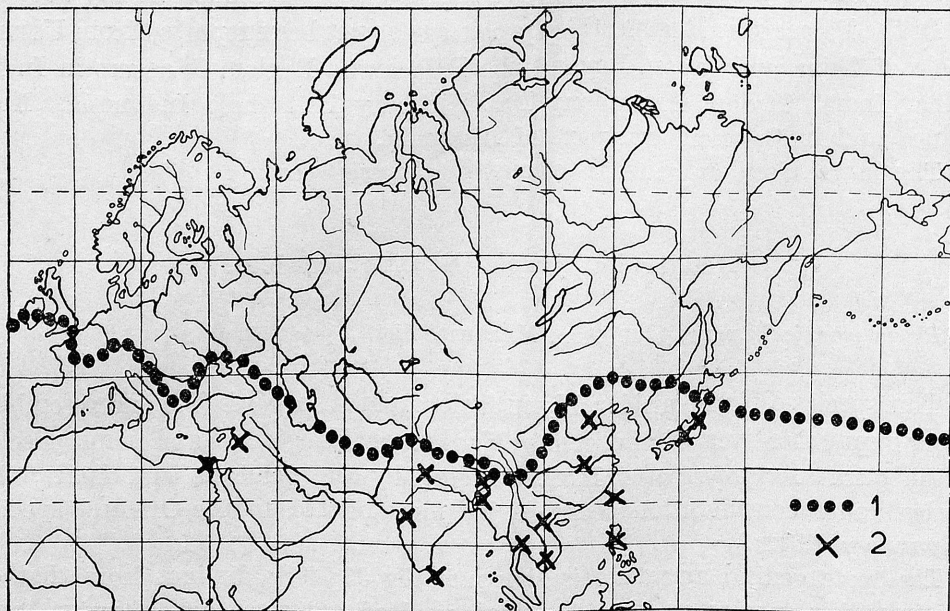


Fig. 5. Geographical distribution of the Palaeartic species of the genus *Chrysodeixis* HBN.

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 chalcytes (ESPER), **comb. n.**

Noctua chalcytes ESPER, 1789, Eur. Schmett. 4: 447, pl. CXLI, f. 3

Noctua questionis FABRICIUS, 1794, Ent. Syst. 3: 81

Nonctua bengalensis ROSSI, 1794, Mant. Ins. 2: 22, pl. III, f. 1

Plusia buchholzi PLOTZ, 1880, Ent. Ztg. Stettin 41: 298.

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, DIEFFENBACHS New Zealand Exp. 2: 285

Plusia verticillata GUENÉE, 1852, Noct. 2: 344

Plusia adjuncta WALKER, 1865, Cat. Lep. Het. Brit. Mus. 33: 840

Plusia dinava BETHUNE-BAKER, 1906, Novit. zool. 13: 270

Plusia cohaerens SCHULTZ, 1907, Int. ent. Zeit. 1: 32.

This species has hitherto been combined with *Ch. chalcytes* (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. chalcytes* (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 Palaearctic Region: Cairo, Syria, Pekin, Japan. It is due to the confusion [with *Ch. chalcytes* (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; outside 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,

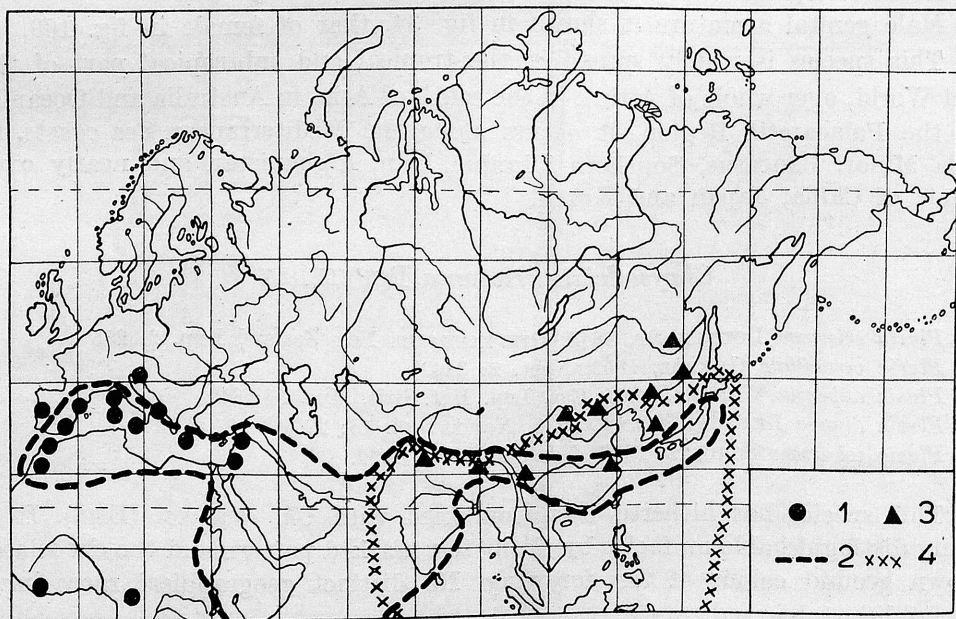


Fig. 6. Geographical distribution of the Palaearctic species of the genus *Argyrogramma* HBN.
1 — *A. accentifera* (LEF.), 2 — *A. daubei* (BSD.), 3 — *A. ornatissima* (WKR.), 4 — *A. albostrata* (BR. & GR.).

rather H-shaped. Aedeagus thin, elongate. Vesica armed with numerous cornuti.

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 Palaearctic Region includes nine species, the distribution of which is shown in fig. 6 and 7.

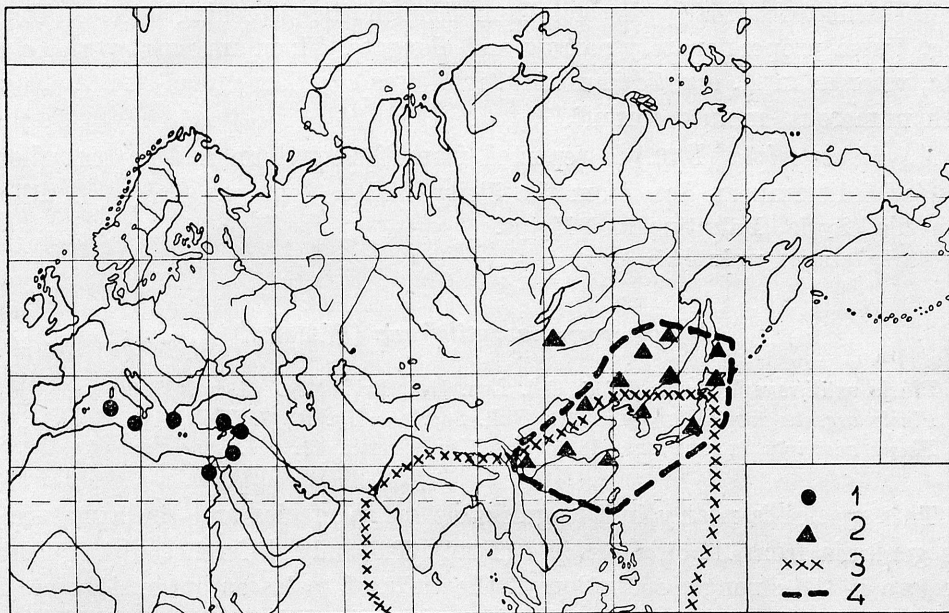


Fig. 7. Geographical distribution of the Palaearctic species of the genus *Argyrogramma* HBN. 1 — *A. circumscripta* (FRR.), 2 — *A. rutilifrons* (WKR.), 3 — *A. ochreate* (WKR.), 4 — *A. agnata* (STGR.).

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

Plusia ornatissima WALKER, 1858, Cat. Lep. Het. Brit. Mus. 15: 1786

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. verruca* (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 Palaearctic Region (Amur, Ussuri, Sichote-Alyn, Pekin, Korea, Central

China, Shen-si, Setschuan) 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 rutilifrons WALKER, 1858, Cat. Lep. Het. Brit. Mus. 15, no. 1785

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

Plusia adscripta STAUDINGER, 1888, Ent. Ztg., Stettin 48: 261.

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. accentifera (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.

***Argyrogramma ochreata* (WALKER), comb. n.**

Plusia ochreata WALKER, 1865, Cat. Lep. Het. Brit. Mus. 33, no. 839

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.

***Argyrogramma agnata* (STAUDINGER), comb. n.**

Plusia agnata STAUDINGER, 1892, in ROMANOFF, Mém. Lép. 6: 547

Phytometra chalcytes, HAMPSON, 1913, Cat. Lep. Phal. Brit. Mus. 13: 484 (nec ESPER, 1789) (partim).

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. chalcytes* (ESP.) or *Ch. eriosoma* (DOUBL.).

Early stages unknown.

***Argyrogramma albostrata* (BREMER & GREY), comb. n.**

Plusia albostrata BREMER & GREY, 1853, Beitr. Schmett. Nord China p. 18

Abrostola transfixa WALKER, 1858, Cat. Lep. Het. Brit. Mus. 15, no. 1783 (nec WALKER 1857, ibid., no. 884)

Plusia oxygramma HAMPSON, 1894, Moth Ind. 2: 575 (nec 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. albostrigata (BR. & GREY.) is distributed over all the Oriental Region and in Australia. From the Palaearctic 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 ciliaris WALKER, 1857, Cat. Lep. Het. Brit. Mus. 12, p. 928

Plusia indicator WALKER, 1857, Cat. Lep. Het. Brit. Mus. 12, no. 922

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 Palaearctic 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 Palaearctic Region and India; *A. daubei* ssp. *indicator* (WKR.) appears in the steppe and semi-desert areas of Africa and in Reunion, 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.

Male genital armature: Uncus long, thin. Valva proportionately broad with apex obtuse. Cucullus clothed with setae-like hairs. Clavus moderately long. Vinculum elongate, rather V-shaped. Aedeagus thin, elongate, with several more heavily sclerotized stripes.

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, its 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 albostrata* (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.

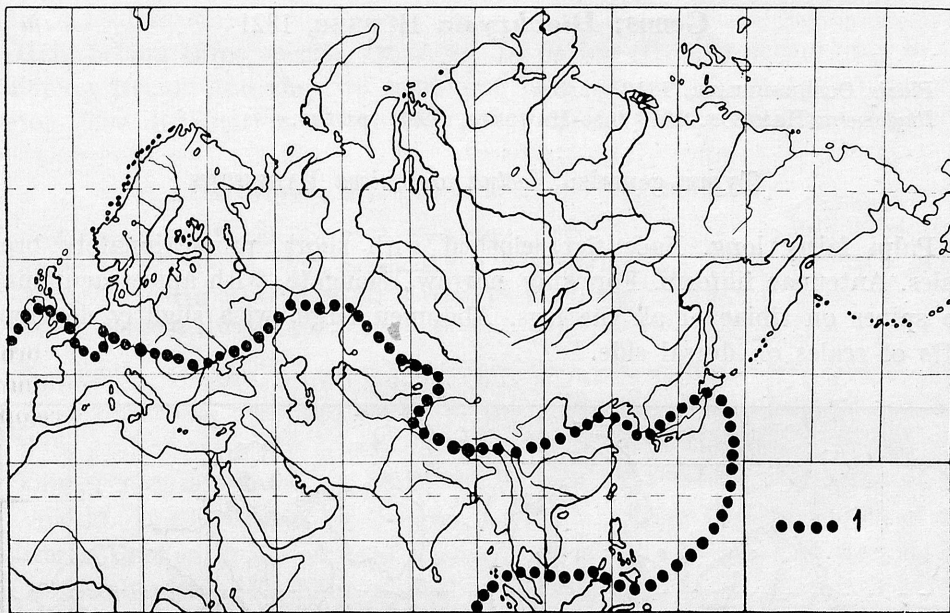


Fig. 8. Geographical distribution of the Palearctic species of the genus *Trichoplusia* McDUNN.

1 — *T. ni* (HBN.).

Trichoplusia ni (HÜBNER)

Noctua ni HÜBNER, 1802, Eur. Schmett. Noct. f. 284

Plusia humilis WALKER, 1857, Cat. Lep. Het. Brit. Mus. 12, no. 915

Plusia extrahens WALKER, 1857, Cat. Lep. Het. Brit. Mus. 12, no. 929

Plusia significans WALKER, 1857, Cat. Lep. Het. Brit. Mus. 12, no. 930

Plusia innata HERRICH-SCHÄFFER, 1868, Corresp.-Blatt zool.-min. Ver. Regensburg 22: 184

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 Palaearctic 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.

Larvae polyphagous; feed on numerous species of the genera: *Solanum* L., *Urtica* L., *Reseda* L., *Rumex* L., *Chenopodium* L., *Crepis* L., *Taraxacum* L., *Trifolium* L., *Senecio* L. and *Glossyphium* L.

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.

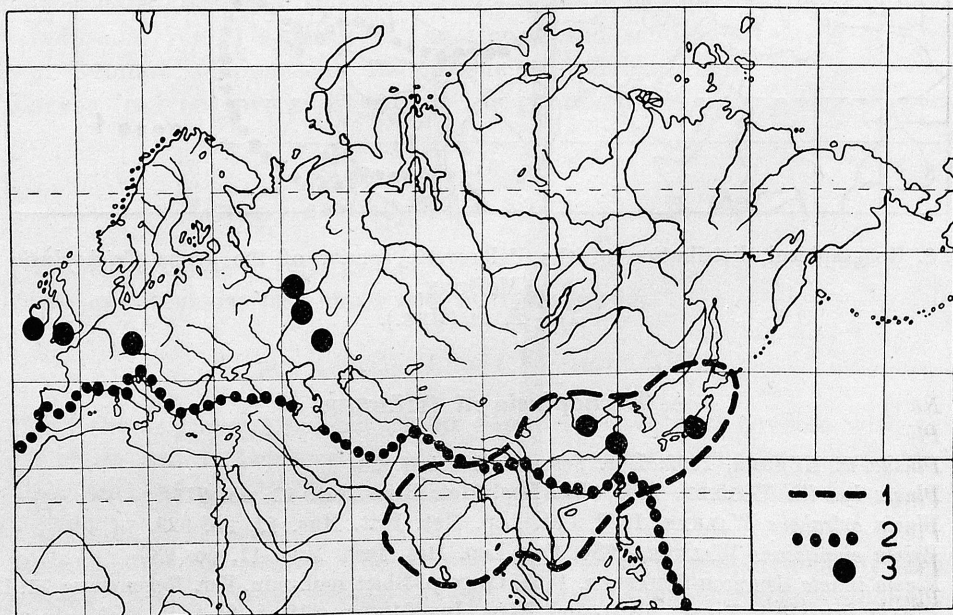


Fig. 9. Geographical distribution of the Palaearctic species of the genus *Diachrysia* HBN.
1 — *D. intermixta* (WARR.), 2 — *D. orichalcea* (F.), 3 — *D. orichalcea* (F.), isolated localities.

Male genital armature: Uncus very long and thin. Valva decidedly elongate, with apices club-shaped dilated. Cucullus clothed with setae-like hairs. Ampulla proportionately short, straight. Clavus long. Vinculum elongate, with apex dilated in form of a small sucker. Aedeagus elongate, thin. Vesica armed with cornuti of various shapes.

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.

***Diachrysia 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

Noctua aurifera HÜBNER, 1821, Eur. Schmett. Noct. f. 463.

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 Palearctic Region it appears along the sea-shores of the Mediterranean Sea, in Madeira, the Azores, the Canaries Is., 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.

***Diachrysia intermixta* (WARREN) comb. n.**

Phytometra intermixta WARREN, 1913, in SEITZ, Grossschmett. d. Erde. 3: 357, pl. 64 g

Phytometra brachyhalcea HAMPSON, 1913, Cat. Lep. Phal. Brit. Mus. 13: 481, pl. 237, f. 18?

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 brachyhalcea* HMPS. is synonymous with the species under consideration, however, HAMPSON states that his *Phy-*

tometra 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* HBN. The specimens of *Dichrysia intermixta* (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 *Dichrysia orichalcea* (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 HÜBNER, 1821

Phytometra HAMPSON 1913 (nec HAWORTH, 1809), partim.

Typus generis: *Phalaena Noctua chrysitis* LINNAEUS

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

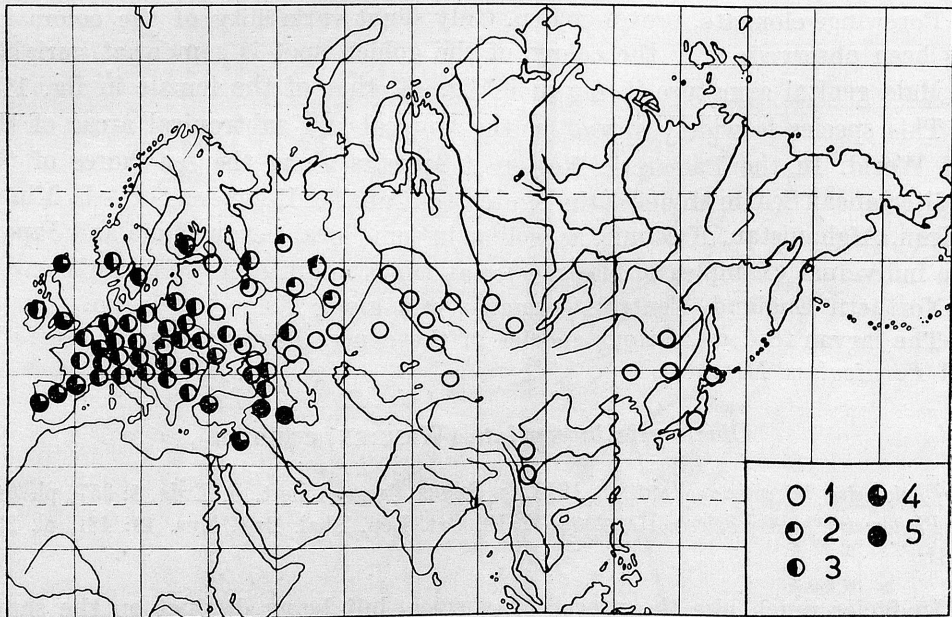


Fig. 10. Geographical distribution of the Palaearctic species of the genus *Plusia* OCHS. 1 — *P. tutti* spec. nov., 2—4 — Localities where *P. tutti* sp. n. and *P. chrysitis* (L.) occur together, 5 — *P. chrysitis* (L.).

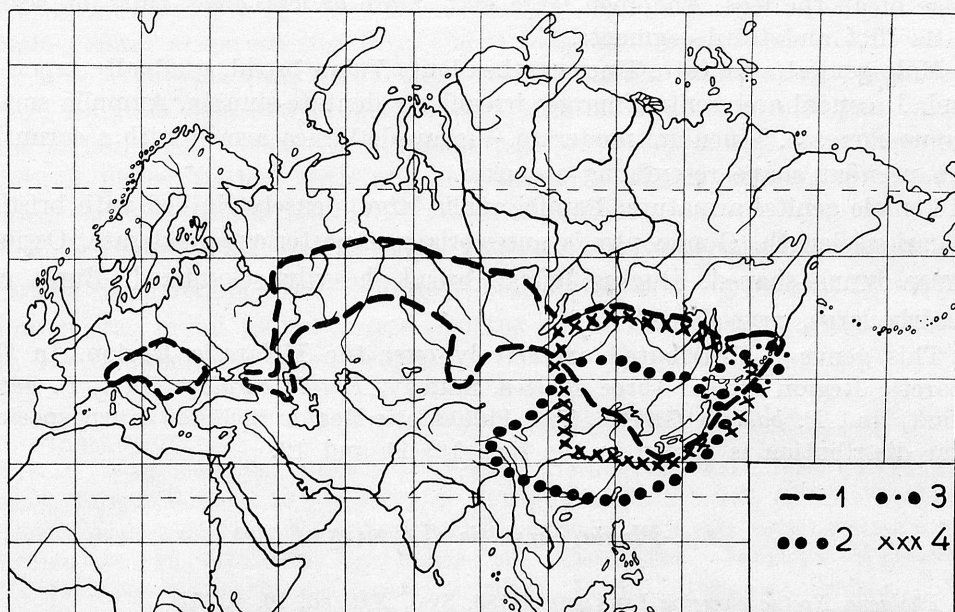


Fig. 11. Geographical distribution of the Palearctic species of the genus *Plusia* OCHS.
1 — *P. zosimi* (HBN.), 2 — *P. stenochrysis stenochrysis* (WARR.), 3 — *P. stenochrysis multauri* (BRYK.), 4 — *P. leonina* (OB.).

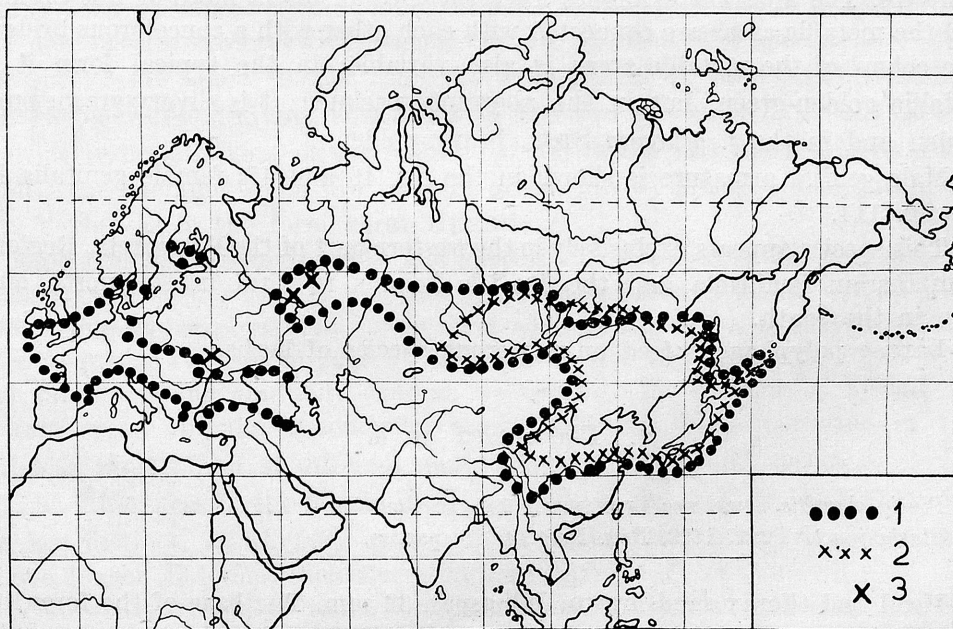


Fig. 12. Geographical distribution of the Palearctic species of the genus *Plusia* OCHS.
1 — *P. chryson*, 2 — *P. nadeja* OB., 3 — *P. nadeja* OB., isolated localities.

tibiae of all the legs. Abdomen large with more or less erect tufts of scales on its first and third segments.

Male genital armature: Uncus rather long. Valva broad, gradually tapering caudad; caudal and ventral margin irregularly dentate-sinuate. Ampulla small. Clavus elongate. Vinculum moderate, V-shaped. Vesica armed with a cornutus of a peculiar shape resembling a sucker.

Female genital armature: Papilla analis large, densely clothed with bristles of various length. Gonapophysis anterioris and posterioris moderate. Ostium bursae funnel-shaped. Ductus bursae broad, heavily sclerotized. Bursa copulatrix large, pear-shaped.

This genus is distributed exclusively over the Holarctic Region. In the Nearctic Region appear three species, namely, *Plusia aeroides* GRT., *P. aerea* (HBN.) 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 STAUDINGER, 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.

Female genital armature (fig. 115). Papilla analis large, clothed with hairs of various size. Gonapophysis anterioris and posterioris proportionately short. Ostium bursae broad funnel-shaped. Ductus bursae broad and heavily sclerotized. Bursa copulatrix large, round.

Holotype — male: Podole, Rakulowa, ex coll. KAMIENIECKI, Gen. Slide No. 983 (coll. IZPAS, Kraków).

Typoids — one male: Ste. Marie a. M., France, Hte-Rhin, 23. VIII. 1938, leg. MEIER; one male: Tatry, Zakopane, 30. VI. 1937, leg. FUDAKOWSKI (both in coll. IZPAS, Kraków); one male: Podole-Miodobory, Kozaczyzna koło Okna, 8. VI. 1939, leg. ŚWIDERSKI; one female: Strzałków, 11. VIII. 1917, leg. SCHILLE; one male: Podkowa Leśna pr. Warszawa, 16. VI. 1951, leg. ŚWIDERSKI; one female: Strzałków, 12. VIII. 1929, leg. SCHILLE (coll. IZPAS, Warszawa); one male: Breslau, leg. KRANNICH (coll. Zoological Museum of the Wrocław University, Wrocław).

The new species has hitherto been confused with *Plusia chrysitis* (L.), especially with *P. chrysitis* f. *juncta* TUTT. Both the new species and *P. chrysitis* ab. *juncta* 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. tutti* 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. tutti* 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-*chrysitis*-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. chrysitis* (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. chrysitis* (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. chrysitis* (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. chrysitis* (L.) is from Krasnoufimsk, Ural, and Kotlas, Oparino and Vjatka in the European part of the USSR. In Asia Minor, Caucasus and Iran the dominant species is *P. chrysitis* (L.). It appears there in numerous colour forms, e. g. *P. chrysitis* 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 Siberia, Khina, Korea and Japan [*P. stenochrysis stenochrysis* (WARR.)] and in the Kuri Is and Hokkaido [*P. stenochrysis multauri* (BRYK)].

Early stages unknown.

Plusia nadeja OBERTHÜR

Plusia nadeja OBERTHÜR, 1880, Ét. entom. 5: 84, pl. 3, f. 10
Plusia chrysitis HAMPSON, 1913, Cat. Lep. Phal. Brit. Mus. 13: 579, partim (nec LINNEAUS, 1758).

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 metallically 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)

Noctua zosimi HÜBNER, 1822, Eur. Schmett. Noct. f. 651.

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* OB., 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, Dobrudscha, 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

Noctus orichalcea HÜBNER, 1790, Eur. Schmett. Beitrag, 2 (1): 28, pl. 4, f. W

Noctua aerifera SOWEBY, 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 *Panchrysia* 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 Palaearctic 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, Ét. entom. 10: 26, pl. 3, f. 11

Plusia bieti OBERTHÜR, 1884, Ét. entom. 10: 27

Plusia humeralis BUTLER, 1886, Trans. ent. Soc. London 1886: 135.

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 Palaearctic Region; it ranges from Bajkal to Central China, Japan and Kuril IIs. 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. (nec OCHSENHEIMER, 1816, partim)

Phytometra HAMPSON, 1913 (nec 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.

Male genital armature. Uncus short and thin. Valva proportionately short with caudal margin dentate-sinuate. Ampulla large, prong-like curved. Caudal margin of sacculus in form of a long sheet decidedly protruding beyond valva. Clavus long with apex club-shaped broadened. Vinculum strongly elongate, rather U-shaped. Vesica armed with numerous cornuti.

Female genital armature. Papilla analis large and elongate, clothed with not numerous, rather long bristles. Gonapophysis anterioris and posterioris long. Dorsal side of ostium bursae with a large, rather triangular, heavily sclerotized, clothed with minute teeth plate. Ductus bursae short, heavily sclerotized. Bursa copulatrix elongate with a large lamina dentata.

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

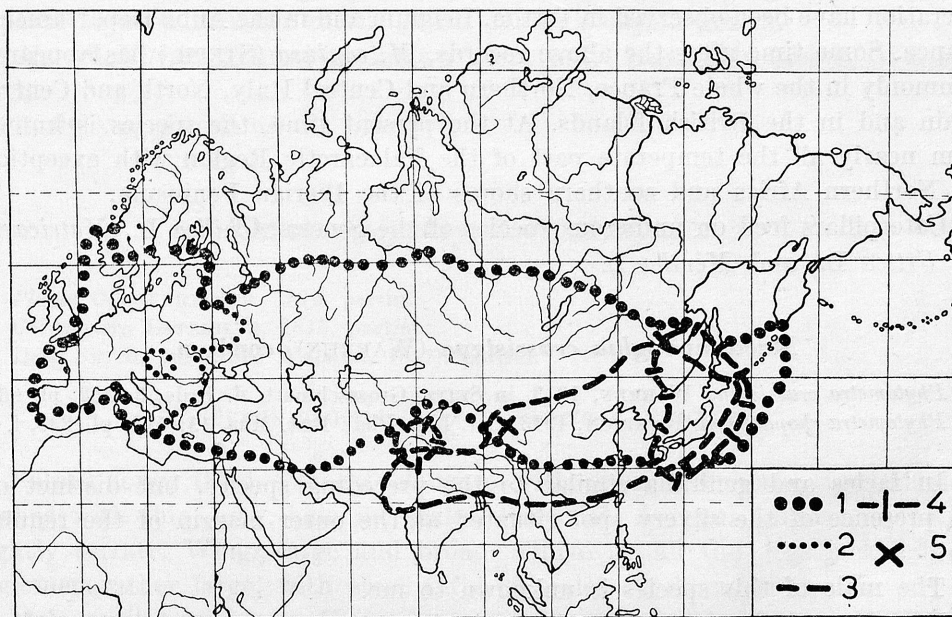


Fig. 13. Geographical distribution of the Palearctic species of the genus *Macdunnoughia* gen. n.

1 — *M. confusa* (STEPH.) present borders, 2 — *M. confusa* (STEPH.) borders till 1890, 3 — *M. crassisigna* (WARR.), 4 — *M. camptosema* (HMPS.), 5 — *M. schalisema* (HMPS.).

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

Noctua circumflexa ESPER, 1788, Eur. Schmett. 4, pl. 111, nom. praeocc.

Plusia confusa STEPHENS, 1850, Spec. Brit. Anim. 5: 291

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 Palaearctic 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 Palaearctic 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 crassisigna* (WARREN), comb. n.**

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

Phytometra rhopalosema HAMPSON, 1913, Cat. Lep. Phal. Brit. Mus. 13: 513, pl. 238, f. 6.

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. crassisigna (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.**

Phytometra camptosema HAMPSON, 1913, Cat. Lep. Phal. Brit. Mus. 13: 523, pl. 238, f. 16.

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 Wrocław there are several specimens from Amur.

Early stages unknown.

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

Phytometra schalisema HAMPSON, 1913, Cat. Lep. Phal. Brit. Mus. 13: 537, pl. 238, f. 23.

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: *Polychrystia* HÜBNER, 1821

Plusia OCHSENHEIMER, 1816, partim

Chrysoptera LATREILLE, 1815, partim

Deva SMITH, 1893 (nec WALKER, 1857), partim.

Typus 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.

Male genital armature. Uncus long and proportionately thin. Valva broad and short with apex rounded. Ampulla thin and elongate. Clavus fairly short. Vinculum small, V-shaped. Vesica armed with a single, large cornutus.

Female genital armature. Papilla analis large, clothed with long bristles. Gonapophysis anterioris and posterioris long with apices pointed. Ostium bursae funnel-like broadened. Ductus bursae broad and short. Bursa copulatrix elongate, gradually tapering towards polus bursae.

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 *Polychrystia* (HBN.). In the Palaearctic 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.

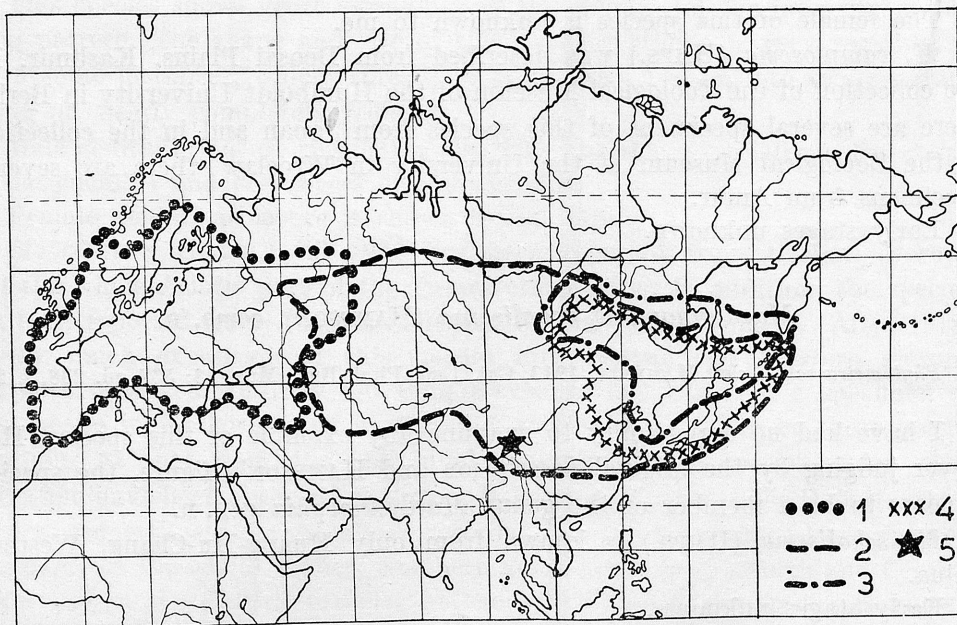


Fig. 14. Geographical distribution of the Palearctic species of the genus *Polychrystia* HBN.
1 — *P. moneta* (F.), 2 — *P. esmeralda* (OB.), 3 — *P. aurata* (STGR.), 4 — *P. splendida* (BTLR.),
5 — *P. aureus* (B.-H.).

Polychrystia 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.

Polychrystia esmeralda (OBERTHÜR)

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

Chrysoptera moneta HAMPSON, 1913, Cat. Lep. Phal. Brit. Mus. 13: 444, partim.

This species has hitherto been considered as a subspecies of *P. moneta* (F.). Both *P. moneta* (F.) and *P. esmeralda* (OB.) are distinct from each other on their facies and on the genitalia as well. The irroration 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 Finland.

Early stages unknown.

***Polychrysia splendida* (BUTLER), comb. n.**

Deva splendida BUTLER, 1878, Ann. Mag. nat. Hist. (5) 1: 203

Plusia intractata STAUDINGER, 1888, Ent. Ztg. Stettin 48: 262.

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. splendida (BTLR.) 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.

***Polychrysia aurata* (STAUDINGER), comb. n.**

Plusia aurata STAUDINGER, 1888, Ent. Ztg. Stettin 48: 260.

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 *Polychrysia* 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.

***Polychrysia aureus* (BANG-HAAS), comb. n.**

Chrysoptera aureus BANG-HAAS, 1927, Horae Macrolep. 1: 91.

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: *Panchrysia* HÜBNER, 1821

Plusia OCHSENHEIMER, 1816, partim

Phytometra, HAMPSON, 1913 (nec HAWORTH, 1809), partim.

Typus generis: *Noctua deaurata* ESPER

Palpus long, slightly curved. Apical joint elongate with apex faintly acuminate. 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.

Male genital armature. Uncus thin and elongate. Valva broad and short with apex rounded. Ampulla thin, straight. Vinculum small, V-shaped. Clavus

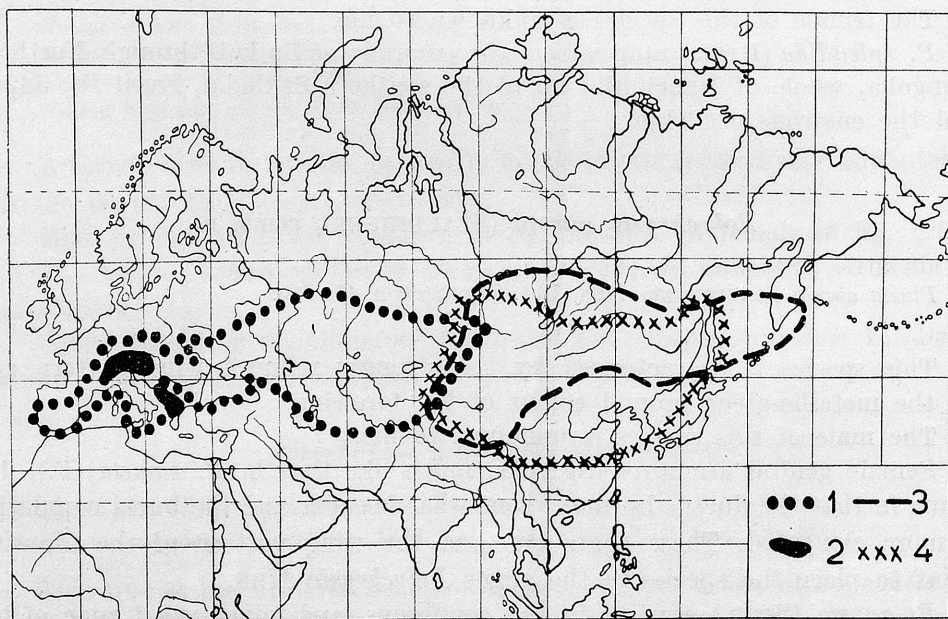


Fig. 15. Geographical distribution of the Palaearctic species of the genus *Panchrysia* HBN.
1 — *P. deaurata* (ESP.), 2 — *P. v-argenteum* (ESP.), 3 — *P. dives* (EV.), 4 — *P. ornata* (BR.).

moderate. Vesica armed with numerous minute cornuti and a single long cornutus.

Female genital armature. Papilla analis broad, clothed with long hairs. Gonapophysis anterioris and posterioris rather short. Ostium bursae funnel-shaped broadened. Ductus bursae strongly elongate, thin. Bursa copulatrix large.

The species referable to this genus, with exception of the Ethiopian *P. sestertia* (FEID.), are distributed only in the Palaearctic Region. The geographical distribution of the Palaearctic 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

Noctua aurea HÜBNER, 1802, Eur. Schmett. Noct. f. 288

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. aquilegifolium* L.

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

Plusia dives EVERSMANN, 1844, Bull. Soc. Nat. Moscou 3: 596.

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 Palaearctic 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

Noctua mya HÜBNER, 1802, Eur. Schmett. f. 275.

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-steppe 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. (nec OCHSENHEIMER, 1816), partim

Deva WALKER, 1857, partim.

Typus generis: *Phalaena Noctua c-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.

Male genital armature. Uncus long. Valva broad. Ampulla elongate, slightly arched. Clavus very short in form of a rounded projection. Vinculum rather large, V-shaped. Vesica armed with numerous cornuti.

Female genital armature. Papilla analis small, covered with numerous minute bristles. Gonapophysis anterioris and posterioris short. Ostium bursae broad with a heavily sclerotized list on ventral side. Ductus bursae short, tapering gradually basad. Bursa copulatrix rather small.

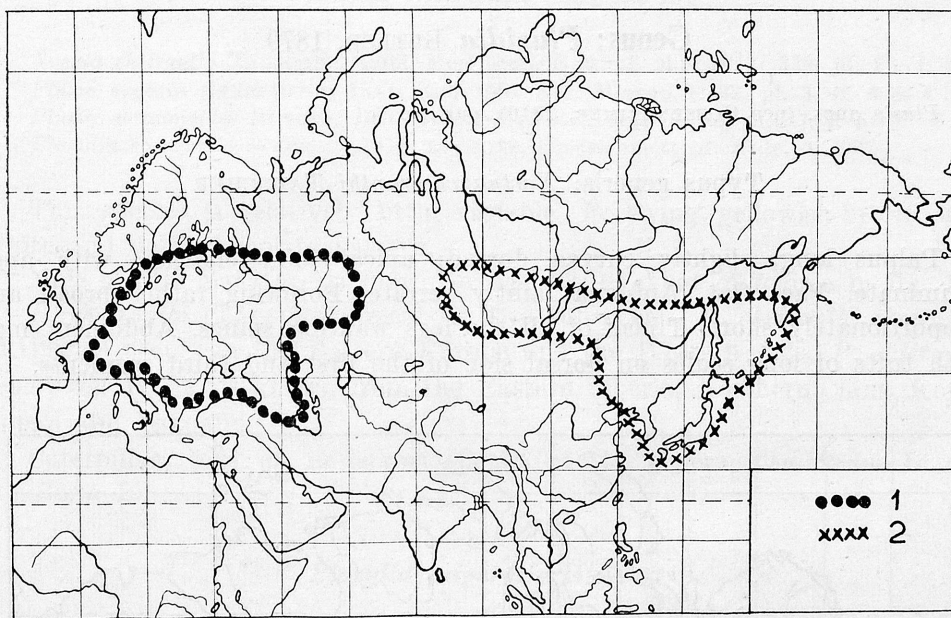


Fig. 16. Geographical distribution of the Palearctic species of the genus *Chrysoptera* LATR.
1 — *Ch. c-aureum* (KN.), 2 — *Ch. c-aureum micadina* (BTLR.).

The genus *Chrysoptera* LATR. includes only one species occurring exclusively in the Palearctic 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
Noctua concha FABRICIUS, 1787, Mant. Ins. 2: 161.

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 Palearctic 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 Is and Southern Kamtchatka.

Caterpillars feed on *Thalictrum aquilegifolium* 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.

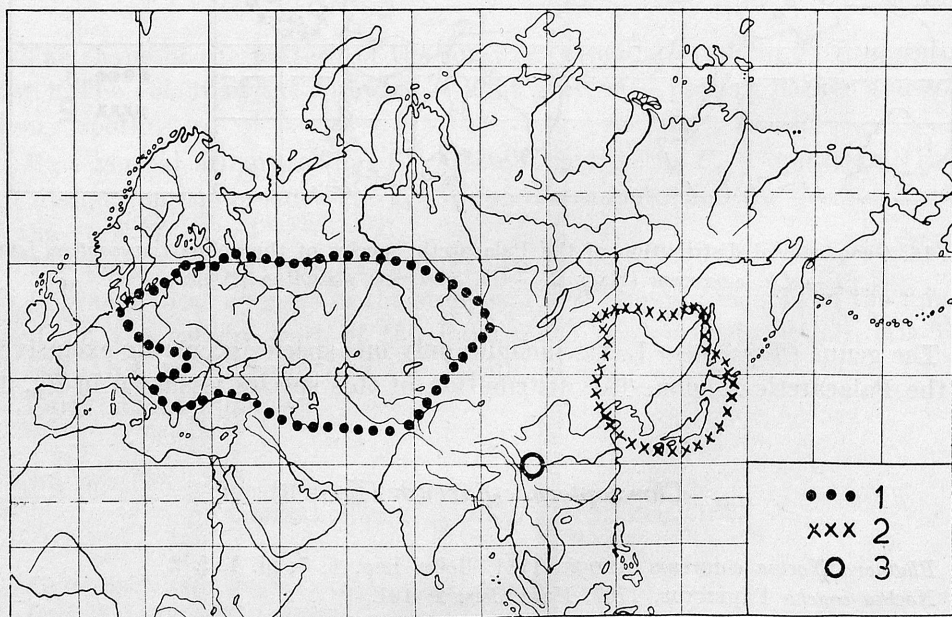


Fig. 17. Geographical distribution of the Palearctic species of the genus *Plusidia* BTLR. 1 — *P. cheiranthi cheiranthi* (TAUSCH.), 2 — *P. cheiranthi separanda* (WARR.), 3 — *P. imperatrix* (DRT.).

Male genital armature. Uncus long. Valva broad with apex rounded. Ampulla long. Clavus in shape of a strongly folded projection. Vinculum V-shaped. Vesica armed with cornuti of various size.

Female genital armature. Papilla analis large. Gonapophysis anterioris and posterioris short. Ostium bursae broad, folded. Ductus bursae narrow with basal portion heavily sclerotized. Bursa copulatrix narrow and elongate.

This genus includes two species occurring exclusively in the Palearctic Region. The distribution of the two is shown in fig. 17.

***Plusidia cheiranthi* (TAUSCHER)**

Noctua cheiranthi TAUSCHER, 1809, Mém. Soc. Natural. Moscou 2: 322, pl. 20, f. 6

Plusia eugenia EVERSMAAN, 1841, Bull. Soc. Nat. Moscou 1: 32, pl. 3, ff. 3 & 4

Plusia abrostoloides BUTLER, 1879, Ill. Heter. Brit. Mus. 3: 28, pl. 47, f. 5

Plusidia separanda WARREN, 1913, in SEITZ, Grossschmett. d. Erde, 3: 357.

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. cheiranthi (TAUSCH.) appears in two subspecies. *P. cheiranthi cheiranthi* (TAUSCH.) occurs in the Eastern Europe and the Western Asia. *P. cheiranthi 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**

Plusidia imperatrix DRAUDT, 1950, Mitt. Münch. ent. Ges. 40: 155, pl. 9, f. 19.

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

Early stages unknown.

Genus: *Euchalcia* HÜBNER, 1821

Plusia OCHSENHEIMER, 1816, partim

Phytometra HAMPSON, 1913 (nec HAWORTH, 1809), partim

Adeva 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.

Male genital armature. Uncus long, rather thick. Valva broad with apical portion rounded. Ampulla straight. Clavus in form of a small, basally broadened, cylindrical process. Vinculum rather large, V-shaped. Vesica armed with cornuti of various size.

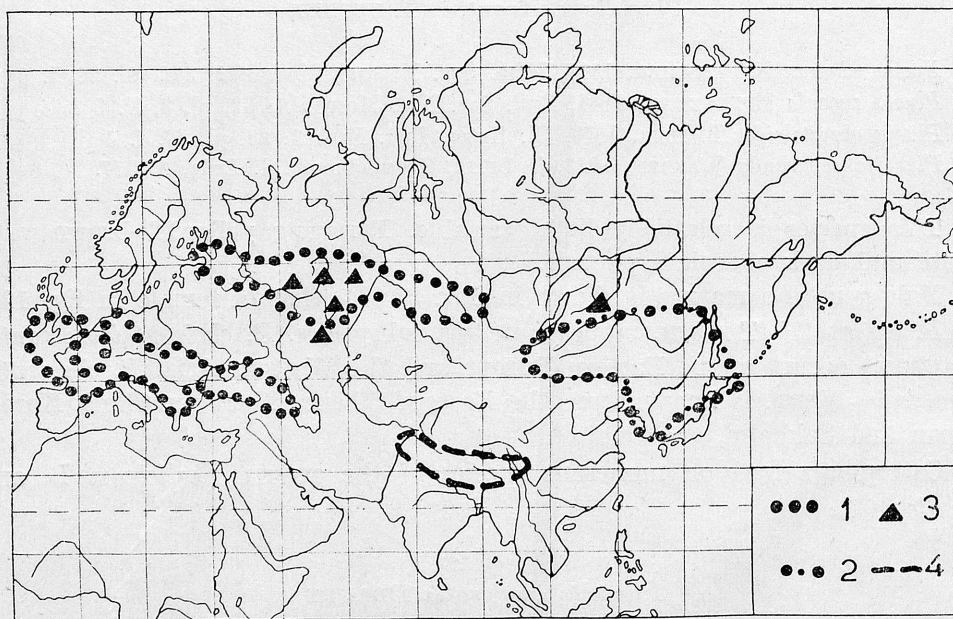


Fig. 18. Geographical distribution of the Palearctic species of the genus *Euchalcia* HBN.
1 — *E. variabilis variabilis* (PILL.), 2 — *E. variabilis mongolica* (STGR.), 3 — *E. uralensis* (EV.), 4 — *E. cashmirensis* (MR.).

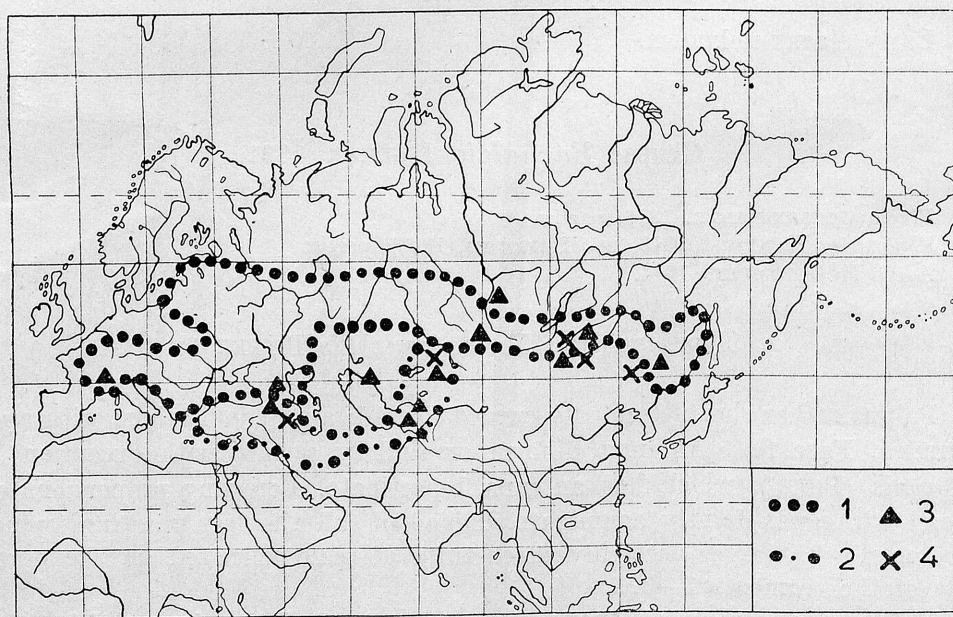


Fig. 19. Geographical distribution of the Palearctic species of the genus *Euchalcia* HBN.
1 — *E. modesta modesta* (HBN.), 2 — *E. modesta viridis* (STGR.), 3 — *E. herichi* (STGR.),
4 — *E. renardi* (EV.).

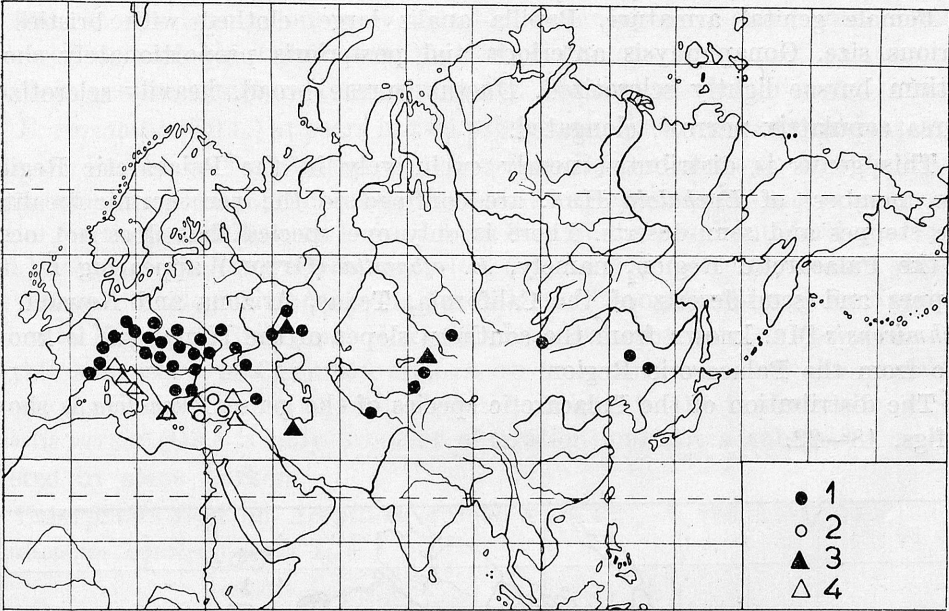


Fig. 20. Geographical distribution of the Palearctic species of the genus *Euchalcia* HBN.
1 — *E. consona consona* (F.), 2 — *E. consona taurica* (OSTH.), 3 — *E. siderifera* (EV.), 4 —
E. italica (STGR.).

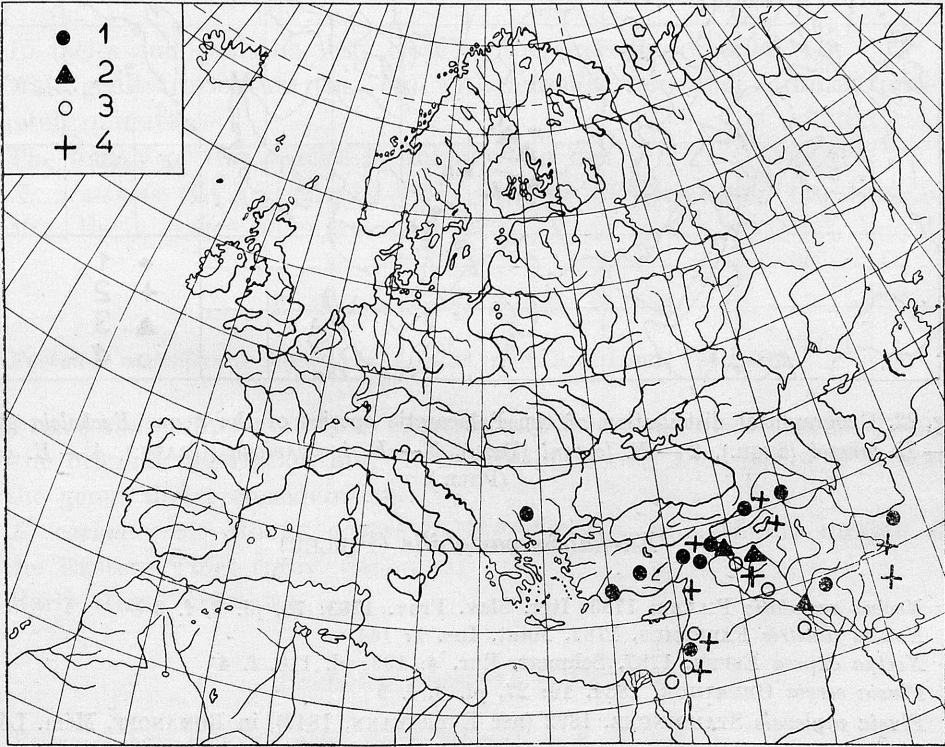


Fig. 21. Geographical distribution of the Palearctic species of the genus *Euchalcia* HBN.
1 — *E. emichi* (RGHFR.), 2 — *E. dorsiflava* (STDF.), 3 — *E. maria* (STGR.), 4 — *E. augusta* (STGR.).

Female genital armature. Papilla analis large, clothed with bristles of various size. Gonapophysis anterioris and posterioris proportionately short. Ostium bursae lightly sclerotized. Ductus bursae broad, heavily sclerotized. Bursa copulatrix narrow, elongated.

This genus is distributed nearly exclusively in the Palaearctic 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 Palaearctic Region, namely, *E. albavitta* (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 Palaearctic Region.

The distribution of the Palaearctic species of the genus *Euchalcia* is shown in figs. 18—22.

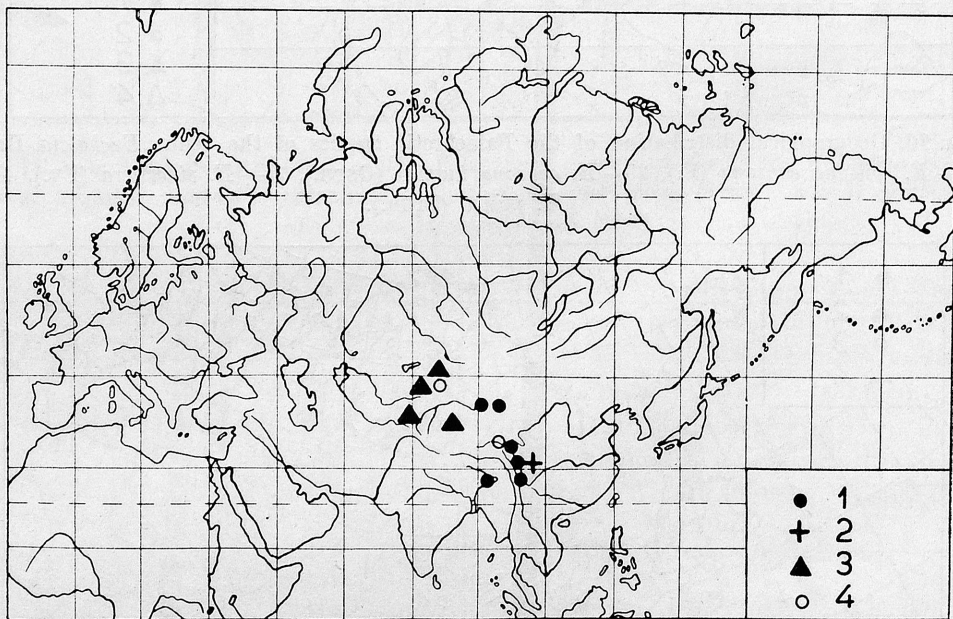


Fig. 22. Geographical distribution of the Palaearctic species of the genus *Euchalcia* HBN. 1 — *E. tancrei* (STGR.), 2 — *E. lenzeni* (DRT.), 3 — *E. inconspicua* (GRAES.), 4 — *E. gerda* (PGLR.).

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 uralsensis STAUDINGER, 1892 (nec EVERSMAHN, 1842), in ROMANOFF, Mém. Lépid.

6: 538

Plusia mongolica STAUDINGER, 1901, Cat. Lep. Pal.: 236.

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 Finnland, 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 HAMPSON 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* WF. and on *Thalictrum aquilegifolium* L.

***Euchalcia uralensis* (EV.)**

Plusia uralensis EVERSMAAN, 1842, Bull. Soc. Nat. Moscou 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**

Euchalcia cashmirensis MOORE, 1881, Proc. zool. Soc. Lond. 1881: 376.

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.

E. cashmirensis MOORE occurs in the Himalayas, Kashmir, Punjab and in the Eastern Tibet (prov. Setshuan).

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

Plusia viridis STAUDINGER, 1901, Cat. Lep. Pal.: 236.

In facies recembling 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* (HBN.) 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)

Noctua consona FABRICIUS, 1787, Man. Ins. 2: 163.

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. Č. as well.

Euchalcia siderifera (EVERSMANN), comb. n.

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

Plusia beckeri STAUDINGER, 1861, Ent. Ztg. Stettin 21: 288.

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 *Rindera tritaspis* D. C.

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

Plusia italica STAUDINGER, 1882, Ent. Nachr. 8: 293

Plusia calberlae STANDFUSS, 1884, Ent. Ztg. Stettin 44: 199

Phytometra siderifera ab. *italica* HAMPSON, 1913, Cat. Lep. Phal. Brit. Mus. 13: 565.

Since the HAMPSON publication, *E. italica* (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. italica* (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. italica (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. praeocc.)

Plusia uralensis BELLIER, 1859, Ann. Soc. ent. Gr. 1859: 192, pl. 5, figs. 7 & 8 (nec EVERSMAAN, 1842) (nom. praeocc.)

Plusia herrichi STAUDINGER, 1861, Ent. Ztg. Stettin 41: 288

Plusia eversmanni 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.**

Plusia renardi EVERSMANN, 1844, Bull. Soc. Nat. Moscou 3: 595, pl. 15, figs. 2 a & 2 b.

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* (STANDFUSS), comb. n.**

Plusia dorsiflava STANDFUSS, 1891, in ROMANOFF, Mém. Léop. 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.**

Plusia maria STAUDINGER, 1891, Dtsch. ent. Zeit. Iris 4: 311.

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, sacculus with characteristic processes in the outer side of the sacculus. 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. Setshuan and Shen-si) as well.

Early stages unknown.

***Euchalcia lenzeni* (DRAUDT), comb. n.**

Phytometra lenzeni DRAUDT, 1950, Mitt. Münchn. ent. Ges. **40**: 157, pl. 9, f. 20.

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 is 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: *Chryaspidia* 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.

Male genital armature. Uncus thin, elongate. Valva narrow, gradually expanding caudad. Ampulla thin, rather long. Clavus decidedly elongate. Vinculum rather small, V-shaped. Aedeagus proportionately short.

Female genital armature. Papilla analis large, clothed with long bristles. Gonapophysis anterioris and posterioris rather short. Ostium bursae funnel-shaped broadened. Ductus bursae short, lightly sclerotized. Bursa copulatrix small, narrow, at mouth somewhat more heavily sclerotized than in the remainder.

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 Palaearctic Region. In the Neartic Region occur four species, namely, *Ch. venusta* (WKR.), *Ch. putnami* (GRT.), *Ch. nichollae* (HMPS.) and *Ch. contexta* (GRT.). The distribution of the Palaearctic species of the genus in question is shown in figs. 23 and 24.

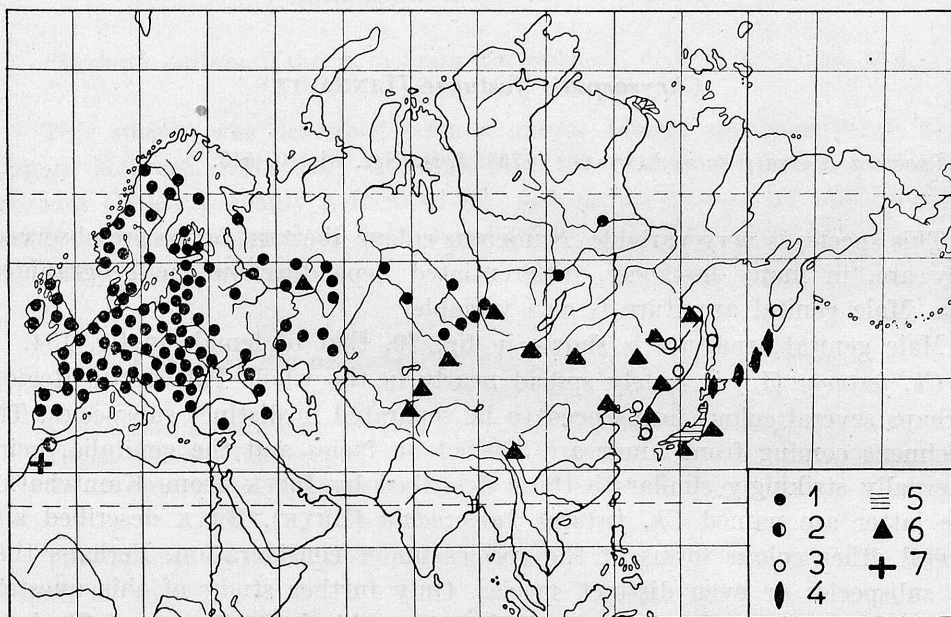


Fig. 23. Geographical distribution of the Palaearctic species of the genus *Chrysaspidia* HBN.
 1 — *Ch. festucae festucae* (L.), 2 — *Ch. festucae maroccana* (RUNGS), 3 — *Ch. festucae kamczadala* (BRYK.), 4 — *Ch. festucae kurilensis* (BRYK.), 5 — *Ch. festucae japonibia* (BRYK.),
 6 — *Ch. festata* (GRAES.), 7 — *Ch. barbara* (WARR.).

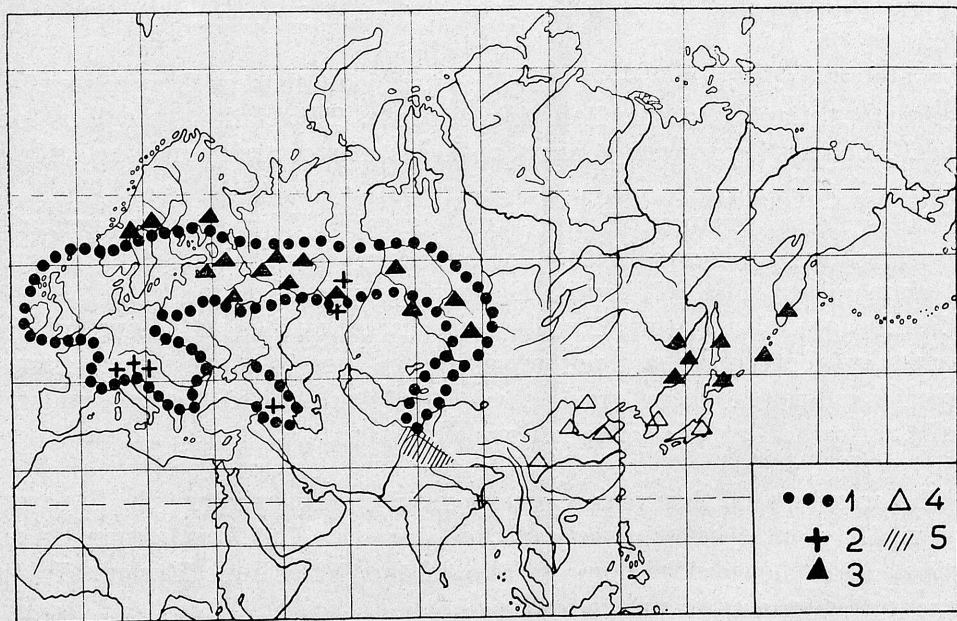


Fig. 24. Geographical distribution of the Palearctic species of the genus *Chrysaspidia* HBN.
 1 — *Ch. bractea* (SCHIFF. & D.), 2 — *Ch. aemula* (SCHIFF. & D.), 3 — *Ch. excelsa excelsa* (KR.),
 4 — *Ch. excelsa parabractea* (HMPs.), 5 — *Ch. argyrosigna* (MR.).

Chrysaspidia festucae (LINNAEUS)

Phalaena Noctua festucae LINNAEUS, 1758, Syst. Nat. ed. 10: 513.

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 Palearctic 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 Kamchatka. 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 maroccana* (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 kameczadala* (BRYK).

Caterpillars feed on various species of the *Monocotyledones* of the genera *Festuca* L., *Glyceria* L., *Carex* L., *Typha* L., *Sparganium* L., *Iris* L., *Alisma* L.

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

Plusia festata GRAESER, 1889, Berl. ent. Z. 33: 262

Plusia putnami auct. (nec 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 maroccana* (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 EVERSMA

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

Phytometra parabractea HAMPSON, 1913, Cat. Lep. Phal. Brit. Mus. 13: 551, pl. 239, f. 3.

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 Kamtchatka, Kuril Is 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, 1922 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

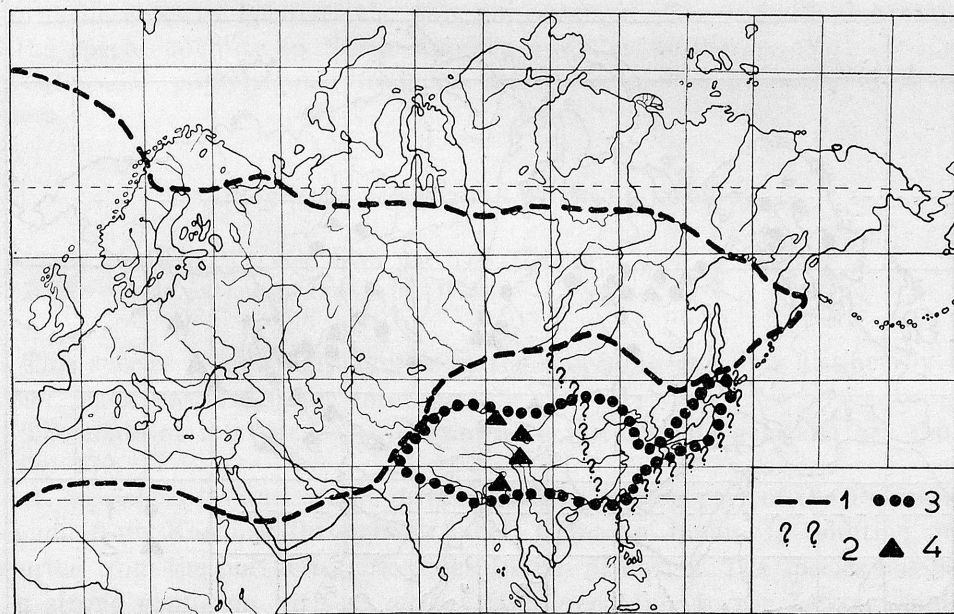


Fig. 25. Geographical distribution of the Palearctic species of the genus *Autographa* HBN. 1 — *A. gamma* (L.), 2 — area with data referable to *A. gamma* (L.), but according to LEECH referable to *A. nigrisigna* (WKR.), 3 — *A. nigrisigna* (WKR.), 4 — *A. purpureofusa* (HMPS.).

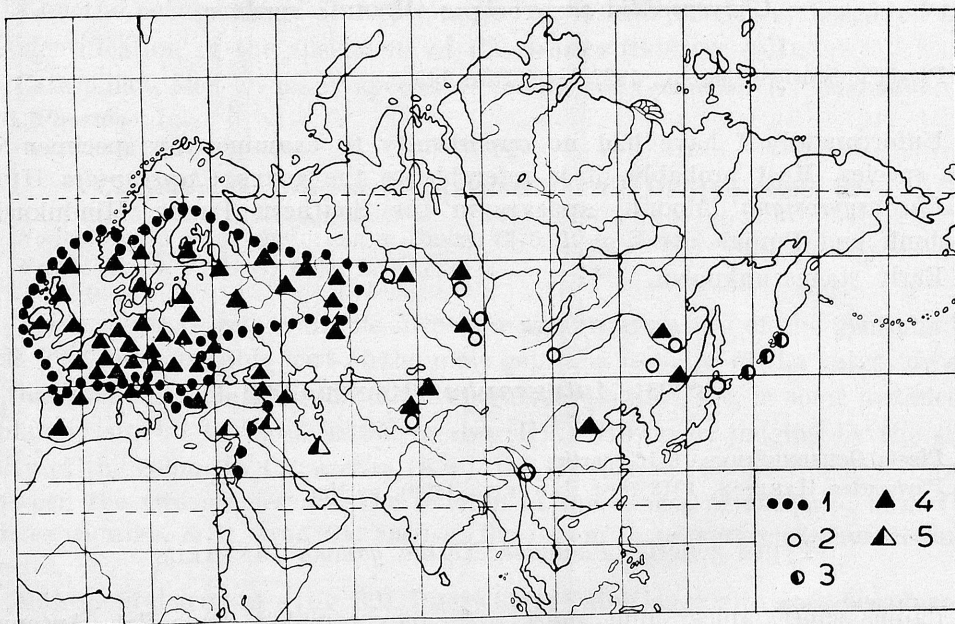


Fig. 26. Geographical distribution of the Palearctic species of the genus *Autographa* HBN.
 1 — *A. v-aureum v-aureum* (HBN.), 2 — *A. v-aureum buraetica* (STGR.), 3 — *A. v-aureum urupina* (BRYK.), 4 — *A. jota jota* (L.), 5 — *A. jota anatica* (SCHWING.).

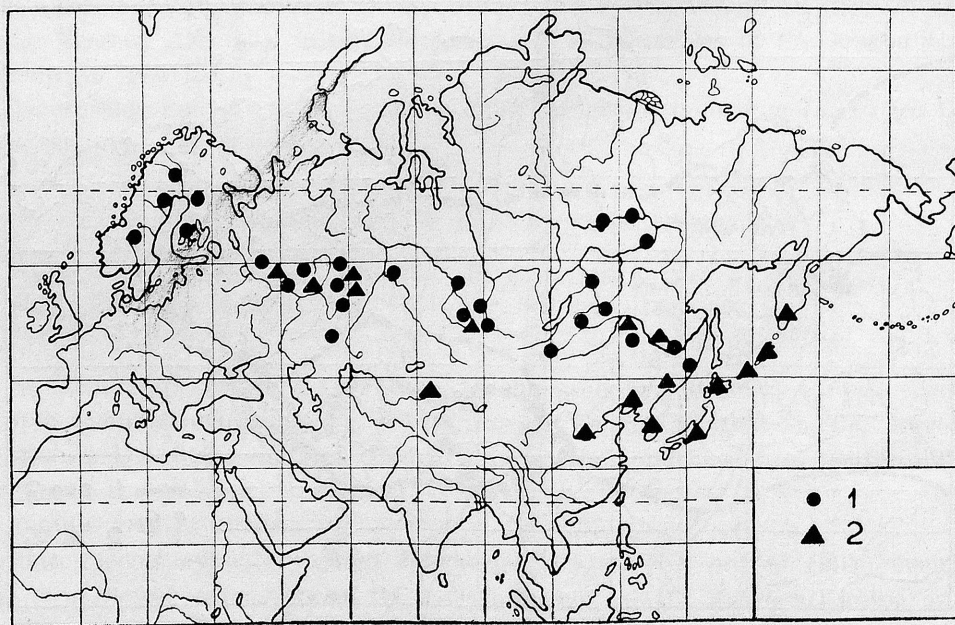


Fig. 27. Geographical distribution of the Palearctic species of the genus *Autographa* HBN.
 1 — *A. macrogamma* (EV.), 2 — *A. mandarina* (FRR.).

expanding caudad. Ampulla large. Clavus long and thin. Vinculum V-shaped. Vesica armed with cornuti of various size.

Female genital armature. Papilla analis large, clothed with long bristles. Gonapophysis anterioris and posterioris short. Ostium bursae bowl-shaped broadened. Ductus bursae short and heavily sclerotized. Bursa copulatrix large.

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 Palaearctic 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 gammina 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 Palaearctic Region including extreme south and north. The species does not form the geographical subspecies, with exception for *A. gamma gammina* (STGR.) from the Balkans. However, this subspecies 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 nigrisigna WALKER, 1857, Cat. Lep. Het. Brit. Mus. 12, no. 928

Plusia gamma auct. (nec 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 Palaearctic 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 (nec LINNAEUS, 1758), (n. praeocc.)

Noctua pulchrina HAWORTH, 1802, Prod. Lep. Brit.: 16.

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

Plusia percontatrix STAUDINGER, 1888, Nord. Fjär.: 181

Plusia buraetica 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 Palaearctic 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 buraetica* (STGR.) ranges from Ural to the Pacific Ocean. The third subspecies, namely, *A. v-aureum urupina* BRYK occurs in the Kuril IIs and Hokkaido, Japan.

Caterpillars polyphagous; they feed on several species of herbs.

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

Phalaena Noctua jota LINNAEUS, 1758, Syst. Nat. ed. 10: 513

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

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

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

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

Plusia bartholomaei MÉNETRIES, 1859, Bull. Phys. Math. Acad. Sci. St. Pétersbourg 1859:

315

Plusia monogramma ALPHÉRAKY, 1887, Ent. Ztg. Stettin 47: 171

Plusia amurica 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.

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

Caterpillars polyphagous, feed on numerous species of herbs.

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

Noctua mandarina FREYER, 1846, Neue Beitr. 5: 164, pl. 479, f. 4

Plusia intersealaris HERRICH-SCHÄFFER, 1850, Eur. Schmett. Noct., f. 510

Plusia typinota BUTLER, 1878, Ann. Mag. nat. Hist. (5) 1: 201

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.

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 IIs and Kamtchatka. The most wetstern localities of the species are environs of Kazan and Vjatka.

Early stages unknown.

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

Plusia macrogamma EVERSMANN, 1842, Bull. Soc. Nat. Moscou 3: 554

Noctua sevastina FREYER, 1842, Neue Beitr. pl. 455, f. 5.

This species is most resembling *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.

A. macrogamma (Ev.) occurs in the northern part of the Palaearctic Region. It ranges from Sweden and Lappland 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.

Genus: *Cornutiplusia* gen. n.

Plusia auct. (nec OCHSENHEIMER, 1817), partim

Phytometra HAMPSON, 1913 (nec HAWORTH, 1809), partim.

Typus generis: *Phalaena Noctua circumflexa* LINNAEUS

Palpus short, straight; third joint short with apex rounded. Face flat. Antenna filiform. Forewing narrow, elongate. Tibiae of the hindlegs clothed with spines. Tibiae of the forelegs and the midlegs lack spines. Abdomen with extending tufts of scales on dorsal side of segments 1—3.

Male genital armature. Uncus of medium length. Valva short and narrow, expanding gradually caudad. Ampulla of medium length, straight. Clavus thin and elongate. Vinculum V-shaped. Vesica armed with numerous cornuti of various size.

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.

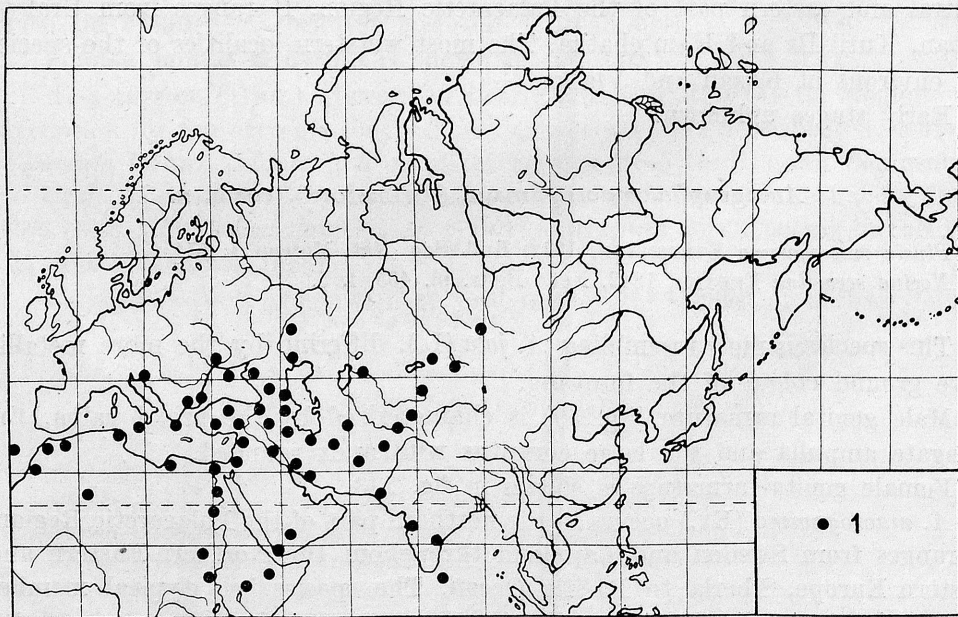


Fig. 28. Geographical distribution of the Palaearectic species of the genus *Cornutiplusia* gen. n.
1 — *C. circumflexa* (L.).

***Cornutiplusia circumflexa* (LINNAEUS), comb. n.**

Phalaena Noctua circumflexa LINNAEUS, 1767, Syst. Nat. ed. 12: 844

Plusia graphica HERRICH-SCHÄFFER, 1845, Eur. Schmett. 2: 394, pl. Noct. f. 548

Plusia daubii FREYER, 1845, Neue Beitr.: 90, pl. 256, f. 2

Plusia patefacta WALKER, 1857, Cat. Lep. Het. Brit. Mus. 12, no. 924.

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

Palpus rather long; third joint short with apex rounded. Face flat. Antenna filiform. Wings rather broad. Tibia of the hindleg lacks spines. Abdomen broad, dorsal side with erect tufts of scales on the first and the third segments.

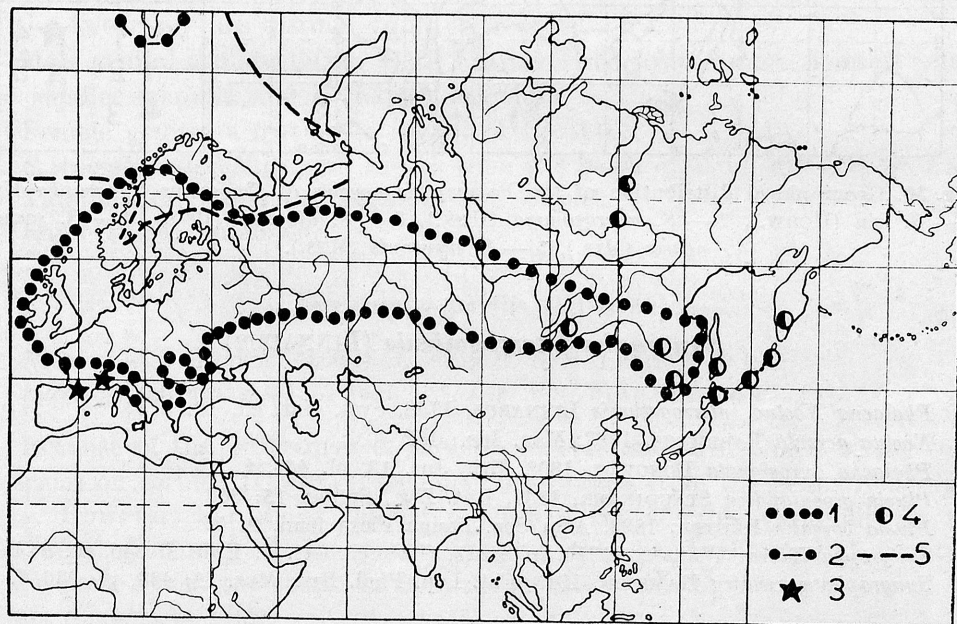


Fig. 29. Geographical distribution of the Palaearctic species of the genus *Syngrapha* HBN. 1 — *S. interrogationis interrogationis* (L.), 2 — *S. interrogationis groenlandica* (STGR.), 3 — *S. interrogationis cinerea* (WARR.), 4 — *S. transbaicalensis* (STGR.), 5 — *S. parilis* (HBN.).

Male genital armature. Uncus short. Valva narrow. Ampulla curved with base strongly broadened. Clavus small, conical. Vinculum V-shaped. Aedeagus large. Vesica armed with a large cornutus on a broad, stripe-like base.

Female genital armature. Papilla analis rather minute, clothed with long bristles. Gonapophysis anterioris and posterioris short. Ductus bursae broad and short, heavily sclerotized. Bursa copulatrix large.

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.

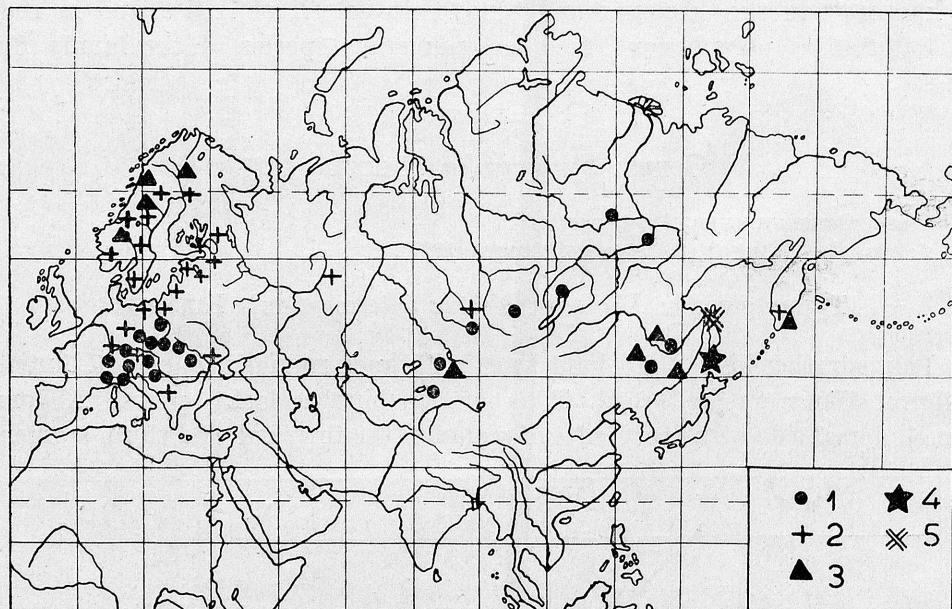


Fig. 30. Geographical distribution of the Palaearctic species of the genus *Syngrapha* HBN. 1 — *S. ain* (HCHW.), 2 — *S. microgamma* (HBN.), 3 — *S. diasema* (BSD.), 4 — *S. sachalinensis* (MTS.), 5 — *S. nyiwonis* (MTS.).

Syngrapha interrogationis (LINNAEUS)

Phalaena Noctua interrogationis LINNAEUS, 1758, Syst. Nat. ed. 10: 513

Noctua aemula FABRICIUS, 1787, Man. Ins.: 162

Phalaena aurosignata DONOVAN, 1808, Brit. Ins. 13, pl. 453, f. 1

Plusia groenlandica STAUDINGER, 1857, Ent. Ztg., Stettin 15: 306

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

Syngrapha pyrenaica HAMPSON, 1913, Cat. Lep. Phal. Brit. Mus. 13: 428, pl. 236, f. 21.

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 Palaearctic Region. The first of these, *S. interrogationis interrogationis* (L.) ranges from France and British Islands throughout the Northern and Central Europe and Siberia to Kamtchatka, 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

Syngrapha interrogations f. *transbaicalensis* STAUDINGER, HAMPSON, 1913, Cat. Lep. Phal. Brit. Mus. 13: 431.

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 Kamtchatka, Kuril Is., Sakhalin and Ussuri.

Early stages unknown.

Syngrapha parilis (HÜBNER)

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

Plusia quadriplaga WALKER, 1857, Cat. Lep. Het. Brit. Mus. 12, no. 911.

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 (HBN.) 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

Syngrapha borea HAMPSON, 1913 (nec AURIVILLUS, 1890), Cat. Lep. Phal. Brit. Mus. 13: 416.

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 Kamtchatka 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 Alasca.

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

Syngrapha ain (HOCHENWARHT)

Noctua ain HOCHENWARTH, 1785, Schrift. Berl. Ges. Naturg. Freunde 6: 337, pl. 7, f. 8.

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. ain (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)

Noctua microgamma HÜBNER, 1821, Eur. Schmett. Noct. ff. 698, 699

Plusia incompleta REUTER, 1893, Acta Soc. Fauna Flora fenn. 9: 59.

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. rosmarinifolia* L.

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

Plusia sachalinensis MATSUMURA, 1925, J. Coll. Agric. Tokyo 15, 3.

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**

Syngrapha nyiwonis MATSUMURA, 1925, J. Coll. Agric. Tokyo 15, 3.

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 hohenwarthi* 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.

Male genital armature. Valva short, broad. Ampulla broad, prong-like curved. Clavus small, conical. Vinculum V-shaped. Aedeagus small. Vesica armed with minute cornuti.

Female genital armature. Papilla analis small. Gonapophyses anterioris

and posterioris short. Ductus bursae long, heavily sclerotized. Bursa copulatrix narrow, elongate.

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. ingea* (GRT.) and *S. alticola* (WKR.). The distribution of the Palaearctic species of the genus in question is shown in fig. 31.

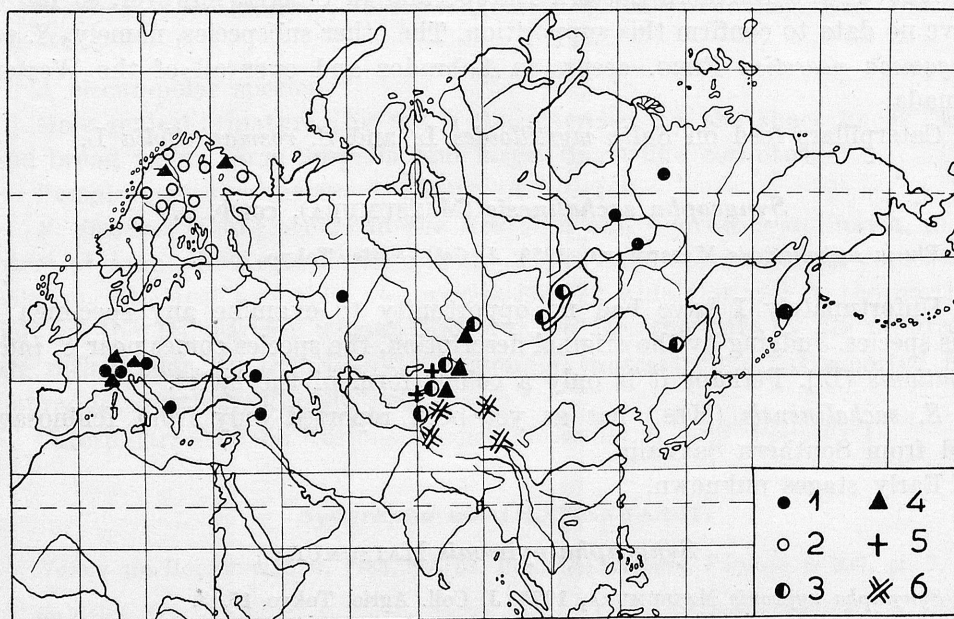


Fig. 31. Geographical distribution of the Palaearctic species of the genus *Caloplusia* SM. 1 — *C. hohenwarthi hohenwarthi* (HCHW.), 2 — *C. hohenwarthi lapponaris* SCHULTE, 3 — *C. hohenwarthi alaica* (GALV.), 4 — *C. divergens* (HBN.), 5 — *C. composita* (WARR.), 6 — *C. tibetana* (STGR.).

Caloplusia hohenwarthi (HOCHENWARTH)

Phalaena hohenwarthi HOCHENWARTH, 1785, Schrift. Berl. Ges. Naturf. Freunde 6: 337, pl. 7, f. 2

Noctua divergens FABRICIUS, 1787, Mant. Ins. 2: 162

Plusia alaica GALVAGNI, 1906, Verh. zool.-bot. Ges. Wien 56: 82.

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. hohenwarthi (HCHW.) appears in three subspecies differing from each other on the facies and the armature of the genitalia as well. *C. hohenwarthi hohenwarthi* (HCHW.) occurs in the Alps, Macedonia, Armenia, Caucasus, Ural,

the Northern-Eastern Siberia and in Kamtchatka. *C. hohenwarthi lapponaris* SCHULTE is known from Scandinavia. The third subspecies, namely, *C. hohenwarthi alaica* (GALV.) 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 *Umbellifereae*.

Caloplusia composita WARREN

Caloplusia composita WARREN, 1913, in SEITZ, Grossschmett. d. Erde 3: 345, pl. 64 a.

In genitalia similar to *C. hohenwarthi* (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.

C. composita WARR. occurs in the Thian-Shan Mts., Ala-Tau Mts. and Alai Mts. Early stages unknown.

Caloplusia tibetana (STAUDINGER)

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

Caloplusia hohenwarthi f. *tibetana* STAUDINGER, HAMPSON, 1913, Cat. Lep. Phal. Brit. Mus. 13: 409.

This species comes very near *C. hohenwarthi* (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)

Noctua devergens HÜBNER, 1818, Eur. Schmett. Noct. ff. 500, 501.

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 *Geum* L.

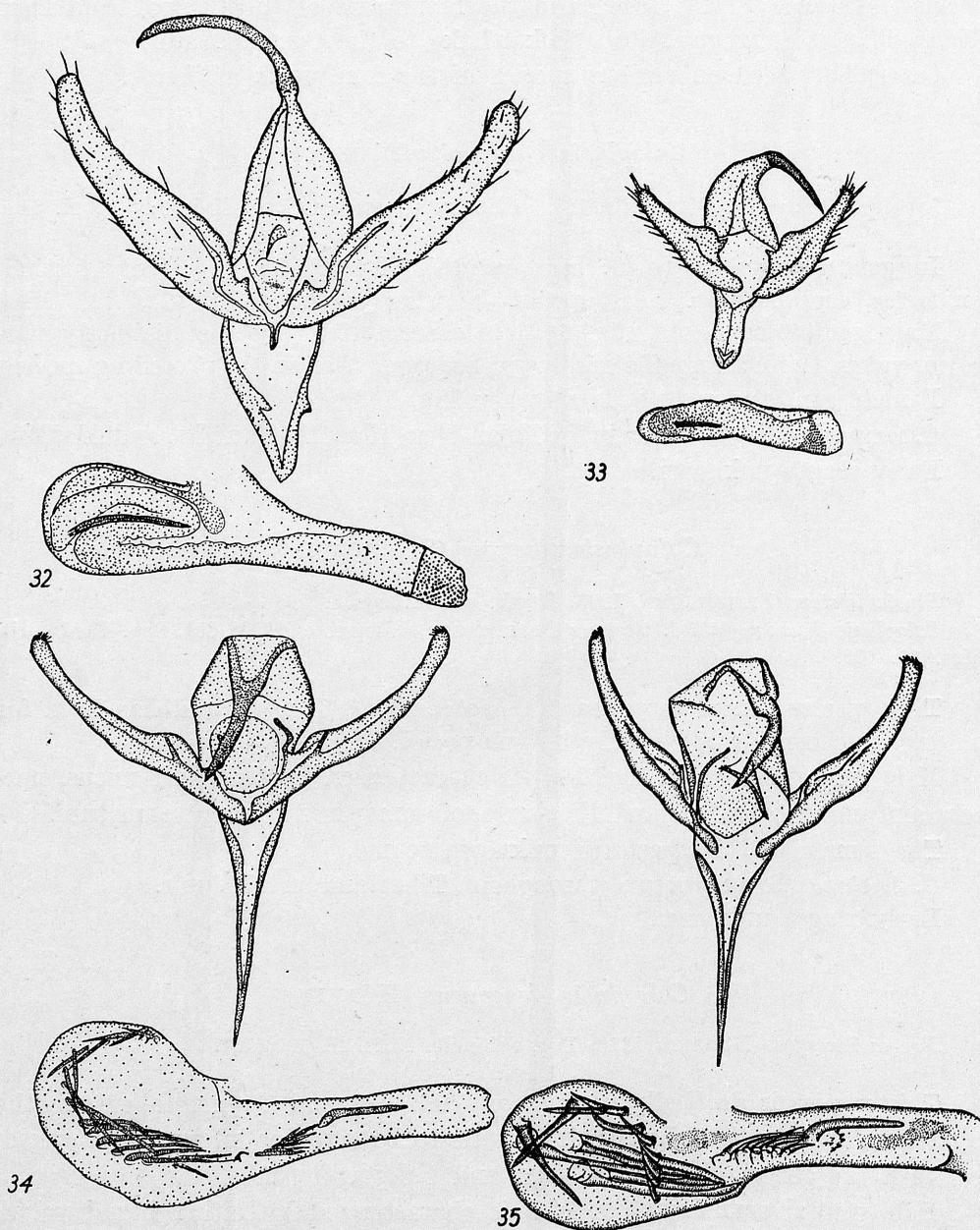


Fig. 32—35. Male genital armatures: 32 — *Anadevidia peponis* (F.). „Japan“, 33 — *Anadevidia pyropia* (BTLR.). „Naga Hills“, 34 — *Chrysodeixis chalcytes* (DBL.). „Lombok, Sapit, 2000', V—VI. 1896“.

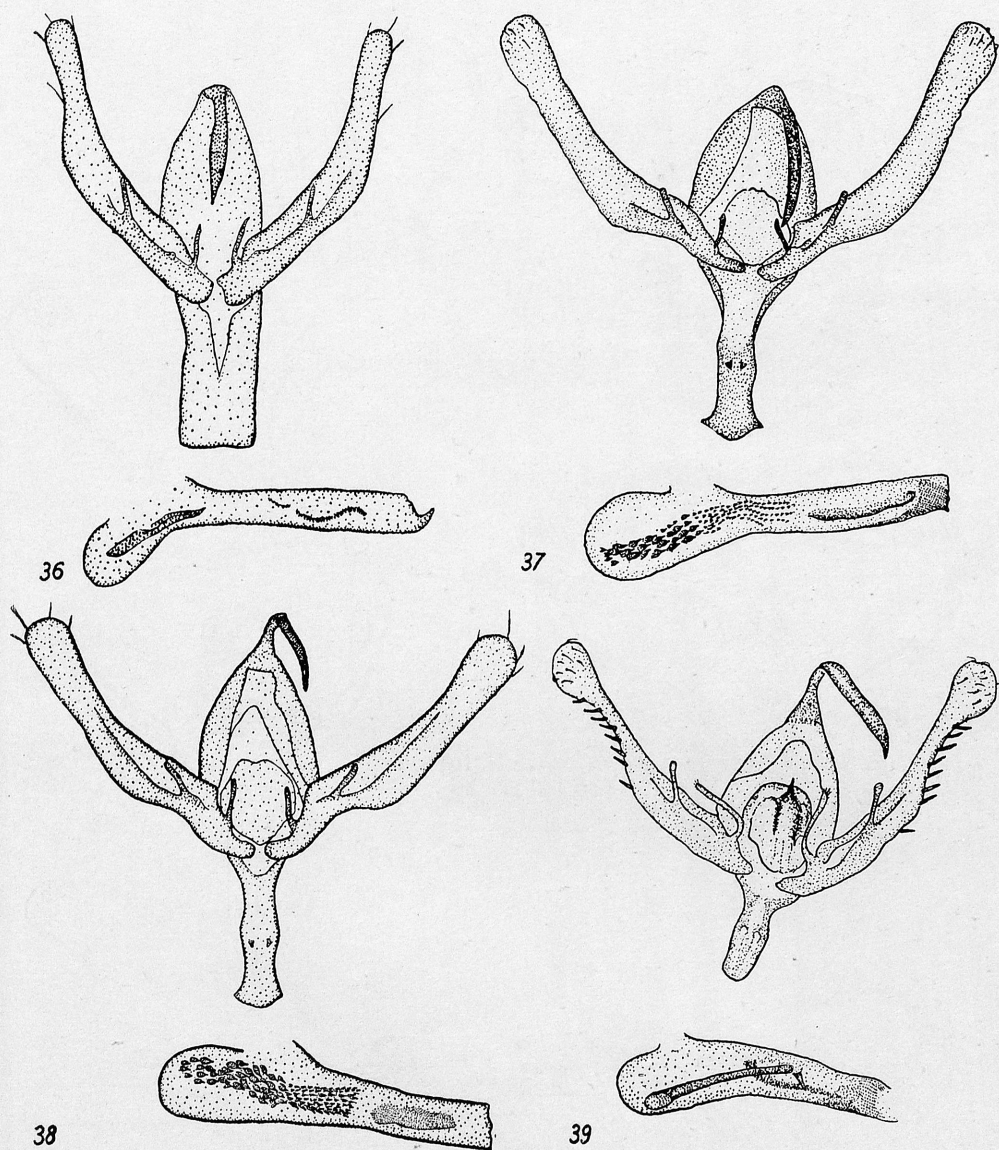


Fig. 36—39. Male genital armatures: 36 — *Argyrogramma ornatissima* (WKR.). „Java, Pengalongan“, 37 — *Argyrogramma circumscripta* (FRR.). „Sicilien“, 38 — *Argyrogramma rutilifrons* (WKR.). „Amurland“, 39 — *Argyrogramma accentifera* (LEF.). „Catalonien“.

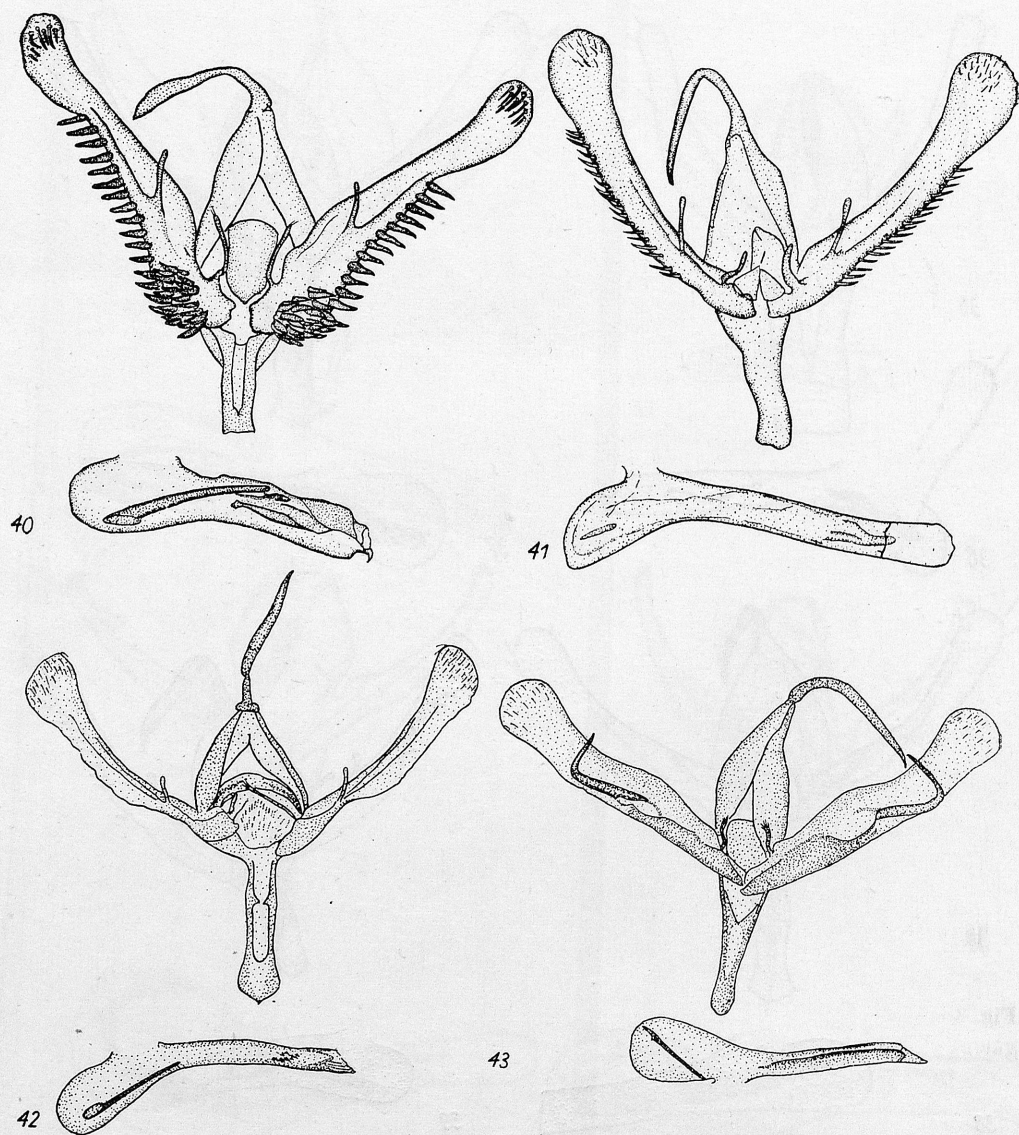


Fig. 40—43. Male genital armatures: 40 — *Argyrogramma agnata* (STGR.). „Amurland“, 41 — *Argyrogramma albostrata* (BR. & GR.). „Java occident., Mons Gede, 4000'. 1896“, 42 — *Argyrogramma daubei* (BSD.). „Montpellier“, 43 — *Trichoplusia ni ni* (HBN.). „Malaga“.

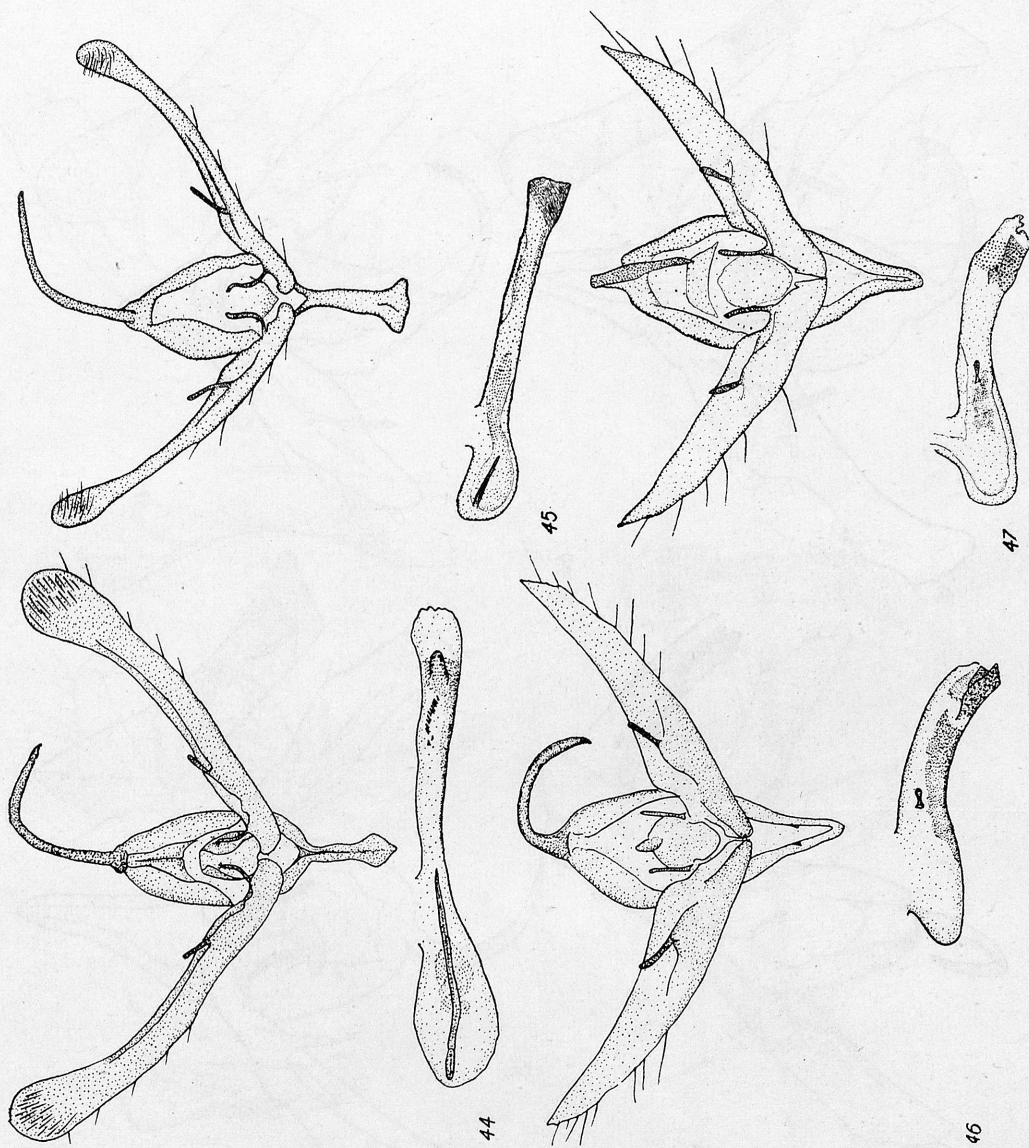


Fig. 44—47. Male genital armatures: 44 — *Diachrysia orichalcea* (F.). „Canarische Ins.“, 45 — *Diachrysia intermixta* (WARR.). „Sikkim“, 46 — *Plusia chrysitis* (L.). Typical form. „Podole, Rakulowa“, 47 — *Plusia chrysitis* (L.) ab. *generosa* STGR. Type. „Zeitun, Haradj. 1897“.

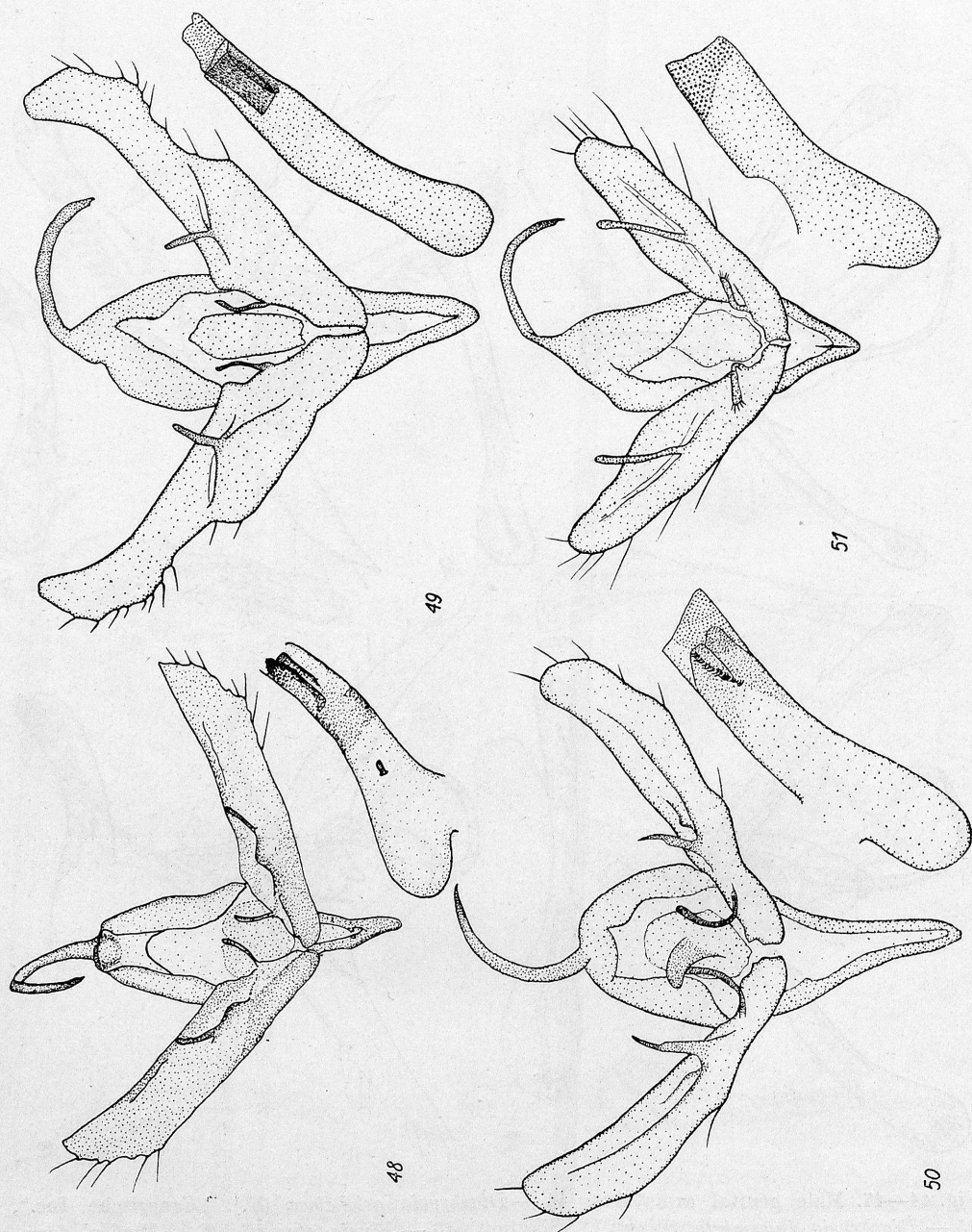


Fig. 48—51. Male genital armatures: 48 — *Plusia tutti* sp. n. „Podole, Rakulowa“, 49 — *Plusia nadeja* OB. „Ussurigebiet, 50 — *Plusia zosimi* (HBN.). „Podhorce k. Stryja. 15. VII. 1904“, 51 — *Plusia chryson* (ESP.). „Breslau. 1. VII. 1922“.

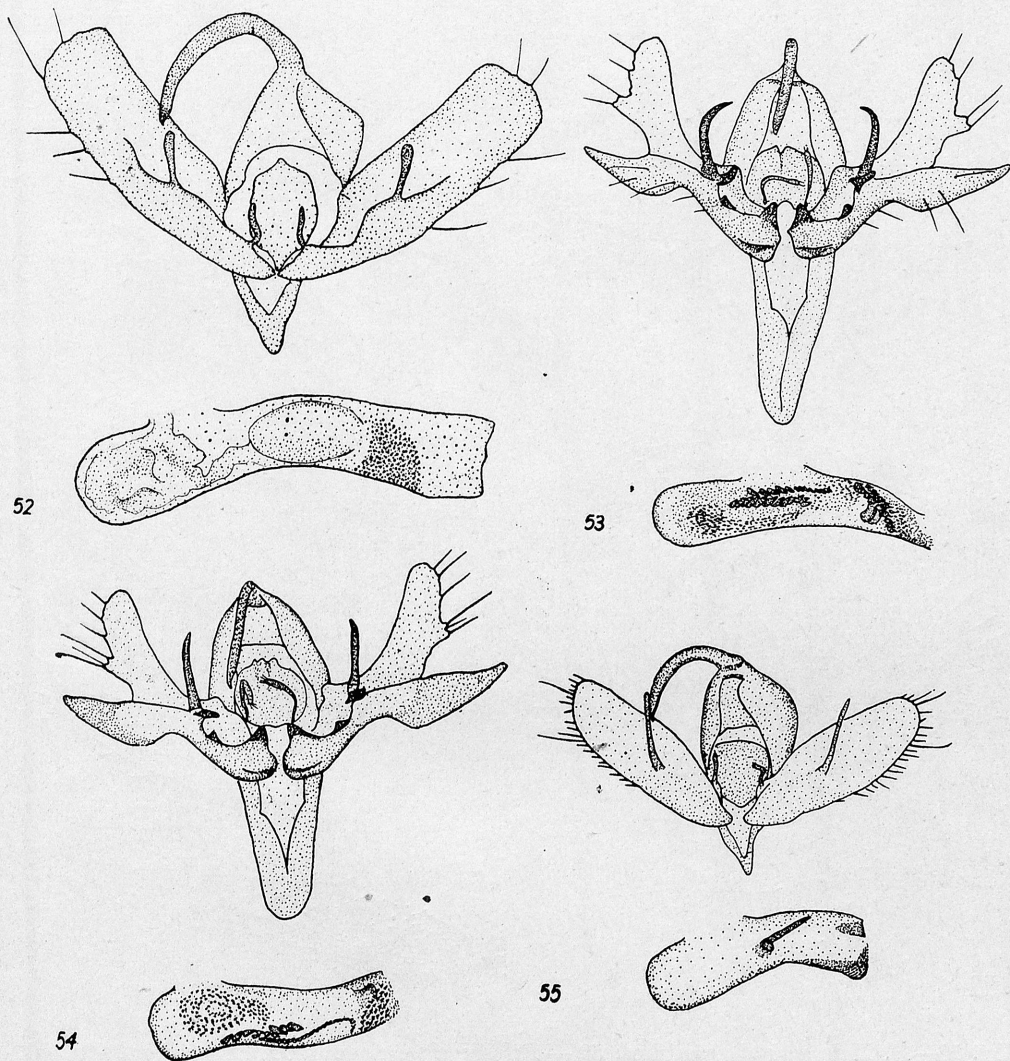


Fig. 52—55. Male genital armatures: 52 — *Plusia leonina* OB. „Wladiwostok“, 53 — *Macdunnoughia confusa* (STEPH.). „Bozen“, 54 — *Macdunnoughia camptosema* (HMPS.). „Amur“, 55 — *Polychrysis moneta* (F.). „Carlsbad“.

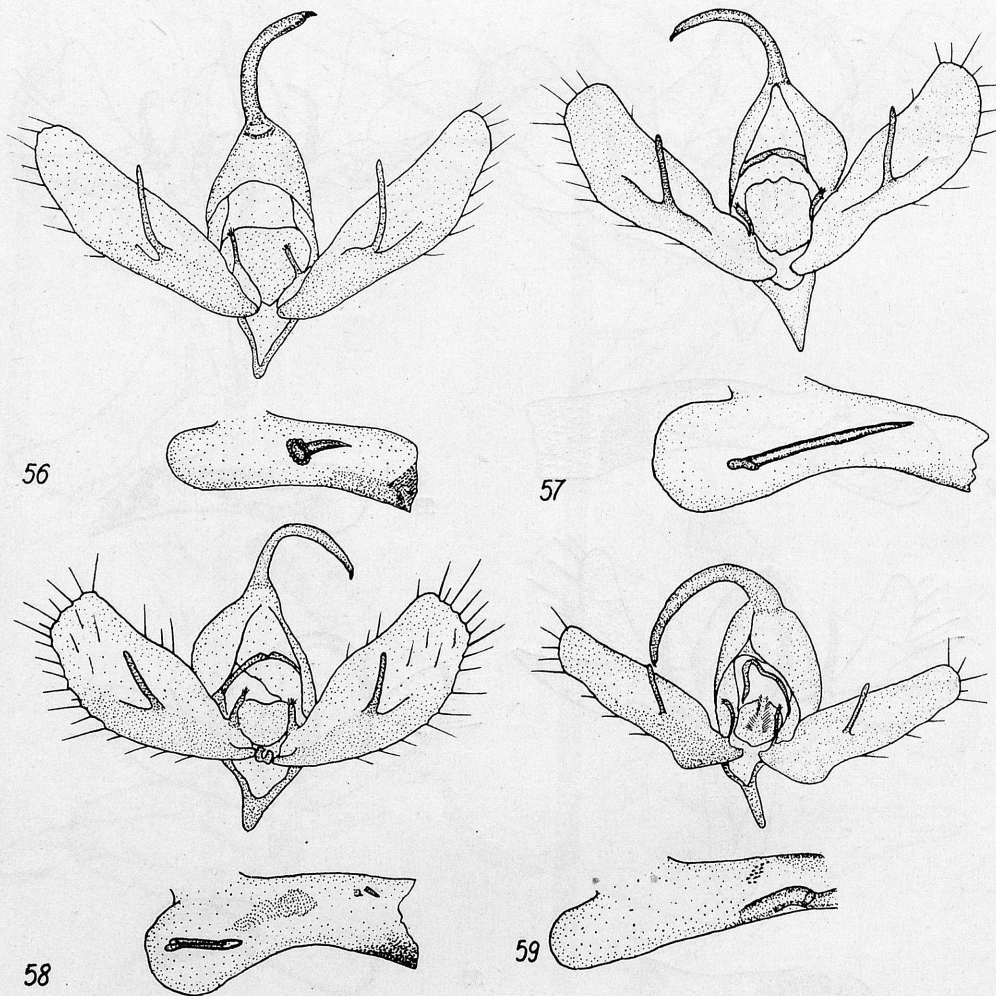


Fig. 56—59. Male genital armatures: 56 — *Polychrysia esmeralda* OB. „Siberia or., Chitaizki-Sterena“, 57 — *Polychrysia splendida* (BTLR.). „Ussuri. 1907“, 58 — *Panchrysia deaurata* (ESP.). „Ungarn“, 59 — *Panchrysia dives* (Ev.). Patria ignota.

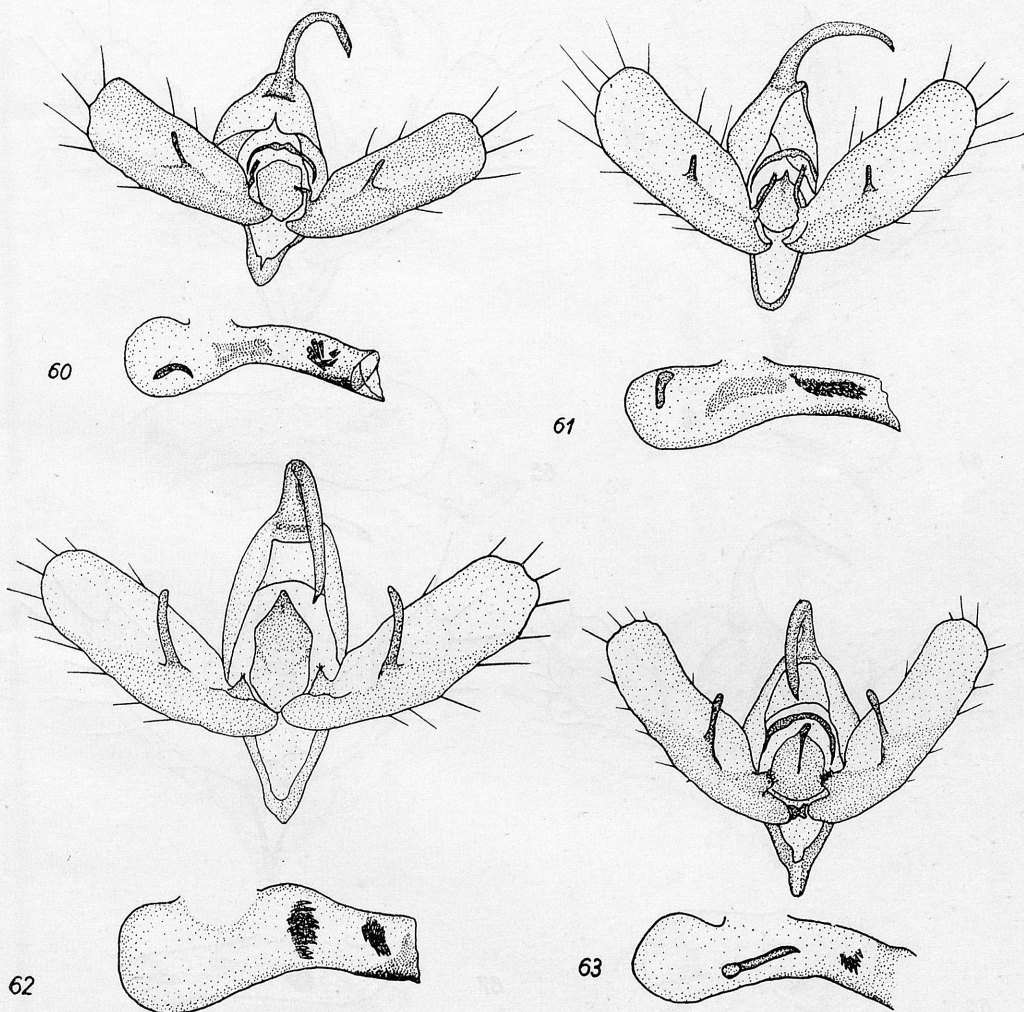


Fig. 60—63. Male genital armatures: 60 — *Panchrysia v-argenteum* (ESP.). „Schweiz“, 61 — *Panchrysia ornata* (BR.). „Amur“, 62 — *Chrysoptera₂ c-aureum* (KN.). „Berlin Umg. 7. VI. 1934“, 63 — *Plusidia cheiranthi cheiranthi* (TAUSCH.). „Zawiercie, ad lucem. 17. VII. 1923“.

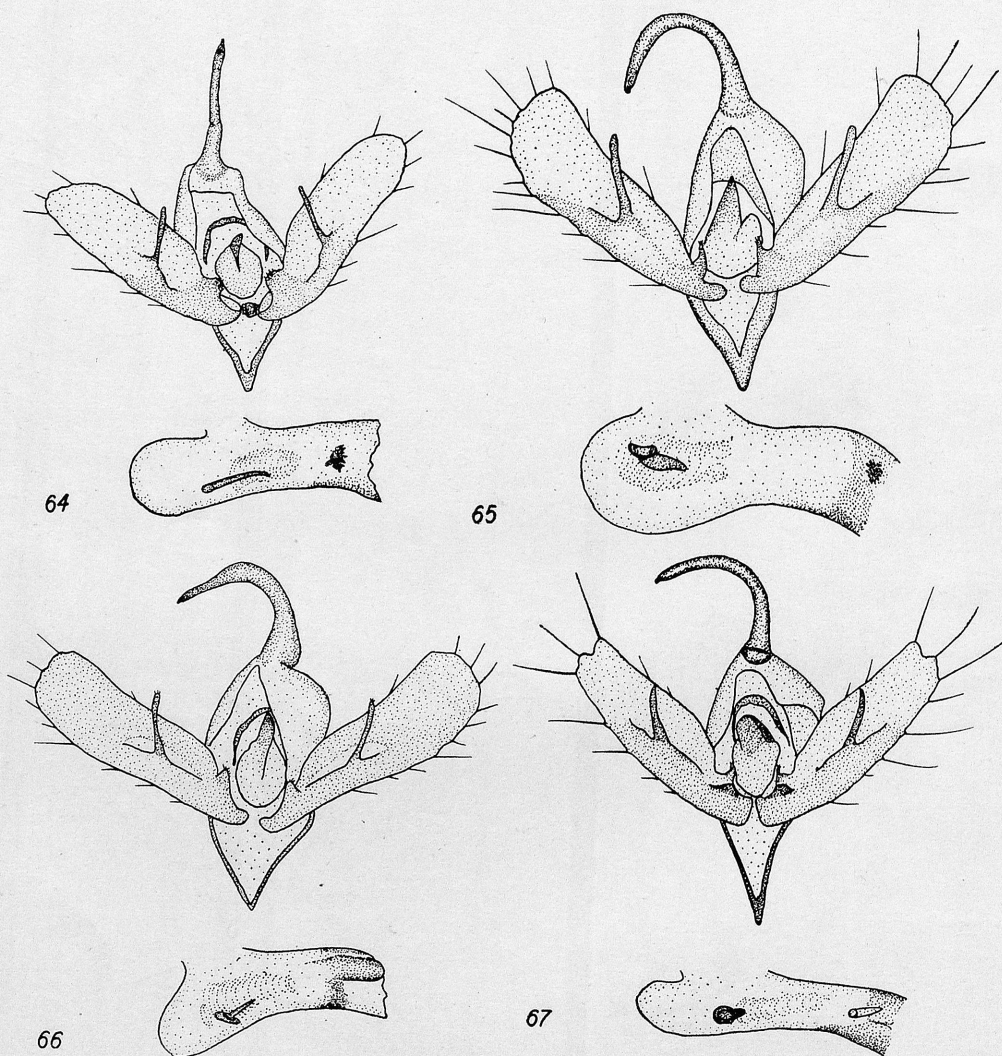


Fig. 64—67. Male genital armatures: 64 — *Plutidia cheiranthi separanda* (WARR.). „Amur“, 65 — *Euchalcia variabilis* (PILL.). „Ungarn“, 66 — *Euchalcia uralensis* (EV.). „Uralsk“, 67 — *Euchalcia modesta* (HBN.). „Ural“.

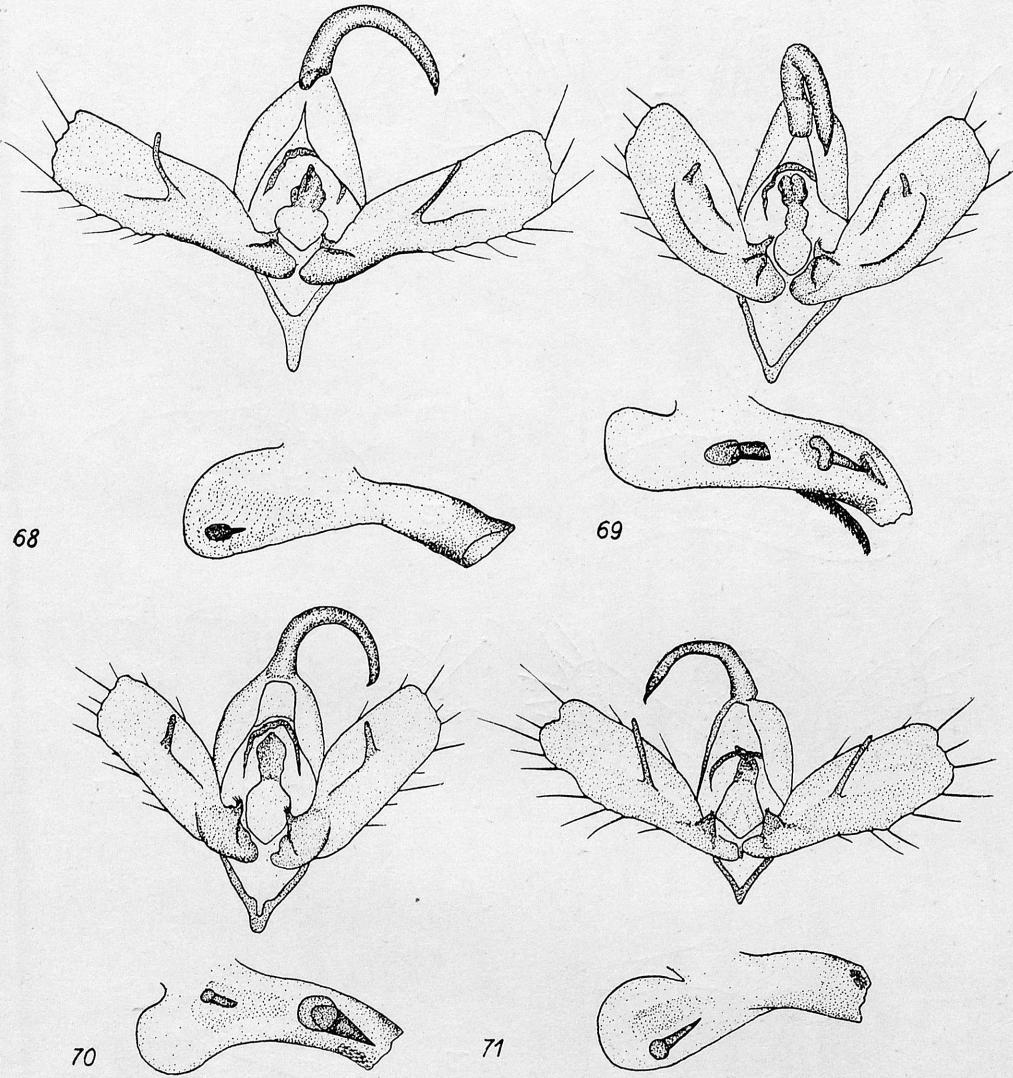


Fig. 68—71. Male genital armatures: 68 — *Euchalcia consona* (F.). „Krzyżanowice, distr. Pińczów. 10. VI. 1951“, 69 — *Euchalcia siderifera* (Ev.). „Sarepta. 16. VI. 1920“, 70 — *Euchalcia italica* (Stgr.). „Apenini centr., Gran Sasso, 2400 m.“, 71 — *Euchalcia herrichi* (Stgr.). „Ili, Centr. Asien“.

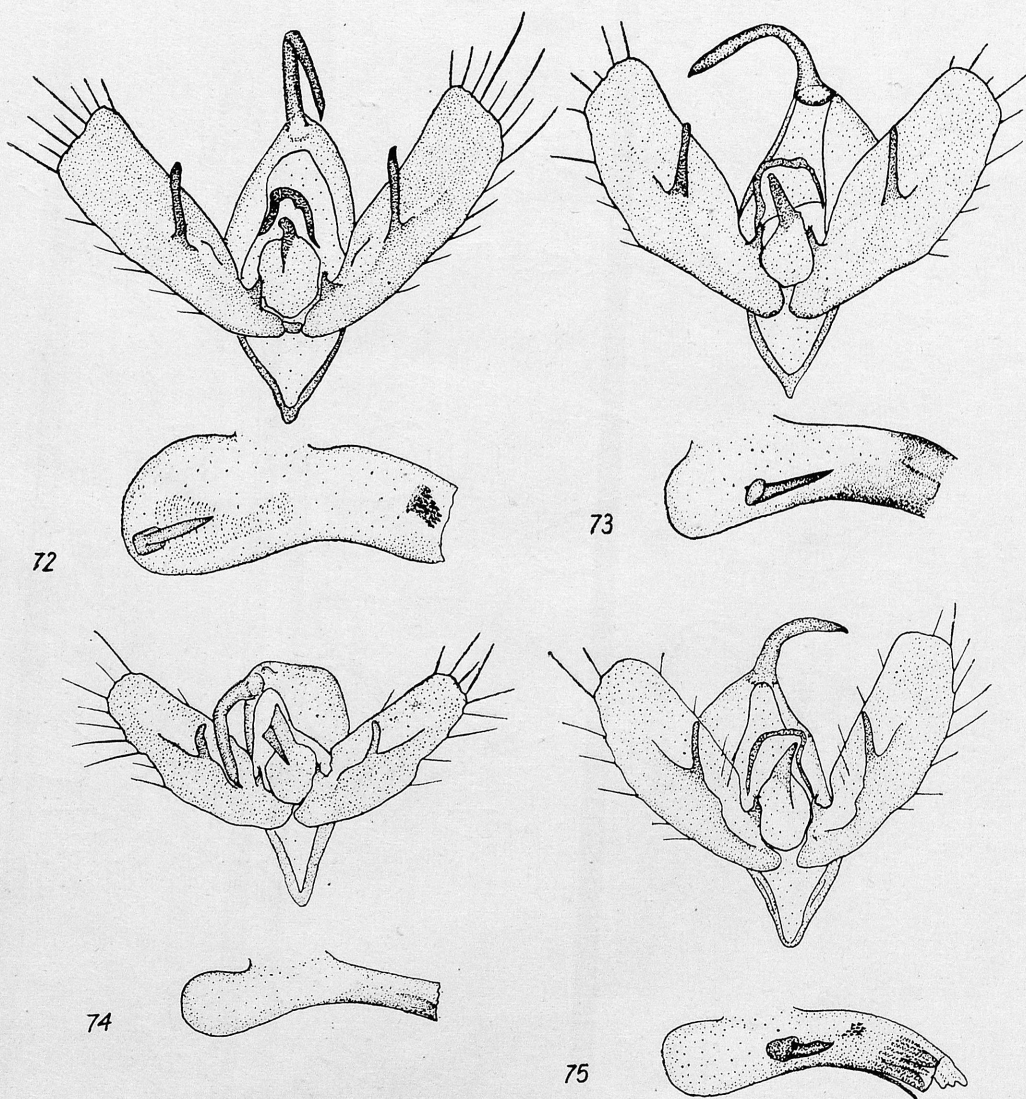


Fig. 72—75. Male genital armatures: 72 — *Euchalcia renardi* (Ev.). „Altai“, 73 — *Euchalcia emichi* (RGHFR.). „Pontus, Amasia“, 74 — *Euchalcia dorsiflava* (STDF.). Type. „Marden, Manés. 1891“, 75 — *Euchalcia augusta* (STGR.). Type. Patria ignota.

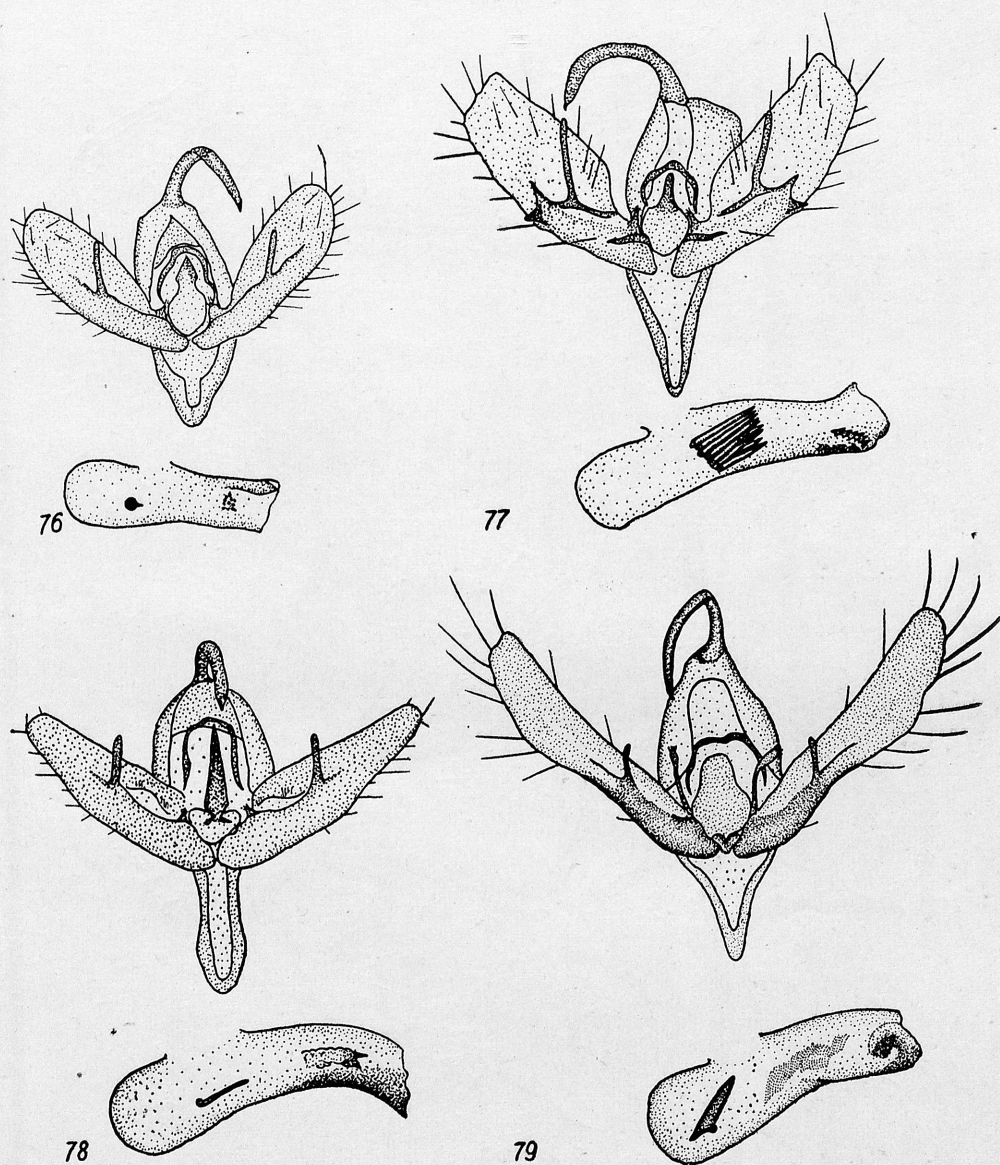


Fig. 76—79. Male genital armatures: 76 — *Euchalcia maria* (STGR.). Type. „Jerusalem, Paulis. 1891“, 77 — *Euchalcia inconspicua* (GRAES.). „Turkestan“, 78 — *Euchalcia tancrei* (STGR.). „Kuku-Noor“, 79 — *Chrysaspidia festucae* (L.). „Karyntja, Celowiec. 1914“.

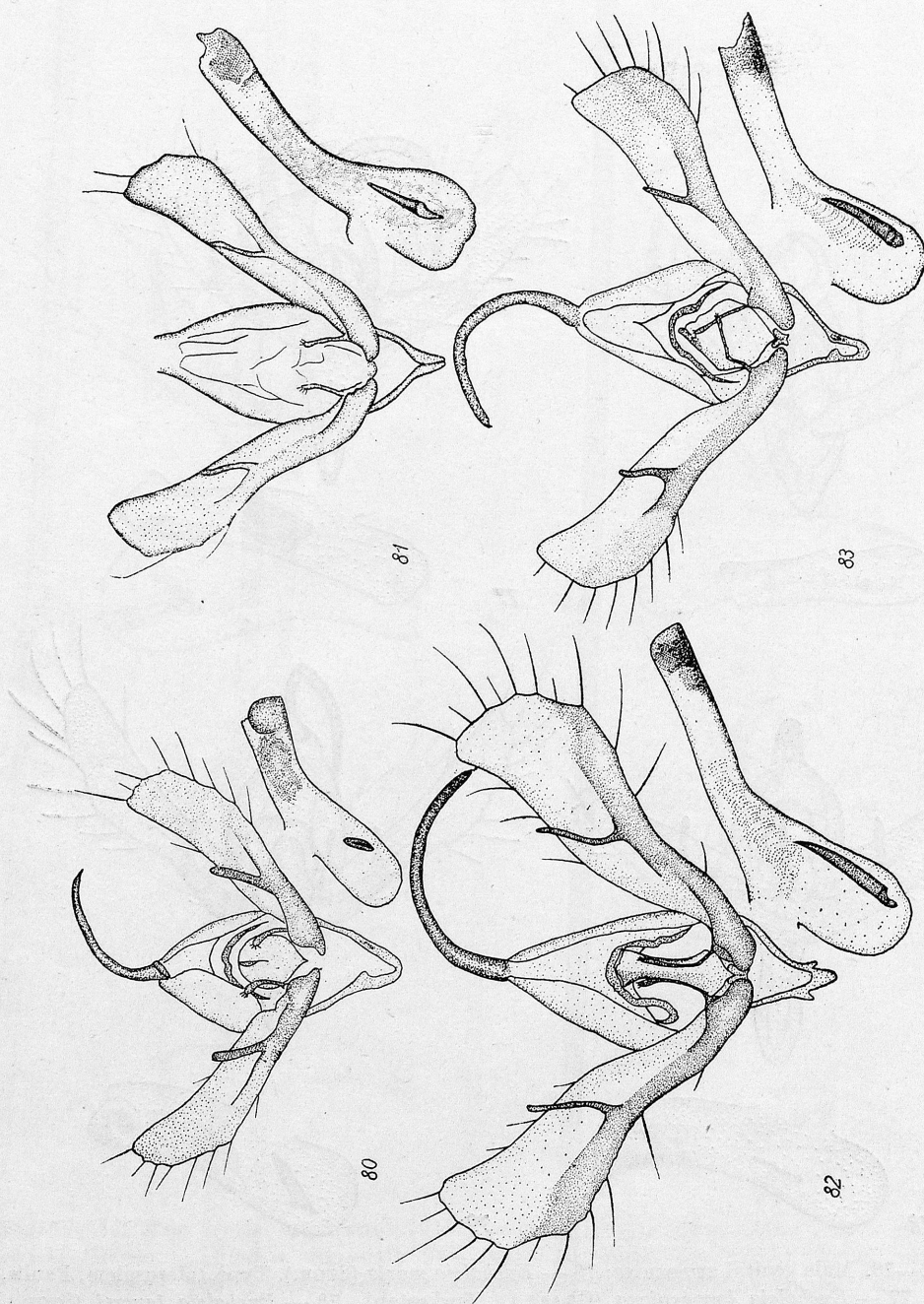


Fig. 80—83. Male genital armatures: 80 — *Chrysaspidia festata* (GRAES.). „Amurland“, 81 — *Chrysaspidia aemula* (SCHIFF. & D.). „Garmisch. 20. VII. 1920“, 82 — *Chrysaspidia bractea* (SCHIFF. & D.). „Baligród, Czarne, pow. Lesko. 9. VII. 1954“, 83 — *Chrysaspidia excelsa* (KR.). „Amur“.

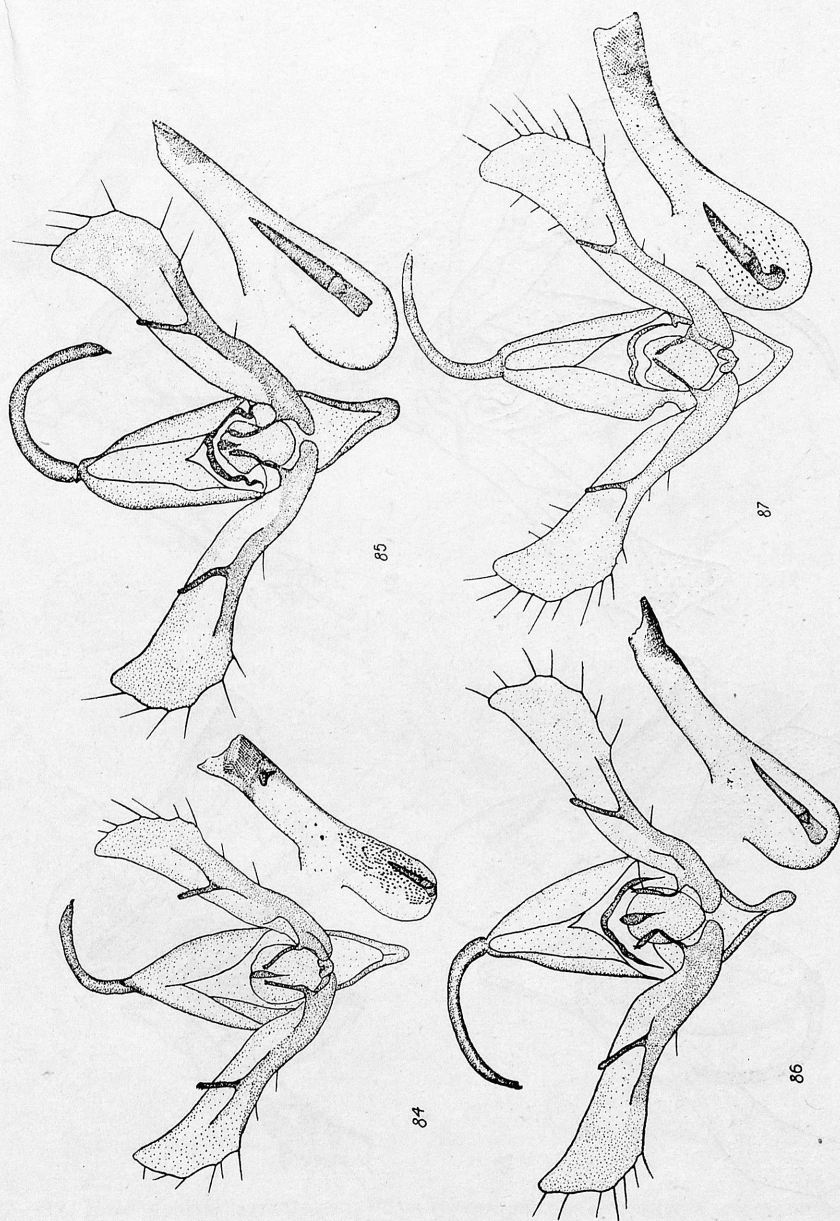


Fig. 84—87. Male genital armatures: 84 — *Autographa gamma* (L.). „Klütz, Pommern. 10. VIII. 1925“, 85 — *Autographa v-aureum* (HBN.). „Karyntja, Celowiec. 1914“, 86 — *Autographa v-aureum buraetica* (STGR.). „Chikoi“, 87 — *Autographa jota* (L.). „Karyntja, Celowiec“.

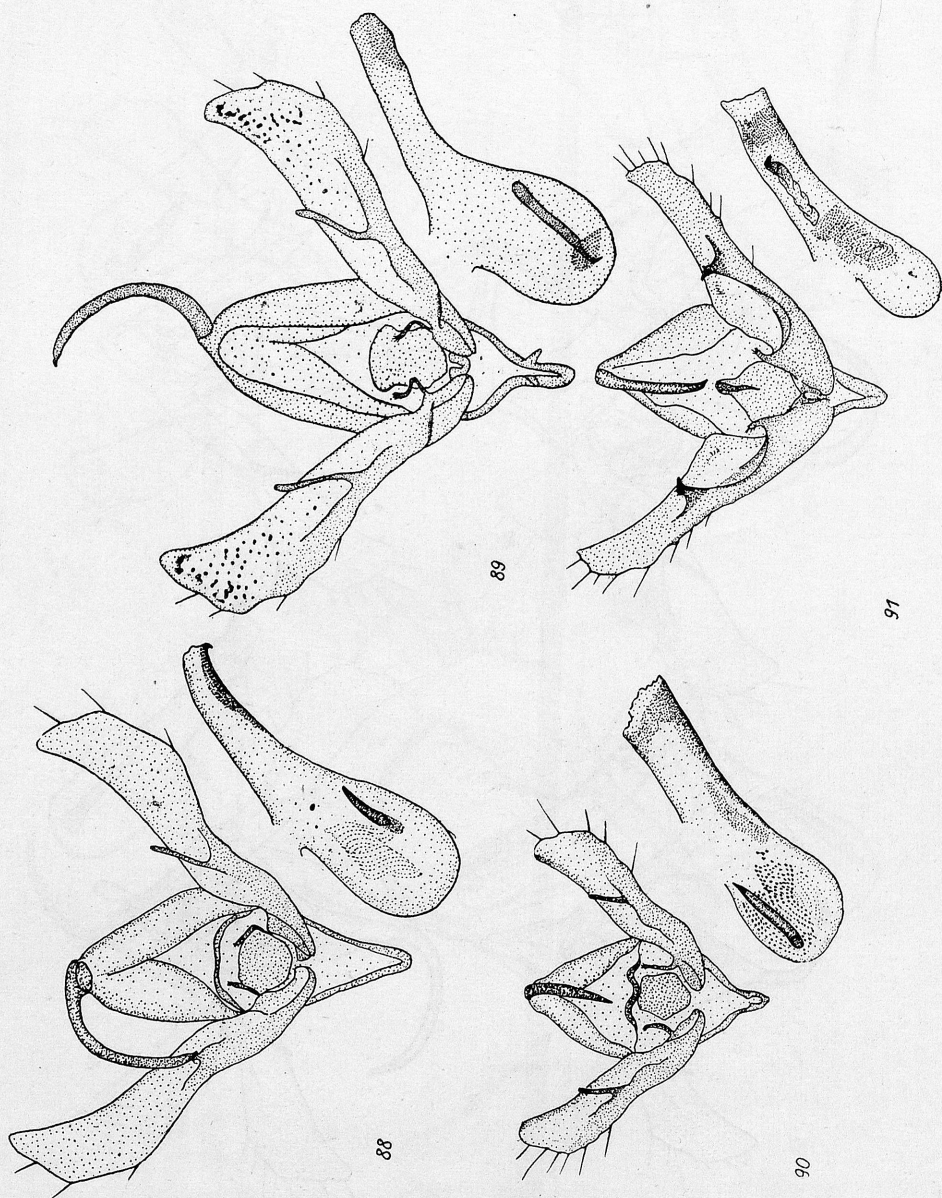


Fig. 88—91. Male genital armatures: 88 — *Autographa mandarina* (FRR.). „Ural“, 89 — *Autographa macrogamma* (EV.). „Norway pol.“, 90 — *Cornutiplusia circumflexa* (L.). „Rossia merid. 1. IV. 1872“, 91 — *Syngrapha interrogationis interrogationis* (L.). „Tirol, Pitztal, 1350 m. 22. VII. 1931“.

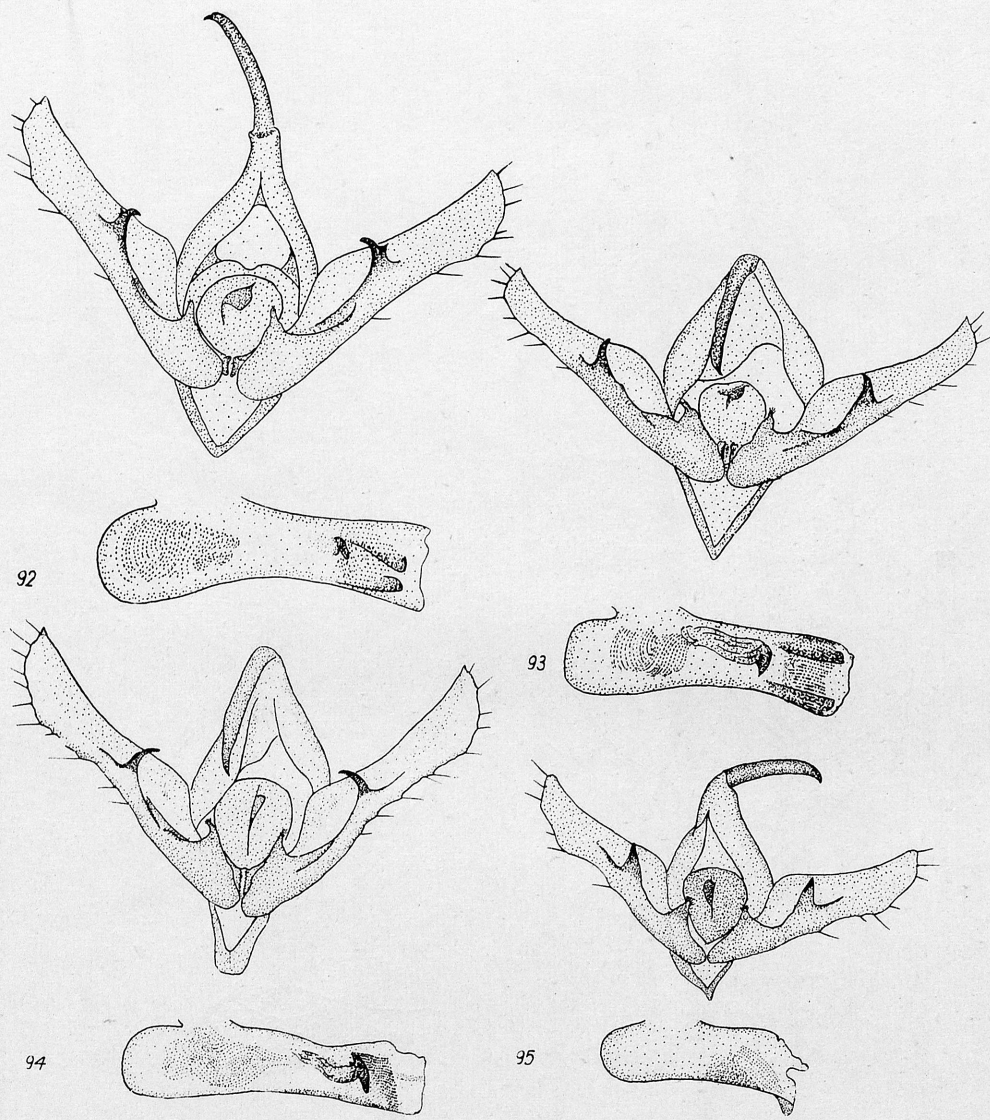


Fig. 92—95. Male genital armatures: 92 — *Syngrapha interrogationis groenlandica* (STGR.). „Grönland“, 93 — *Syngrapha interrogationis cinerea* WARR. „Spanien“, 94 — *Syngrapha transbaicalensis* (STGR.). „Transbaikal“, 95 — *Syngrapha parilis* (HBN.). „Labrador“.

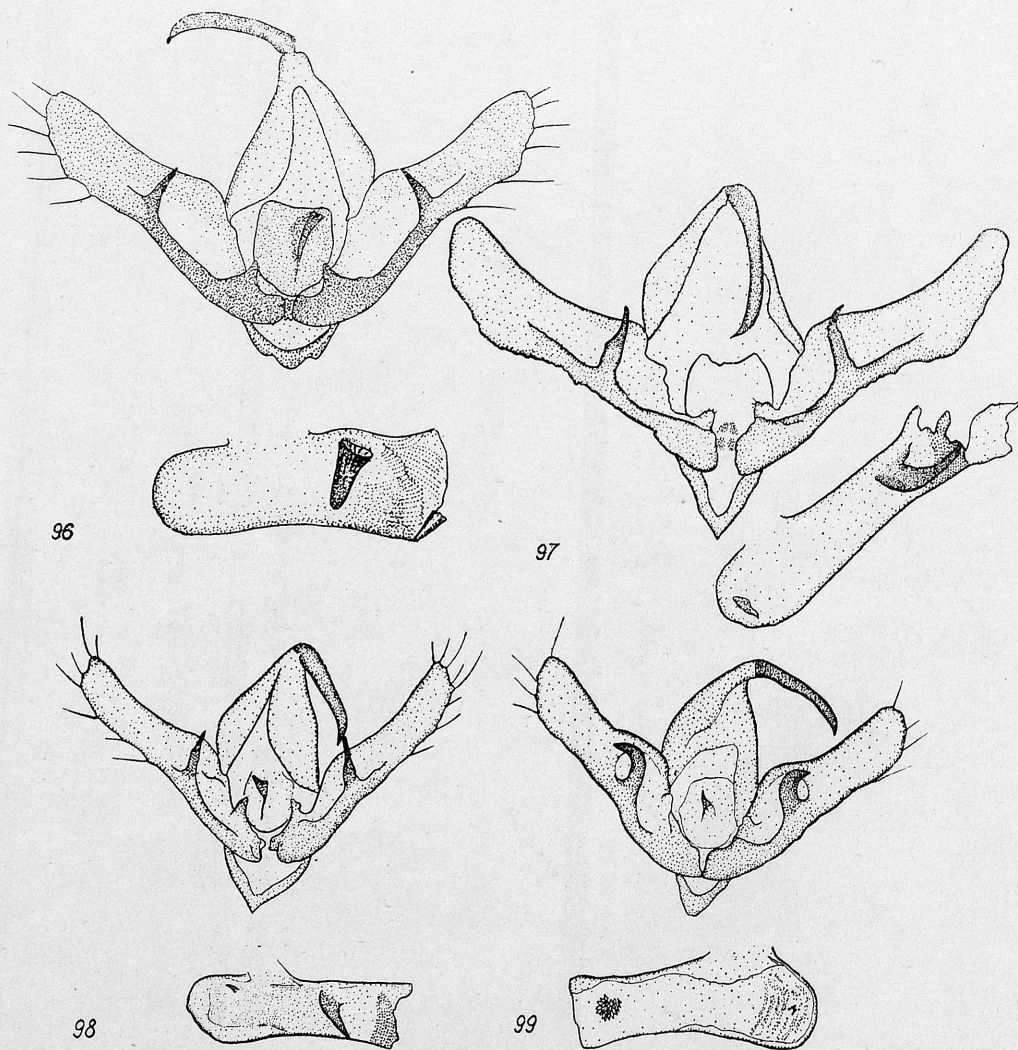


Fig. 96—99. Male genital armatures: 96 — *Syngrapha diasema* (Bsd.). „Lapponia, Porjus Lulea. VII. 1914“, 97 — *Syngrapha ain* (Hchw.). „Sonnblickgebiet, Fleiss. 20. VII. 1938“, 98 — *Syngrapha microgamma* (Hbn.). „Antony, pow. Święciany. 8. VI. 1937“, 99 — *Caloplusia hohenwarthi hohenwarthi* (Hchw.). „Davos“.

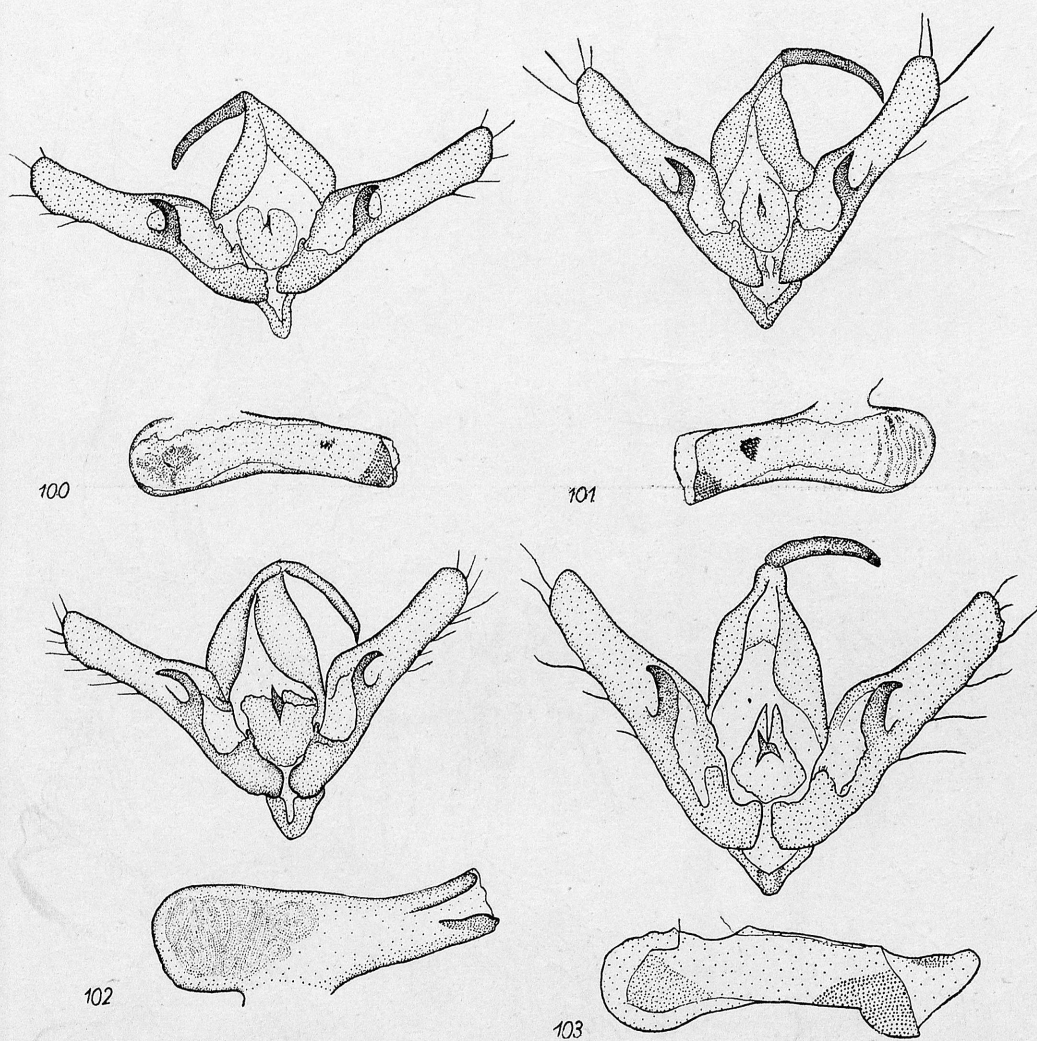
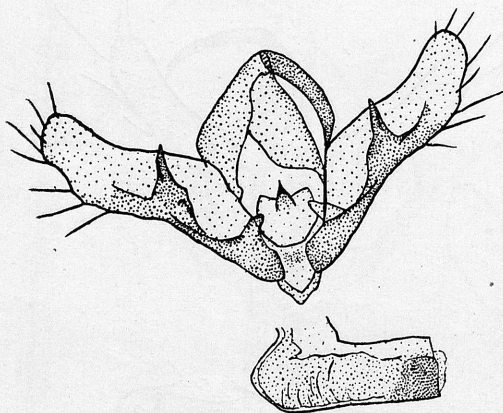
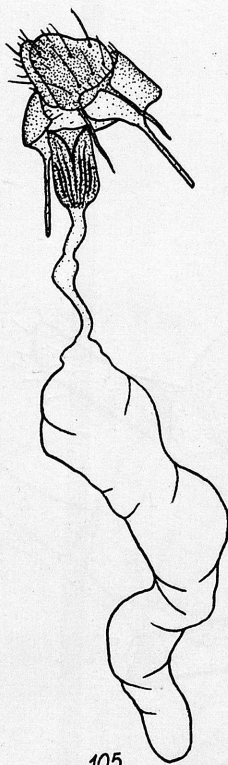


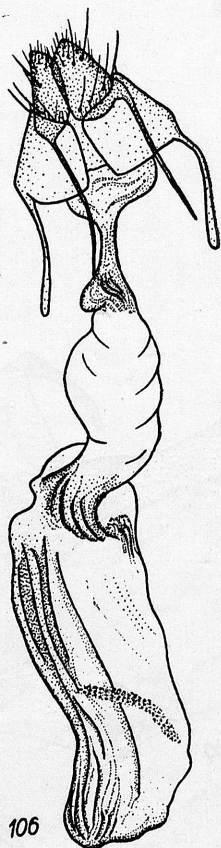
Fig. 100—103. Male genital armatures: 100 — *Calopplusia hohenwarthi lapponaris* SCHULTE. „Lapponia finl. Muonio. 22. VII. 1928“, 101 — *Calopplusia hohenwarthi alaica* (STGR.). „Kuku-Noor. 1908“, 102 — *Calopplusia composita* WARR. „Samarkant. 1909“, 103 — *Calopplusia tibetana* (STGR.). „Tibet, Siminin Alp“.



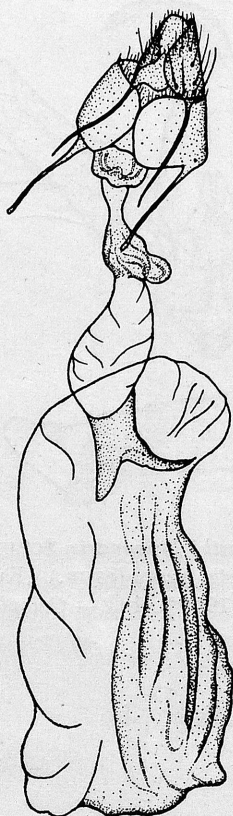
104



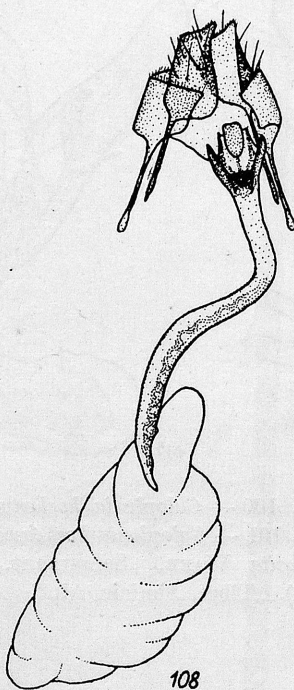
105



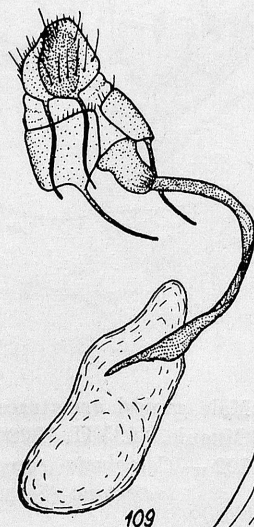
106



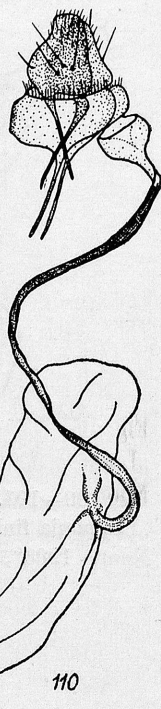
107



108



109



110

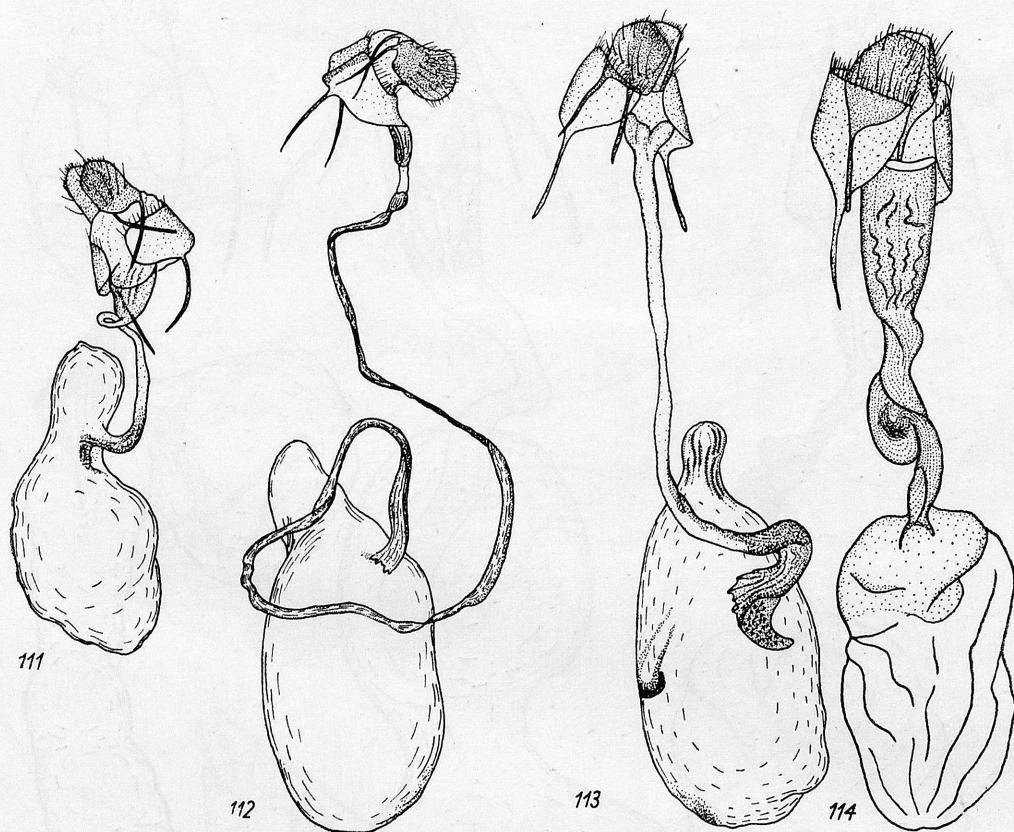


Fig. 104. *Caloplusia devergens* (HBN.). „Davos“. Male genital armature.
 Fig. 105—114. Female genital armatures: 105. *Anadevidia peponis* (F.). „Java, Pengalongan“,
 106. *Chrysodeixis chalcytes* (ESP.). „Dalmatien“, 107 — *Chrysodeixis eriosoma* (DBL.). „Jeru-
 salem, Jordanthal“, 108 — *Argyrogramma circumscripta* (FRF.). „Creta“, 109 — *Argyrogramma*
accentifera (LEF.). Patria ignota, 110 — *Argyrogramma albostrata* (BR. & GR.). „Kina Balu“,
 111 — *Argyrogramma daubei* (BSD.). „Corsica“, 112 — *Trichoplusia ni ni* (HBN.). „Ungarn“,
 113 — *Diachrysia orichalcea* (F.). „Tenerifa“, 114 — *Plusia chrysitis* (L.). „Ural“.

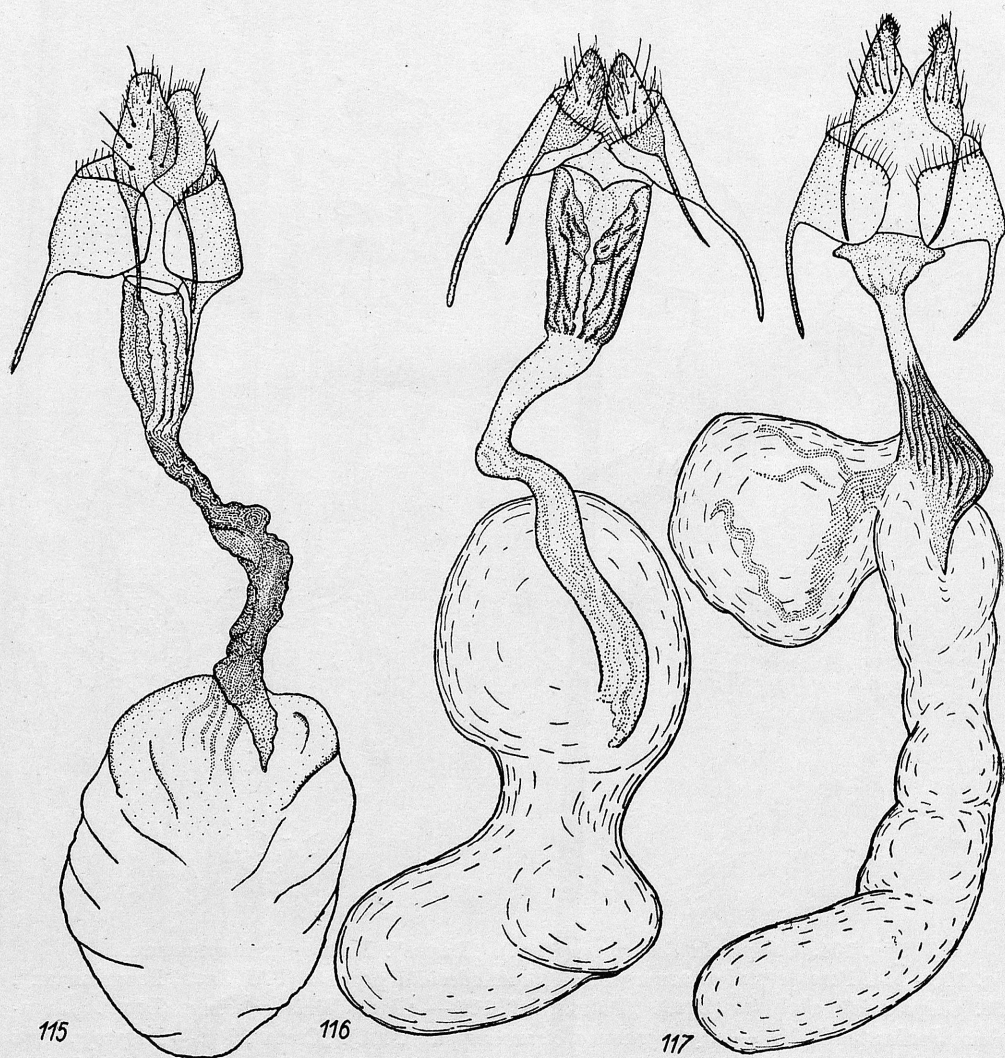


Fig. 115—117. Female genital armatures: 115 — *Plusia tutti* sp. n. Paratype. „Strzałków. 11. VIII. 1917, leg. F. SCHILLE“, 116—*Plusia stenochrysis* (WARR.). „Amurland“, 117—*Plusia chryson* (ESP.). „Italien“.

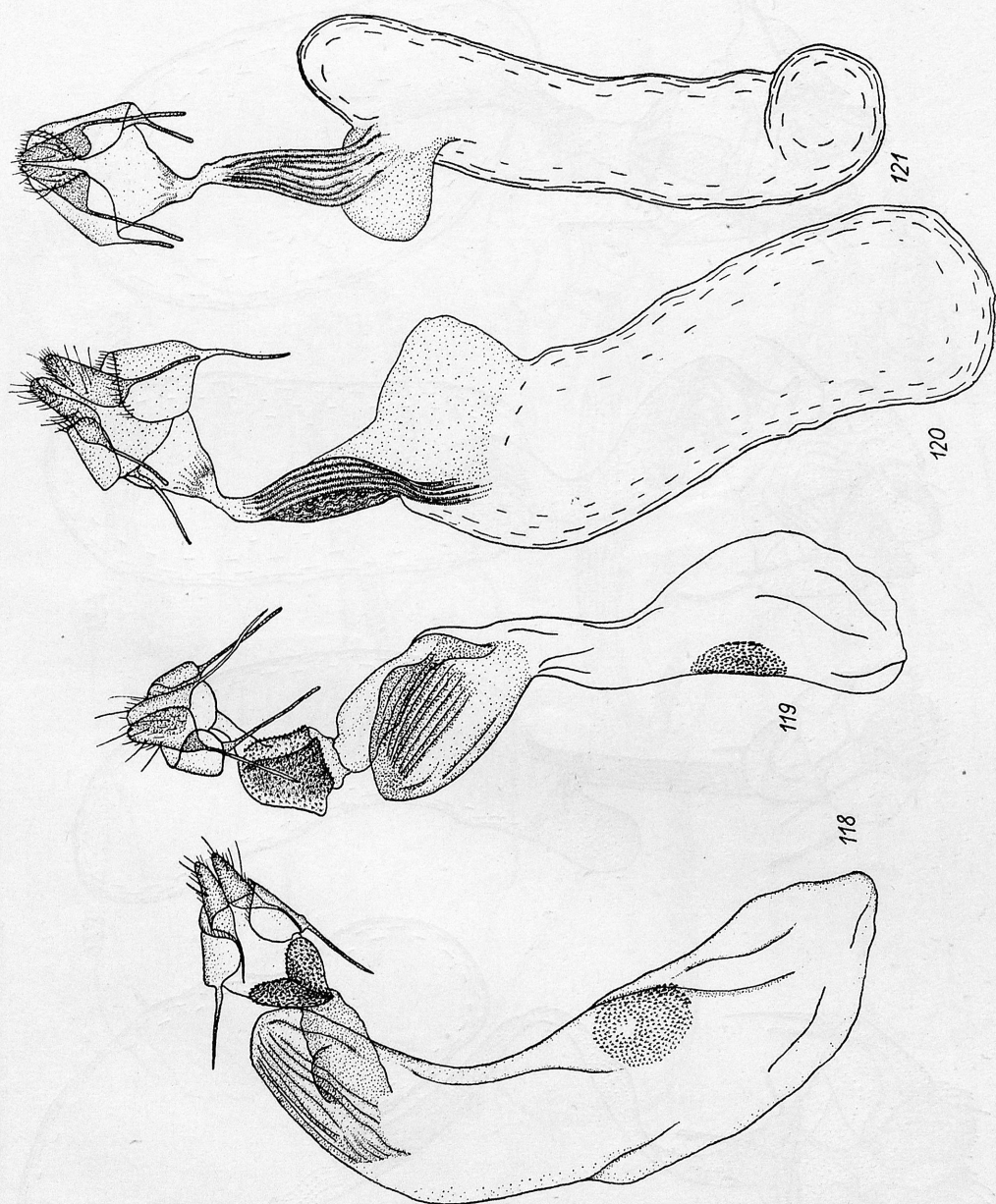


Fig. 118—121. Female genital armatures: 118 — *Macdunnoughia confusa* (STEPH.). „Pforzheim. 1928“, 119 — *Macdunnoughia crassigna* (WARR.). „Amurland“, 120 — *Polychrysis moneta* (F.). „Carlsbad“, 121 — *Polychrysis aurata* (STGR.). Type. „Ussuri“.

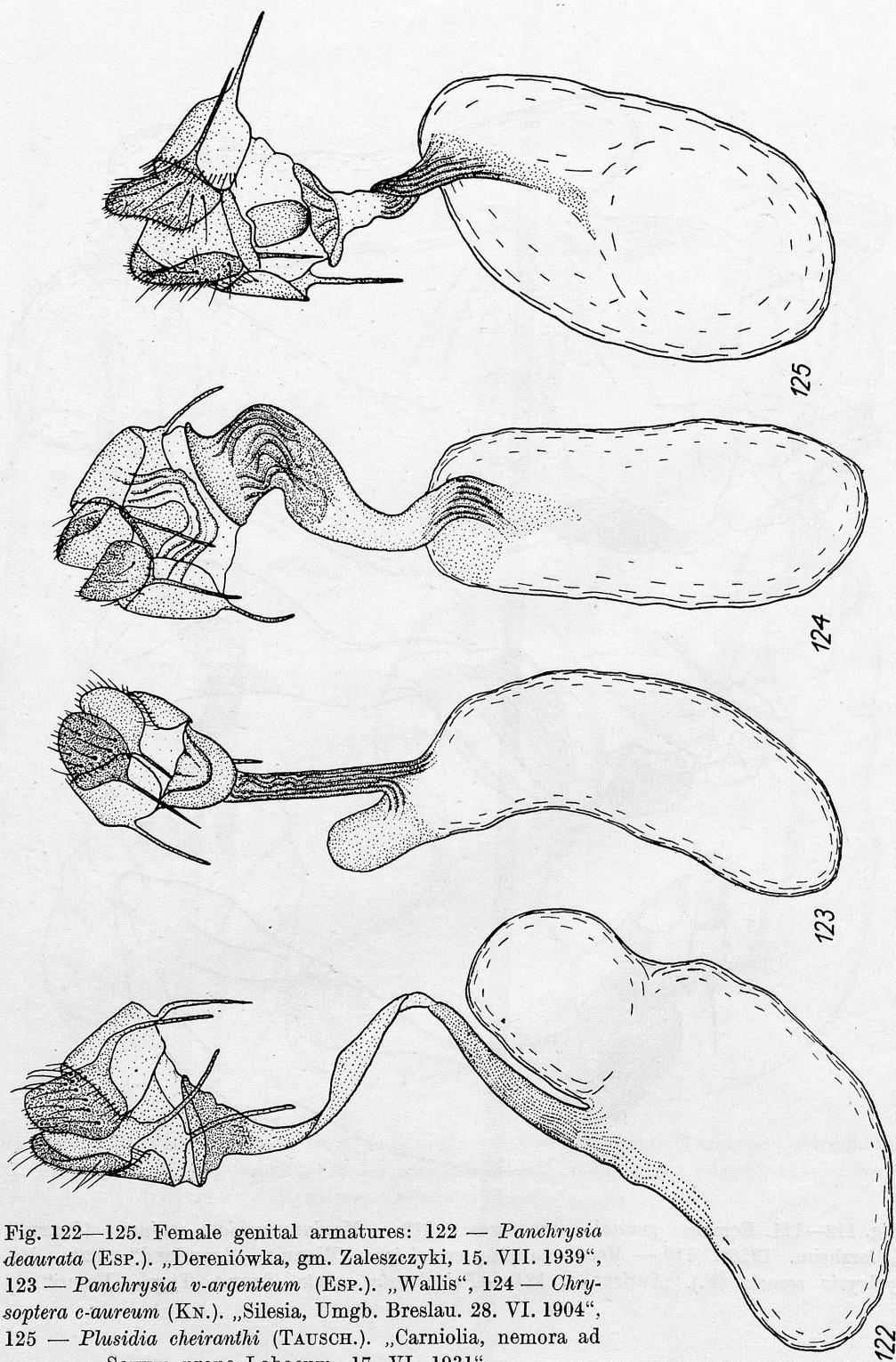


Fig. 122—125. Female genital armatures: 122 — *Panchrysia deaurata* (ESP.). „Dereniówka, gm. Zaleszczyki, 15. VII. 1939“, 123 — *Panchrysia v-argenteum* (ESP.). „Wallis“, 124 — *Chrysoptera c-aureum* (KN.). „Silesia, Umgb. Breslau. 28. VI. 1904“, 125 — *Plusidia cheiranthi* (TAUSCH.). „Carniolia, nemora ad Savum prope Labacum. 17. VI. 1931“.

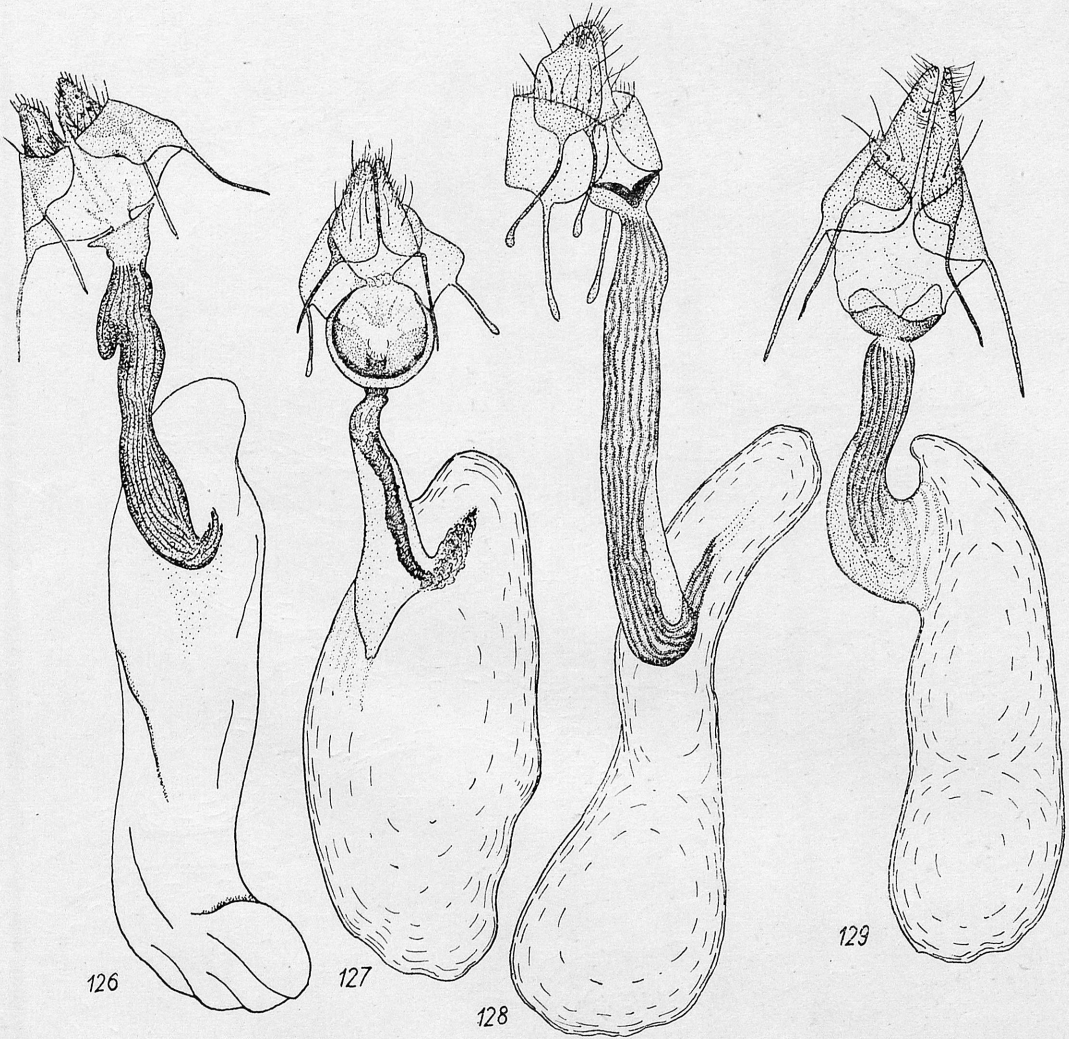


Fig. 126—129. Female genital armatures: 126 — *Euchalcia variabilis* (PILL.). „Frankreich“, 127 — *Euchalcia modesta* (HBN.). „Ofen“, 128 — *Euchalcia consona* (F.). „Naumburg-Thüringen. 25. VI. 1929“, 129 — *Euchalcia italica* (STGR.). „Abruzzen. 7000', 1882“.

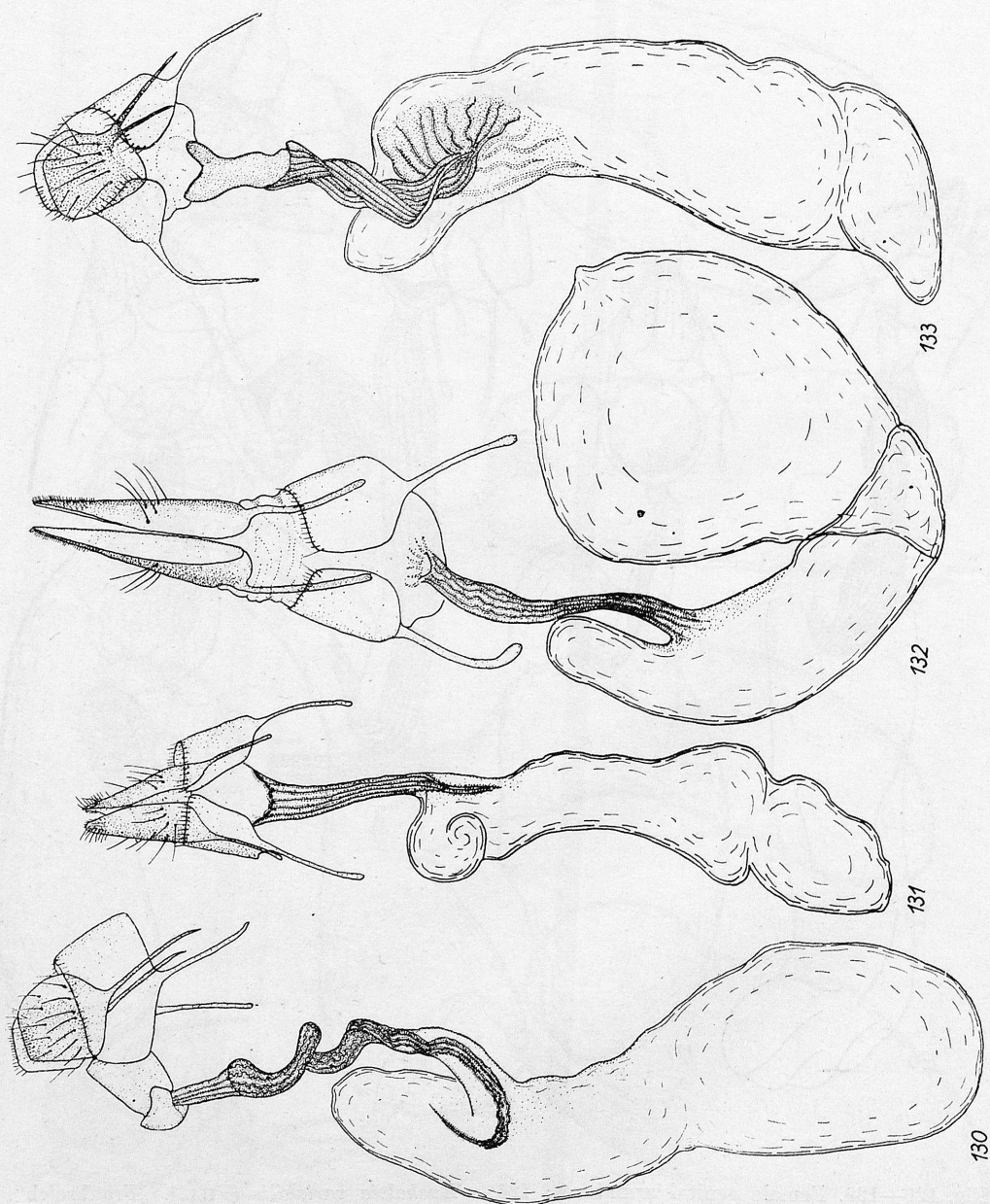


Fig. 130—133. Female genital armatures: 130 — *Euchalcia herrichi* (STGR.). „Ili, Centr. Asien“, 131 — *Euchalcia emichi* (RGHFR.). „Taurus“, 132 — *Euchalcia dorsiflava* (STDF.). „Kurdistan“, 133 — *Euchalcia inconspicua* (GRAES.). „Alexandergebirge“.

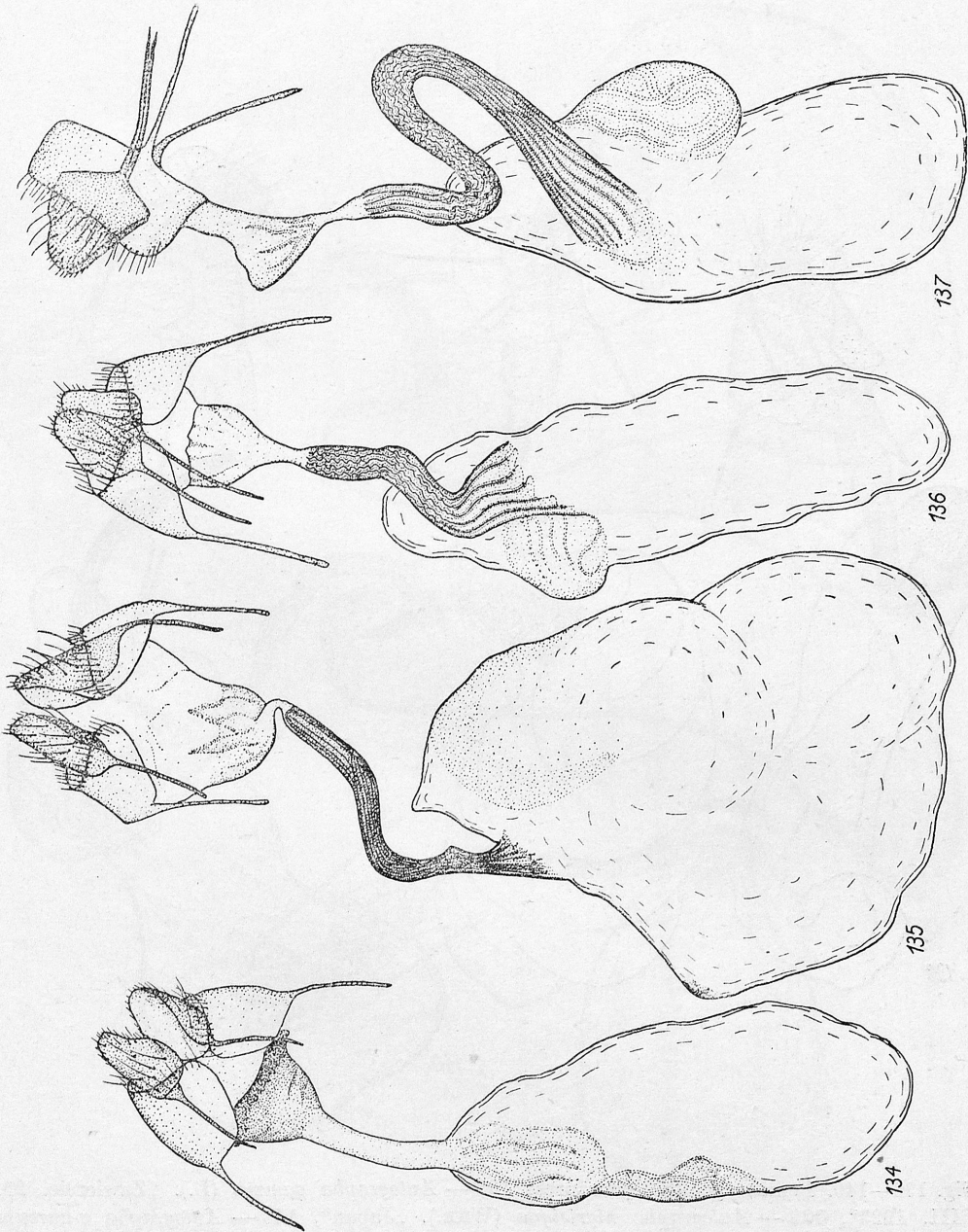


Fig. 134—137. Female genital armatures: 134 — *Chrysaspidia festucae* (L.). „Podole, Rakulowa“, 135 — *Chrysaspidia aemula* (SCHIFF. & D.). „Hochschwab“, 136 — *Chrysaspidia bractea* (SCHIFF. & D.). „Tirol, Pitztal, 1350 m.“, 137 — *Chrysaspidia excelsa* (KR.). „Siberia orient., Chitaiziki Sterena“.

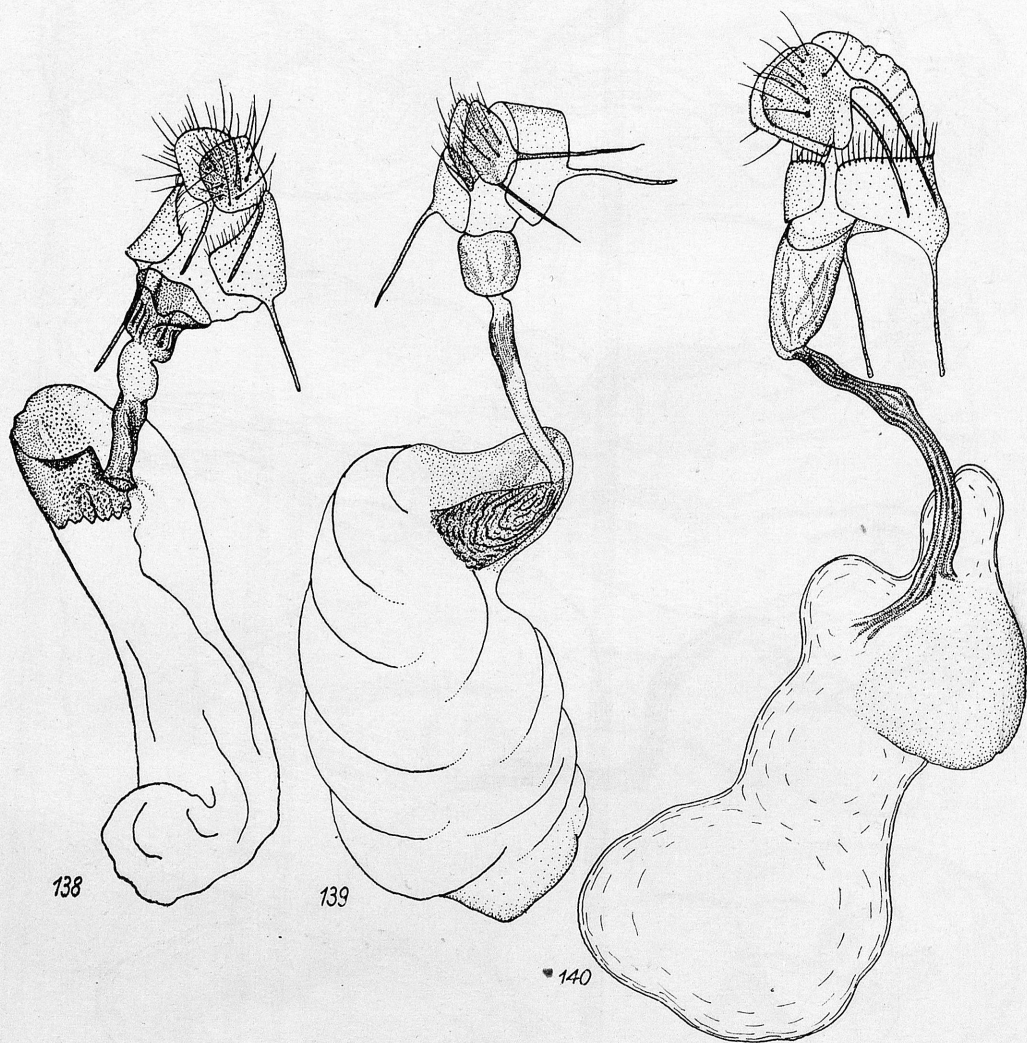


Fig. 138—140. Female genital armatures: 138 — *Autographa gamma* (L.). „Zawiercie. 25. VIII. 1923“, 139 — *Autographa nigrisigna* (WKR.). „Japan“, 140 — *Autographa v-aureum* (HBN.). „Oesterreich“.

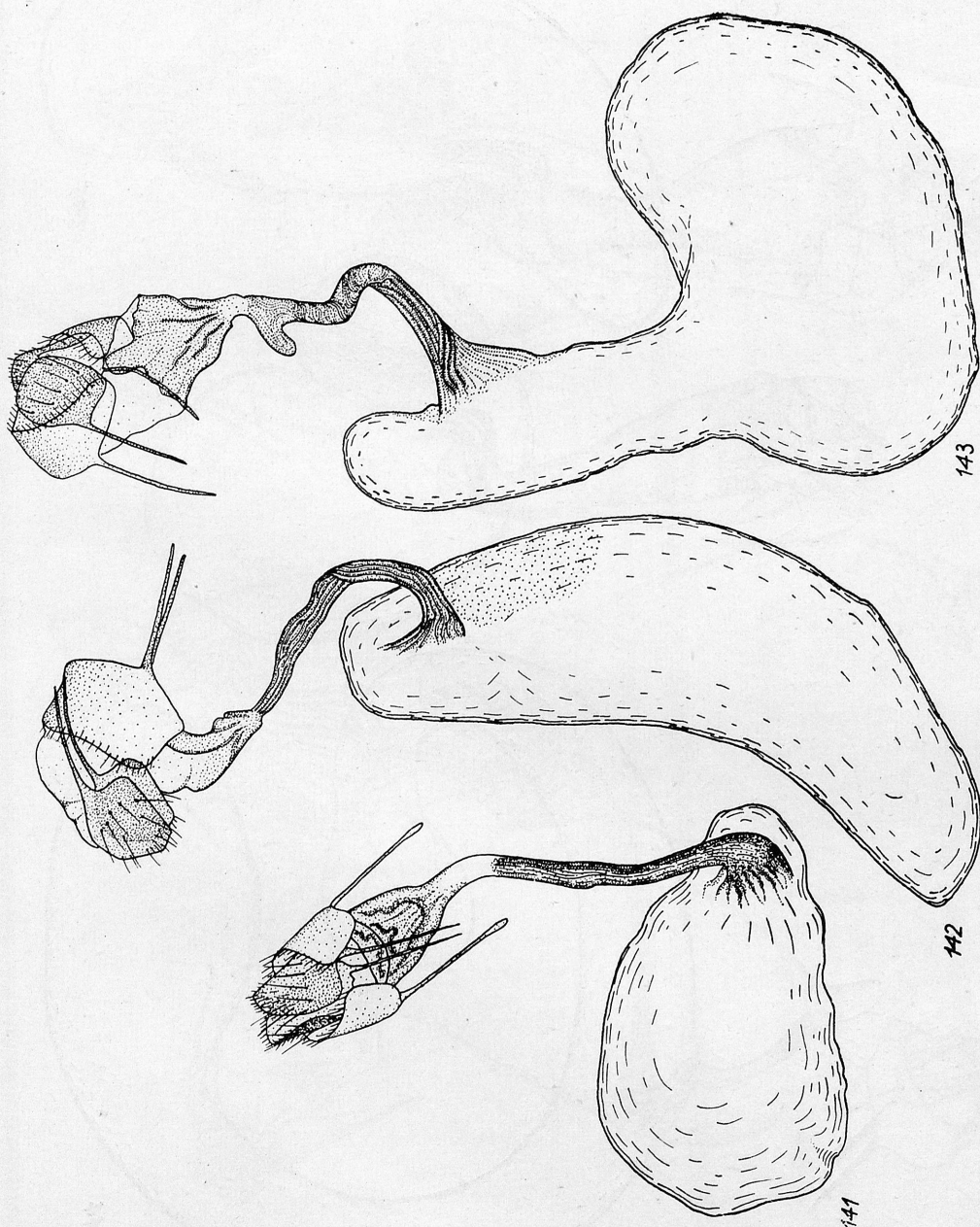


Fig. 141—143. Female genital armatures: 141 — *Autographa jota* (L.). „Simplon. 15. VII. 1901“, 142 — *Autographa mandarina* (FRR.). „Kentey“, 143 — *Autographa macrogamma* (Ev.). „Norway pol.“.

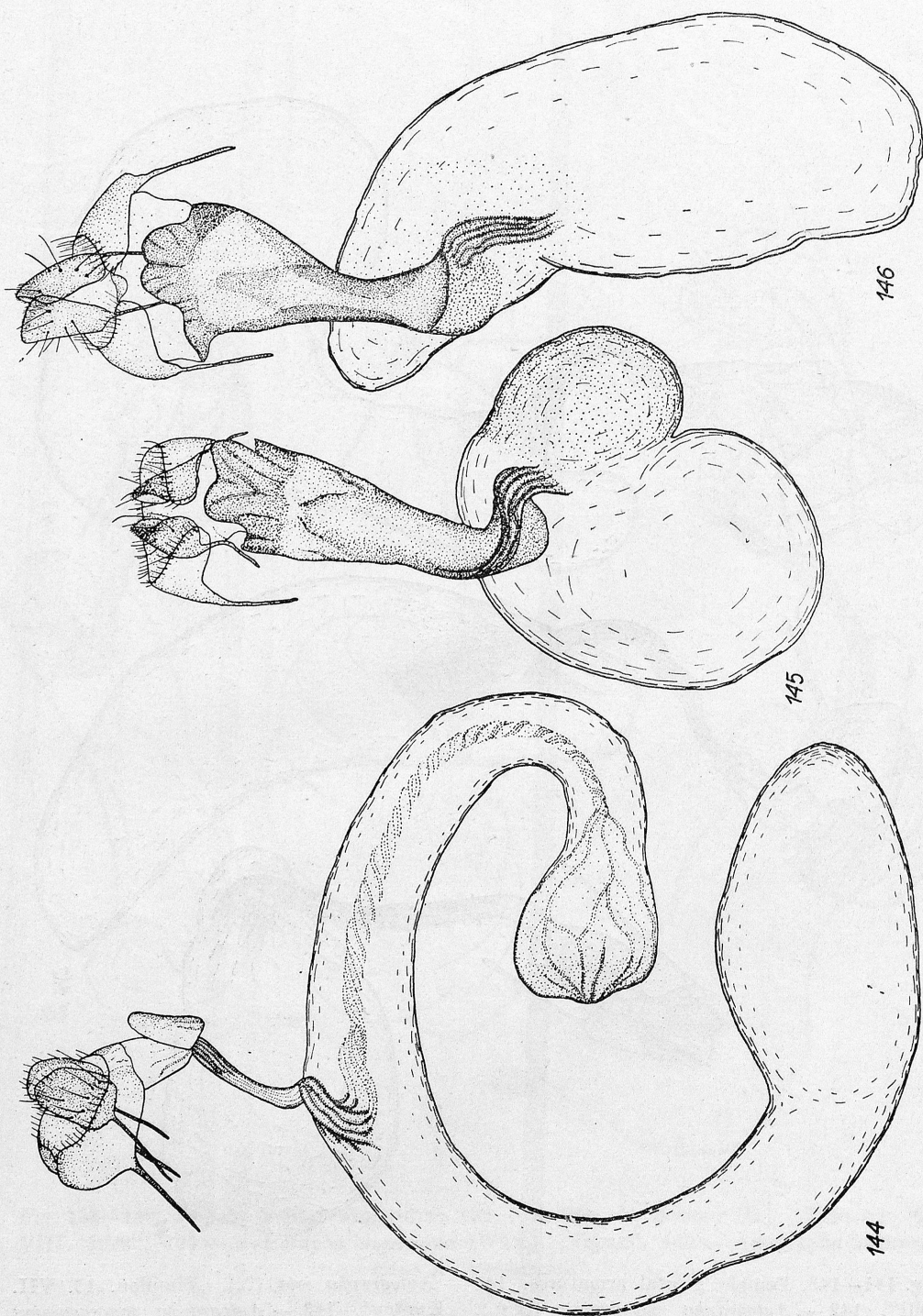


Fig. 144—146. Female genital armatures: 144 — *Cornutiplusia circumflexa* (L.). „Armenia“, 145 — *Syngrapha interrogationis interrogationis* (L.). „Hel, Jastarnia. 4. VIII. 1937“, 146 — *Syngrapha transbaicalensis* (StGR.). „Amur“.

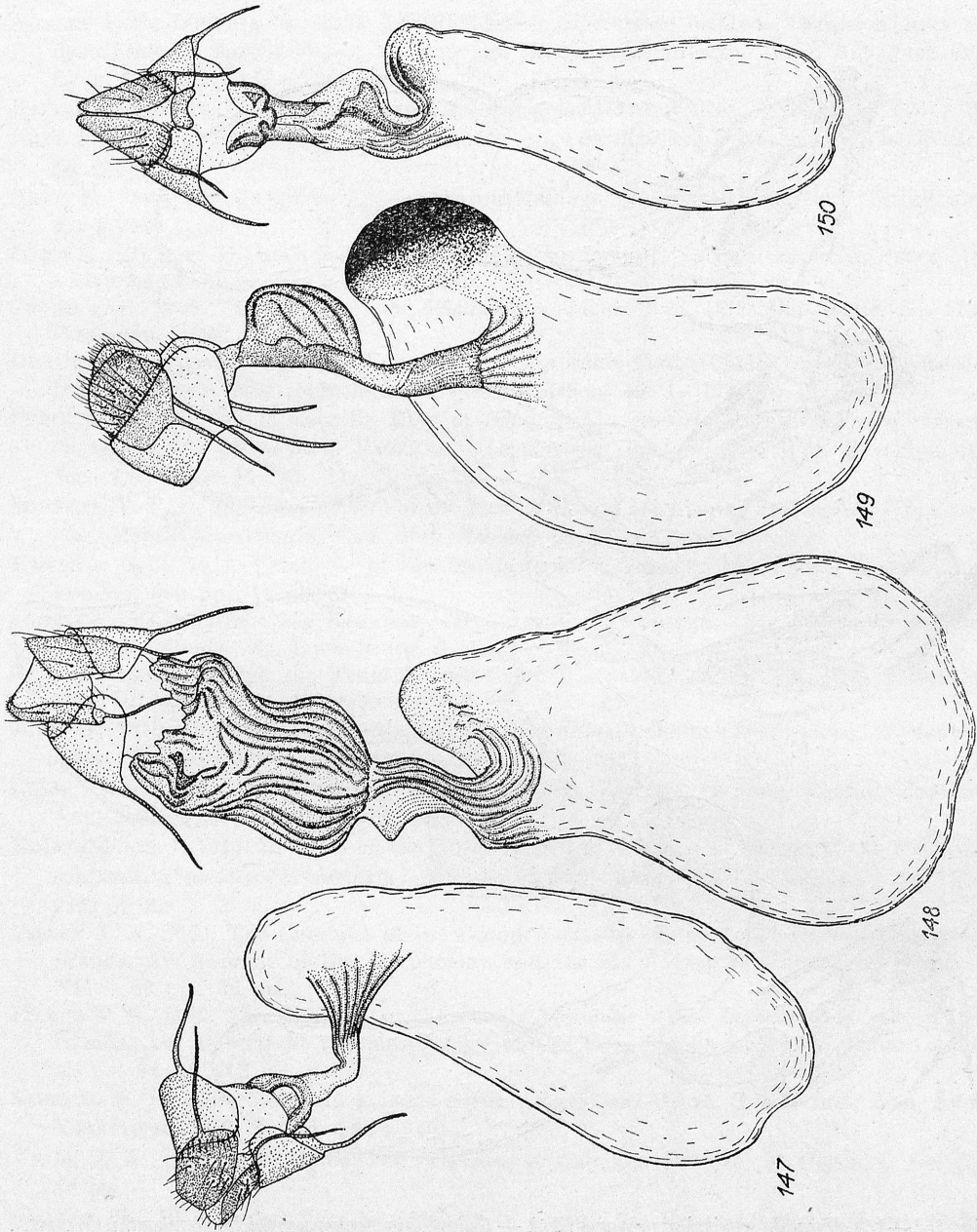


Fig. 147—150. Female genital armatures: 147 — *Syngrapha parilis* (HBN.). „Labrador“, 148 — *Syngrapha diasema* (BSD.). „Doverfjeld, Kongsvold, 1895“, 149 — *Syngrapha ain* (HCHW.). „Sonnblickgebiet, Fleiss. 20. VII. 1938“, 150 — *Syngrapha microgamma* (HBN.). „Rossia pol., 1895“.

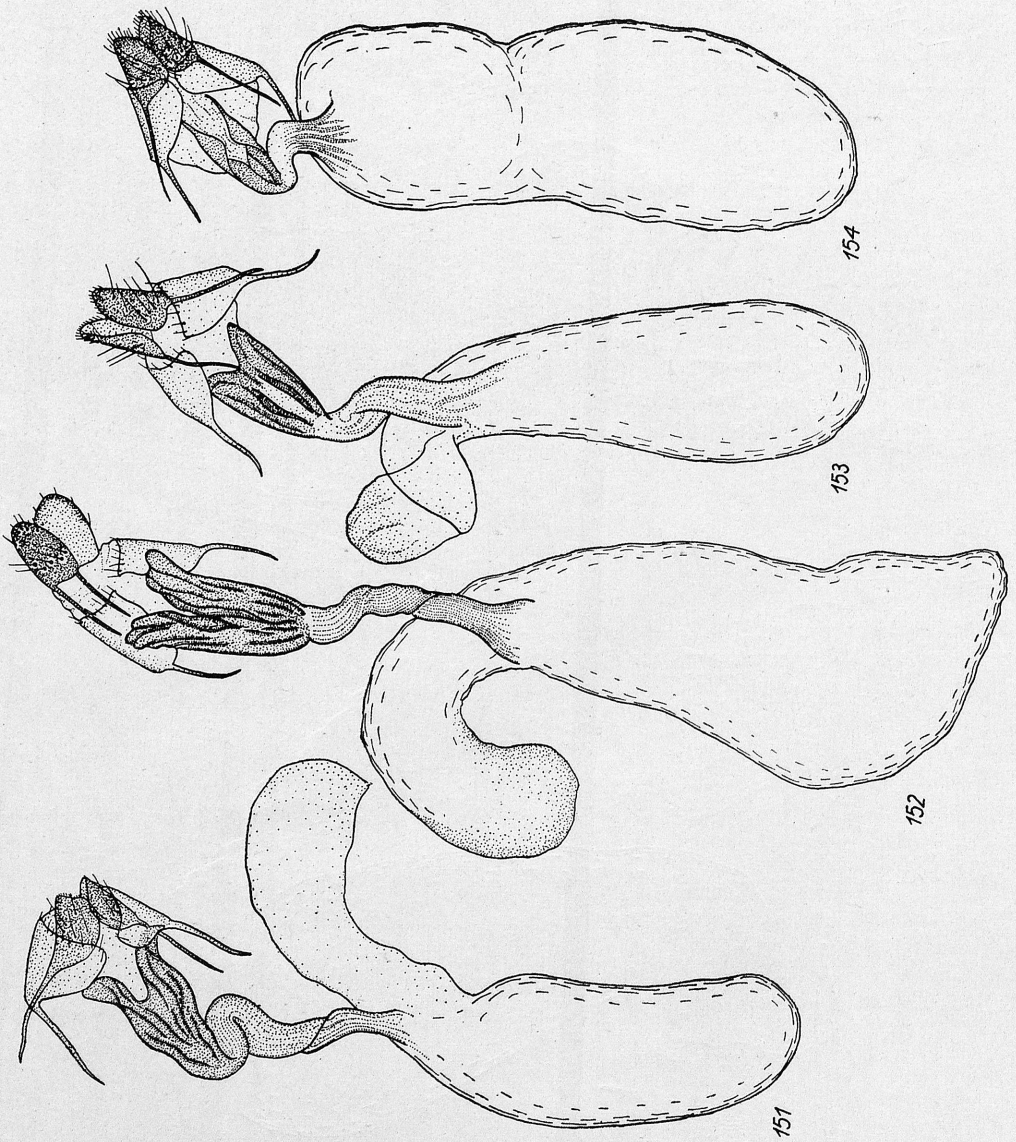


Fig. 151—154. Female genital armatures: 151 — *Caloptusia hohenwarthi hohenwarthi* (HCHW.). „Oberengadin“, 152 — *Caloptusia hohenwarthi lapponaris* SCHULTE. „Fennia, Petsamo. 2. VII. 1929“, 153 — *Caloptusia composita* WARR. „Alai-tal, am Koksus“, 154 — *Caloptusia devergens* (HBN.). „Zermatt. VIII. 1921“.

REFERENCES

- AUBERT J. F., BOURSIN CH. 1953. Les Phalenides (Noctuelles) du Jura. (Révision de la nomenclature et introduction à la faune des Macrolépidoptères du Jura). Bull. Soc. linn. Lyon, Lyon, **22**: 115—126.
- BAINBRIGGE FLETCHER T. 1950. A small *Euchalcia gamma*. Ent. Rec., London, **62**: 107—108.
- BRYK F. 1942. Zur Kenntniss der Grossschmetterlinge der Kurilen. Dtsch. ent. Z. Iris, Dresden, **56**: 3—90, pl. 2.
- BRYK F. 1949. Zur Kenntniss der Grossschmetterlinge von Korea. Ark. Zool., Stockholm, **41**: 1—115, pl. 7.
- CORTI A., DRAUDT M. 1938. Die palaearktischen eulenartigen Nachtfalter. In A. SEITZ „Die Grossschmetterlinge der Erde“, 3, suppl. Stuttgart, v + 332 pp., 26 pls.
- CRUMB S. E. 1956. The Larvae of the *Phalaenidae*. Techn. Bull. U. S. Dep. Agric. no. 1135. Washington, 356 pp., 11 pls.
- DRAUDT M. 1950. Beiträge zur Kenntniss der Agrotiden-Fauna Chinas aus den Ausbeuten Dr. H. HÖNE's. Mitt. Münchn. ent. Ges., München, **40**: 1—174, pl. 18.
- FERGUSON D. C. 1950. A nearctic Race of *Syngrapha microgamma* HÜBNER, with remarks on the Status of *montana* PACKARD. (*Lepidoptera*, *Phalaenidae*). Bull. Brooklyn ent. Soc., Lancaster, **50**: 23—27.
- FORBERS W. T. H. 1954. *Lepidoptera* of the New York and neighboring States. Part III, *Noctuidae*. Mem. Cornell agric. Exp. Stat., Ithaca, no. 329, 433 pp.
- HAMPSON G. F. 1913. Catalogue of the *Lepidoptera Phalaenae* in the British Museum. 13. London, 609 pp., 18 pls.
- JOHN O. 1909. Beiträge zur Kenntniss der Gattung *Plusia* OCHS. (*Lepidoptera*, *Noctuidae*). Rus. ent. Obozr., St. Petersburg, **8** (1): 74—86.
- JOHN O. 1909. Beiträge zur Kenntniss der Gattung *Plusia* OCHS. (*Lepidoptera*, *Noctuidae*). Rus. ent. Obozr., St. Petersburg, **8** (3—4): 215—227.
- JOHN O. 1910. O trech maloizwestnych vidach r. *Plusia* OCHS. (*Lepidoptera*, *Noctuidae*). Horae Soc. ent. Ross., St. Petersburg, **39**: 251—255.
- LESSE H. DE. 1951. Expéditions polaires françaises. Zoologie, 4 note, Macrolépidoptères. Ann. Soc. ent. Fr., Paris, **117**: 51—77.
- MCDUNNOUGH J. 1944. Revision on the North American Genera and Species of the Phalaenid subfamily *Plusiinae* (*Lepidoptera*). Mem South Calif. Acad. Sci., Los Angeles, **2** (2): 175—232, pl. 6.
- PIERCE F. N. 1900. The Genitalia of the Group *Noctuidae* of the *Lepidoptera* of the British Islands. An Account of the Morphology and the male Clasping Organs. Liverpool, XII + 88 pp., 32 pls.
- PIERCE F. N. 1942. The Genitalia of the Group *Noctuidae* of the *Lepidoptera* of the British Islands. An Account of the Morphology of the Female reproductory Organs. Oundle, XVI + 64 pp., 15 pls.
- SAVENKO R. F. 1956. Materialy k faune sovok (*Noctuidae*) Gruzii. Trudy Inst. Zool. Akad. Nauk Gruz. SSR, Tbilisi, **14**: 5—47.
- VALLE K. J. 1940. *Macrolepidoptera*, *Noctuae*, in Animalia Fennica. 4. Helsinki, 484 pp., 32 pls.
- WARREN W. 1914. Eulenartige Nachtfalter. In SEITZ „Die Grossschmetterlinge der Erde“. 3, abt. 1. Stuttgart, 510 + IV pp., 75 pls.

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

STRESZCZENIE

Praca niniejsza jest systematycznym opracowaniem palearktycznych gatunków *Plusiinae* i zarazem uzupełnieniem i rozszerzeniem pracy McDUNNOUGH na obszar całej Holarktyki. Autor daje analizę zoogeograficzną omawianej grupy, jej filogenezę, omawia krytycznie dotychczasowe układy systematyczne. Pracę kończy przegląd systematyczny gatunków. Zostały opisane trzy nowe rodzaje: *Anadevidia* gen. n. z typem rodzajowym *Noctua peponis* F., *Macdunnoughia* gen. n. z typem rodzajowym *Plusia confusa* STEPH. oraz *Cornutiplusia* gen. n. z typem rodzajowym *Phalaena Noctua circumflexa* Z. Nadto został opisany nowy gatunek *Plusia tutti* sp. n., dotychczas mylony z bardzo podobnym *P. chrysitis* (L.). Rodzaj *Abrostola* OCHS. został w pracy pominięty.

РЕЗЮМЕ

Предъявляемая работа является систематической разработкой палеарктических видов *Plusiinae* и заодно дополнением и растирением работы McDUNNOUGH'a 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* СТЕРН. 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* ОЧНС. в работе опущен.

Redaktor zeszytu: dr St. Bieszyński

Państwowe Wydawnictwo Naukowe — Oddział w Krakowie 1961

Nakład 800+100 egz. — Ark. wyd. 8, — Ark. druk. 6¹²/₁₆ — Papier ilustr. kl. III 80 g 70×100
Zam. 194/61

Cena zł 24.—

Drukarnia Uniwersytetu Jagiellońskiego w Krakowie

