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The Tortricinae and Sparganothinae of Japan
(Lepidoptera: Tortricidae)
(Part I)

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Introduction

The Tortricidae is a large, cosmopolitan family of small to medium-sized moths. In Japan, the family is represented by three subfamilies: viz., Olethreutinae, Tortricinae and Sparganothinae. As is commonly known, in several groups of this family the costal margin of the forewing is sinuous and when the moth is resting, its outline roughly resembles that of a bell. Hence, these moths are sometimes called the bell-moths. The larvae feed on the foliage of many species of coniferous and deciduous plants. They bind, crumple, or roll the leaves together to form a shelter and because of this habit they are commonly called leaf-rollers or leaf-tiers. Often they occur abundantly enough to cause considerable injuries to plants of economic importance.

It was the original intent of this study to enumerate all the just species occurring in Japan, to give characters for identification of both adults and larvae, and to summarize biological information.

In the present paper, I treat 134 species and 8 subspecies belonging to 39 genera of the subfamily Tortricinae and 1 genus comprising 2 species have been recognized as belonging to the subfamily Sparganothinae. Of these, two genera and 1 subgenus and 11 sepcies and 3 subspecies are originally described. The larvae of 46 species belonging to 20 genera are described in detail, and some biological observations are given.

It seems useful to compile all available data concerning systematics either from the literature or from my own observations. The study of all such characters as the wing ventaion, the haed, labial palpus, and the genigalia of bloth sexes, biological data, including food plants and ecology, and geographical distribution are of importance.

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Historical Review

The Japanese Tortricidae has been studied by several authors. Only a few species have been named by Motschulsky (1846) and Butler (1879). These authors used the characters of the pattern of wings in their works. More detailed study of the Japanese Tortricidae began with the paper by Walsingham (1900). Soon afterwards an important series of papers by Meyrick has been published in the Journal of the Bombay Natural History Society. In his large publications entitled "Exotic Microlepidoptera", Meyrick described many species belonging to this family. He dealt with the Tortricidae in his two further works (Meyrick, 1895, 1913). Meyrick's system was entirely based on such the external characters as wing venation, the shape of palpi or antenna. Although in many cases his system has proved to be a good guide for a sound classification of Lepidoptera, still there remained many in deficient problems. In 1923, Pierce and Metcalfe published their system of clasasification based on the characters of the male and female genitalia, thus offering a best criterion for the classification. That has proved to be most usable and satisfactory arrangement. However, the availability of their paper was restricted to the British fauna. Since then, the structure of the genitalia have been employed in the classification of the family Tortricidae.

Diakonoff (1939) used the genital characters of both sexes, besides the coloration and venation in his study of the Indo-Malayan and Papuan faunas.

Then Obraztsov (1954–1957) published a revision of the genera of the Paraearctic Tortricidae.

The history of the studies of the Japanese Tortricidae is as follows.

In 1931 Matsumura illustrated 42 species including the descriptions of 4 new species. Diakonoff described *Epagoge stenochorda* and *Homona magnanima* in 1948, and also *Cerace xanthocosma* in 1950. Issiki (1950) illustrated 25 species of this family in a revised edition of the "Iconographia Insectorum Japonicorum". Later on, Inoue (1954) listed 91 species from Japan. Kodama (1956) wrote a paper on the larvae of Tortricidae infesting the apple tree, treating 13 species of the subfamily Tortricinae. Then Oku (1956) published his paper on the study of *Acleris*, describing *A. alnivora* and *A. elegans* as new. The same author (1957) described an additional new species, *Acleris issikii*, and gave some synonimic notes on two species of the genus *Archips*. In 1957 and 1959, two books containing the colour illustrations of the Tortricid moths were published in Japan. In the first of them Issiki treated 70 tortricids species, while in the latter one Okano listed only 63 species. Issiki (1959) illustrated the larvae of 4 species in a famous book entitled "Illustrated Insect Larvae of Japan". Oku (1961) published his paper on the bilolgy of the Japanese Tortric-

idae. The paper by Kodama (1960) was devoted to the larvae of 14 species of the genus *Archips* occurring in Japan. In 1961, two papers on the Tortricidae were published. Thus Oku recorded *Cornicacoecia lafauryana* as a pest of strawberry in Hokkaido, then Issiki published a handbook under the title of "Microlepidoptera Injurious to conifer in Japan". In that book he reported the infestations of 7 species and gave the description of two new species, viz., *Choristoneura coniferana* and *Epagoge abievora*. In 1962 he listed also 19 species infesting the coniferous plants in Japan. The paper by Oku (1963) comprises the descriptions of *Lozotaenia kumatai* and *Clepsis insignata*. Since 1963, important series of enlightening papers by Kawabe has appeared. In 1963a he published his paper on *Tortricodes*, discussing the status of *T. ignavana* and describing *T. razowskii*, and in the same year (1963b) he described three new *Acleris* species, namely *bicolor*, *pulchella* and *nigrilineana*. The redescriptions of 5 species belonging to the genus *Pandemis* were published by Kawabe in 1963c. Further he wrote (Kawabe, 1964, 1965) papers on the species of *Homona* and *Ptycholoma* and described three new species (1964b), viz., *Clepsis monticolana*, *Hastula hoshinoi* and *Philedone violetana*. Kawabe redescribed (1965b) or recoreded 3 genera and 17 species of the subfamily in question, and moreover he described one new genus (*Hoshinoa*) and one new species, *Archips insulanus*. His paper on *Clpsis* (1965c) comprises the descriptions of two new species (*jinboi* and *aliana*) both from Japan. Yasuda (1956) wrote a paper on *Adoxophyes*, he (1957) described a new species, *Philedonides magnata*, and in 1961 he published a paper on the Japanese *Archips*-species containing the descriptions of *A. peratratus*, *A. fumosus*, *A. issikii* and *A. brevicelvicus*. The description of *Homona issikii* was published by him in 1962. Yasuda and Razoswki (1964) described 8 new species namely *Acleris simplex*, *A. takeuchii*, *A. hokkaidana*, *A. electrina*, *A. crassa*, *A. phantastica*, *A. ophthalmicana* and *A. roxana*. Yasuda (1965) published a paper on *Acleris* in which he described 3 further new species, viz., *A. kurokoi*, *A. kodamai* and *A. aestuosa*. In the same yaer (1965b) he published a revisional paper on the Japanese Ceracinii. The book by Razowski (1966) on the world fauna of the Tortricini includes the descriptions of 3 Japanese species namely *Acleris yasudai*, *Croesia dentata* and *Tortrix kawabei*.

Systematic Position of Tortricinae

A historical review of the taxonomy of the Tortricidae has been discussed in the preceding chapter. The immature stages of the species of the family were worked out by Petersen (1948) and MacKay (1959). They considered tortricids and olethreutids to be the separate families of the Tortriciodea. Only Swatschek (1958) published his opinion that not a single character could be found to treat olethreutids as a distinct family. Cochylidae (Phalonidae auct.) differ in the genitalia, wing venation and larval characters from other tortricid moths and should be treated as a separate family within the group (Razoswki. 1970). Carposinidae, however, very often treated as tortricids (genus *Carposina* H.-S. has been sometimes included in Cochylidae) is nothing but the leaf-roollers and is a distinct family.

The family Tortricidae is defined here after Obraztsov (1954), and the Japanese Tortricidae are classified as follows:

Family TORTRICIDAE (Schiffermuller & Denis, 1775) Stephens, 1828
- Subfamily Olethreutinae Walisngham, 1897
  - Tribes: Eucosmini, Laspeyresiini, Olethreutini
- Subfamily Tortricinae Fernald, 188w2
  - Tribes: Tortricini, Cnephasiini, Archipini, Ceracini
- Subfamily Sparganothinae (Walsingham, 1913) Obraztsov, 1943

Definition and Classification

It seems to me that the classification best showing the relationships among the taxa of the subfamily Tortricinae is that of Obraztsov. The following key is prepared to facilitate the distinction of the particular subfamilies of the Tortricidae occurring in Japan:

1. Base of upper side of cubital vein of hindwing with pecten.....2
–. Base of upper side of cubital vien of hindwing without pecten.....Tortricinae
2. Labial palpus long; gnathos well sclerotized, not coalescent medially; cucullus not developed; juxta simple.....Sparganothinae
–. Labial palpus short; gnathos membranous, coalescent medially; juxta in form of olethreutoid .....Olthreutinae

Material and Systematics

Early collections of Japanese Microlepidoptera were made by H. Whitely (1866) mostly in Hakodate (Hokkaido) and by F. Jonas (1875), who collected chiefly in Yokohama near Tokyo. These materials were described by A. Butler in the work entitled "Illustrations of typical specimens of Lepidoptera Heterocera in the collection of the British Museum". In the 1880's, H. Pryer, J. Leech and Manley made some collections in Japan. The tortricid portions of their collections were subsequently reported by L. Walsingham in his "Asiatic Tortricidae", and the types of newly described species were deposited in the British Museum (Natural History). Further on J. Harmand (1906) and E. Gallois (1909) collected the moths near Tokyo or Chusenji and the materials became the source of the paper by Diakonoff on the Japanese Microlepidoptera. The types of the sepcies described by Diakonoff are deposited in the Paris Museum.

A good collection of Japanese Microlepidoptera has been made by S. Matsumura, who has deposited it in the Entomological Institute, Hokkaido University. In the years 1912–1970, a largest single collection of Japanese Microlepidoptera was gathered by Issiki, Osaka. His materials, which initiated the developement of the studies of the Japanese Microlepidoptera, are now in his private collection. In the years 1950–1955 a considerable incidental collection of the Tortricidae was done by M. Hoshino, who thansfered it to A. Kawabe of Tokyo. The Tortricidae of the northern parts of Japan were collected by T. Oku and T. Kumata, now deposited in Hokkaido University. The other large collections of the Tortricidae are those done in Honshu by A. Kawabe and T. Oku.

The Japanese materials examined by myself consist of over 3500 specimens, the majority of which are deposited in the collection of the University of Osaka Prefecture. Some types and other speciemens have been also studied by me in the collections of the particular private collectors, institutions and museums. Some have been kindly lent to me for study.

Systematics

The characters of the head are of little value in the presnet classifications, but serve to supplement the description for identification purposes. The size or shape of the labial palpus and its relative length to the diamater for the eye have been used to some extent, as they are considerably larger in certain genera. But it is note worthy that these characters are not constant in some larger genera. Antenna is one-third as long as the forewing's costa, in male it is usually ciliate. The scapus of antenna is deeply notched inwardly in the representatives of the genus *Pandemis*. The classification employing such characters is impracticable.

The thorax is often tufted with conspicuous upraised scales at the scutellum of the mesonotum and it is called the thoracic crest. This character is usually present in the genera *Archippus*, *Homonopsis*, *Argyrotaenia* and *Acleris*. However, owing to the variability of that character a caution must be paid on the reliability of it in the case of determination.

The structure of the tarsus of the hind leg is one of the important characters to determine the tribes. Some peculiar bristles are present on each of the tarsal segments 1–4 in the representatives of the tribes Ceracini, Cnephasiini, and Archipini. These bristles in the examined Japanese species of the Tortricinae are absent in the tarsi of the Tortricini. In such genera of the Archipini as *Pandemis*, *Archips*, *Archippus*, *Hoshinoa*, *Cornicacoecia* and *Aphelia*, the bristle groups on segments 1–4 are 6:6:5:3, as shown in figs. 247, 248. In the Ceracini (*Cerace*, *Eurydoxa* and *Pentacitrotus*) a series of the bristles is situated along the apical edge of the segments 1–4, as in fig. 246.

The wing venation and the variability of wing pattern will be discussed at the definitions of the particular tribes.

In both sexes of the majority of the species belonging to the genera *Archippus* and *Archips*, the tergite of the second and sometimes third abdominal segments are provided with a pair of deep rounded pits (fig. 274). These pits are also present in the pupal cases, and are not found in other genera of the Japanese Tortricinae. The function of these pits remains still obscure.

External structure of the male genitalia provides the basis for the classification and should be relied upon for all critical determination. In all Tortricidae gnathos is more or less distinct, and plays an important role during copulation. In Archipini and Cnephasiini gnathos has a shape of two srtong arms terminated in a plate or median hook. In the remaining Tortricidae gnathos is latered: in Sparganothinae its arms are not coalescent terminally and in Tortricini the median part of gnathos is fused with the tuba analis. However, the structures of the latter replace gnathos in ist function. The gnathos of Olethreutinae is similar as in the Tortricini, but the structures of tuba analis are weaker, and practically lose its function in many species. The uncus is absent in the Tortricini, but it is always fully developed in the remaining tribes. The tuba analis is of significance only in the Tortricini having a form of a broad plate ventrally to the tegumen. In the genera of the Cnephasiini, for instance *Cnephasia*, *Eana* and *Kawabea*, the papillae anales are large and flat, especially posteriorly (so-called floricomous type of the ovipositor). The shape of the posterior portion of the organ is rather regular in *Cnephasia* but sometimes distinctly asymmetrical in *Eana* and *Kawabea*. The signum is usually elongate having a form of a single smooth horn in a considerable number of the representatives of that Archipini. In the tribes Cnephasiini and Tortricini, the signum is usually plate-shaped, rounded, or elongate, provided with numerous smaller or larger thorns.

In the present paper I follow the terminology used in the "Taxonomist's glossary of Genitalia in Insects" and those of the books by Diakonoff (1954) and Razowski (1966). The names of the particular parts of the male and female genitalia are given in figs. A–F.

Early Stages

The eggs of the Tortricini and Cnephasiini are deposited singly or in small groups on rough surfaces (stem, branche, etc.) and leaves. The members of the Archipini, Ceracini and Sparganothinae lay their eggs in masses. The eggs of the Tortricinae are flat and rather scale-like.

Larva. Cheatoatxy is important on the specific level of the family. The typical arrange-

ment of the setal map of the body are illustrated as in fig. 672. The setae are named according to the system proposed by Hinton (1946).

Pupa. Pupation of the majority of the species normally takes place in the last larval shelter. The shape of the cremaster of the pupa is considerably diversified in the tribes. The fundamental forms of the cremaster may be classified as follows:

Ceracini-Cremaster long, provided with knife shaped setae (figs. 253–255).

Archipini-Cremaster long, with billfook-shaped setae (figs. 256–258).

Tortricini-Cremaster short, curved inwardly, with long hook-shaped setae (figs. 261, 262).

Cnephasiini-Cremaster very short, in a form of a sclerotized porjection of the end of the last abdominal segment (figs. 259, 260).

Pupal case has two rows of the spines on the dorsal surface of the abdominal segments primarily. Usually the pupa pushes itself partly out of the cocoon just before the adult emerges, except for the Ceracini-species.

Biology

Only about 50% of the data of the food plants of the Japanese Tortricinae-species are available. The knowledge concerning the food plants of many species is fragmental and based on only a singly or a very few rearing records.

Knowledge on the hibernating habits of the particular species is very few in Japan. The *Archips*-species enter an obligatory initiation of diapause in the egg stage soon after the oviposition. The species of *Archippus* and *Pandemis* and *Adoxophyes orana* enter diapause in the second or third instar larvae, and the hibernaculums are spun by them on the twig or under the bark of the host plants. Both *Ptycholoma imitatior* and *Ptycholomoides aerferana* hibernate probably in the first or second instar larvae.

Oku (1966) wrote a paper on the diapause of some leaf-rollers of apple. The results are as follows: Under the laboratory condition at 15°C and 11–13 hours of illumination per day, the pre-diapause behaviour could be observed, and so-(A) the hibernating larva wander for seraching the hibernation site after finishing full feeding at a certain instar (manly the second instar in *Pandemis heparana*, the third or fourth instar in *Archippus breviplicanus*, and the third in *Adoxophyes orana*); (B) the larvae become turbid-yellow, losing a greenish tone in the body-colour, when they finished spinning of the hibernacula between the floss-stopper and the wall of rearing-tube; (C) the larvae become inactive just after moulting in the hibernacula.

It seems possible that the hibernating stadium of the larva determines the number of the generations in a particular species. For instance, such species as *Choristoneura diversana* or *Ptycholomoides aeriferana* enters diapause in the first instar larvae which do not eat before the winter. The moths appear in mid-summer, thus having a single generation per annum. *Pandemis heparana* and *chlorograpta* enter diapause in the third instar larvae which make hibernacula. They have two generations annually. The larvae of *Adoxophyes fasciata* and some *Archippus*-species and *Cerace xanthocosma* enter hibernation in the same instar, but they do not build hibernacula feeding occasionally in warmer day. Such moths have 2–3 generations a year *Homona magnanima* which enter diapause in the later instar than the above mentioned species (probably fourth or fifth) does not make any hibernaculum often feeding during the warmer winter days. It has 3 or 4 generations a year.

Apparently all the sepcies of the Japanese Tortricinae are normally active only in the early evening and during the night. The females of *Pseudeulia vermicularis* are attracted to light, but the males are active only in early evening.

The results of the experiments on the response of tortricids moths to the chemical lamp and white light are as follows. Although the temperature, precipitation, wind-velocity and the phase of the moon varied throughout the season, the chemical lamp attracted more tortricid moths than the white light in all the cases, regardless to the postion or the density of the traps. The intensity of the light is of less importance.

Host-plant preference.

The majority of the Tortricidae feed on the browse of the dicotyledonous plants. Although most of the larvae feed on their host plants externally, the representatives of the subfamily Olethreutinae are very often the borers. The larvae of the representatives of the subfamily Tortricinae are for the most part polyphagous or oligophagous and all sorts of dichotyledonous and coniferous plants are utilized by them. However, at least 3 species feed primarily on the grasses in Japan.

In Japan, food plants of 75 of the 142 species of the Tortricinae are known. The majority of those species have been observed to feed on one or several plants. The data are as yet too fragmentary of permit us to draw any conclusions on the host specificity for most of the species of the subfamily Tortricinae. But, the dicotyledonous angiosperms are the plants most often used by the larvae of this subfamily as a food source, and Rosales comprise the basic group of the food plants especially in northern parts of Japan.

The spceies of this subfamily feed on the members of 49 families of the plants. Of those, 32 species (40%) are oligophagous and polyphagous feeding on more than one plant families. In fact, certain plant families appear on the host list only because of this subfamily of the moths. For instance, four *Pandemis*-species feed on the members of the plant family Rosaceae in various parts of the Palaearctic Region, but all four are polyphagous, viz., *P. heparana* is recorded to feed on 37 genera of the palnts belonging in 19 families. The monophagous Tortricinae-species live on the plants of 26 families, while both oligo-phagous and polyphagous speices are utilizing the members of 40 plant families. Table 1

Table 1. Number of species of Torticinae and Sparganothinae utilizing families of plants in Japan.

Plant Family	Tortricinae				Sparganothinae	Total
	Archipini	Cnephasini	Tortricini	Ceracini		
Rosaceae	24	1	5	1	1	32
Salicaceae	14	1			1	18
Pinacea	14	1	1	1		17
Betulaceae	7		6			13
Fagaceae	10		3			13
Compositae	11	1			1	13
Leguminosae	9	1			1	11
Ericaceae	5	1	2	1		8
Aceraceae	7			1		8
Oleaceae	5	1			1	7
Ulmaceae	6		1			7
Juglandaceae	3	1	1		1	6
Moraceae	6					6
Polygonaceae	4	1			1	6
Umbelliferae	3	1			2	6

shows the numbers of the Tortricinae and Sparganothinae species living on the particular members of the plant families.

If consideration is taken into the phylogenic relationship on the species level, the examples of almost all the types of the relationship between the insects and host plants are found in Tortitcinae. It is interesting to point out that *Acleris yasudai* is remarkably restricted to one genus of plants, but uses at least 3 species within the genus. Less restricted food habit is found in *Archippus piceanus similis*, which has been recoreded from eight host-plant genera of one family, the Pinaceae. The other extreme is the case of *Pandemis heparana* which feeds on 37 genera in 19 different families (all Dicotyledoneae), while *Homona magnanima* accept the species of 35 genera in 26 families (both Gymnospermae and Angiospermae) as food plants.

Extremely polyphagous habits are exhibited in the Archipini. Many of them have been recorded from more than one dozen of the plant species. Some species of *Archips* feed mostly on the Rosaceae, Fagacea, Ulmaceae and Salicaceae and other species of that genus on the coniferous trees. The species of *Hoshinoa* are also recorded from Rosaceae, Fagaceae and Salicaceae. It is interesting that Fagaceae, Ulmaceae and Salicaceae are colsely related to the Rosaceae. *Pandemis*, *Archips*, *Archippus* and *Hoshinoa* are primarily feeding on the Rosaceae. Palaearctic *Pandemis* departs from the usual pattern of the group in feeding on Rosaceae-Betulaceae-Salicaceae-Leguminosae. *Archips* and *Hoshinoa* are primarily associated with Rosaceae, Fagaceae, Betulaceae, Salicaceae and Moraceae. The Japanese members of *Archippus* feed not only on the Myrisinaceae and Euphorbiaceae like their more southern relatives but also on the Rosaceae, Fagaceae, Betulaceae and Aceraceae.

Although the food-plants of some larvae of *Pandemis*, *Archips*, *Hoshinoa*, *Archippus* and *Ptycholoma* are covering Rhamnales, Celastralis, Malvales, Leguminosae, Hamamelidales, Urticales, Fagales, Myricales or Salicales, thier morphological charactors are so similar to the larvae of Rosales feeding genera including *Archips*. Judging from his fact together with the phylogenic relationship of the food-plants, it is assumed that the Rosales feeding species may represent the originaltstock from which the rest of the Palaearctic Archipini are derived.

The larvae of *Archpis xylosteanus* feed preferably on *Castanea* and *Alnus*, but very locally on *Ulmus*. And the larvae of *Sparganothis pilleriana* commonly occurrs on Compositae, but locally on *Oneothera*, *Chenopodium*, *Filipendula*, *Fraxinus*, *Juglans*, *Matteucia*. Twelve species of the Tortricinae, viz., *Archips issikii*, *A. fumosus*, *Archippus piceanus similis*, *Archippus* (*Pararchips*) *pulchra*, *A.* (*P.*) *abiephaga*, *Ptycholomoides aeriferana*, *Lozotaenia coniferana*, *Homona issikii*, *Eana argentana*, *Acleris abietana nigrilineana*, *Paracroesia abievora* and *Eurydoxa advena* are exclusively restricted thier food plants to the conifers. *Spatalistias bifasciana* feeds inside the fruits of *Rhamnus costata* (Rhamnaceae) or *Cornus controversa* (Umbelliferae). In the Archipini, *Pseudargyrotoxa diticinctana* presumably feeds normally only on young shoots of *Syringa reticulata* (Oleaceae). *Epagoge* sp. 1 and *Argyrotaenia congruentana*, at least in some special circumstances, feed on the dead leaves of deciduous trees.

It is possible that the evolution from woody plant feeding to grass-feeding habits has developed through the plant framily Leguminosae.

There remained many problems still unsolved. However, I do hope that the above remarks will be of use.

A list of the host plants for the particular species is given at the end of this paper.

Natural enemies

The larval stage is most frequently attacked by the parasites, but the egg and pupal

stages are also parasitized. The most important parasites are belonging chiefly in the orders Hymenoptera and Diptera. The majority of the parasites of the Tortricinae is found in the order Hymenoptera. These belong for the most part to the Ichneumonidae, Braconidae and Chalcidoidea. Among them Ichneumonidae are of greatest importance, then follows superfamily Chalcidoidea and braconids. Next to the Hymenoptera the dipterous family Tachinidae is abundant in attacking the Tortricinae larvae. The Ichneumonidae comprise the largest group which has been recorded as parasites of the Japanse Tortricinae, and probably they are also the commonest, at least so far as the number of host-parasite relationships is concerned. The following parasites have been recorded from Japan:

Eurydoxa advena Filipjev
(Ichneumoniaed) *Phaeogenes spiniger* (Gravenhorst)
P. eurydoxae Uchida
Omorgus shikotsensis Uchida
(Braconidae) *Meteorus* sp.
(Tachinidae) *Myxexoristops blondeli* R.–D.
Zenilali (*Serixozenillia*) *albipila* Mesnil
Nemoriall floralis Fallen

Cerace xanthocosma Diakonoff
(Tachinidae) *Pseudoperichaeta insidiosa* R.–D.
Zenillia libatrix Panzer

Pandemis heparana Hübner
(Ichneumonidae) *Glypta sapporensis* Uchida
Macrocentrus pallidipes Nees

Archips fuscocupreanus Walsingham
(Tachinidae) *Pseudoperichaeta insidiosa* R.–D.

Archips xylosteanus Linnaeus
(Ichneumonidae) *Phaeogenes eurydoxae* Uchida
(Chalcididae) *Brachymeria obscurata* Walker
(Tachinidae) *Steiniomyia bakeri* Townsend

Archippus piceanus similis Butler
(Ichneumonidae) *Acropimpla jezoensis* Matsumura
A. pictipes Gravenhorst
Agrothereutes japonicus Uchida
Apechthis rapae Uchida
Glypta bipunctoria Thunberg
Gambrus tricoloripes Uchida
Itoplectis alternans Gravenhorst
Phaeogenes spiniger Gravenhorst
Pimpla disparis Viereck
Scambus heichinus Sonan
Theronia atalantae Poda
(Braconidae) *Macrocentrus marginatol* Nees
(Eurytomidae) *Eutytoma* sp.
(Pteromalidae) *Habrocytus* sp.
Pteromalini sp.
(Tachinidae) *Elodia tragica* Meigen
Nemorilla maculosa Meigen
Pseudoperichaeta insidiosa R.–D.
Nemorill floralis maculosa Meigen

Archippus (*Pararchips*) *pulchra* Butler

(Ichneumonidae) *Acropimpla jezoensis* Matsumura
A. pictipes Gravenhorst
Apechthis rapae Uchida
Glypta bipunctoria Thunberg
Itoplectis alternans Gravenhorst
Pimpla disparis Viereck
Scambus heichinus Sonan
Theronia atalantae Poda

(Braconidae) *Macrocentrus marginatol* Nees

(Pteromalidae) *Habrocytus* sp.
Pteromalini sp.

(Torymidae) *Monodontomerus calcaratus* Kamijo

(Tachinidae) *Elodia tragica* Meigen
Nemorilla maculosa Meigen
Pseudoperichaeta insidiosa R.-D.

Hoshinoa longicellan Walsingham

(Braconidae) *Macrocentrus pallidipes* Nees

Lozotaenia coniferana Issiki

(Ichneumonidae) *Pimpla disparis* Viereck
Teleutaea sachalinensis Uchida

Ptycholomoides aeriferana H.-S.

(Ichneumonidae) *Ephialtes* sp.
Cephaloglypta laricis Momoi
Itoplectis alternans spectabilis Matsumura
Lissonota sp.
Maesochorus sp.
Phaeogenes yezoensis Uchida
P. spiniger Gravenhorst
Pimpla disparis Viereck
P. illecebrator Villers
P. nipponica Uchida
P. turionellae Linnaeus
Scambus sp.
Theronia atalantae gestator Thunberg
Tranosema sp.
Monodontomerus calcaratus Kamijo

(Braconidae) *Meteorus* sp.
Rogas sp.

(Eupelmidae) *Eupelmus* sp.

(Pteromahidae) *Habrocytus* sp.

(Torymidae) *Monodontomerus calcaratus* Kamijo

(Pteromalidae) *Pteromalid* sp.

(Tachinidae) *Bessa selecta fugax* Rondani
Nemorilla floralis Fallén
Pseudoperichaeta insidiosa R.-D.

Homona magnanima Diakonoff

(Ichneumonidae) *Campoplex homonae* Sonan
Pimpla parnarae Viereck
Teleutaea minamikawai Momoi

(Chalcidiade) *Brachymeria obscurata* Walker
(Trichogrammatidae) *Trichogramma dendrolimi* Matsumura

Adoxophyes orana F.-R.

(Ichneumonidae) *Campoples homonae* Sonan
Itoplectis alternans spectabilis Matsumura
I. narangae Ashmead
Lycorina ornata Uchida
(Chalcididae) *Brachymeria obscurata* Walker
Euchalcidia kajimurai Habu
(Trichogrammatidae) *Trichogramma dendrolimi* Matsumura

Adoxophyes fasciata Walsingham

(Braconidae) *Apanteles adoxophyesi* Minamikawa
Bracon adoxophesi Minamikawa
Meteorus adoxophyesi Minamikawa

Economic Importance

In Japan some trotricid caterpillars have been known as the pests of various shrubs and trees and occasionally the grasses. The larvae of the members of the tribe Archipini are usually polyphagous and feed on various cultivated crops. Many species of this group are destructive of forest, shade and fruit trees. For example, apple tree is attacked by 24 species of this subfamily. They are as follows:

Archipini
Pandemis heparana Schiffermiller & Denis
P. cinnamomeana Treitschke
P. chlorograpta Meyrick
Archips fuscocupreanus Walsingham
A. xylosteanus Linnaeus
A. crataeganus ssp. 1.
A. nigricaudanus Walsingham
Archippus ingentanus Christoph
A. asiaticus Walsingham
A. reviplicanus Walsingham
Hoshinoa adumbratana Walsingham
H. longicellana Walsingham
Homona magnamima Diakonoff
Cornicacoecia lafauriana Ragonot
Choristoneura diversana Hübner
Ptycholoma licheana circumclusana Christoph
P. imitator Walsingham
Clepsis strigana Hübner
Adoxophyes orana Fischer v. Roslerstamm
Homonopsis foederatana Kennel
H. illotana Kennel
Acleris cristana Fabricius
A. comariana Zeller
Cnephasiini
Cnephasia cinereopalpana Razowski

Especially *Archips fuscocupreanus*, *A. xylosteanus*, *Pandemis heparana*, *Adoxophyes orana* and *Homona magnanima* feed on a wide range of plants including fruit trees of the Rosaceae, as apple, pear and cherry. The best known of the leaf-rollers in the apple orcards is *A. fuscocupreanus*, the species occurring in Japan, and Korea. *A. xylosteanus* is widely distributed in the Palaearctic Region. This moth is closely related and superficially similar to *A. fuscocupreanus* but it differes in the structure of genitalia. The geographical distribution of these two species is now known to be almost allopatric. *Archippus breviplicanus*, the adult of which may be distinguished from *Archips fusoccupreanus* by a short costal fold and the presence of a fine costal patch of the forewing, is also a destructive leaf-roller attacking apple and pear. This species is spread in Hokkaido and Honshu.

The most notorious of the apple pests is *Adoxophyes orana*. In northern parts of Japan, where *A. orana* causes extensive damage to apple crops, poison baits and ilght traps have been tried with little effects. The genus *Adoxophyes* contains a number of economically important species occurring in Europe and Asia. The adults of many of these are superficailly or genitalically very similar to each other and difficult to separate.

Homona magnanima is attacking the leaves of many trees and shrubs in all parts of Japan. *Acleris comariana* feeds chiefly on strawberry, but may also attack some *Rosa*-species. The fruit-tree leaf rollers, *A. fuscocupreanus* and *A. xylosteanus*, attack sometimes *Castanea crenata* or *Alnus japonica*, and *Tortrix sinapina* does considerable damage to oak in the alpine zone in central Honshu. *Cnephasia cinereopalpana* feed mainly on Compositae, but at some localities the main hosts are *Rumex*, *Chenopodium*, *Heracleum* and *Mentha*.

The Tortricidae are undoubtedly the important family of insects affecting forest trees. More than 24 species of the subfamily Tortricinae are known to occur in the forests in Japan. Important members of this subfamily attacking conifers are *Archippus piceanus similis*, *Archips fumosus*, *Choristoneura diversana*, *Lozotaenia coniferana*, *Ptycholomoides aeriferanus* and *Eurydoxa advena*. The larvae of *A. piceanus similis* live in partially eaten cyllindrical tubes made of needles of *Cedrus deodara* or the *Pinus*-species *A. fumosus* attacks *Abies sachalinensis*, *Taxus cuspidata* and some other trees in Hokkaindo. *Lozotaenia coniferana*, *Choristoneura diversana* and *Eurydoxa advena* feed on *Abies sachalinensis*, *A. veitchii*, *Picea jezonesis* and other hosts in the alpine zone and in northern parts of Japan. Another species, viz., *P. aeriferanus* and *Eana argentana* are found on Japanese larch (*Larix leptolepis*).

On the other hand, in the years 1903 through 1947, many textbooks or reports on the Japanese insects as horticultural and agricultural pests have been published. Many authors treating the economical Lepidoptera, included the family Tortricidae in their tasks. However, the references to the extensive economic literature on many of the species have been omitted, largely because of the possible misidentifications of the species, and the hopeless task of correcting the nomenclatorial problems.

Note on the Distribution

Among 144 Japanese species in total, 58 species are proved to be endemic to Japan. From Hokkaido 83 species have been collected, and 18 of which are endemic to Japan; of the latter 5 are endemic to Hokkaido. In Honshu 95 species have been found and 33 of which are endemic to Japan, including 16 species which are known to be distributed in Honshu alone. From Shikoku 28 species are known; 33 from Kyushu; and 8 from the Amami Islands.

Seventy six species found in Japan are assorted to be common to the Palaearctic, 13 to the Oriental, 1 to the Ethiopian, and 7 to the Nearctic Regions.

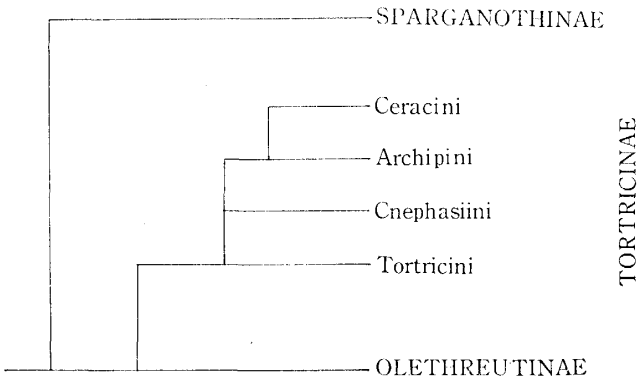
Phylogenetic Relationships

On the basis of morphological and ecological evidences the Tortricinae classified into four tribes, i.e., Ceracini, Archipini, Cnephasiini and Tortricini. Table 2a–2c give a comparison of the tribes on the basis of 21 morphological features together with some biological characters.

As shown in Table 2, the four Japanese tribes are morphologically distinct, and there seems to be little evidence of alinear evolutional developmental relationship. The Cnephasiini differ from the Archipini and Tortricini by the presence of the infracellurar vein and by the shape of the male and female genitalia. In the Tortricini the infracellurar vein is usually atrophied, but can be found in the genus *Tortsix* and in some members of the genus *Croesia*. The floricomous ovipositor is very characterisic of the chief groups of the Cnephasiini, but can be found only occasionally in other groups of Tortricinae. A consideration of the biological characteristics may be of value in the analysis of the relationships within the Tortricinae. In the Tortricidae development toward the external feeding habit is developed in Tortricinae and Sparganothinae, but the internal feeding habit is remaining in the tribe Tortricini. Eggs of the Tortricinae and Sparganothinae are so far deposited in masses except those of Tortricini. In the Tortricinae, the presence of the telescopic type of oviposior in the female genitalia, or the presence of infracellurar vein in the median cell, or the retention of simple oviposition behaviour appear to me to be primitive characters.

Powell (1962) has suggested that the Tortricinae is a very old group with three separated tribes in the temperate zones, and more recently derived tribes are found in the tropics. The subfamily is envisioned as having evolved from generalized olethreutoid stock of the temperate zone which deposits its eggs singly and develope as a relative oligophagic wood-borer with a well-defined life cycle.

The phylogenetic relationship of the four tribes is supposed as follows:



Systematic Part

Characteristics of the subfamily Tortricinae

Tortricinae are the moths of small, rarely of moderate size. *Pternozyga* is the smallest in size, having the length of the forewing 5 mm. *Cerace* is the largest, 25 mm.

Table 2. Synoptic table of the Tribes of Tortricinae in Japan

(Table 2-a)

Character \ Tribe		Ceracini	Archipini	Cnephasiini	Tortricini
Head		smooth	rough	clothed with rather short rough scales	rough
Labial palpus		short, mostly stout, subacending	long or moderate	rather short	large
Maxillary palpus		2 segments	3 segments	3 segments	3 segments
Thorax		smooth	with elected scales group	smootth	with crest
Wing	maculation of forewing	multicolorous pattern	typical tortricid form, consists of basal patch, median and subapical or apical patch	tortricid form but basic pattern somewhat obscured	tortricid form but basic pattern somewhat obscured or pattern is very weak or completely atrophied, and having variability in colouration.
	maculation of hindwing	marked with spots or lines	no pattern	no maculation	no maculation
	wing venation	all veins separated	variable	all veins separate in forewing, variable in hindwing (viz., Rs and M1 or M3 and Cula stalked)	variable
	costal fold of forewing	absent	developed in major genera	absent	absent
	sexual dimorphism	distinct in size and pattern	distinct in wing shape, size and pattern especially in *Archips* and *Archippus*	distinct in wing shape or size	no sexual dimorphism; but having seasonal dimorphism (polymorphism)
Bristles on tarsal segments of hind leg		present; and situated along the apical edge of the segments 1, 2, 3 and 4.	present; bristle group on segments 1, 2, 3 and 4 usually 6:6:5:3 but varying from 6:6:5:3: to 1:1:1:1.	present	absent

(Table 2-b)

Character	Ceracini	Archipini	Cnephasiini	Tortricini
Abdomen	normal	anal tuft developed, and with abdominal pits in genera *Archips* and *Archippus*	normal	normal
♂-genitalia uncus	developed, broad	well developed and broadened terminally	slender and pointed, rather flattened laterally	usually absent
socius	mostry large, drooping	different generically in size	very differnt specifically in size	well developed, large and drooping
gnathos	strong, with terminal hook	strong with moderatelly long median tip	consists of two lateral more or less slender arms, with a terminal plate	very weak, development of subscaphium
tuba analis	weak	membraneous	membraneous	well developed and sclerotized
valva	simple, semiovate or elongate; sacculus long	well developed and broad; sacaulus usually strongly sclerotized	well developed and elongate, tapering terminally	elongate, rather slender; sacculus markedly developed, usually long, broad anteriorly, with short spined termination
aedoeagus	without cornuti	slightly curved, phallobase rather large with cornuti	simple, rather slender, with cornuti	large, slender, with cornuti
♀-genitalia ovipositor	normal	normal	telescopic or floricomous type	normal
apophyses	extremely short	rather long	well developed, long	enormously long
ostium bursae	narrow and broad	rather wide, strongly sclerotized	broad	rather large, rounded or elliptic

(Table 2-c)

Character	Ceracini	Archipini	Cnephasiini	Tortricini
♀-genitalia antrum	strogly sclerotized well developed,	broad and shot, cup or funnel-shaped	well sclerotized, broad	well developed and differentiated from the ductus bursae
signum	scobinate plate	large, dagger or horn-shaped, usually having rounded capitulum	present (long, spined) or absent	rounded plate
Egg	deposited by a form of mass	mass	deposited singly or in small groups	deposited singly or in small groups
Larvae	loss of internal feeding habits; on segment 9, D2 pinaculum separated to each other, SV group on semgents 1, 2, 7, 8 and 9 usually 3:3:3:2:2	SD2 on abdominal segments 1-8 always on the SD1 pinaculum, D1 on segment 9 always on its own pinaculum, SV group on abdominal segments 1,2,7,8 and 9 usually 3:3:3:2:2; loss of internal feeding habits	loss of internal feedits; SV group on segments 1,2,7,8 and 9 usually 3:3:3:2:2, SD1 on segment 9 on its own pinaculum or on the same pinaculum as D1	remainning internal feeding habits in the genus *Ergasia*; SV group on segmennts 1,2, 7,8 and 9 usually 3:3:2:2:2
Pupa	cremaster long, with knife saped setae; when emergence, pupal case remainning its cocoon	cremaster long, with billhook shaped setae, usually the pupa pushes itself partly out of the cocoon just before the adult emerges	cremaster very short, pupal case pushed out when emergence	cremaster short, curved inwardly, with long hook-shaped setae
Generation number per year	1 or 2	1, 2 and 3 or more	1 or 2	1 or 2
Hibernating stage	larval stage	egg or larval stage	larval or pupal stage	adult, egg or larval stage
Distribution	Oriental Region	cosmopolitan	cosmopolitan	cosmopolitan

Head usually with dense loosely raised scales, seldom smooth; ocellus present. Antenna one-third as long as forewing, in male usually ciliate, seldom pectinate. Labial palpus moderate or long, porrecte or subascending; second joint with dense projecting or appressed scales, usually subtriangular, terminal joint short or moderate, cylindrical, obtuse. Maxillary palpus obsolate. Haustellum usually well developed. Thorax often crested. Hind tibia clothed with dense rather rough scales. Forewing subtriangular or elongate rectangular, with costa more strongly curved in basal half; anal veins (1A+2A) long bifurcate anteriory; median cell moderate, sometimes tapering; parting-veins moderate, sometimes well developed, Culb from before 3/4 of dorsal edge of median cell, widely remote from Cula, the latter and M3 approximate, rarely stalked, M2 often approximate at base to M3, R1 separated, R5, R4 and R3 variously arranged, Sc separated throughout. Hindwing slightly broader than forewing; semitrapezoidal, 3A present, 1A+2A short furcate; Cula from the angle of median cell, seldom before it, approximate, coincident or stalked with vein M3, M2 at base to M3, M1 and Rs closely approximate to M1 at the base, or stalked.

Male genitalia: tegumen well developed; uncus distinct or absent; gnathos arms often present, coalescent apically, when absent a ventral sclerotization of the tuba analis developed; socii distinct, strongly reduced or even absent. Vinculum moderate. Valva usually membranous with costa poorly developed in some Archipini; sacculus well developed. Aedoeagus rather short and stout, pistol-shaped. Anellus and manica usually membraneous; juxta in a form of a triangular distinctly sclerotized plate.

Female genitalia; papillae anales pad-like; ostium bursae normally wide; ductus bursae straight or coidal; cestum present in many cases; corpus bursae usually strong; signum single thorn-shaped, or stellate patch, or absent.

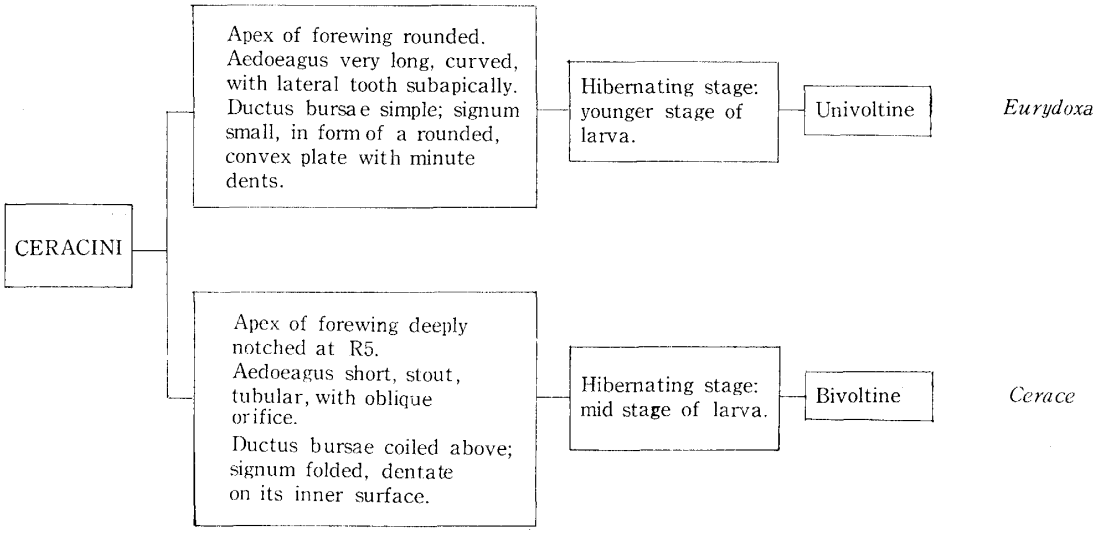
Tribe Ceracini Swinhoe & Cotes, 1889

Ceraciinae Swinhoe & Cotes, 1889, Cat. Moths Ind., p. 699.
*Ceracini Obraztsov, 1954, Tijdschr. Entom., **97**: 150.
Ceracini Yasuda, 1965, Kontyu, **33**: 1.
Ceracini Diakonoff, 1970, Tijdschr. Entom., **113**: 91.

The tribe is a natural group of multicolorous large moths. Head smoothly scaled; antenna reaching about middle of costa, with short scape; flagellum of antenna slender, fasciculate-ciliate in male. Labial palpus short, mostly stout, subascending. Thorax smoothly scaled. Abdomen rather long. Forewing elongate-ovate, without costal fold in male.

The tribe Ceracini has a limited distribution, being spread mainly throughout the Oriental Region. Most probably the center of its distribution is in India, and from there the species dispersed into the neighbouring areas. The area of the genus *Eurydoxa* extends rather far towards the north-east.

* Regarding the references, I mentioned here only the published works by Obraztsov (1954–1957) and other papers published thereafter in order to save the space and with a view to avoid the repetition.



Genus *Eurydoxa* Filipjev, 1930

(Figure 263)

Eurydoxa Filipjev, 1930, C. R. Acad. Sci. URSS, (A): 373 (Type species: *Eurydoxa advena* Filipjev, 1930).
Eurydoxa Obraztsov, 1954, 154. – Diakonoff, 1970, 94.

Labial palpus short. Forewing elongate-truncate, apex normally developed short, in male without costal fold. Vein R4 to termen beyond apex, anal veins befurcate to 1/4; weak inner vein of median cell present. In hindwing Cula distinctly separated from M3. In male genitalia sacculus with short free termination; transtilla absent; aedoeagus very long, curved, strongly sclerotized, with lateral tooth subapically, no cornuti in vesica. Female genitalia characterized by a slender antrum and a plate-shaped dentate signum.

Genus *Cerace* Walker, 1863

(Figures 264, 265)

Cerace Walker, 1963, List Spec. Lep. Ins. Brit. Mus., **28**: 422 (Type species: *Cerace stipatana* Walker, 1963).
Cerace Obraztsov, 1954, 154.

Forewing with apex before R4, then termen concave at R5, then prominent. Anal veins bifurcate almost until the middle of their length; median cell with a well developed inner vein. In the hindwing veins Cula from one point with M3. In male genitalia aedoeagus with cornuti in vesica in some species but not in *xanthocosma* transtilla well developed; sacculus without free termination. In the female genitalia antrum broad; signum represented by a folded plate.

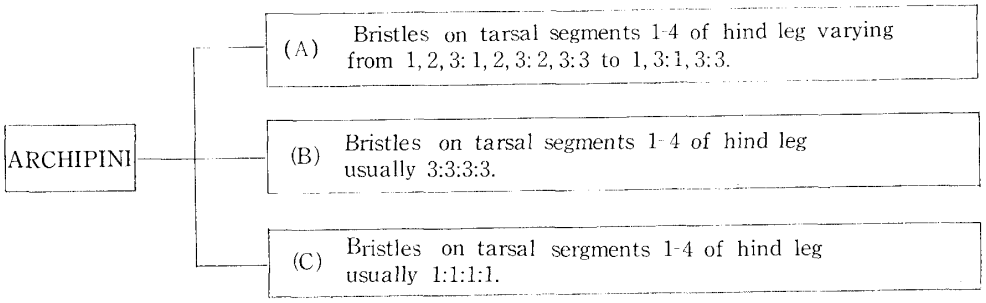
Tribe Archipini (Pierce & Metcalfe, 1922) Obraztsov, 1942

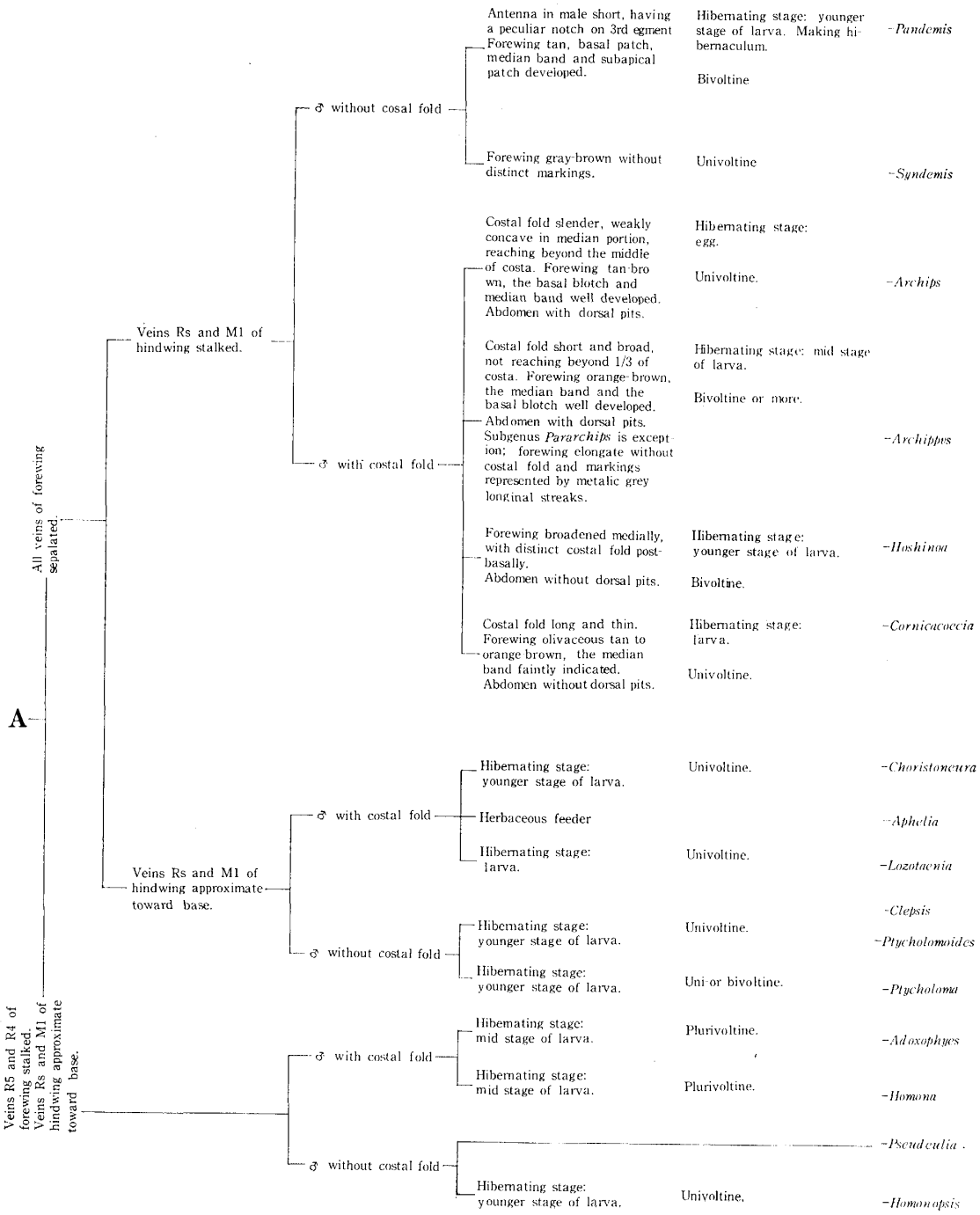
Archipsini Obraztsov, 1942, Iris, **56**: 157.
Archipini Obraztsov, 1954, Tijdschr. Ent., **97** (3): 157.
Archipsini Swatschek, 1958, Die Larvalsystematik der Wickler. Abhandlungen zur Larvalsystematik der Insekten, Nr. 3, 31.
Archipinae Freeman, 1958, Canad. Ent., Suppl. 7, 11.
Archipini Hannemann, 1961, Die Tierwelt Deutschlands, **48**: 4.

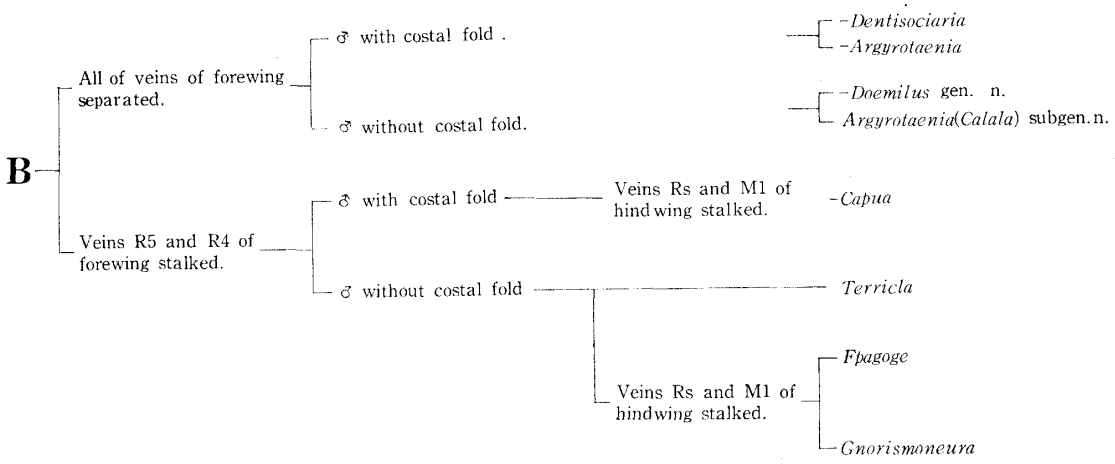
The labial palpi vary in length and direction, but usually expanded medially, subtriangular. Thorax sometimes with a posterior crest. Forewing usually tan or redbrown, with a characteristic pattern consisting of a dark basal patch, a median band which typically extends from the middle of the costa to near the outer angle of the posterior margin, or tornus, and a lunate or triangular costal spot; costal fold sometimes present; costa usually bowed basally, hardly concave before apex; apex prominent. Vein R4 and R5 of forewing free, rarely stalked; R5 running to termen or to the apex; M3 and Cula of hindwing separate, rarely stalked.

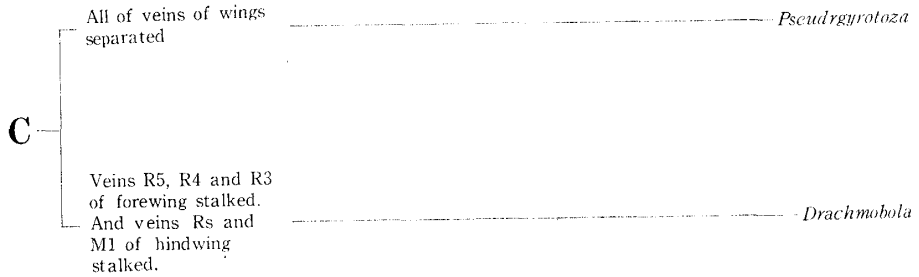
Male genitalia: uncus well developed, large, often dilated at the top; gnathos strong; socii small, drooping; valva mostly rounded, sacculus often with a strong, apical projection.

Female genitalia: base of ductus bursae often sclerotized and referred to as the antrum; sterigma often funnel-like; signum usually present as a curved thorn with a bulbous base.









Genus *Pandemis* Hübner, 1825

(Figures 266–270)

Pandemis Hübner, 1825, Verz. bek. Schmett., 388. (Type species: *Pyralis corylana* Fabricius, 1794)

Pandemis Obraztsov, 1954, 164. – Freeman, 1958, 12. – Swatschek, 1958, 34. – Hannemann, 1961, 4. – MacKay, 1962, 56. – Kawabe, 1963, 80. – Powell, 1964, 244.

Head: labial palpus elongate, porrect, second joint broadened distally with projecting scales above, third joint short, usually pointed. Antenna in male short, densely ciliate having a peculiar notch between scape and shaft of antenna. In female antenna simple, scarcely ciliate.

Forewing elongate, subrectangular, broadest before middle. No costal fold in male. Vein R1 from before middle of median cell; R2 from 3/4 of it, closer to R3 than

to R1; R4 and R5 separate, approaching one another basally; M3 approximate to M3 at the base; Cula arises from angle, Culb from about 3/5 of median cell; Cu2 usually developed; basal fork of anal vein about 1/3 of the entire length of the vein. Hindwing as broad as or broader than forewing; cosa sinuate; apex rounded; dorsum rounded; usually straight between 1A and 3A. Vein Sc straight or slightly bent; Rs and M1 approximating towards the base; M2 curved, arising from 3/5 of median cell. The pattern consists fundamentally of basal patch, occupying about 1/3 of the wing, median band running obliquely from middle of costa to ternus, and semicircular costal spot subapically.

Male genitalia: mensis ventralis broad, with large dense scopae. Tegumen elongate; valva broad, rounded; costa not developed; sacculus reaching outer margin of valva, without a free tip. Transtilla of a simple band or semilunar rod. Uncus short, very broad, slightly dilated towards hollowed apex, short hairly underneath; gnathos strong with a moderately long median tip. Socii elongate, drooping. Aedoeagus slightly curved; phallobase rather large; two large cornuti with sclerotized ring-shaped bases.

Female genitalia: papillae anales elongate; sterigma rather wide, strongly sclerotized, funnel-shaped; lamella postvaginalis well developed, with small scale tuft on either side. Colliculum trough-like. Ductus bursae rather short, without cestum. Corpus bursae membraneous, sometimes with two heavily sclerotized plates; signum represented by a curved thick thorn, with an oblique, rounded capitulum.

Adults of both sexes attractable to the light. In the laboratory, the eggs are deposited on the upper surface of the leaves or on the fruits under the condition of the egg-masses. Young larvae pass the winter in protected places on the bark or in tent-like hibernaculum of silk. In Japan the species of the genus *Pandemis* undergo two generation yearly.

Length of mature larva 22–23 mm. Body slender, pale green or deep green. Head pale yellowish brown or greenish, with blackish pigments in ocellar area and in a small area at the postgenal juncture. Thoracic shield pale, sometimes with some darker pigments posterolaterally. Thoracic legs and anal shield pale. Pinacula lighter than body colour. Anal fork well developed with 8 or 9 prongs.

The larvae of *Pandemis heparana, P. chlorograpta, P. cinnamomeana* and *P. corylana* feed on the leaves of trees or shrubs. But the larvae of *P. dumetana* usually feed on the leaves of herbaceous plants, occasionally attacking the leaves of trees or shrubs.

This genus has a Holarctic distribution. There are four Nearctic species, all of which are rather restricted in repartition. In the Palaearctic Region 8 species occur, most of which are widely distributed. Six species occur in Japan, and one, *Pandemis* sp. 1, is confined to the central mountain region of Honshu.

Genus *Archips* Hübner, 1822

(Figures 271–274)

Archips Hübner, 1822, Sys.-alphab. Verz., 58. (Type species: *Phalaena Tortrix xylosteana* Linnaeus, 1758)
Archips (part.) Obraztsov, 1954, 175. – Swatschek, 1958, 37. – Yasuda, 1961, 57.
Archips Freeman, 1958, 19. – MacKay, 1962, 37, 47. – Kawabe, 1965, 14.

Head with fairly short, scaled labial palpus. Forewing broad with costa strongly curved outwards anteriorly, then straight in male, concave subapically in female. Apex short in male, prominent in female; termen somewhat sinuate, strongly so in female. Costal fold slender, weakly concave in median portion, sometimes reaching beyond the middle of costa. Venation; anal veins long bifurcate basally; R5 to termen beyond apex,

approximate to R5 at median cell. In the hindwing Cula and M3 from one point from median cell; M2 curved anteriorly, approximate to M3; M1 and Rs from one point.

Abdomen with conspicuous genital tuft. But this tuft is smaller than the tuft of the next genus.

Male genitalia: tegumen elongate, slender; uncus long, usually broadening terminally; gnathos well developed, with ta terminal hook; socii vestigial. Vinculum strong. Valva broad, ovate; sacculus long, often with subterminal and terminal projections. Transtilla broadened laterally. Aedoeagus long, often provided with a thorn; several cornuti in vesica.

Female genitalia: sterigma short, developed as a lamella postvaginalis; antrum well defined, distinctly sclerotized, tapering towards ductus bursae; the latter long, or very long, provided with cestum. Signum capitate, long.

As stated before, the tergite of the second and sometimes third abdominal segments are usually provided with a pair of deep, rounded pits. But this pits without in the adult of *A. crataeganus* ssp. 1 (a deep hollow present along the chephalic margin on the second and third abdominal segments of pupal case), and indistinct in *A. fuscocupseanus*..

Mature larva: Body usually cylindrical in the species of Tortricinae. Head with a deep vertical trianglye; adfrontal area nearly extending to vertical triangle; frontocylpeal area longer than wide. Head with primary setae only; minute V setae alined and nearly equidistant to one another; V3 dorsad from Va; P1 extremely long; ocelli III, IV and V close to one another. Mandible usually with 5 teeth, and inner retinaculum. The structure of the retinaculum is one of the important characters to determine the species. Chaetotaxy of the body as follows: seta SD2 on abdominal segments 1–8 always on the SD1 pinaculum; D1 on segment 9 always on its own pinaculum; SV setal group on segments 1, 2, 7, 8 and 9 invariably 3:3:3:2:2. Proleg short, bearing triordinal slender crochets. Anal fork well developed.

There is a single annual generation throughout the range. The adults fly during May, June, and July. Eggs are deposited in oval patches during evening on the bark of branches. Most egg masses in the field range between 30 and 100 eggs. The female smears a gummy substance which is exuded from the end of the abdomen over the eggs. When first dry, the covering is dark brown or black, but during the ensuing summer and winter the colour bleaches to white. Winter is spent in the egg stage. The eggs hatch in spring as buds are openning, in May in most regions. The larvae of this genus are the well-known "fruit-tree leaf-roller" of Japanese economic literature. A number of native plants are utilized as host, apparently under natural conditions; and therefore it seems likely that the geographical distribution has not been altered greatly by development of orchard practices. The larvae of *xylosteanus* and *viola* make shelter by rolling leaves, but another species of this genus make shelter by tying leaves.

As mentioned above, the species of the genus hibernate in the egg stage, having a single generation yearly. That is the main difference from the next genus, *Archippus*.

The genus is Holarctic in distribution. In Japan seven species occur.

Genus *Archippus* Freeman, 1958

(Figure 276)

Archippus Freeman, 1958, Canad. Ent., 40, Suppl , **7**: 15 (Type species: *Tortrix packardiana* Fernald, 1886)

Archippus MacKay, 1962, 44. – Kawabe, 1965, 21.

Labial palpus longer than in preceding genus; costal fold of the forewing of the male short and broad, not reaching beyond 1/3 of the wing lengt.h Otherwise as for *Archips*.

The species of the genus hibernate in the larval stage. The hibernating larvae are of 3–4 instar. The pecies have in this country 2 or 3 generationsper year. The genus is Holarctic in distribution. Nine species occur in Japan.

Subgenus *Pararchips* Kuznetzov, 1970

(Figures 275, 280)

Archippus (*Pararchips*) Kuznetzov, 1970, Entom. Obozr., **49**: 448. (Type species: *Archippus* (*Pararchips*) *pulchra* Butler, 1879).

Differs from *Archippus* (*Archippus*) essentially only by absence of costal fold in male, and veins Rs and M1 of hindwing shortly stalked.

The species of this genus hibenate in the larval stage. Two species occur in Japan.

Genus *Hoshinoa* Kawabe, 1965

(Figures 277, 278, 281, 282)

Hoshinoa Kawabe, 1965, Trans. Lep. Soc. Jap., **16**: 30. (Type species: *Archips longicellanus* Walsingham. 1900)

Labial palpus rather short, slender. Forewing braodened medially, wiht distinct costal fold placed postbasally. In the venation median cell very long; R5 to termen beyond apex, approximate to R4 basally; Cula from end of cell, Culb from its middle. In the hindwing veins Rs and M1 separately; M3 stalked with Cula.

Male genitalia with strong uncus and gnathos; socii well developed; valva broad with strong sacculus. Aedoeagus fairly long; cornuti present.

Faemle gintitalia: sterigma small; antrum narrow, cuplike; ductus bursae very long; cestum as long as the ductus bursae; signum fairly large.

The species of this genus hibernate in the early inster larvae

Genus *Cornicacoecia* Obraztsov, 1954

(Figures 279, 283, 284)

Cornicacoecia Obraztsov, 1954, Tijdschr. Ent., **97**: 172. (Type species: *Tortrix lafauryana* Ragonot, 1875)

Labial palpus as in preceding genus. In the forewing, the median cell much shorter than in *Hoshinoa*, vein Cula only weakly curved anteriourly. Costal fold long and thin, beginning beyond the base of wing. In hindwing all the veins separately.

Male geniatlia: vlava borad and short; sacculus slender, with long ventral hook. Aedoeagus simple.

Female geniatlia as in *Hoshinoa*.

Only one species records in Japan.

Genus *Choristoneura* Lederer, 1859

(Figure 286)

Choristoneura Lederer, 1859, Wien Ent. Monatschr., **3**: 242. (Type species: *Tortrix diversana* Hübner, 1817).

Choristoneura Obraztsov, 1954, 171. – Freeman, 1958, 30 – Hannemann, 1961, 6. – —MacKay, 1962, 36, 38. – Powell, 1964, 161.

Forewing with all the veio separate; costal fold small or absent. In the hindwing Rs close to M1 at median cell, similarly as M3 and Cula.

Male genitalia: uncus distinctly bradened apically; socii well developed. Valva tapering caudad; sacculus with thick terminaiton.

Female genitalia: sterigma small; antrum elongate; ductus burase very long, with cestum; signum capitate.

Only one species occuring in Japan. And this species hibernates in the first instar larva.

Genus *Syndemis* Hübner, 1825

(Figures 285, 292, 293)

Syndemis Hübner, 1825, Verz. bek. Schm., 382. (Type species: *Olethreutes musculana* Hübner, 1822)

Syndemis Obraztsov, 1954, 183. – Swatschek, 1958, 41. – Hannemann, 1961, 15. – Powell, 1964, 158.

Forewing without costaltfold in male; costa moderately arched from base to apex; apex short; termen concave above. Forewig with all the veins spearate; vein Culb from 1/2. Hindwing veins Rs and M1 separate, Rs curved and colsely approximated to M1 towards base. M3 and Cula connate from anlge, M2 slightly approximate at bsae.

Male genitalia: sociimoderate: valva broad with strong sacculus; aedoeagus long: cornuti present.

Female genitalia:sterigma short, developed as a lamella postvaginalis; antrum well defined; ductus bursae long, provided with cesum. Signum thorn-like, not capitate.

Genus *Aphelia* Hübner, 1825

(Figure 287)

Aphelia Hübner, 1825, Verz. bek. Schm., 390. (Type species: *Pyralias viburniana* Fernald, 1908).

Aphelia Obraztsov, 1954, 189. – Swatchek, 1958, 44. – Hannemann, 1961, 16. – MacKay, 1962, 67.

Subgenus *Aphelia* Hübner, 1825

Aphelia (*Aphelia*) Obraztsov, 1954, 192. – Swatschek, 1958, 44. – Hannemann, 1961, 16.

Labial palpus moderate, usually about 1.5 times as long as diameter of eye. Forewing Forewing elongate-rectangular, with somewhat curved costa, without costal fold. In the forewing vien Culb from about 3/5 of cell, Cula – M2 remote, Cula from angle, M3 nearer to M2. In the hindwing vein Culb from about 2/3, Cula and M3 connate from angle, Rs and M1 separate, approximated towards base.

Male geniatlia: uncus well developed. Socii small, rounded. Gnathos strong with elongate, dentate ventrolateral processes. Valva elongate, rather small; sacculucs strongly developed with free termiation. Transtliila nerrowed in middle, thick pads at the side, dentate above.

Female genitalia; sterigma short, developed as a broad lamella postva inalis; antrum short; ductus bursae provided with cestum; signum short.

Genus *Lozotaenia* Stephens, 1829

(Figures 288, 290, 291)

Lozotaenia Stephens, 1829, Sust. Cat. Brit. Ins., **2**: 169. (Type species: *Pyralis forsterana* Fabricius, 1871)
Lozotaenia Obraztsov, 1954, 204. – Swatschek, 1958, 53. – Hannemann, 1961, 25.

Labial palpus about 1.5 times as olng as diameter of eye. Forewing without costal fold; with the all veins spearate. Hindwing Cula and M3 connate, Rs and M1 approximated towards base.

Male geniatlia: uncus rather short, broad. Socii small, drooping. Transtilla strong, narrowed in middle, lateral lobes dentate above. Valva broad.

Female genitalia: sterigma narrow; antrum membraneous, then sleder and more strong sclerotized plate proximally. Ductus bursae long with cestum. Corpus bursae with distinct sharp thorn.

Genus *Ptycholomoides* Obraztsov, 1954

(Figures 289, 294, 295)

Ptycholomoides Obraztsov, 1954, Tijdschr. Ent., **97**: 186. (Type species: *Cocoyx aeriferana* Herrich-Schäffer, 1851).
Ptycholomoides Hannemann, 1961, 16.

Labial palpus moderate, about 1.5 times as long as diameter of eye. Forewing with costal fold in male; elongate-rectangular, dilated postreiorly. Vein Culb from 3/5 of cell; parting vien present. Hindwig with all the viens separate.

Male geniatlia: uncus large, with rounded-clavate top, haired undernaeth. Gnathos with narrow arms and slender hairy hook. Valva short, triangular.

Female genitalia: ovipositor lobes long, uniformaly broad throughout. Sterigma narrow. Corpus brusae large with small signum.

P. aeriferana hibernates in the first instar larva. Only one species occuring in Japan.

Genus *Ptycholoma* Stephens, 1829

(Figures 296, 301)

Ptycholoma Stephens, 1829, Syst. Cat. Brit. Ins., **2**: 183. (Type species: *Phalaena tortrix lecheana* Linnaeus)
Ptycholoma Obraztsov, 1954, 199. – Swatschek, 1958, 51. – Hannemann, 1961, 24 – Kawabe, 1965, 77.

Labial palpus short; more or less one time ads long as the diameter of the eye. Forewing broad with long costal fold. Otherwise as for *Lozotaenia*.

Male geniatlia: uncus short braod. Socii minute. Valva short, triangular; sacculus strong, with free termination. Transtilla strong.

Female genitaila: sterigma narrow. Antrum cup-like. Corpus bursae with sharp, thorn-like capitate signum.

The species have in this country 1 or 2 generations anunally and hibernate in the larval stage. The genus is Holarctic in distribution. Two species occur in Japan.

Genus *Clepsis* Guenée, 1845

(Figures 297, 298, 302, 303)

Clepsis Guenée, 1845, Ann. Soc. Ent. France, ser. 2, **3**: 149. (Ttype species: *Tortrix helvolana* Frolich, 1828).
Clepsis Obraztsov, 1945, 193. – Swatschek, 1958, 45. – Hannemann, 1961, 18. – MacKay, 1962, 66, 67.

Labial palpus 1.5 times as long as diameter of eye. Forewing rather narrow, elongate, with or without costal fold. Culb from 3/5 of cell; Cula – M2 separate, equidistant, M2 and M1 parallel; R4 – R2 equidistant, R3 and R2 parallel, slightly sinuate. Hindwing with all the veins separate.

Male genitalia: uncus broad, rather short. Socii short. Valva broad and short. Transtilla dentate above.

Female genitalia: sterigma narrow; antrum well developed; ductus bursae long, with or without cestum.

Subgenus *Clepsis* Guenée, 1845

Clepsis (*Clepsis*) Obraztsov, 1954, 196. – Swatschek, 1958, 46. – Hannemann, 1961, 19.

Male genitalia: uncus dilated at the top, with two haired pads undernaeth; transtilla paired, dentate above; valva triangular.

Female genitalia: corpus bursae without signum.

Subgenus *Siclobola* Diakonoff, 1947

Obraztsov, 1954, 198. – Swatschek, 1958, 47. – Hannemann, 1961, 19.

Male genitalia: Uncus elongate above, with a rounded top. Transtilla narrowed in middle, thick pads at the sides, dentate above.

Female genitalia: Ductus bursae with cestum. Signum a short thorn, its capitulum short and strong.

Genus *Homona* Walker, 1863

(Figures 299, 304, 305)

Homona Walker 1863, List Lep. Het. B. M., **9**: 424. (Type species: *Tortrix coffearia* Nietner, 1861)
Homona Obraztsov, 1954, 179. – Kawabe, 1946, 18.

Labial palpus short, about 1. Forewing in male elongate-semiovate, with a broad and short costal fold, ovate-triangular in shape; forewing in female elongate-rectangular, apex slightly rounded, projecing. Vein Culb from before 2/3, curved, Cula – M2 remote, Cula from angle; R4 and R5 stalked, stalk is long. Hindwing borader than forewing. Vein Cula and M3 connate, from angle; Rs and M1 separate, closely approximated towards base.

Male genitalia: Uncus large, with rounded-clavate top. Socii narrow, drooping. Valva broad, very short, triangular; sacculus strongly scrlotized, with a pointed free termination.

Female geniatlia: Ostium broad upturned-trapezoid. Ductus bursae very long and narrow, and beginning with a curved and scrlotized funnel; cestum thin, making one spiral. Corpus bursae large, avoid, signum a large hook with dilated base.

The genus has a limited distribution, being spread mainly throughout the South Asia.

The hibernating larvae are of 3–4 instar. The species have in this country 2 or 3 generations peryear.

This genus contains two species which are restricted to Japan, Formosa and Korea.

Genus *Adoxophyes* Meyrick, 1881

(Figures 300, 306, 307)

Adoxophyes Meyrick, 1881, Proc. Linn. Soc. N. S. Wales, **6**: 429.
Adoxophyes Obraztsov, 1954, 58. – Swatschek, 1958, 50. – Hannemann, 1961, 24. – Honma, 1970, 89–94.

Labial palpus long, about 2. Forewing broad, elongate-truncate, with a costal fold in male reaching to about 1/2 of costa; apex projecting; termen sinuate bove, rounded and projecting beneath. Culb from 1/2 of cell, Cula considerably before angle, M3 from angle, R5 and R4 stalked, stalk is long. Hindwing semiovate. Vein Cula from befroe angle, M3 from angle, M2 separate from M3, approximated at base, Rs and M1 stalked.

Male genitalia: Uncus large, elongate, dilated and indent at the top. Socii small elongate. Valva elongate, sacculucs narrow. Transtilla narrowed in middle, thick pads at the sides, dentate above.

Female genitalia: Sterigma narrow. Ductus bursae narrow above, with a sclerotized vesiculation. Corpus bursae large, signum a short, sharp thorn.

Abundant in the Papuan and Australian regions, more sporadically occurring in China, Japan, Formosa and Europe.

As I (1956) had pointed out, the genitalia characters in many of the Asiatic *Adoxophyes* are very similar, and specific differences are usually very subtle. The likelihood of their being subspecific relationships in several complexes of presently conceived species nonetheless exists. However, until a better understanding of the distribution patterns and biological characteristecs is vailable, illustration of these is not possible. It seems probably that the *orana-fasciata* group is most closely related to the *privatana-ergatica-fasciculana* group according to the characters of the genitalia.

The similarity of the genitalia and the allopatric distribution suggest the possigbility of a single widespread, geographiclly variable species.

Genus *Dentisociaria* Kuznetzov, 1970

(Figure 309)

Dentisociaria Kuznetzov, 1970, Entom. Obozr., **44**: 449. (Type species: *Dentisociaria armata* Kuznetzov, 1970)

Labial palpus slender, about 1.5. Forewing broad, elongate-rectangular, without costal fold. Venation as in *Cacoecimorph* or *Parasyndemis*, vein Culb from 2/3 of cell, Cula – M2 equidistant, Cula from angle. Hindwing broad. Veins Cula and M3 from angle, connate; Rs and M1 separate, approximated towards base.

Male genitalia: Tegumen elongate; uncus broad, fairly short. Gnathos strong.

Socii strong dentate. Valva elongate-ovate; sacculus broad, well sclerotized. Aedoeagus long.

Genus *Pseudeulia* Obraztsov, 1954

(Figures 312, 313)

Pseudeulia Obraztsov, 1954, Tijdschr. Ent., **97**: 206. (Type species: *Archips asinana* Hubner, 1822)
Pseudeulia Hannemann, 1961, 27.

Labial palpus slender, short. Forewing slinghtly expanding posteriorly, without costal fold. Vein Culb from before 3/4 of cell; Cula – M2 remote, equidistant; R5 and R4 stalked. Hindwing broad, vein Cula from angle, remote from M3, M3 and M2 approximated at base, M1 and Rs shortly stalked.

Male genitalia: Tegumen broad. Uncus with a broad base, elongate above. Socci minute. Genathos strong. Valva broad. Transtilla braod, with a rectangular projection in the middle. Aedoeagus strongly curved.

Female genitalia: Sterigma narrow. Antrum cup-shaped, broad at ostimu. Ductus bursae long, without cestum. Corpus bursae small without signum.

Genus *Homonopsis* Kuznetzov, 1946

(Figure 308)

Homonopsis Kuznetzov, 1964, Entom. Obozr., **43**: 873. (Type species: *Dichelia illotana* Kennel, 1900)

Labial palpus moderate, about 1.5 to 2 times as long as the diameter of eye. Forewing elongate-semiovate, apex little rounded, termen fairly concave above, oblique and rounded beneath; without costal fold. Vein Culb from beyond 2/3 of the cell; Cula – M2 remote, Cula from angle, curved; R4 and R5 stalked, stalk long. Hindwing broad, semiovate-triangular. Veins Cula and M3 connate, from angle, M2 approximated towards base, Rs and M1 stalked.

Male tenitalia: Tegumen broad, and short; uncus enormeous, rounded torminally, bifurcate apically. Gnathos slender. Socii minute. Valva semiovate; saccullus strong, terminated in a short hook. Aedoeagus short, no cornuti.

Female genitalia: Sterigma with broad lateral portions. Antrum long, well sclerotized. Ductus bursae long. Corpus bursae ovate; signum elongate.

Daemilus gen. n.

(Figures 314, 315)

Type species: *Cacoecia fulva* Filipjev, 1962.

Labial palpus slender; 1.5 to 2 times as long as the diameter of eye; terminal joint short. Forewing elongate, rather narrow; costa arched with narrow and short costal fold in male; termen oblique, gradually rounded. Vein Culb from 1/2 of cell, Cula from before angle, M3 and M2 from angle, connate, M1 – R4 separate. Hindwing subtrapezoid. Veins Culs and M3 from angle, connate, M2 little approximated towards base, M1 and Rs colsely approximated towards base.

Male genitlaia: Tegumen slender; uncus elongate, strongly broadened terminally, rounded apically; gnathos long; socii minute. Valva elongate; sacculus broad, reaching

end of valva. Transtilla narrowing medially. Aedoeagus fairly short, pointed treminally. Cornuti slender.

Female genitalia: Sterigma with sledner lateral arms; antrum short; ductus bursae somewhat longer than corpus bursae; signum large, capitate.

Genus *Argyrotaenia* Stephens, 1852

(Figures 310, 311)

Argyrotaenia Stephens, 1952, Lists Spec. Anim. B. M., **10**: 67. (Type species: *Tortrix pulchellana* Haworth, 1811)
Argyrotaenia Obraztsov, 1954, 168. – Mackay, 1962, 58, 59.

Subgenus *Argyrotaenia* Stephens, 1852

(Figure 310)

Labial palpus short, about 1. Forewing elongate, rather narrow, with or without costal fold. Vein Culb from 3/5 of cell, Cula from just befor angle, or from sngle. Hindwing elongate-trapezoid. Veins Cula and M3 from angle, connate; Rs and M1 approximated or shortly stalked.

Male genitalia: Tegumen elongate: uncus slender. Socii elongate. Gnathos strong, arms slender. Valva ovate, rather short. Transtilla developed.

Female genitalia: Sterigma cup-shaped with lateral end thin. Antrum short. Ductus bursae fairly short. Corpus burase large; signum long, capitate.

Calala sg. n

Type species: *Argyrotaenia angustilineata* Walsingham.

Labial palpus moderate, about 1.5. Forewing elongate, rather narrow, without costal fold. Venations as in *Adoxophyes*. In the forewing, Culb from 2/3 of cell, Cula from considerably before angel; M3 and M2 from angle, connate; R4 and R5 stalked: In the hindwing Cula and M3 from angle, connate; M2 separate from M3, approximated at base; Rs and M1 stalked.

Genitalia as in the preceding subgenus.

Differs from the preceding subgenus by venation. And costa having no costal fold in male.

Genus *Capua* Stephens, 1834

(Figure 316)

Capua Stephens, 1834, I11. Brit. Ent. Haust., **4**: 171. (Type species: *Olethreutes favillaceana* Hübner, 1822)
Capua Obraztsov, 1954, 214. – Swatchek, 1958, 50. – Hannemann, 1961, 29.

Labial palpus long about 2. Forewing rather narrow, gradually expanding posteriorly with nallow costal fold, it reaches to about 1/2 of costa. Venation is *Adoxophyes*. Veins Cula and M3 of hindwing from angle, connate.

Male genitalia: Uncus strong. Socii broad. Valva elongate; sacculus strong, twith short termination.

Female genitalia: Sterigma cup-like, fairly tapering anteriorly. Ductus bursae rather long, membraneous throughout. Corps bursae small; no signum present.

Genus *Epagoge* Hübner, 1825

(Figures 317, 318)

Epagoge Hübner, 1825, Verz. bek. Schm., 389. (Type species: *Pyralis grotiana* Fabricius, 1781)
Epagoge Obraztsov, 1954, 211.

Labial palpus moderate or long. Forewing elongate, without costal fold in male; apex rounded; termen strainght. Vein Culb from beyond 3/5 of cell, Cula from angle, sometimes from before angle. Cula – M2 equidistant, M2 and M1 strainght, R5 and R4 stalked. Hindwing semiovate. Veins Cula and M3 connate or shortly stalked, Rs and M1 stalked.

Male genitalia: Tegumen strong; uncus large, rather broad. Socii elongate, drooping. Gnathos strong. Valva elongate, with a rounded top; ascculus moderate.

Female genitalia: Sterigma cup-like. Antrum indistinct. Ductus bursae very long, corpus bursae modserate. Signum short.

Genus *Gnorismoneura* Issiki & Stringer, 1932

(Figure 321)

Gnorismoneura Issiki & Stringer, 1932, Stylops, 1: 134. (Type species: *Gnorismoneura exulis* Issiki & Stringer, 1932)

Labial palpus moderate. Forewing elongate, rather short, without costal fold in male. Vein Culb from 3/4 of cell; Cula and M3 stalked, from angle; M2 and M1 straight; R5 and R4 stalked. Hindwing with a distinct short fringe of raised scales on anal vein in male. Veins Cula and M3 shortly stalked; Rs and M1 stalked.

Male genitalia: Tegumen elongate; uncus broad, narrower in terminal half, strongly curved downwards. Guathos strong. Socii elongate. Valva elongate; sacculus well sclerotized. Transtilla broadest medially. Aedoeagus slender.

Female genitalia: Obipositorial lobe narrow, bifurcat terminally. Sterigma cup-like; antrum indistinct. Ductus bursae narrow. Corpus bursae modelate, with small signum.

Allied to *Leontochroma* Wlsm., from which it differs in the separation of veins M1 and Rs in the hindwing, in the absence of the fringe of scales on anal vein, and genitalia. And superficially resembling *Epagoge*.

Genus *Terricula* Falkovitsh, 1965

(Figure 320)

Terricula Falkovitsh, 1965, Entom. Obozr., **44**: 418. (Type species: *Terricula noctis* Falkovitsh, 1965, this is a synomym of *T. violetana* Kawabe, 1964)

Labial palpus elongate-rectangular, rather broad. Forewing without costal fold in male. Vein Culb from 2/3, sinuate; Cula and M3 from angle, connate; M2 and M1 straight; R5 and R4 stalked. Hindwing broader than forewing. Veins Cula and M3 from angle, connate; M2 approximated toward base; M1 and Rs stalked.

Male genitalia: Tegumen large; uncus slender, long; gnathos slender; socii small. Valva elongate, somewhat tapering terminally; sacculus broad. Transtilla strong. Aedoeagus long.

Female geniatlia: Arms of sterigma fairly slender. Antrum well sclerotized; ductus bursae narrow and short. No signum in corpus bursae.

This is very colsely allied to *Epagoge* or *Homonopsis*, but shows slight structures as well as genital differences.

Genus *Drachmobola* Meyrick, 1907

(Figure 324)

Drachmobola Meyrick, 1907, Journ. Bombay Nat. Hist. Soc., **17**: 978.
(Type species: *Drechmobola periastra* Meyrick, 1907)

Labial palpus slender. Forewing with somewhat curved costa, without costal fold. In the venation R3 is short stalked with R5, and R4 is stalked to beyond middle length with R5. Vein Cula approximate to M3 at base; inner vien of median cell distinct. In the hindwing Rs stalked with M1 and M3 short so with Cula.

Male genitalia with wel developed uncus; short gnatohs and distinct transtilla. Sacculus without free termination.

Genus *Pseudargyrotoza* Obraztsov, 1954

(Figures 319, 322, 323)

Pseudargyrotoza Obraztsov, 1954, Tijdschr. Ent., **97**: 228. (Type species: *Pyralis conwagana* Fabricius, 1775)

Labial palpus slender, fairly short. Forewing without costal fold in male. Venation: in forewing all veins separate, R5 to termen just beyond the apex; Cula from top of median cell; internal vein of that cell short, but distinct. In hindwing all veins separate, however, Rs approximate to M1, and M3 to Cula in their basal portions.

Male genitalia: Tegumen short; uncus well developed; gnathos slender. Valva elongate with fairly short sacculus. Aedoeagus slender.

Female genitalia: Sterigma small; antrum short, well sclerotized; ductus bursae fairly long, without any cestum; signum minute, if present.

Except for the type species, and *P. aeratana*, I am including here *diticinctana*, *calvicaput* and *minuta*. Two latter spceies are weakly correlated with *conwagana*, but throughout going revision of that group is needed to solve this problem. Thus, I am not shure about their generic position, and place them in *Pseudargyrotoza* only provisionally.

Tribe Cnephasiini Obraztsov, 1949

(Figures 251, 259, 260)

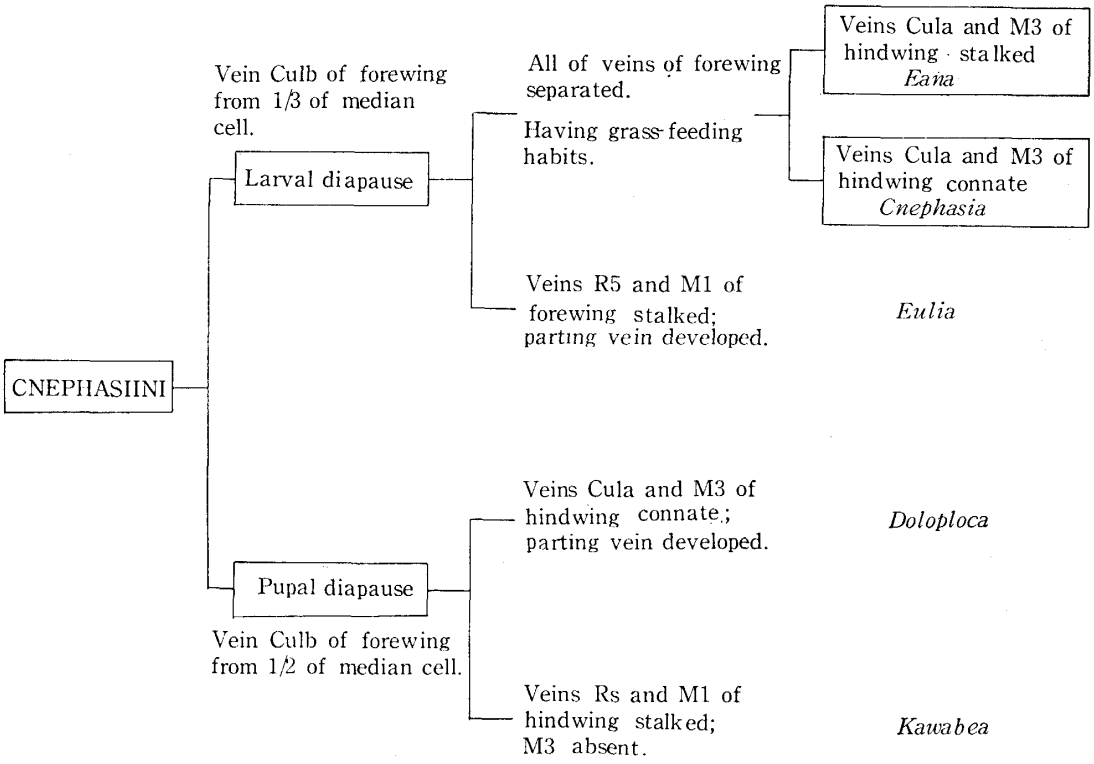
Cnephasiini Obraztsov, 1949, Entomon., **1**: 201.
Cnephasiini Swatschek, 1958, Abhandl. zur Larvalsyst. der Insekten, **3**: 58.
Cnephasiini Razowski, 1959, Acta Zool. Cracov., **4**: 179. – Razowski, 1965, Acta Zool. Cracov., **10**: 199.
Cnephasiini Hannemann, 1961, Die Tierwelt Deutschlands, **48**: 32.

Head clothed with rather short scales. Labial palpus in comparison with that in other groups of the Tortricinae rather short.

The characteristics of the particular parts of the genitalia ranged according to their systeatic importance are given hereunder.

Uncus in nearly all genera is slender and pointed, rather flattened laterally, and minutely spined.

There are two types of papillae anales in the Cnephasiini. The normal Tortricinae-type is characteristic of *Eulia*. In *Cnephasia*, *Eana*, *Kawabea* and *Doloploca* papillae are large and flat, especially their posterior portions (floricomous type of the ovipositor).



Ganus *Euria* Hübner, 1825

(Figure 333)

Eulia Hübner, 1825, Verz. bek. Schm., 379. (Type speices: *Phalaena Tortrix ministrana* Linnaeus, 1758)

Eulia Obraztsov, 1955, 157. – Swatschek, 1958, 66. – Razowski, 1959, 206. – Hannemann, 1961, 34. – Razowski, 1961, 221.

Labial palpus short. Forewing broad with all veins separate. Hindwing also broad with short apex. Veins Rs and M1 shortly stalked.

Male genitalia: Gnathos long, provided with termianl large plate. Valva broad, rounded apically. Aedoeagus thin, bent.

Female genitalia: Papillae anales is normal Tortricinae-type. Corpus bursae very large, spined in anterior half.

Genus *Cnephosia* Curtis, 1826

(Figure 334)

Cnephasia Curtis 1826, Brit. Ent,, 3; 100, (Type species: *Olethreutes pascuana* Hübner, 1822).

Cnephasia Obraztsov, 1955, 158. – Swatchek, 1955, 158, 60. – Razowski, 1959, 210. – Hannemann, 1961, 35. – MacKay, 1962, 23. – Powell, 1964, 123, – Razowski, 1965, 223.

Labial palpus usually short, twice times as long as diameter of the eye. Wings brosd with all veins segment. Partiug vein preseni,

Male geniatlia: Valva long, sacculus strongly sclerotized, provided with free hairly termination. Uncus usually long, minutely spined. Gnathos with well developep terminal plate. Aedoeagns without cornuti but sometimes with charaeteristic projections.

Female genitalia: Papillae anales with large, flat posterior portions. Lamella vaginalis different shapes, ostium simple; ductus bursae sometimes long. Signum usually well developed.

There we about 77 species in the Palaearctic Region, hut in Japan only one species occurs.

Genus *Eana* Billberg, I820

(Figure 335)

Eana Billberg, 1820, Enum. Ins., 90. (Type spedies: *Tortrix penziana* Thuberg, 1791)

Eaba Obraztsov, 1955, 170. – Swatschek, 1958, 66. – Razowski, 1959, 271. – Hannemann, 1961, 42. – Powell, 1964, 127. – Razoswki, 1965, 302.

Subgenus *Ablabia* Hübner, 1825

Ablabia Hübner, 1825, Verz. bek. Schm., 383. (Type species: *Phalaena osseana* Socpoli, 1763.)

Ablabia Obraztsov, 1955, 173. – Razoswki, 1959, 274. – Razowski, 1966, 303. – Hannemann, 1961, 42.

Labial palpus long. Forewing rather broad, trapezoidal, the apex somewhat acuminate. In the forewing vein Culb from 1/3 of cell. Cula from angle, M3 nearer to M2 than to Cula. Parting vein present. In the hindwing veins Cula and M3 from angle, connate. M1 and Rs separate, approximate basally.

Male genitalia: Tegumen large; uncus with strong basal parts; socii large with broad central part. Valva long, usually of the same width throughout the middle portion; transtilla large with broad central part. Aedoeagus strong, usually simple.

Female genitalia: Papillae analis large asymmetric or irregular in shape. Lamella vaginalis broad, not tapering laterally. Signum long, narrow.

Genus *Kawabea* Razowski, 1965

(Figure 336)

Kawabea Razowski, 1965, Acta Zool. Cracov., **10**: 293. (Type species: *Cheimatophila ignavana* Christoph, 1881.)

Labial aplpus very short. Forewing elongarte, strongly dilated posteriorly; apex pointed; termen very strongly oblique. Vein Culb from 1/2 of cell; Cula from before angle; M3 remote, from angle, M2 separate, parallel to M1. R4 and R5 separate. Parting vein present. Hindwing broader than forewing. Veins Rs and M1 stalked.

Male genitalia: Valva narrow; sacculus short; tegumen very broad; socii short; uncus well developed, long; gnathos strong; transtilla broad, well sclerotized. Aedoeagus strong, bifurcate.

Female genitalia: Papillae analis broad; lamella vaginalis well sclerotized, broad; ductus bursae and bursa copulatrix transparent; signum absent.

Genus *Doloploca* Hübner, 1825

Doloploca Hübner, 1825, Verz. bek. Schm., 387. (Type species: *Phalaena punctulana* Schiffermiller, 1776)

Doloploca Obraztsov, 1955, Tijdschr. Ent., 98: 173. – Swatschek, 1958, 63. – Razowski, 1959, 303. – Hannemann, 1961, 46. – Razowski, 1965, 329.

Labial palpus short. Forewing broad, expanding posteriorly; apex rounded. All veins in the forewing saparate. Parting vein present.

Male geniatlia: Tegumen broad; uncus sledner with strong projected lateral ends of basal parts. Gnathos weak; socii slender. Valva broad at base, slender in posterior portion; sacculus strongly sclerotized, long, sinuate beyond middle ventrally.

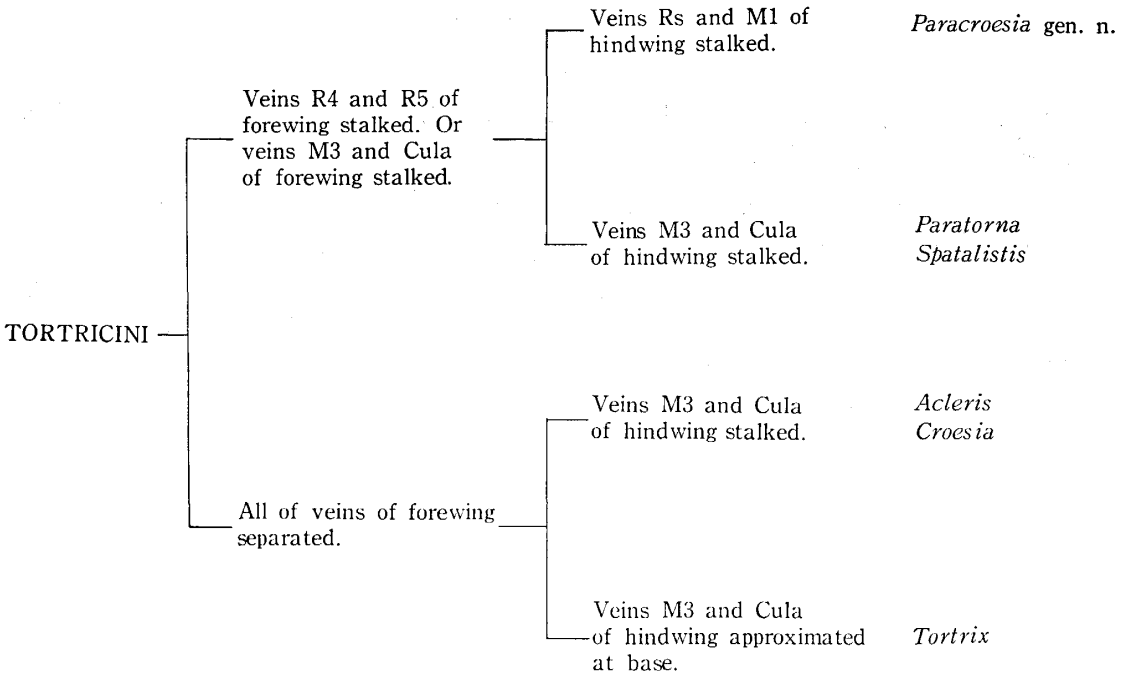
Female genitalia: Papillae analis large and flat posterior portions. Ductus bursae short. Singnum very small.

Tribe Tortricini Obraztsov, 1949

(Figures 261, 262)

Tortricini Obraztsov, 1949, Entomon, **1**: 201.
Tortricini Obraztsov, 1955, Tijdschr. Ent., **98**: 178.
Tortricini Swatschek, 1958, Abhandl. zur Larvalsyst. der Insekten, **3**: 68.
Tortricini Hannemann, 1961, Die Tierwelt Deutschlands, **48**: 48.
Tortricini Razowski, 1966, World fauna of Tortricini.

The wing is more or less expanding terminad. In some genera as in *Eboda* or *Paratorna* the forewing is elongate ovate. The species have sometimes metallic markings on forewing, and often they possess raised scale-tufts. The species of the genus *Acleris* are an instance of enormous variation. And there are two groups of species in the genus *Acleris* in which two seasonal forms are met that differ in the coloration. A well known example is *A. affinatana*. The typical form of this species is a summer form. To another group belongs *A. paradiseana*. The typical form lives in the northern part of the Palaearctic Region and in a single generation only.



Paracroesia gen. n.

(Figure 325)

Type species: *Epagoge abievora* Issiki, 1961.

Labial palpus about 2; terminal joint short. Thorax without a posterior crest. Forewing elongate, acut, slightly expanding posteriorly; costa bent throughout; rather straight. Venation: Culb from beyond 3/4 of cell, Cula from angle, M3 remote, little approximated to M2 at base, M2 and M1 from about middle of transverse vein, R5 and R4 stalked, stalk is long, close to R3. Hindwing rather narrow, apex acute, termen concave above, rounded benaeth. Venation: Culb from about 2/3 of cell, Cula and M3 connate, from angle, M2 approximatde at base, M1 and Rs stalked, stalk is long.

The genitalia are rather similar to those in *Sclerodisca* Razowski, 1964, but in the venation the differences are great.

Geuus *Spatalistis* Meyrick, 1907

(Figure 327)

Spatalistis Meyrick, 1907, Jorn. Bombay Nat. Hist. Soc., **17**: 978. (Type species: *Spatalistis rhopica* Meyrick, 1907).

Spatalistis Obraztsov, 1955, 185. – Swatschek, 1958, 70. – Hannemann, 1962, 50. – Razowski, 1966, 113.

Labial palpus long, termianl joint long. Forewing broad with raised scale-tufts and with patches of metallic, shining scales. Vein Culb from beyond the middle of cell, Cula and M3 stalked, from angle. Hindwing subtrapezoid. Vein Cula and M3 stalked, from angle, M2 connare, M1 and Rs separtae, approximated towards base.

Male genitalia: Tegumen elongate; socii long, drooping; tuba analis broad. Valva long; sacculus strong, with terminal or subterminal projections; brachiola very thin.

Female genitalia: Sterigma broad with strong, pointed anterior projections; antrum very short. Ductus bursae broad. Corpus bursae with a rounded, spined plate.

Genus *Paratorna* Meyrick, 1907

(Figure 326)

Paratorna Meyrick, 1907, Journ. Bombay Nat. Hist. Soc., **17**: 980.
(Type species: *Paratorna dorcas* Myerick, 1907)
Paratorna Diakonoff, 1939, 229. – Razowski, 1966, 136.

Labial palups strongly curved. Forewing ovate, costa strongly curved from base to termen, apex very broadly rounded. Vein Culb from about middle of cell, Cula and M3 stalked, from angle, M2 parallel, near to the origin of Cula+M3. Hindwing elongate-semiovate. Veins Cula and M3 stalked, M2 connate, M1 and Rs separate, approximated towards base.

Genus *Acleris* Hübner, 1825

(Figure 328)

Acleris Hübner, 1825, Verz. bek. Schm., 383. (Type species: *Eutrachia aspersana* Hübner, 1822.)
Acleris Obraztsov, 1955, 189. –Swatschk, 1958, 72. – Hannemann, 1961, 51. – MacKay, 1962, 11, 12. – Powell, 1964,68. – Yasuda, 1965, 11. – Razowski, 1966, 202.

Labial palpus long. Forewing more or less broadening terminad, with tufts of raised scales; costa curved basally, then straight, delicately concave or convex; apex sinuate. Vein Culb from before middle of cell, M1 – R4 equidistant, R5 to costa, Hindwing with all the veins separate, however, Cula and M3 are sometimes very close.

Male genitalia: Uncus atrophied. Tuba analis strongly sclerotized anteriorly and very often membraneous posteriorly, sometimes armed with large ventral projection.

Female genitalia: Eighth tergite well developed; sterigma with pointed anterior projections. Corpus bursae with rounded, dentate signum or without any signum.

This is the biggest genus of the Tortricini. The species of the present genus fall into four groups on the basisof the from of socius.

Genus *Croesia* Hübner, 1825

(Figures 329, 331, 332)

Croesia Hübner, 1825, Verz. bek. Schm., 385. (Type species: *Phalaena Tortrix bergmanniana* Linnaeus, 1758)
Croesia Obraztsov, 1955, 187. – Hannemann, 1961, 50. – MacKay, 1962, 9. – Powell, 1964, 112. – Bazowski, 1966, 496.
Chroesia Swatschek, 1958, 71.

Labial palpus rather sohrt, terminal joint thin, more of less concealed in scales of median joint. Forewing elongate. Culb from about middle of cell, Cula – M2 remote, Cula from angle, M3 more approximated to M2 than to Cula. M2 and M1 parallel. R5 separate to termen. Hindwing subtrapezoid. Culb from beyond 2/3, Cula – M2

equidistant, Cula from angle. M1 and Rs separate, approximated towards base.

Male genitalia: Tegumen elongate, terminal lobes well developed; socii large; tuba analis broad; subscaphium strong. Valva elongate with costa well developed; sacculus long, usually simple; brachiola well developed. Aedoeagus short; cornuti short.

Female genitalia: There are two types in shape of papillae anales. In first type, papillae analis is telescopic shape, and in second type, it is normal shape. Eighth tergite well developed. Sterigma broad. Ductus bursae sometimes with sclerites or sculptures; corpus bursae with or without signum.

Genus *Tortrix* Linnaeus, 1758

(Figure 330)

(*Phalaena*) *Tortrix* Linnaeus, 1758, Syst. Nat., ed. 10, 530. (Type species: *Phalaena Tortrix virideana* Linnaeus, 1758)

Tortrix Obraztsov, 1955, 181. – Swatschek, 1958, 69. – Hannemann, 1961, 50. – Razowski, 1966, 534.

Labial palpus short, terminal joint protruding. Forewing rather broad with all veins esparated. Venation similr to that in *Croesia* Hübn.

Male genitalia: Tegumen short, broadly triangular, pedunculi elongate; socii large drooping; tuba analis delicate. Valva elogate with narrow costa; sacculus thickened at base, ending in a point before the top of valva; brachiola short. Aedoeagus short; cornuti five or six strong spines with dilated base.

Female genitalia: The very specialized ovipositor has broad, rounded flashy lobes, thickly bristled at the inner side. Sterigma broad; ostium rounded; signum dentate.

Subfamily SPARGANOTHINAE (Wlsm., 1913) Obraztsov, 1943

(Figure 252)

Sparganothinae Obraztsov, 1943, Iris, **57**: 68.
Sparganothinae Obraztsov, 1955, Tijdschr. Ent., **98**: 1954.

This subfamily related to Archipini, the possession of the basal pecten of hindwings is probably a reversionary character.

Genus *Sparganothis* Hübner, 1825

(Figure 337)

Sparganothis Hübner, 1825, Verz. bek. Schm., 386.(Type species: *Phalaena pilleriana* Schiff., 1776)
Sparganothis Obraztsov, 1955, 194.

Antenna in male diliated. Labial palpus very long, porrected, second joint more or less shortly rough-scaled, terminal joint moderately long. Thrax without crest. Forewing sometimes with costal fold.

Forewing elongate, costa moderately curved anteriorly; apex orunded. Venation: Culb from about 1/2 of cell, Cula – M2 equidistant, closely approximated at base, Cula from angle, R5 and R4 stalked, stalk is long. Hindwing with basal pecten; broader than forew-

ing. elongate-trapezoid. Venation: Culb from 2/3 of cell, Cula separate, from angle, M3 closely approximated at base, M2 remote, M1 and Rs short-stalked.

Male genitalia: Tegumen rather short; uncus thin very long; socii broad upright; gnathos specialized, arms rounded apically, with hairy termination. Valva broad and long; sacculus slender; transtilla broadening and dentate medially. Aedoeagus rather slender, bent; several slender cornuti in vesica.

Female genitalia: Sterigma broad, ostium bursae broad, strongly sclerotized. Ductus bursae long. Corpus bursae large, ovate with short curved signum.

A LIST OF THE SPECIES OF THE JAPANESE TORTRICINAE AND SPARGANOTHINAE

Subfamily TORTRICINAE Fernald, 1882

Tribe Ceracini Swinhoe & Cotes, 1889

Genus *Eurydoxs* Filipjev, 1930

1. *Eurydoxa advena* Filipjev, 1930

Genus *Cerace* Walker, 1863

2. *Cerace xanthocosma* Diakonoff, 1950

Genus *Pandemis* Hübner, 1822

3. *Pandemis corylana* (Fabricius, 1794)
4. *Pandemis cinnamomeana* (Treitschke, 1830)
5. *Pandemis chlorograpta* Meyrick, 1931
6. *Pandemis heparana* (Schiffermiller & Denis, 1775)
7. *Pandemis* sp. 1.
8. *Pandemis dumetana* (Treitschke, 1935)

Genus *Archips* Hübner, 1822

9. *Archips xylosteanus* (Linnaeus, 1758)
10. *Archips viola* Falkovitsh, 1965
11. *Archips nigricaudanus* Walsingham, 1900
12. *Archips fumosus* Yasuda, 1961
13. *Archips issikii* Yasuda, 1961
14. *Archips fuscocupreanus* Walsingham, 1900
15. *Archips crataeganus* ssp. 1.

Genus *Archippus* Freeman, 1958

Subgenus *Archippus* Freeman, 1958

16. *Archippus* (*Archippus*) *asiaticus* (Walsingham, 1900)
17. *Archippus* (*Archippus*) *peratratus* (Yasuda, 1961)
18. *Archippus* (*Archippus*) *capsigeranus* (Kennel, 1901)
19. *Archippus* (*Archippus*) *insulanus* Kawabe, 1965
20. *Archippus* (*Archippus*) *piceanus similis* (Butler, 1879)
21. *Archippus* (*Archippus*) *breviplicanus* (Walsingham, 1900)
22. *Archippus* (*Archippus*) *semistructus* (Meyrick, 1937)
23. *Archippus* (*Archippus*) *ingentanus* (Walsingham, 1900)

Subgenus *Pararchips* Kuznetsov, 1970

24. *Archippus* (*Pararchips*) *pulchra* (Butler, 1879)
25. *Archippus* (*Pararchips*) sp. 1.

Genus *Hoshinoa* Kawabe, 1965

26. *Hoshinoa longicellana* (Walsingham, 1900)
27. *Hoshinoa adumbratana* (Walsingham, 1900)

Genus *Cornicacoecia* Obraztsov, 1954

28. *Cornicacoecia lafauryana* (Ragonot, 1875)

Genus *Choristoneura* Lederer, 1859

29. *Choristoneura diversana* (Hübner, 18 14–17)

Genus *Syndemis* Hübner, 1825

30. *Syndemis musculana* ssp. 1.

Genus *Aphelia* Hübner, 1825

31. *Aphelia* (*Aphelia*) *inumbratana* (Christoph, 1881)

Genus *Lozotaenia* Stephens, 1829

32. *Lozotaenia kumatai* Oku, 1963
33. *Lozotaenia coniferana* (Issiki, 1961)

Genus *Ptycholomoides* Obraztsov, 1954

34. *Ptycholomoides aeriferana* (Herrich-Schäffer, 1851)

Genus *Ptycholoma* Stephens, 1829

35. *Ptycholoma lecheana circumclusana* (Christoph, 1881)
36. *Ptycholoma imitator* (Walsingham, 1900)

Genus *Clepsis* Guenée, 1845

Subgenus *Clepsis* Guenée, 1845

37. *Clepsis* (*Clepsis*) *insignata* Oku, 1963
38. *Clepsis* (*Clepsis*) *monticolana* Kawabe, 1965
39. *Clepsis* (*Clepsis*) *jinboi* Kawabe, 1965
40. *Clepsis* (*Clepsis*) *aliana* Kawabe, 1965

Subgenus *Siclobola* Diakonoff, 1947

41. *Clepsis* (*Siclobola*) *strignan* (Hübner, 17 96–99)
42. *Clepsis* (*Siclobola*) *rurinana* (Linnaeus, 1758)

Genus *Homona* Walker, 1863

43. *Homona magnanima* Diakonoff, 1948
44. *Homona issikii* Yasuda, 1962

Genus *Adoxophyes* Meyrick, 1881

45. *Adoxophyes orana* (Fischer v. Röslerstamm, 1834)
46. *Adoxophyes fasciata* Walsingham, 1900

Genus *Pseudeulia* Obraztsov, 1954

47. *Pseudeulia asinana* (Hübner, 17 96–99)
48. *Pseudeulia vermicularis* (Meyrick, 1935)

Genus *Homonopsis* Kuznetsov, 1964

49. *Homonopsis foederatana* (Kennel, 1901)
50. *Homonopsis illotana* (Kennel, 1901)

Genus *Dentisociaria* Kuznetsov, 1970

51. *Dentisociaria armata* ssp. 1.

Daemilus gen. n.

52. *Daemilus* sp. 1.
53. *Daemilus fulva* (Filipjev, 1962)

Genus *Argyrotaenia* Stephens, 1852
Subgenus *Argyrotaenia* Stephens, 1852

54. *Argyrotaenia* (*Argytroaenia*) *tricensa* (Meyrick, 1912)
55. *Argyrotaenia* (*Argyrotaenia*) *congruentana* (Kennel, 1901)
56. *Argyrotaenia* (*Argyrotaenia*) sp. 1.
57. *Argyrotaenia* (*Argyrotaenia*) sp. 2.

Calala subgen. n.

58. *Argyrotaenia* (*Calala*) *angustilineata* (Walsingham, 1900)
59. *Argyrotaenia* (*Calala*) *affinisana* (Walker, 1863)

Genus *Capua* Stephens, 1834

60. *Capua favillaecana* (Hübner, 17 96–99)

Genus *Epagoge* Hübner, 1825

61. *Epagoge stenochorda* Diakonoff, 1948
62. *Epagoge prochyta* Meyrick, 1908
63. *Epagoge* sp. 1.
64. *Epagoge hoshinoi* Kawabe, 1964

Genus *Gnorismoneura* Issiki & Stringer, 1932

65. *Gnorismoneura exulis* Issiki & Stringer, 1932

Genus *Terricula* Falkovisth, 1965

66. *Terricula violetana* (Kawabe, 1964)

Genus *Drachmobola* Meyrick, 1907

67. *Drachmobola periastra* Meyrick, 1907

Genus *Pseudargyrotoza* Obraztsov, 1954

68. *Pseudargyrotoza conwagana* (Fabricius, 1775)
69. *Pseudarghrotoza aeratana* (Kennel, 1910)
70. *Pseudargyrotoza diticinctana* (Walsingham, 1900)
71. *Pseudargyrotoza minuta* (Walsingham, 1900)
72. *Pseudargyrotoza calvicaput* (Walsingham, 1900)

Tribe Cnephasiini (Stainton, 1859) Obraztsov, 1949

Genus *Eulia* Hübner, 1825

73. *Eulia ministrana* (Linnaeus, 1758)

Genus *Cnephasia* Curtis, 1826

Subgenus *Cnephasia* Curtis, 1826

74. *Cnephasia* (*Cnephasia*) *cineripalpana* Razowski, 1958

Genus *Eana* Billberg, 1820

Subgenus *Ablabia* Hübner, 1825

75. *Eana* (*Ablabia*) *argentana* (Clerck, 1759)

Genus *Doloploca* Hübner, 1825

76. *Doloploca praeviella* (Erschoff, 1877)

Genus *Kawabea* Razowski, 1965

77. *Kawabea razowskii* (Kawabe, 1963)
78. *Kawabea ignavana* (Christoph, 1881)

Tribe Tortricini (Guenée, 1845) Obraztsov, 1949

Paracroesia gen. n.

79. *Paracroesia abievora* (Issiki, 1961)

Genus *Spatalistis* Meyrick, 1907

80. *Spatalistis christophana* (Walsingham, 1900)
81. *Spatalistis bifasciana* (Hübner, 1787)

Genus *Paratorna* Meyrick, 1907

82. *Paratorna cuprescens* Falkovitsh, 1956

Genus *Acleris* Hübner, 1825

83. *Acleris emargana* (Fabricius, 1775)
84. *Acleris issikii* Oku, 1957
85. *Acleris latifasciana* (Haworth, 1811)
86. *Acleris albiscapulana* (Christoph, 1881)
87. *Acleris bicolor* Kawabe, 1963
88. *Acleris comariana* (Zeller, 1846)
89. *Acleris abietana nigrilineana* Kawabe, 1963
90. *Acleris kodamai* Yasuda, 1965
91. *Acleris submaccana* (Filipjev, 1962)
92. *Acleris exsucana* (Kennel, 1901)
93. *Acleris platynotana* (Walsingham, 1900)
94. *Acleris tunicatana* (Walsingham, 1900)
95. *Acleris paradiseana* (Walsingham, 1900)
96. *Acleris caerulescens* (Walsingham, 1900)
97. *Acleris phantastica* Razowski & Yasuda, 1964
98. *Acleris aestuosa* Yasuda, 1965
99. *Acleris ophthalmicana* Razowski & Yasuda, 1964
100. *Acleris delicatana* (Christoph, 1881)

101. *Acleris pulchella* Kawabe, 1963
102. *Acleris crassa* Razowski & Yasuda, 1964
103. *Acleris alnivora* Oku, 1956
104. *Acleris hokkaidana* Razowski & Yasuda, 1964
105. *Acleris filipjevi* Obraztsov, 1956
106. *Acleris cristana* (Schiffermiller & Denis, 1776)
107. *Acleris expressa* (Filipjev, 1931)
108. *Acleris placata* (Meyrick, 1912)
109. *Acleris perfundana* Kuznetsov, 1962
110. *Acleris nigriradix* (Filipjev, 1931)
111. *Acleris strigifera* (Filipjev, 1931)
112. *Acleris affinatana* (Snellen, 1883)
113. *Acleris yasudai* Razowski, 1966
114. *Acleris shepherdana* (Stephens, 1852)
115. *Acleris roscidana amurensis* (Caradja, 1928)
116. *Acleris logiana* (Clerck, 1759)
117. *Acleris lacordairana* (Duponchel, 1836)
118. *Acleris japonica* (Walsingham, 1900)
119. *Acleris takeuchii* Razowski & Yasuda, 1964
120. *Acleris boscana ulmicola* (Meyrick, 1930)
121. *Acleris apiciana* (Hübner, 1793)
122. *Acleris uniformis* (Filipjev, 1931)
123. *Acleris umbrana* (Haworth, 1811)
124. *Acleris similis* (Filipjev, 1931)
125. *Acleris longipalpana* (Snellen, 1883)
126. *Acleris enitescens* (Meyrick, 1912)

Genus *Croesia* Hübner, 1825

127. *Croesia aurichalcana* (Bremer, 1864)
128. *Croesia dentata* Razowski, 1966
129. *Croesia* sp. 1.
130. *Croesia phalera* Kuznetsov, 1964
131. *Croesia askoldana* (Christoph, 1881)
132. *Croesia leechii* (Walsingham, 1900)
133. *Croesia conchyloides* (Walsingham, 1900)
134. *Croesia fuscotogata* (Walsingham, 1900)
135. *Croesia elegans* (Oku, 1956)
136. *Croesia* sp. 2.
137. *Croesia* sp. 3.
138. *Croesia* sp. 4.
139. *Croesia indignana* (Christoph, 1881)
140. *Croesia crataegi* Kuznetsov, 1964
141. *Croesia tigricolor* (Walsingham, 1900)

Genus *Tortrix* Linnaeus, 1758

142. *Tortrix sinapina* Butler, 1879

Subfamily SPARGANOTHINAE (Walsingham, 1913) Obraztsov, 1943

Genus *Sparganothis* Hübner, 1825

143. *Sparganothis pilleriana* (Schiffermiller & Denis, 1776)
144. *Sparganothis* sp. 1.

Synonyms and mis-identefications

Synonyms

1) Genus *Eurydoxa* Filipjev, 1930
   Ceraceopsis Matsumura, 1931
2) Genus *Archips* Hübner, 1822
   Cacoecia Hübner, 1825
3) Genus *Acleris* Hübner, 1825
   Peronea (nom. praeocc.) Curtis, 1824; *Acalla* Hübner, 1825; *Rhacodia* Hübner, 1825; *Oxygrapha* Stainton, 1859
4) Genus *Croesia* Hübuner, 1825
   Argyrotoza Stephens, 1829
5) *Eurydoxa advena* Filipjev, 1930
   Ceraceopsis sapporensis Matsumura, 1931
6) *Archips viola* Falkovitsh, 1965
   Archips purpuratus Kawabe, 1965 **syn. n.**
7) *Archips fuscocupreanus* (Walsingham, 1900)
   Cacecia punica Matsumura, 1931; *Lozotenia Ishidaii* Matsumura, 1900; *Cacoecia ishidai* Matsumura, 1931
8) *Archips fumosus* Yasuda, 1961
   Archips abietis Falkovitsh, 1965 **syn. n.**
9) *Aschippus semistructus* (Meyrick, 1937)
   Archips brevicervicus Yasuda, 1961
10) *Archippus brevipricanus* (Walsingham, 1900)
    Cacoecia criticana Kennel, 1908
11) *Hoshinoa longicellana* (Walsingham, 1900)
    Cacoecia disparana Kennel, 1901
12) *Hoshinoa adumbratanus* (Walsingham, 1900)
    Cacoesia teshionis Matsumura, 1931
13) *Ptycholoma lecheana circumclusana* (Christoph, 1881)
    Ptycholoma lecheana nipponica Oka, 1925
14) *Clepsis rurinana* (Linnaeus, 1758)
    Tortric semialbana Guenée, 1845
15) *Pseudeulia vermicularis* (Meyrick, 1935)
    Philedonides magnata Yasuda, 1957 **syn. n.**
16) *Argyrotaenia* (*Calala*) *angustilineata* (Walsingham, 1900)
    Dichelia inconditana Kennel, 1901 **syn. n.**
17) *Capua favillaceana* (Hübner 17 96–99)
    Capua ochraceana Stephens, 1928
18) *Terricula violetana* (Kawabe, 1964)
    Terricula noctis Falkovitsh, 1965 **syn. n.**
19) *Acleris lacordairana* (Duponchel, 1836)
    Acleris roxana Razowski & Yasuda, 1964

20) *Acleris longipalpana* (Snellen, 1883)
Acleris electrina Razowski & Yasuda, 1964

21) *Acleris tunicatana* (Walsingham, 1900)
Acleris kurokoi Yasuda, 1964

22) *Acleris affinatana* (Snellen, 1883)
Oxygrapha pryerana Walsingham, 1900

23) *Acleris logiana* (Clerck, 1759)
Pyralis niveana Fabricius, 1787

24) *Acleris comariana* (Zeller, 1846)
Acalla baracola Matsumura, 1931

25) *Acleris submaccana* Filipjev, 1962
Acleris simplex Razowski & Yasuda, 1964

26) *Tortrix sinapina* Butler, 1879
Tortrix kawabei Razoswki, 1966 **syn. n.**

Mis-identifications

1) *Cerace xanthocosma* Diakonoff, 1950
Cerace onustana (non Walker) Miyake, 1911; *Cerace onustana* (non Walker) Matsumura, 1931; *Cerace guttana* (non Felder) Issiki, 1949; *Cerace guttana* (non Felder) Kawada, 1933

2) *Archips fuscocupreanus* Walisngham, 1900
Archips rosaceana (non Harris), Ishikawa, 1915; *Tortrix Ishidai* Nishitani, 1916; *Cacoecia crataegana* (non Hübner) Matsumura, 1917

3) *Archippus asiaticus* (Walsingham, 1900)
Cacoecia podana (non Scopoli) Matsumura, 1899 & 1905; *Cacoecia sorbiana* (non Hübner) Nishitani, 1916

4) *usArchipp breviplicanus* (Walsingham, 1900)
Archips podana (non Scopoli) Nishitani, 1916; *Caoecia criticana* (non Kennel) Matsumura, 1917

5) *Hoshinoa longicellana* (Walsingham, 1900)
Cacoecia rosaceana (non Harris) Matsumura, 1899; *Cacoecia rosana* (non Linnaeus) Matsumura, 1917;*Cacoecia sorbian* (non Hübner) Matsumura, 1920

6) *Hoshinoa adumbratana* (Walsingham, 1900)
Cacoecia sorbiana (non Hübner) Matsumura, 1905, 1917 and 1931; *Caoecia sorbiana* (non Hübner) Takahashi, 1930; *Archips sorbiana* (non Hübner) Nishitani, 1916; *Caoecia sorbiana* (non Hübner) Issiki, 1922; *Caoecia sorbiana* (non Hübner) Inoue, 1954

7) *Pandemis* sp. 1.
Tortrix unicolorana (non Duponchel) Issiki, 1922

8) *Pandemis chlorograpta* Meyrick, 1931
Pandemis ribeana (non Hübner) Matsumura, 1905, 1910 and 1917; *Pandemis ribeana* (non Hübner)Issiki, 1922; *Pandemis ribeana* (non Hübner) Inoue, 1954; *Pandemis cerasana* (non Hübner) Kawabe, 1963

9) *Ptycholoma imitator* (Walsingham, 1900)
Tortrix sinapina (non Butler) Nishitani, 1916; *Caocecia* (*Tortrix*) *sinakpina* (non Bulter) Matsumura, 1917

10) *Homona magnanima* Diakonoff, 1948
Capua menciana (non Walker) Matsumura, 1905: *Cacoecia asiatica* (non Walsingham) Takachiho, 1913; *Cacoecia menciana* non Walker) Matusmura, 1920; *Homona menciana* (non Walker) Issiki, 1922; *Cacoecia asiatica* (non Walsingham) Takahashi, 1930; *Homona coffearia* (non Neitner) Shiraki, 1933; *Homona coffearia* (non Neitner) Inoue, 1954

11) *Homona issikii* Yasuda, 1962
Homona magnanima (non Diakonoff) Issiki, 1959

12) *Argyrotaenia* (*Argyrotaenia*) sp. 1.
Artyrotaenia congruentana (part.) Issiki, 1922

13) *Epagoge* sp. 1.
Epagoge grotiana (non Fabrisius) Issiki, 1922

14) *Cnephasia* (*Cenphasia*) *cineripalpana* Razowski, 1958
Cnephasia chrysantheana (non Duponchel) Msatumura, 1905; *Cnephasia wahlbomiana* (non Linnaeus) Issiki, 1922; *Cnephasia wahlbomiana* (non Linnaeus) Inoue, 1954; *Cnephasia alticolana* (non Herrich-Schäffer) Hori, 1934

15) *Acleris issikii* Oku, 1957
Acleris quadridentana (non Walsingham) Oku, 1956

16) *Acleris latifasciana* (Haworth, 1811)
Acleala shalleriana (non Linnaeus) Matsumura, 1917; *Peronea schalleriana* (non Linnaeus) Issiki, 1922; *Acleris schalleriana* (non Linnaeus) Inoue, 1954

17) *Acleris submaccana* (Filipjev, 1962)
Peronea hastiana (non Linnaeus) Issiki, 9221; *Acleris hastiana* (non Linnaeus) Inoue, 1954

18) *Acleris yasudai* Razowski, 1966
Acleris tunicatana (non Walsingham) Yasuda, 1964; Issiki, 1957

19) *Acleris roscidana amurenasis* (Caradja, 1928)
Oxgrapha hispidana (non Christoph) Matusmura, 1905; *Peronea ispidana* (non Christoph) Issiki, 1922; *Acleris hispidana* (non Christoph) Inoue, 1954

20) *Croesia dentata* Razowski, 1966
Argyrotoxa auricalcana (part.) Issiki, 1922

21) *Epagoge stenochorda* Diakonoff, 1948
Epagoge pedaliota (non Meyrick) Issiki, 1957

22) *Kawabea razowskii* (Kawabe, 1963)
Tortricodes igavana (non Christoph) Issiki, 1957

23) *Acleris perfundana* Kuznetsov, 1962
Peronea ferrugana (non Treitschke) Issiki, 1957

24) *Croesia* sp. 1.
Argyrotoxa stibiana (non Snellen) Issiki, 1957

Host Plants of the Japanese Tortricinae and Sparganothinae

1) *Abies concolor* Lindl. (Pinaceae)
Archips issikii; *Archippus* (*Pararchips*) sp. 1; *Choristoneura diversana*; *Lozotaenia coniferana*

2) *Abies firma* Siebold et Zuccarini (Pinaceae)
Archips issikii; *Archippus capsigeranus*; *Archippus piceanus similis*; *Archippus ingentanus*; *Archippus* (*Pararchips*) *pulchra*; *Homona magnanima*; *Homonopsis foederatana*

3) *Abies homolepis* Sieb. et Zucc. (Pinaceae)
Archips (*Pararchips*) *pulchra*; *Lozotaenia coniferana*

4) *Abies sachalinensis* Masters (Pinaceae)
Eurydoxa advena; *Archips issikii*; *Archips fumosus*; *Archippus piceanus similis*; *Archippus* (*Pararchips*) sp. 1; *Archippus* (*Pararchips*) *pulchra*; *Lozotaenia coniferana*; *Acleris abietana nigrilineana*; *Choristoneura diversana*

5) *Abies veitchii* Lindl. (Pinaceae)
Eurydoxa advena

6) *Acer negundo* L. (Aceraceae)
Ptycholoma lechenaa circumclusana

7) *Acer palmatum* Thunb. (Aceraceae)
Cerace xanthocosma; *Archippus capsigeranus*

8) *Acer rufinerve* Sieb. et Zucc. (Aceraceae)
Archips viola

9) *Acer* sp. (Aceraceae)
Pandemis heparana; *Archips fuscocupreanus*; *Archippus asiaticus*; *Ptycholoma lecheana circumclusana*; *Homonopsis illotana*

10) *Akebia quinata* Decaisne (Lardizabalaceae)
Archippus asiaticus

11) *Aluns hirsta* Rupr. (Betulaceae)
Archips viola; *Choristoneura diversana*; *Acleris alnivora*

12) *Alnus inokumai* ? (Betulaceae)
Acleris submaccana

13) *Alnus japonica* Stend. (Betulaceae)
Archips crataeganus; *Archippus breviplicanus*

14) *Aluns maximowiczii* Callier (Betulaceae)
Acleris submaccana

15) *Aluns* sp. (Betulaceae)
Pandemis heparana; *Archips fusccoupreanus*; *Archips xylosteanus*

16) *Angelica* sp. (Umbelliferae)
Archippus asiaticus

17) *Arctium lappa* L. (Compositae)
Pandemis heparana; *Archippus insulanus*; *Cnephasia cinereipalpana*

18) *Ardisia sieboldi* Miq. (Myrsinaceae)
Archippus peratratus

19) *Artemisia montana* Pampan. (Compositae)
Pandemis heparana; *Clepsis* (*Siclobola*) *strigana*; *Aphelia inumbratana*; *Cnephasia cinereipalpana*; *Cornicacoecia lafauryana*

20) *Artemisia princeps* Pampan. (Compositae)
Archippus semistructaus; *Cnephasia cinereipalpana*

21) *Artemisia* sp. (Compositae)
Hoshinoa adumbratana; *Archippus ingentanus*; *Sparganothis pilleriana*

22) *Betula platyphylla* Sukatcher (Betulaceae)
Pandemis heparana; *Archips fuscocupreanus*; *Acleris submaccana*; *Acleris delicatana*

23) *Betula* sp. (Betulaceae)
Archips xylosteanus; *Choristoneura diversana*

24) *Beta vulgaris* L. (Chenopodiaceae)
Pandemis heparana; *Cnephasia cinereipalpana*; *Sparganothis pilleriana*

25) *Camellia japonica* L. (Theaceae)
Archippus peratratus; *Homona magnanima*

26) *Carpinus japonica* Blume. (Betulaceae)
Acleris delicatana

27) *Carpinus laxiflora* Blume (Betulaceae)
Croesia tigricolor

28) *Carpinus* sp. (Betulaceae)
Pandemis heparana

29) *Castanea crenata* Sieb. et Zucc. (Fragaceae)
Pandemis heparana; *Archips fuscocupreanus*; *Archips xylosteanus*; *Hoshinoa longicellana*

30) *Castanopsis* sp. (Fragaceae)
Archips nigricaudauns; *Homonopsis illotana*; *Homona magnanima*

31) *Cedrus dordara* Lond. (Pinaceae)
Arcpippus piceanus similis

32) *Chamaecyparis obtusa* Endlicher (Pincaeae)
Archippus piceanus similis

33) *Chenopodium album* L. (Chenopodiaceae)
Cnephasia cinereipalpana; *Sparganothis pilleriana*

34) *Chloranthus serratus* Roem. et Schult. (Chloranthaceae)
Archippus asiaticus

35) *Cinnamomum camphora* Siebold (Lauraceae)
Homona magnanima

36) *Cinnamomum* sp. (Lauraceae)
Cerace xanthocosma

37) *Cirsium* sp. (Compositae)
Pandemis dumetana; *Cornicacoecia lafauryana*; *Cnephasia cinereipalpana*

38) *Citrus unshiu* Narcov. (Rutacea)
Homona magnanima

39) *Clethra brabinervis* Sieb. et Zucc. (Clethraceae)
Cerace xanthocosma

40) *Clerodendron trichotomum* Thunb. (Verbenaceae)
Archippus peratratus

41) *Cleyera japonica* Thunb. (Theaceae)
Homona magnanima

42) *Cornus controverasa* Hemsley (Umbelliferae)
Pandemis heparana; *Archips xylosteanus*; *Spataristis bifasciana*

43) *Corylus* sp. (Umbelliferae)
Pandemis heparana

44) *Crataegus chlorosarca* Maxim. (Rosaceae)
Pandemis heparana

45) *Cryptomeria japonica* D. Don. (Taxodiaceae)
Archippus semistructus; *Archippus peceanus similis*; *Homona issikii*

46) *Cydonia oblonga* Mill. (Rosaceae)
Pandemis heparana; *Archips fuscocupreanus*; *Archippus breviplicanus*

47) *Daphniphyllum teijsmanii* Zoll. (Enphorbiaceae)
Archippus peratratus; *Archippus capsigeranus*

48) *Dentzia scabra* Thunb. (Saxifragaceae)
Acleris exsucana

49) *Dioscorea* sp. (Dioscoreaceae)
Archippus peratratus

50) *Disporum smilacinum* A. Gray (Liliaceae)
Archippus ingentanus; *Sparganothis pilleriana*

51) *Diospyros kaki* Thunb. (Ebenaceae)
Archips fuscocupreanus; *Archips nigricausdauns*; *Homona magnanima*; *Cnephasia cinereipalpana*; *Sparganothis* sp. 1.

52) *Elaeagnus* sp. (Elaeagnaceae)
Pandemis heparana; *Archippus semistructus*; *Archippus breviplicanus*; *Homonopsis illotana*

53) *Enkianthus campanulatus* (Miq.) Nichols (Ericaceae)
Acleris yasudai

54) *Enkianthus sikokianus* (Palib.) Ohwi (Ericaceae)
Acleris yasudai

55) *Erigeron annuus* Pers. (Compositae)
Pandemis heparana; *Archips fuscocupreanus*; *Cnephasia cinereipalpana*; *Sparganothis pilleriana*

56) *Euonymus japonica* Thunb. (Celastraceae)
Homona magnanima

57) *Fillipendula kamtschatica* Maxim. (Oleaceae)
Acleris shepherdana; *Acleris comariana*; *Sparganothis pilleriana*

58) *Fragaria ananassa* Duchesne (Rosaceae)
Pandemis heparana; *Pandemis chlorograpta*; *Archips fuscocupreanus*; *Archippus semistructus*; *Cornicacoecia lafauryana*; *Ptycholoma lecheana circumclusana*; *Ptycholoma imitator*; *Cnephasia cinereipalpana*; *Acleris comariana*; *Sparganothis pilleriana*

59) *Fraxinus mandshurica* Rupr. (Oleaceae)
Doloploca praeviella; *Archippus breviplicanus*; *Saprganothis pilleriana*

60) *Glochidion oboratum* Sieb. et Zucc. (Euphorbiaceae)
Homona magnanima

61) *Glycine max* Morrill. (Leguminosae)
Archips fuscocupreanus; *Homona magnanima*; *Sparganothis pilleriana*

62) *Heracleum moellendorffii* Hance (Umbelliferae)
Cnephasia cinereipalpana

63) *Houttuynia cordata* Thunb. (Saururaceae)
Archippus asiaticus; *Archippus ingentauns*

64) *Ilex crenata* Thunb. (Aquifoliaceae)
Homona magnanima

65) *Ilex pedunculosa* Miq. (Aquifoliaceae)
Cerace xanthocosma; *Terricula violetana*; *Acleris platynotana*

66) *Juglans ailanthifolia* Carr. (Juglandaceae)
Homona magnanima

67) *Juglans sieboldiana* Maxim. (Juglandaceae)
Sparganothis pilleriana

68) *Juglans* sp. (Juglandaceae)
Pandemis heparana; *Archips fuscocupreanus*; *Cnephasia cinereipalpana*; *Acleris caerulescens*

69) *Larix leptolepis* Cordon (Pinaceae)
Archips issikii; *Clepsis rurinana*; *Chorestoneura diversana*; *Ptycholomoides aeriferana*; *Homona magnanima*; *Eana argentana*; *Sparganothis pilleriana*

70) *Ledum palustre* L. var *diversipilosum* Nakai (Ericaceae)
Cornicacoecia lafauryana

71) *Lespedeza* sp. (Leguminosae)
Cornicacoecia lafauryana

71′) *Lespedeza thunbergii* Nakai (Leguminosae)
Sparganothis pilleryana

72) *Lonicera gracilipes* var. *glandulosa* Maxim. (Caprifoliaceae)
Pandemis chlorograpta

73) *Lyonia ovalifolia* var. *elliptica* Hand. – Mazz. (Ericaceae)
Cerace xanthocosma; *Acleris platynotana*; *Homonopsis illotana*

74) *Ligusturm japonica* Thunb. (Oleaceae)
Homona magnanima

75) *Ligusturm tschonoskii* Decaisne (Olaeceae)
Pternozyga calvicaput

76) *Ligustrum yesoense* var. *glabrum* Nakai (Oleacee)
Pandemis heparana

77) *Lilium cordatum* (Thunb.) Koidz. (Liliaceae)
Terricula violetana

78) *Linum usitatissimum* L. (Linaceae)
Pandemis heparana; *Cnephasia cinereipalpana*; *Sparganothis pilleriana*

79) *Maesa japonica* Moritzi (Myrsinaceae)
Archippus capsigeranus

80) *Magnolia grandiflora* L. (Magnoliaceae)
Cerace xanthocosma

81) *Machilus thunbergii* Sieb. et Zucc. (Lanraceae)
Archippus capsigeranus

82) *Malus baccata* Borkh. (Rosaceae)
Pandemis chlorograpta; *Archips fuscocupreanus*; *Archips crataeganus* ssp. 1; *Archippus breviplicanus*; *Hoshinoa adunbratana*; *Ptycholoma imitator*; *Acleris comariana*

83) *Malus pumila* Mill. (Rosaceae)
Pandemis heparana; *Pandemis chlorograpta*; *Pandemis cinnamomeana*; *Archips fusoccupreanus*; *Archips xylostenaus*; *Archips crataeganus* ssp. 1; *Archips nigricaudanus*; *Archippus asiaticus*; *Archippus breviplicanus*; *Archippus ingentanus Hoshinoa longicellana*; *Hoshinoa adunbratana*; *Cornicacoecia lafauryana*; *Clepsis strigana*; *Choristoneura diversana*; *Ptycholoma imitator*; *Ptycholoma lecheana circumclusana*; *Homona magnanima*; *Homonopsis foederatana*; *Homonopsis illotana*; *Cnephasia cinereipalpana*; *Acleris comariana*; *Acleris cristana*; *Sparganothis pilleriana*; *Sparganothis* sp. 1

84) *Medicago sativa* L. (Leguminosae)
Pandesmi heparana; *Pandemis dumetana*; *Cornicacoecia lafauryana*; *Clepsis strigana*; *Cnepshaia cinereipalpana*

85) *Melia azedarach* L. (Meliaceae)
Homona magnanima

86) *Mentha arvensis* L. (Labiatae)
Cnephasia cinereipalpana

87) *Metasequoia glyptostroboides* Hu et Cheng. (Metasequoiaceae)
Homona magnanima

88) *Morus bombycis* Koidz. (Moraceae)
Archips fuscocupreanus; *Choristoneura diversana*

89) *Morus* sp. (Moraceae)
Pandemis heparana; *Archips nigricaudanus*; *Archippus breviplicanus*; *Hoshinoa longicellana*

90) *Myrica rubra* Sieb. et Zucc. (Myricaceae)
Homona magnanima

91) *Myrsine sequenii* Lev. (Myrsinaceae)
Archippus peratratus

92) *Nandina doemstica* Thunb. (Berberidaceae)
Homona magnanima

93) *Nicotiana tabacum* L. (Solanaceae)
Cnephasia cinereipalpana

94) *Olea europaea* L. (Oleaceae)
Homona magnanima

95) *Paeonia suffruticosa* Andr. (Ranunculaceze)
Homona magnanima

96) *Petasites japonicus* Maxim.
Pandemis dumetana; *Archippus ingentanus*; *Terricula violetana*

97) *Phaseolus* sp. (Leguminosae)
Pandemis heparana; *Pandemis chlorograpta*; *Pandemis dumetana*; *Archips fuscocupreanus*; *Clepsis strigana*; *Ptycholoma lecheana circumclusana*; *Cnephasia cinereipalpana*

98) *Pahellodendron amurense* Rupr. (Rutaceae)
Pandemis heparana

99) *Pinus pentaphylla* Mayv. (Pinaceae)
Archippus piceanus similis

100) *Pinus strobus* L. (Pinaceae)
Archippus piceanus similias

101) *Poa pratensis* L. (Gramineae)
Eana argentana

102) *Podocarpus macrophyllus* Lamb. (Podocarpaceae)
Homona magnanima

103) *Podocarpus nagi* Zeel. et Moritz. (Podocarpaceae)
Homona magnanima

104) *Polygonatum maximowiczii* Maxim. (Liliaceae)
Sparganothis pilleriana

105) *Polygonum cuspidatum* Sieh. et Zucc. (Polygonaceae)
Pandemis chlorograpta; *Homonopsis illotana*

106) *Populus nigra* L. (Salicaceae)
Pandemis heparana; *Archips breviplicanus*; *Choristoneura diversana*; *Acleris issikii*

107) *Populus sieboldii* Miq. (Salicaceae)
Archips viola; *Choristoneura diversana*; *Cnephasia cinereipalpana*; *Acleris issikii*

108) *Populus* sp. (Salicaceae)
Pandemis heparana; *Sparganothis pilleriana*

109) *Prunus armeniaca* L. var *ansu* Maxim. (Rosaceae)
Pandemis heparana; *Archips fuscocupreanus*; *Archippus breviplicanus*

110) *Pruns avium* L. (Rosaceae)
Ptycholoma lecheana circumclusana

111) *Prunus mume* Sieb. et Zucc. (Rosaceae)
Archips fuscocupreanus; *Archippus semistructus*; *Homonopsis illotana*

112) *Prunus persica* Mill. (Rosaceae)
Pandemis heparana; *Archips fuscocupreanus*; *Archippus breviplicanus*; *Homona magnanima*; *Acleris comariana*

113) *Prunus salicina* Lindl. (Rosaceae)
Pandemis heparana; *Archips fuscocupreanus*; *Archippus asiaticus*; *Archippus capsigeranus*; *Archippus ingentanus*; *Archippus berviplicanus*; *Acleris cristana*

114) *Prunus sargentii* Rethder. (Rosaceae)
Archips fuscocupreanus; *Archips crataeganus* sp. 1; *Archippus asiaticus*; *Homonopsis illotana*

115) *Prunus* × *yedoensis* Matsum. (Rosaceae)
Pandemis heparana; *Archips fuscocupreanus*; *Archips crataeganus* sp. 1; *Archippus asiaticus*; *Archippus breviplicanus*; *Hoshinoa longicellana*; *Hoshinoa adunbratana*; *Ptycholoma imitator*; *Prycholoma lecheana circumclusana*; *Homona magnanima*

116) *Prunus* sp. (Rosaceae)
Cerace xanthocosma; *Archips xylosteanus*; *Acleris comariana*

117) *Pteridium aquilinum* L. (Pteridaceae)
Sparganothis pilleriana

118) *Punica granatum* L. (Punicaceae)
Cerace xanthocosma; *Homona magnanima*

119) *Pyrus simoni* Carr. (Rosaceae)
Pandemis heparana; *Archips fuscocupreanus*; *Archips xylosteanus*; *Archips crataeganus* ssp. 1; *Archips nigricaudanus*; *Archippus asiaticus*; *Archippus breviplicanus*; *Archippus ingentanus*; *Hoshinoa longicellana*; *Ptycholoma lecheana circumclusanat*; *Ptycholoma imitator*; *Homona magnanima*

120) *Pyrus pyriforia* Nakai (Rosaceae)
Cnephasia cinereipalpana

121) *Quercus acutissima* Carr. (Fagaceae)
Archips xylosteanus; *Hoshinoa longicellana*; *Acleris affinatana*

122) *Quercus dentata* Thunb. (Fagaceae)
Archips xylosteanus; *Spatalistis chrostophana*; *Tortrix sinapina*; *Acleris affinatana*

123) *Quercus glauca* Thunb. (Fagaceae)
Homonopsis illotana

124) *Quercus mongolica* Fischer (Fagaceae)
Arcips fuscocupreanus; *Archippus breviplicanus*; *Hoshinoa longicellanus*; *Spatalistis christophana*

125) *Quercus phillyraeoides* A. Gray (Fagaceae)
Homona magnanima

126) *Quercus serrata Thunb.* (Fagaceae)
Archips fuscocupreanus; *Archips xylosteanus*; *Archips nigricaudanus*; *Acleris perfundana*; *Archippus ingentanus*; *Acleris affinatana*

127) *Quercus* sp. (Fagaceae)
Pandemis heparana; *Croesia leechii*

128) *Rhamnus costata* Maxim. (Rhamnaceae)
Spatalistis bifasciana

129) *Rhaphiolepis umbellata* Makino (Rosaceae)
Archippus peratratus

130) *Rhus japonica* L. (Anacardiaceae)
Homona magnanima

131) *Ribes grossularia* L. (Saxifragaceae)
Pandemis heparana; *Archips fuscocupreanus*; *Archippus breviplicanus*; *Cnephasia cinereipalpana*

132) *Rosa multiflora* Thunb. (Rosaceae)
Achips fuscocupreanus; *Acleris comariana*; *Acleris cristana*

133) *Rosa* sp. (Rosaceae)
Pandemis heparana; *Archippus semistructus*; *Hoshinoa longicellana*; *Ptycholoma lecheana circumclusana*; *Homona magnanima*

134) *Rubus microphyllus* L. (Rosaceae)
Archippus semistructus; *Acleris enitescesn*

135) *Rubus* sp. (Rosaceae)
Pandemis heparana; *Archips fuscocupreanus*; *Archippus breviplicanus*; *Cnephasia cinereipalpana*

136) *Rumex obtusifolius* L. (Polygonaceae)
Pandemis hepatana; *Cnephasia cinereipalpana*

137) *Salix integra* Thunb. (Salicaceae)
Acleris issikii

138) *Salix* sp. (Salicaceae)
Pandemis heparana; *Pandemis cinnamomeana*; *Archips fuscocupreanus*; *Archips xylosteanus*; *Hoshinoa adunbratana*; *Cornicacoecia lafauryana*; *Ptycholoma lecheana circumclusana*; *Homonopsis foederatana*; *Acleris issikii*; *Acleris latifasciana*

139) *Skimmia japonica* Thunb. (Rutaceea)
Archippus asiaticus

140) *Smilax china* L. (Liliaceae)
Homonopsis illotana

141) *Solidago virga-aurea* L. (Compositae)
Cnephasia cinereipalpana

142) *Sorbus commixta* Hedl. (Rosaceae)
Pandemis cinnamomeana; *Archippus asiaticus*

143) *Sorbus sambucifolia* M. Roemer (Rosaceae)
Acleris paradiseana

144) *Sorbus* sp. (Rosaceae)
Archips fuscocupreanus; *Pandemis heparana*

145) *Spiraea media* Schmidt (Rosaceae)
Acleris comariana

146) *Syringa reticulata* Hara (Oleaceae)
Pseudargyrotoza diticinctana

147) *Syringa vulgaris* L. (Oleaceae)
Pandemis heparana

148) *Taxus cuspidata* Sieb. et Zucc. (Taxaceae)
Archips fumosus; *Archippus piceanus similis*; *Homona magnanima*; *Homonopsis foederatana*

149) *Thea sinensis* L. (Theaceae)
Homona magnanima

150) *Tilia japonica* Simonkai (Tiliacaae)
Tortrix sinapina; *Croesia aurichalcana*; *Croesia dentata*

151) *Tilia maximowitziana* Shirasawa (Tiliaceae)
Croesia aurichalcana

152) *Tilia* sp. (Tiliaceae)
Pandemis heparana

153) *Trifolium repens* L. (Leguminosae)
Pandemis heparana; *Pandemis dumetana*; *Cronicacoecia lafauriana*; *Clepsis strigana*; *Cnephasia cinereipalpana*

154) *Tsuga sieboldii* Carriere (Pinaceae)
Archippus piceanus similis

155) *Ulmus davidiana* Planch. (Ulmaceae)
Archips xylosteanus; *Choristoneura diversana*; *Ptycholoma imitator*; *Ptycholoma lecheana circumclusana*; *Acleris boscana ulmicola*

156) *Ulmus laciniata* Mayr (Ulmaceae)
Christoneura diversana; *Acleris boscana ulmicola*

157) *Urtica thunbergiana* Sieb. et Zucc. (Urticaceae)
Archippus ingentanus

158) *Ulmus* sp. (IUlmaceae)
Archips fuscocupreanus

159) *Vaccinium bracteatum* Thunb. (Ericaceae)
Homona magnanima

160) *Vaccinium vitis-idaea* L (Ericaceae)
Pandemis heparana; *Cnephasia cinereipalpana*

161) *Vaccinium* sp. (Ericaceae)
Homonopsis illotana

162) *Viburnum awabuki* K. Koch (Caprifeliaceae)
Homona magnamnia

163) *Weigela coraeensis* Thunb. (Caprifoliaceae)
Croesia askoldana

164) *Wisteria floribunda* Taubert (Leguminosae)
Homona magnanima; *Sparganothis pilleriana*

165) *Zelkova serrata* Thunb. (Fagaceae)
Acleris japonica

166) *Neolitsea sericea* Koidz (Lauraceae)
Archips nigricaudanus; *Archippus piceanus similis*; *Epagoge foederatana*

167) Fallen dead leaves of dicotyledonous tree
Epagoge sp. 1; *Argyrotaenia congruentana*

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Explantion of Figures.

Figures A-F. Male and female genitalia:

A, male genitalia of Archipini; B, aedoeagus; C, male genitalia of Tortricini; D, female genitalia of Archipini; E, corpus bursae; F, caudal parts of ductus bursae.

List of Abbraviation on the Figures:

VIII=♀, eighth abdominal segment
a=♂, ♀, anus
aed=♂, aedoeagus Pierce 1909
antr=♀, antrum Higgins 1941↔colliculum Diakonoff 1939
apo. ant=♀, apophyses anteriores Kuznezov 1915
bls=♀, bulla seminalis Petersen 1901
br=♂, brachiola Diakonoff 1939
capt=♀, capitulum Diakonoff 1939
cest=♀, cestum Diakonoff 1939
co=♂, costa Pierce 1914
crn=♂, cornuti Pierce 1909
crp. bu=♀, corpus bursae Stitz 1901
du. bu=♀, ductus bursae Petersen 1900
du. sml=♀, ductus seminalis Petersen 1900
gn=♂, gnathos Pierce 1914
lla=♀, lamella antevaginalis Kuznezov 1915
llp=♀, lamella postvaginalis Kuznezov 1915
o. b=♀, ostium bursae Petersen 1900
pap. a=♀, papillae anales Kuznezov 1915
sig=♀, signum Pierce 1914
sl=♂, sacculus Pierce 1909
soc=♂, socii Pierce 1914
sterg=♀, sterigma Bryk 1918
tg=♂, tegumen Petersen 1904
tra=♂, transtilla Pierce 1914
tub. an=♂, tuba analis Diakonoff 1954↔scaphium Pierce 1909; subscaphium Pierce 1909= ventral plate Busck & Heinrich 1921 (in the Genus *Acleris*)
un=♂, uncus Peytoureau 1895
v=♂, valvae Hübner 1820
ves=♂, vesica Pierce 1909
vin=♂, vinculum Pierce 1909

Figures 234–245, -Wing patterns:

234, *Pandemis cinnamomeana*; 235, *P. dumetana*; 236, *P. heparana*; 237, *P.* sp. 1; 238, *P. chlorograpta*; 239, *P. corylana*; 240, *Archips crataeganus* ssp. 1; 241, *A. xylosteanus*; 242, *A. fumosus*; 243, *A. fuscocupreanus*; 244, *A. issikii*; 245, *A. viola.*

Figures 246–252. -Tarsal segemtns of hindlegs:

246, *Cerace xanthocosma*; 247, *Archips xylosteanus*; 248, *Adoxophyes orana*; 249, *Capua favillaceana*; 250, *Pseudargyrotoza conwagana*; 251, *Cnephasia cineripalpana*; 252, *Sparganothis pilleriana.*

Figures 253–262. -Cremaster of pupae:
253–255, *Cerace xanthocosma;* 256–258, *Archippus breviplicanus;* 259–260, *Cnephasia cineripalpana;* 261, 262, *Acleris cristana.*

Figures 263–273. -Lateral view of heads and antenna, and wing venation:
263, *Eurydoxa advena;* 264, 265, *Cerace xanthocosma;* 266,–270, *Pandemis heparana;* 271–273, *Archips xylosteanus.*

Figure 274. -Abdomianl pits of *Archips xylosteanus.*

Figures 275–284. -Lateral view of heads and labial palpi, and wing venation:
275, 280, *Archippus (Pararchips) pulchra;* 276, *Archippus piceanus similis;* 277, 278, 281, 282, *Hoshinoa longicellana;* 279, 283, 284, *Cornicacoecia lafauryana.*

Figures 285–295. -Lateral view of heads and labial palpi, and wing venation:
285, 292, 293, *Syndemis musculana* ssp. 1; 286, *Choristoneura diversana;* 287, *Aphelia inumbratana;* 288, 290, 291, *Lozotaenia coniferana;* 289, 294, 295, *Ptycholomoides aeriferana.*

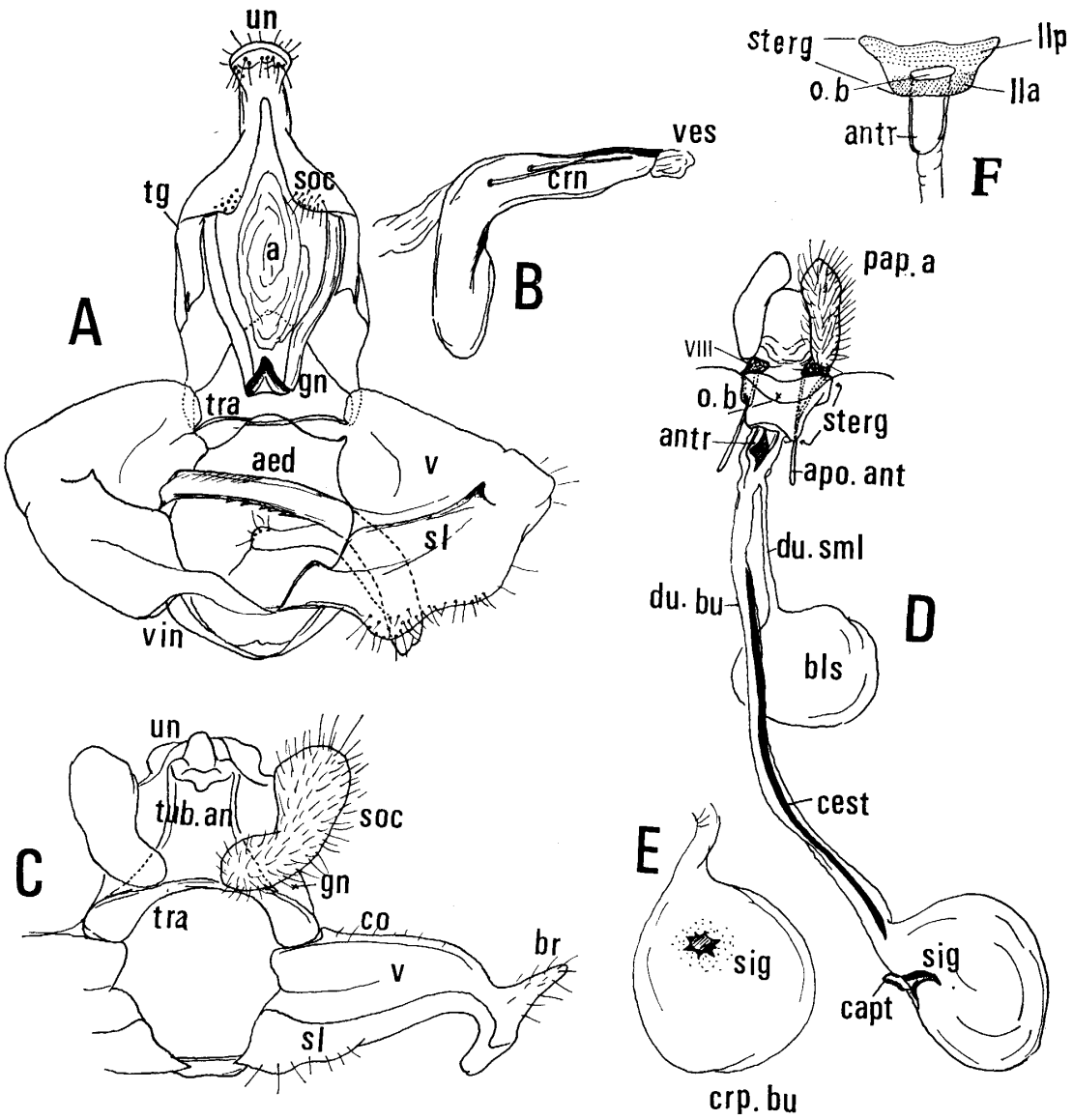
Figures 296–307. -Lateral view of heads and labial palpi, and wing venation:
296, 301, *Ptycholoma imitator;* 297, *Clepsis (Siclobola) strigana;* 298, *Clepsis (Siclobola) rurinana,* 299, 304, 305, *Homona magnanima;* 300, 306, 307, *Adoxophyes orana.*

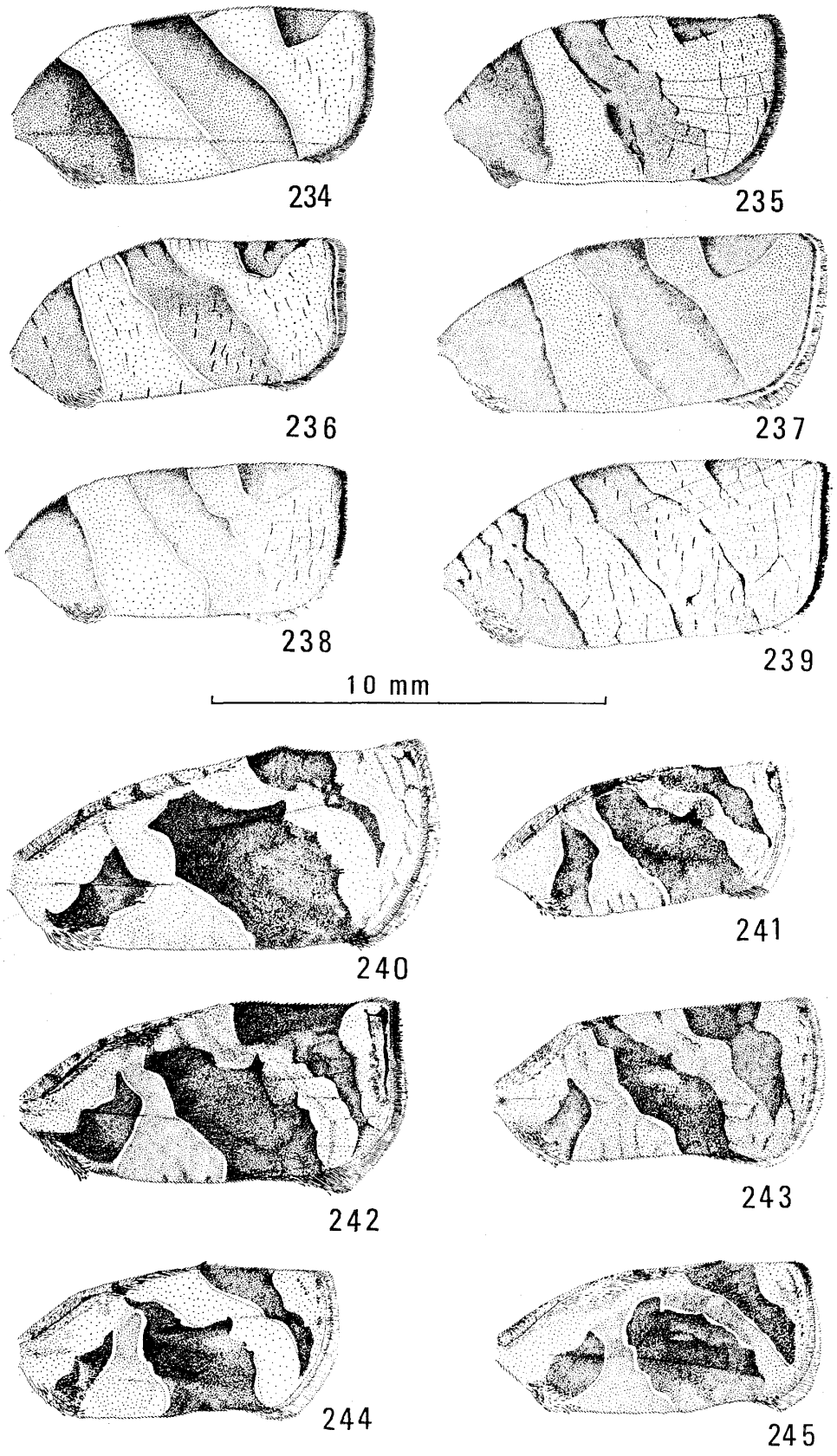
Figures 308–315. -Lateral view of heads and labial palpi, and wing venation:
308, *Homonopsis foederatana;* 309, *Dentisociaria armata* ssp. 1; 310, *Argyrotaenia (Argyrotaenia) tricensa;* 321, 313, *Pseudeulia asinana;* 314, 315, *Daemilus fulva.*

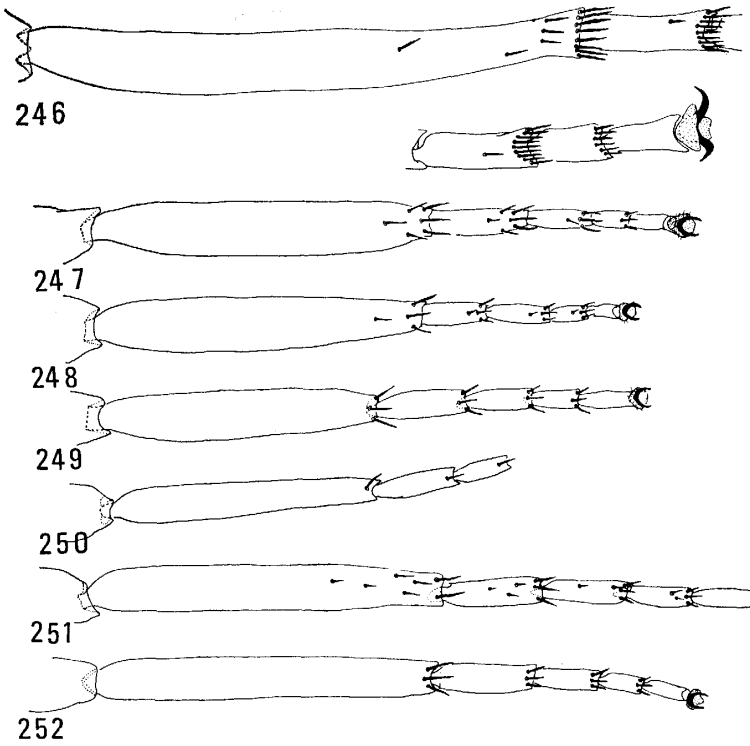
Figures 316–337. -Wing venation:
316, *Capua favillaceana;* 317, *Epagoge prochyta;* 318, *Epagoge* sp. 1; 319, *Pseudargyrotoza diticinctana;* 320, *Terricula violetana;* 321, *Gnorismoneura exulis;* 322, *Pseudargyrotoza conwagana;* 323, *P. minuta;* 324, *Drachmobola periastra;* 325, *Paracroesia abievora;* 326, *Paratorna cuprescens;* 327, *Spatalistis christophana;* 328, *Acleris roscidana amurensis;* 329, *Croesia leechii;* 330, *Tortrix sinapina;* 331, *Croesia aurichalcana;* 332, *Croesia* sp. 4; 333, *Eulia ministrana;* 334, *Cnephasia cineripalpana;* 335, *Eana argentanta;* 336, *Kawabea razowskii;* 337, *Sparganothis pilleriana.*

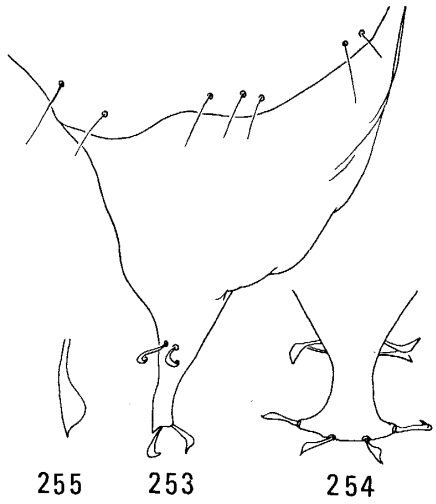
Figure 672. -Setal map of the larva of the Tribe Archipini.

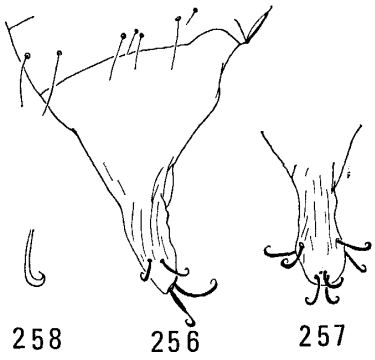
Figures 615, 616. -Pupa of *Archippus brevipricanus:* 615, ventral view; 616, lateral view.

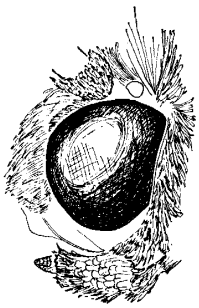












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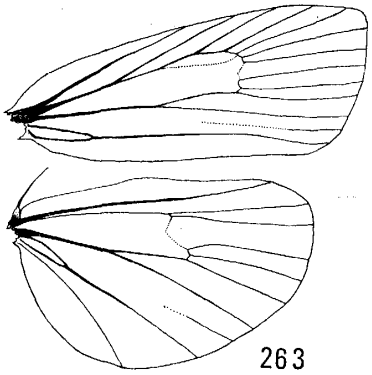

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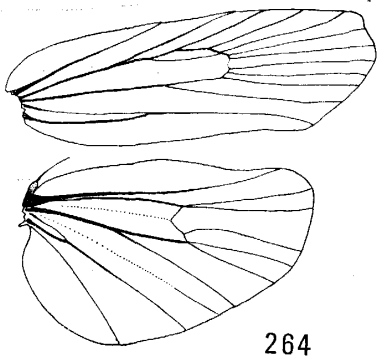

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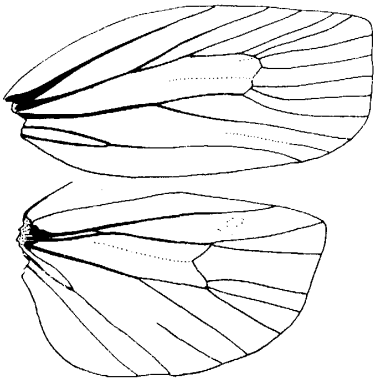

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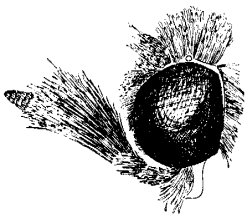

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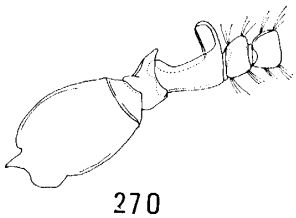

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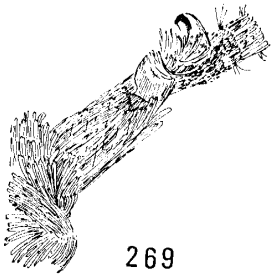

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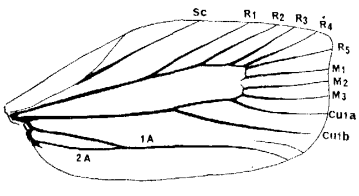

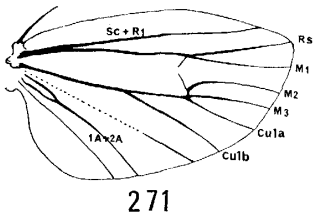

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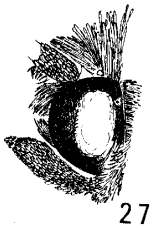

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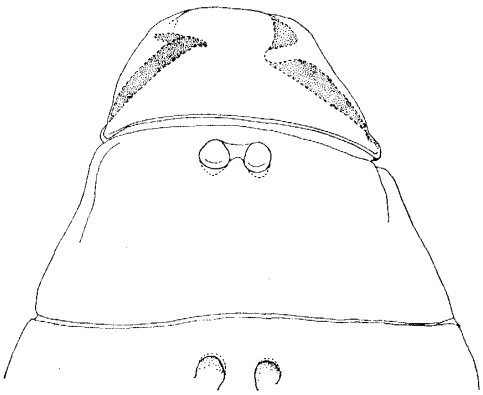

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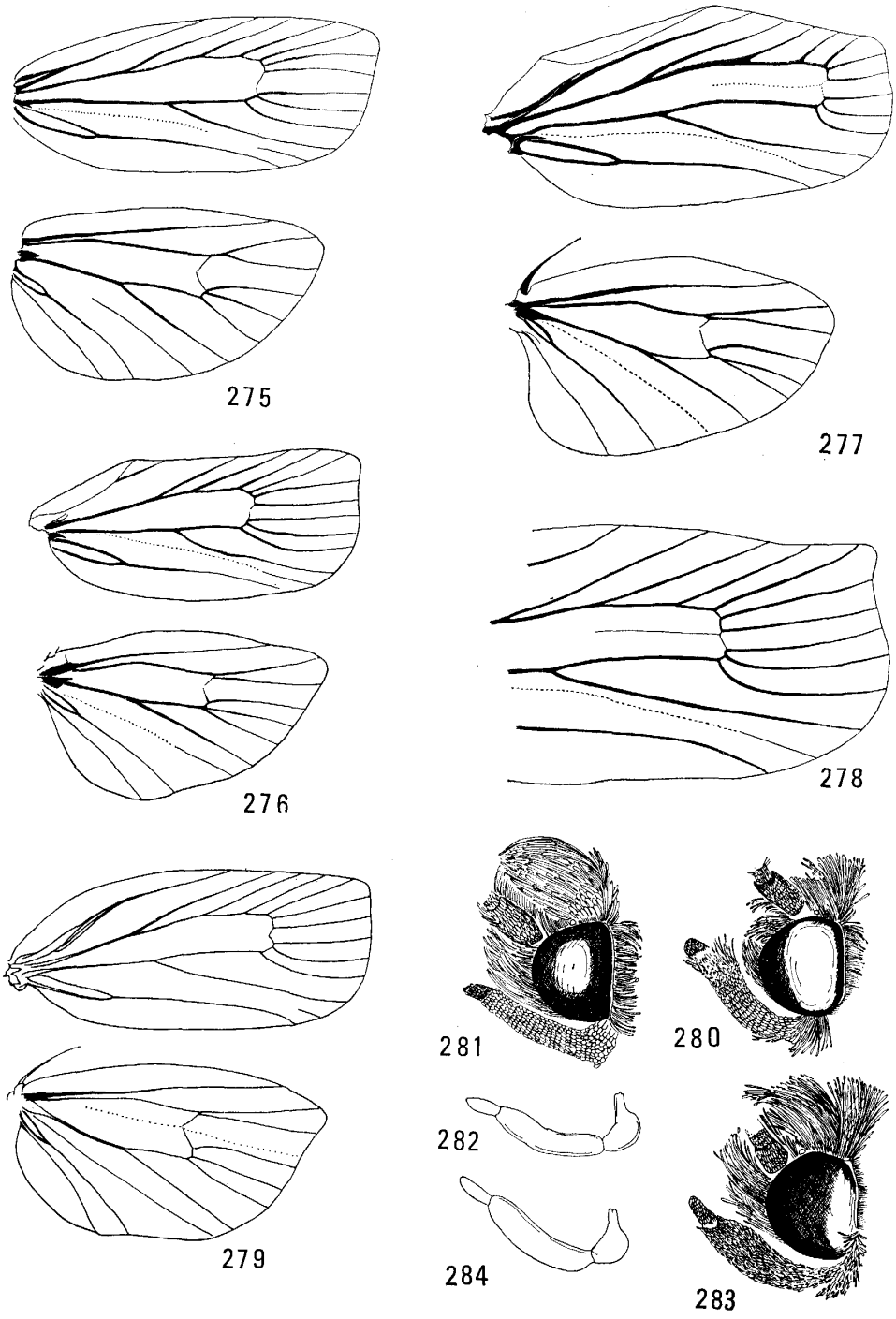

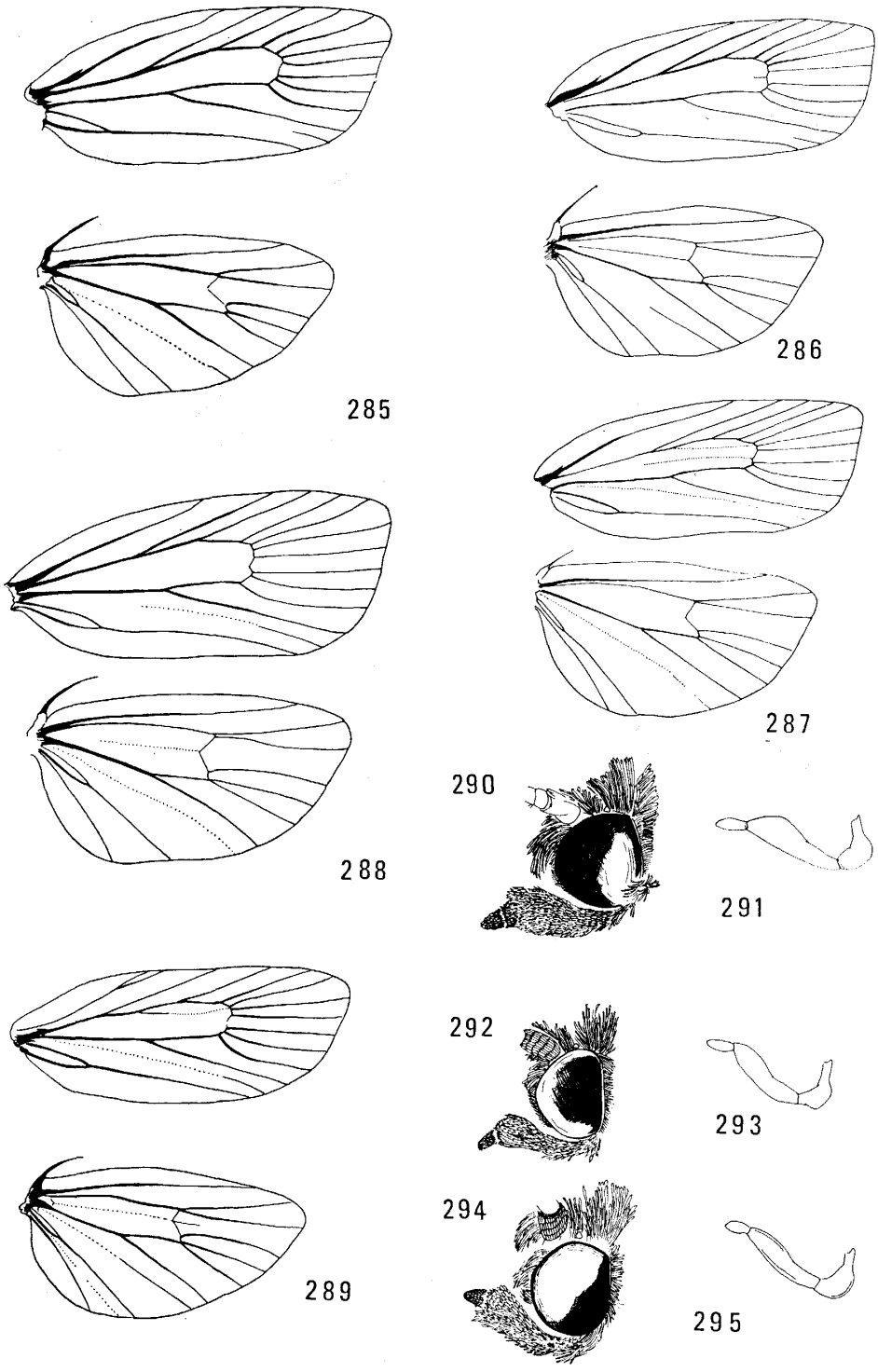

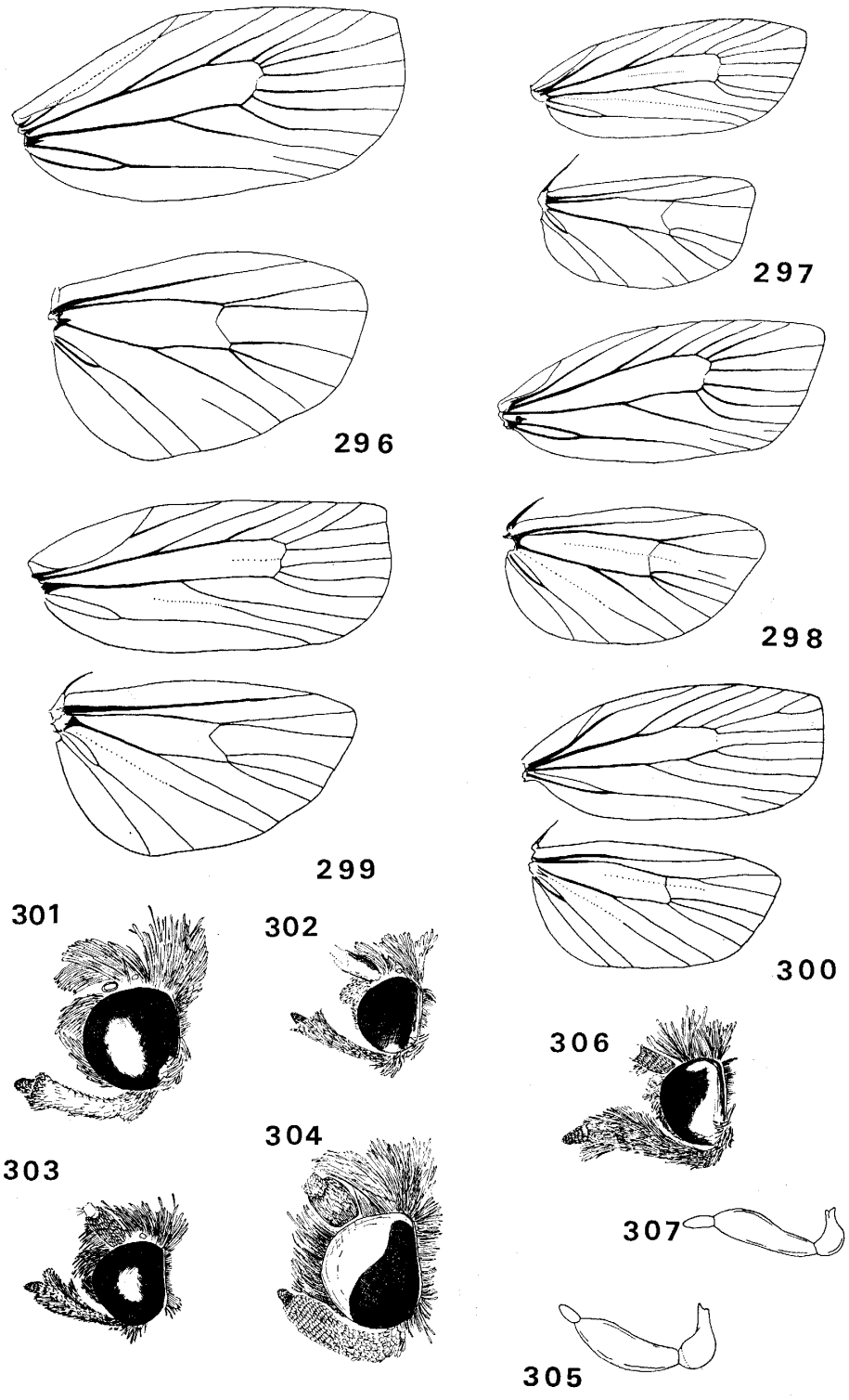

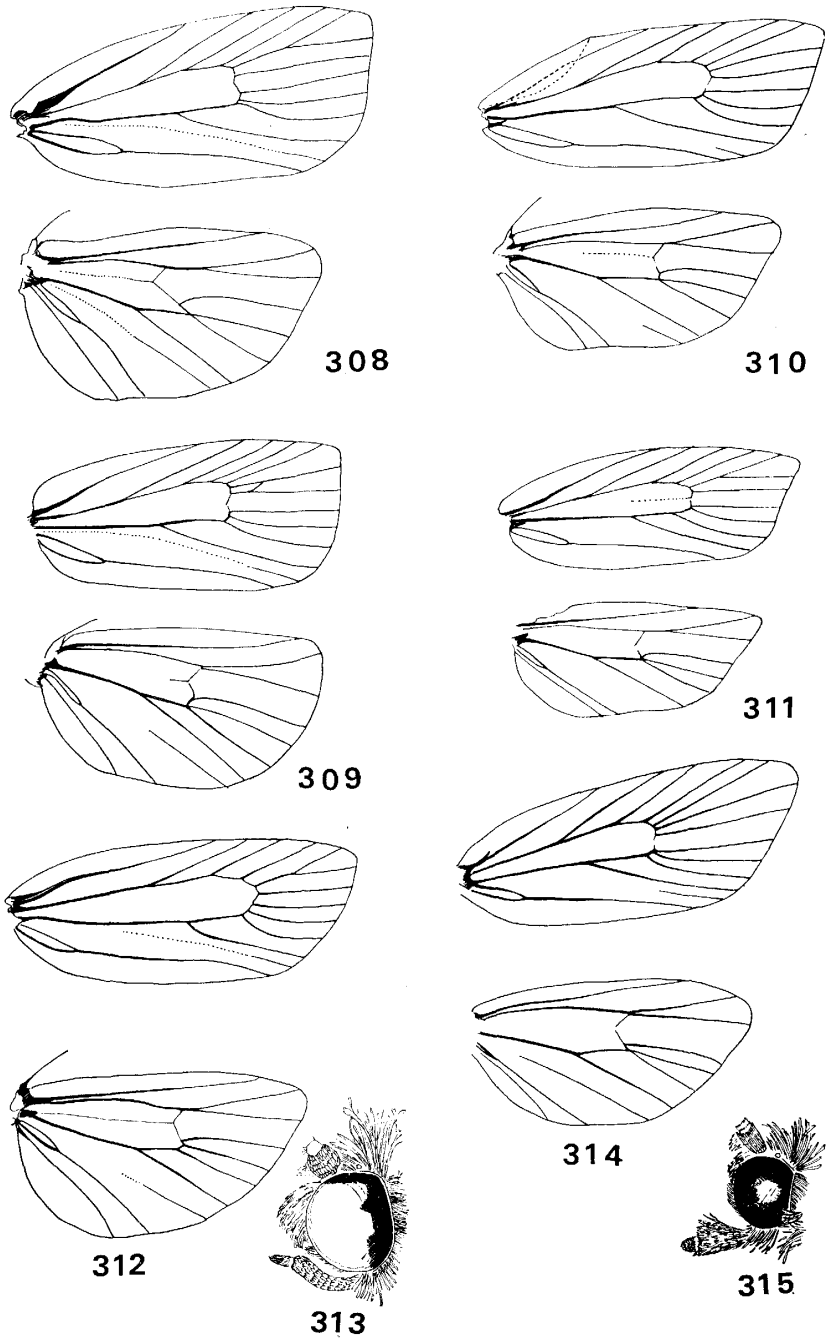

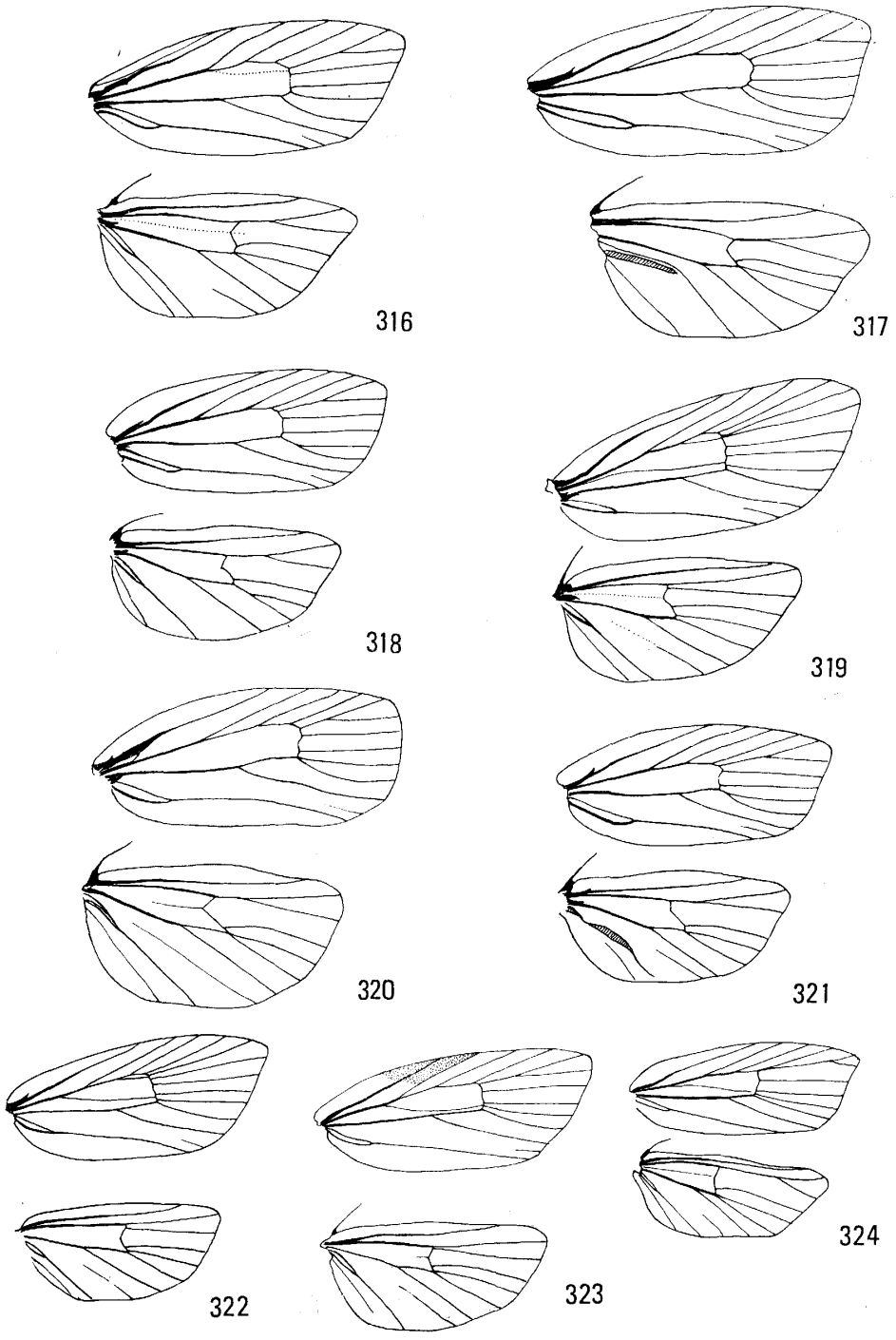

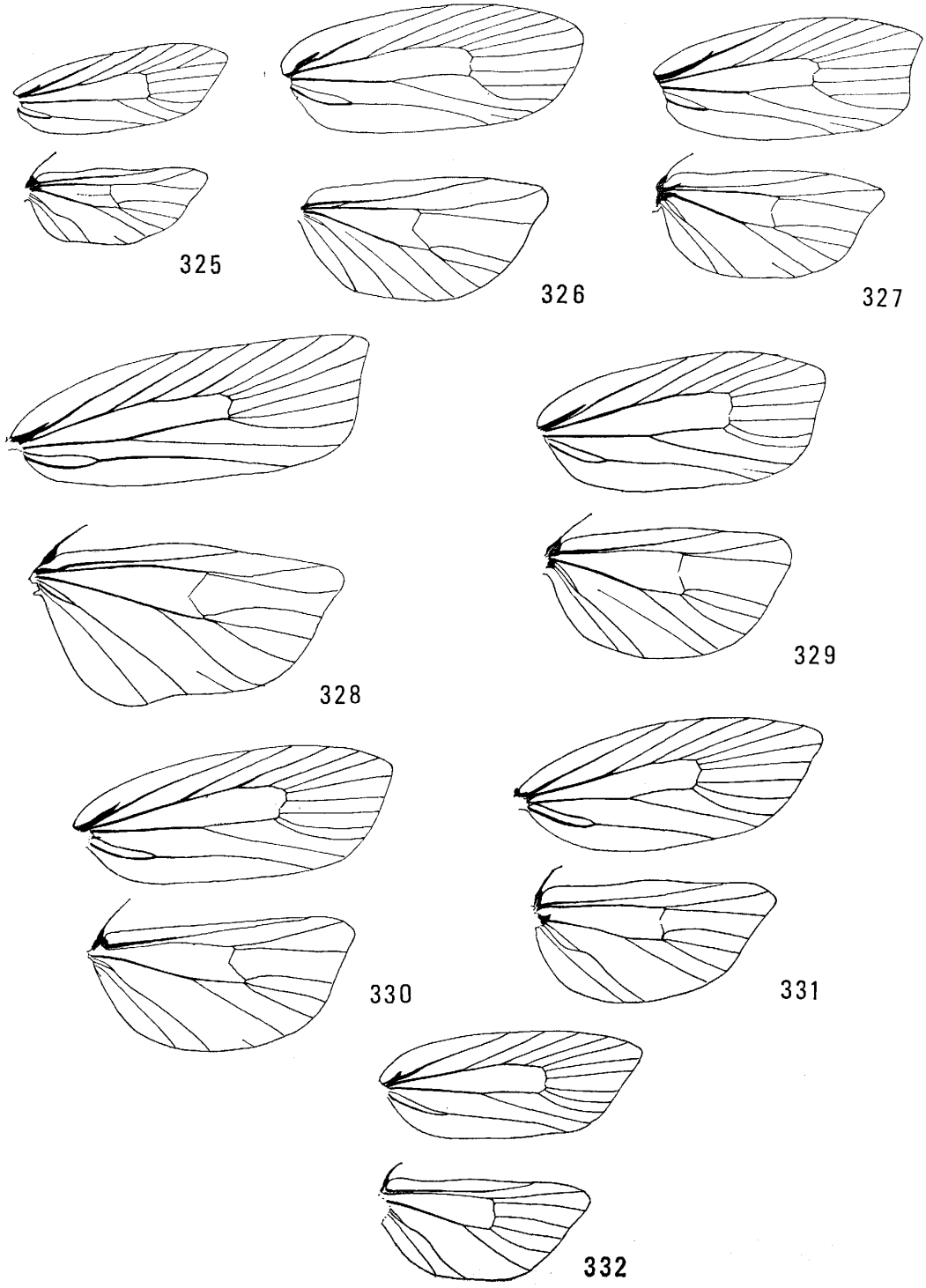

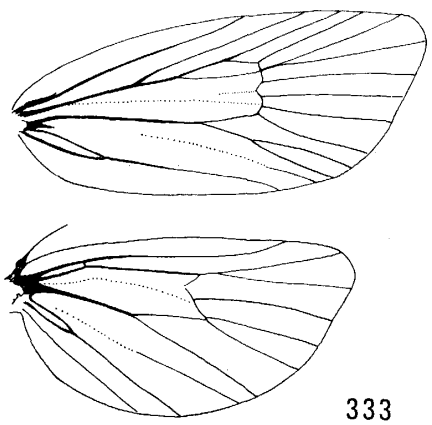

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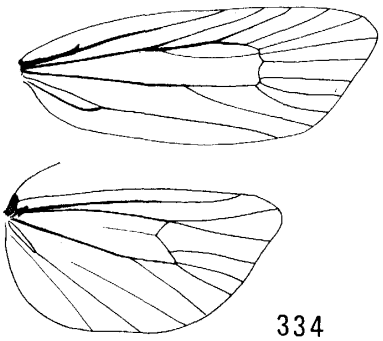

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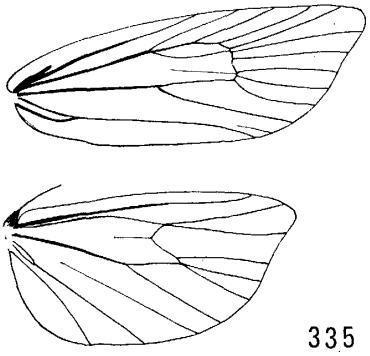

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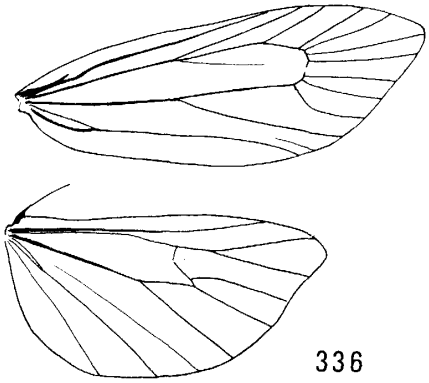

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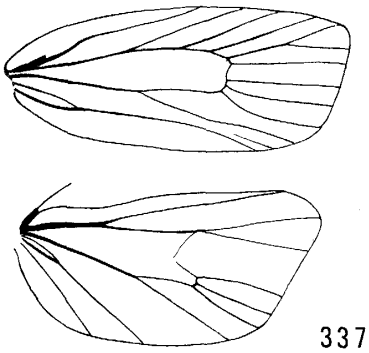

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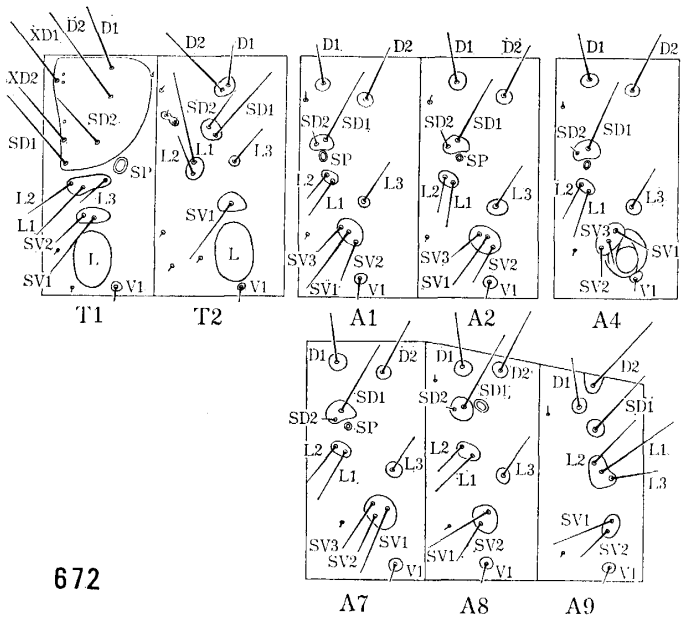

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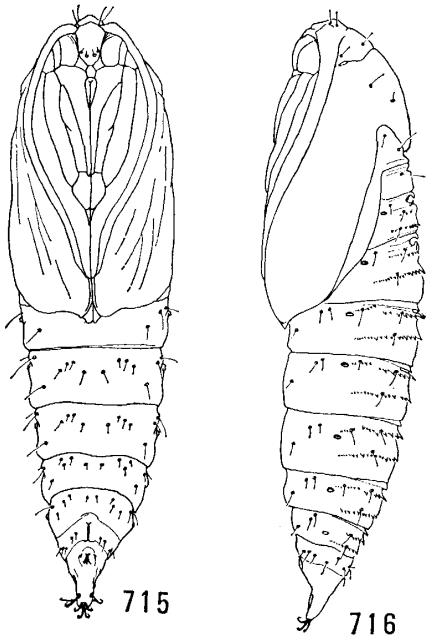

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