



Argyresthiidae (Lepidoptera) of Japan

メタデータ	言語: English 出版者: 公開日: 2009-08-25 キーワード (Ja): キーワード (En): 作成者: MORIUTI, Sigeru メールアドレス: 所属:
URL	https://doi.org/10.24729/00009473

Argyresthiidae (Lepidoptera) of Japan¹⁾

By

Sigeru MORIUTI

Entomological Laboratory, College of Agriculture

The present paper represents a part of a systematic study of the Japanese Yponomeutoidea. The Yponomeutoid family Argyresthiidae is composed of nearly a hundred species, many of which are European and North American. So far little investigation has been done on the Japanese Argyresthiidae. The first Argyresthiid species recorded from Japan is *Argyresthia conjugella* ZELLER, which was reported by MATSUMURA in 1896 as a pest of apple under the name of *Laverna herellera* DUP.? in the "Zoological Magazine (Tokyo)", and two years later he published it under that name in the "U.S. Department of Agriculture, Entomology, New Series" again. Since then this species has been recorded from Japan by REBEL (1901), SPULER (1910), MEYRICK (1914) and MEYRICK (1927), and an account has been given of the biological observation of it by several workers, e. g. MATSUMURA (1899), NITOBE (1906), MATSUMURA (1907), OKAMOTO (1917), MATSUMURA (1917), TAKAHASHI (1930), TAKAHASHI (1947), etc. In 1905 MATSUMURA recorded two *Argyresthia* species, *conjugella* and *illuminatella*; however, no material of the latter has been seen on which this record could be based, and so far as I can trace, the species has never appeared in the Japanese literature, except in only a list by INOUE (1954), since MATSUMURA's record. In 1931 MATSUMURA described and figured five species, *conjugella*, *fulgurialis* MATS., *andereggiella* DUP. f, *kuwayamella* MATS., *sapporella* MATS. and *suzukiella* MATS., as belonging to the genus *Argyresthia*; *fulgurialis* is a synonym of *A. brockeella* (HÜBNER), as pointed out by INOUE in 1954, *kuwayamella* is considered to be merely a local form of the widely distributed species *andereggiella*, *sapporella* is a synonym of a Yponomeutid *Swammerdamia pyrella* (DE VILLERS)²⁾, and *suzukiella* is a Acrolepiid (see MORIUTI, 1964). MEYRICK described

1) Studies on the Yponomeutoidea (XIII). Previous parts of this same series are: (I) Japanese species of *Saridoscelis* MEYRICK (Yponomeutidae), Trans. Lep. Soc. Japan, 11: 64-69 (1961); (II) Two Yponomeutid genera, *Niphonympha* and *Pseudocalantica*, of Japan and Formosa (Lepidoptera). Kontyû, 31: 215-223 (1963); (III) Two new species of the *Argyresthia* (Argyresthiidae) from Japan. Trans. Lep. Soc. Japan, 19: 13-15 (1968) (In collaboration with GERRIT FRIESE); (IV) A new *Argyresthia* (Argyresthiidae) from Formosa. Trans. Lep. Soc. Japan, 19: 85-86 (1968); (V) Record of *Saridoscelis issikii* MORIUTI (Yponomeutidae) from Formosa. Trans. Lep. Soc. Japan, 14: 59 (1963); (VI) Genus *Lycophantis* MEYRICK (Lepidoptera: Yponomeutidae). Kontyû, 31: 261-266 (1963); (VII) Remarks on the *Paraprays anisocentra* (MEYRICK, 1922) (Plutellidae), with description of its larva and pupa. Trans. Lep. Soc. Japan, 14: 52-59 (1963) (In Japanese with English summary); (VIII) *Ypsolophus* (Lepidoptera: Plutellidae) of Japan. Kontyû, 32: 197-210 (1964); (IX) Eine neue *Argyresthia*-Art aus Japan (Lepidoptera: Argyresthiidae). Trans. Lep. Soc. Japan, 15: 20-21 (1964); (X) Records of Yponomeutid-moths from Afghanistan collected by Prof. R. YOSHII in 1960. Results of Kyoto Univ. Sci. Expedition to Karakoram and Hindukush, 1955, 8: 229 (1966); (XI) Two new species of the *Pseudocalantica* FRIESE (Lepidoptera: Yponomeutidae) from Nepal. Kontyû, 33: 7-10 (1965); (XII) *Argyresthia*-species attacking coniferous plants in Japan. Bull. Univ. Osaka Pref., (B) 16: 65-80 (1965).

2) *Swammerdamia pyrella* DE VILLERS, 1789, Caroli Linn. Ent., 2: 515 (*Phalaena Tinea*). = *Argyresthia sapporella* MATSUMURA, 1931, 6000 Ill. Ins. Japan: 1096, no. 2264, n. syn.

Argyresthia subrimosa in 1932, and *A. anthocephala* in 1936; the types of these two were figured by CLARKE in 1965. ISSIKI illustrated some species several times: *conjugella* in 1932; *brockeella* and *conjugella* in 1950; *anthocephala*, *conjugella* and *brockeella* in 1957. INOUE in 1954 listed eight species, previously recorded. In 1959 OKANO illustrated *conjugella* and *brockeella*. In 1961 ISSIKI and MUTUURA reported two *Argyresthia*, *laevigatella* and *anthocephala*, as pests of coniferous plants. A year later ISSIKI et al. gave a brief account of *laevigatella* as a pest of larch. In 1964 I added *Argyresthia mutuurai*, which falls as a synonym of *subrimosa*. In 1965 I gave an account of five *Argyresthia*-species attacking coniferous plants, including two new species, *chamaecypariae* and *sabinae*, and a newly recorded species, *praecocella*. In 1968 I described *Argyresthia alpha* and *Argyresthia beta* in collaboration with FRIESE. This brings the total number of species known from Japan up to 12, all of which belong to the genus *Argyresthia*.

In the present paper, I treat 25 species of the Argyresthiidae from Japan. Thirteen of the species are described as new and the remaining 12 species, one of which is *retinella* ZELLER and is recorded for the first time from Japan, are redescribed. All the species belong to the genus *Argyresthia*, except for one new species, for which a new genus *Paraargyresthia* is proposed. In literature citations under each species, references to original description and important taxonomic works are included only, along with the recent works of Japanese authors.

The most useful specific characters for identification are found in the genital characters of both sexes, and in some species in the comparative coloration of various parts.

Several of the species attack coniferous plants. Among these the most important is *laevigatella*, which is a larch twig borer; *anthocephala* is a borer of the bud or cone of cryptomeria; *chamaecypariae* is a leaf miner of Japanese cypresses; *sabinae* is a leaf miner of juniper; *praecocella* is a cone borer of juniper. Some species feed on resaceous plants; *conjugella* is well known as a fruit borer of apple and mountain ash, being of economic importance; larvae of *alpha* live in leaf buds of mountain ash, and those of *andereggiella* in leaf buds of *Malus sieboldii* Rehder. Two species, *beta* and *tutuzicolella* n. sp., feed on leaf buds of ericaceous azalea. In Japan the host-plants of *brockeella* and *retinella* are still unknown, but in Europe those of the former are birch and alder, and of the latter are *Salix caorea*, *Betula* and *Quercus*. The host-plants and life histories of the other species are unknown.

The main part of this work was done at the Zoologische Sammlung des Bayerischen Staates, Munich, during the tenure of a Research Fellowship provided by the Alexander von Humboldt-Stiftung, Federal Republic of Germany, and I am indebted to Dr. W. FORSTER, Director of the Sammlung, for research facilities in his Sammlung.

I should like to express my sincere gratitude to Prof. S. ITO of our laboratory for his constant advice and encouragement in the course of the work. My thanks are also due to Emeritus Prof. S. ISSIKI for his kind guidance and for putting at my disposal his rich collection of the Argyresthiidae, without which this study would not have been undertaken. And further, I wish to thank the following individuals and their institutions for allowing me to study and dissect the specimens in their care or for the loan or gift of material: Dr. A. DIAKONOFF, Rijksmuseum van natuurlijke Historie; Dr. W. DIERL, Zoologische Sammlung des Bayerischen Staates; Dr. F. KASY, Naturhistorisches Museum; Mr. A. KAWABE, Tokyo; Mr. T. KODAMA, formerly of our laboratory; Dr. T. KUMATA, Hokkaido University; Dr. A. MUTUURA, formerly of our laboratory; Dr. U. ROESLER, Zoologisches Forschungsinstitut und Museum Alexander Koenig; Mr. T. SAITO, formerly of our laboratory; Dr. K. SATTLER, British Museum

(Natural History); Dr. W. SAUTER, Entomologisches Institut der Eidgenössischen Technischen Hochschule; Prof. C. WATANABE, Hokkaido University; Mr. P. E. S. WHALLEY, British Museum (Natural History); Mr. T. YASUDA of our laboratory.

The following abbreviations for collections are used:

- AK Collection of Mr. A. KAWABE, Tokyo.
 BMNH British Museum (Natural History), London.
 ETH Entomologisches Institut der E. T. H., Zürich.
 HU Entomological Institute, Hokkaido University, Sapporo.
 ISSK Collection of Prof. S. ISSIKI, Osaka.
 MAK Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn.
 NHM Naturhistorisches Museum, Wien.
 RNH Rijksmuseum van natuurlijke Historie, Leiden.
 UOP Entomological Laboratory, University of Osaka Prefecture, Sakai.
 ZSM Zoologische Sammlung des Bayerischen Staates, München.

Argyresthiidae

Argyresthidae STAINTON, 1854, Ins. Brit. Lep.: 180.

Head rough above; face smooth. No ocelli. Tongue developed. Antenna $\frac{3}{5}$ – $\frac{3}{4}$, smooth to serrulate, slightly or moderately pubescent; scape moderate, with distinct pecten. Labial palpus moderately long, somewhat curved, porrect or sometimes obliquely ascending, smooth-scaled or somewhat rough beneath; terminal segment longer than or as long as middle, pointed. Maxillary palpus very minute, 1-segmented, as shown in fig. 20. Hind tibia smooth; median spur situated at anterior $\frac{1}{3}$ – $\frac{3}{7}$. Forewing lanceolate; accessory cell defined or not; 12 veins, or 11 by coincidence of M_3 and Cu_{1a} (in *nemorivaga* n. sp., *anthocephala* and *sabinae*); R_2 and R_3 separate, except that in *sabinae* these veins are connate from angle of cell; R_4 and R_5 either separate or stalked; R_5 to termen; M_3 and Cu_{1a} separate, connate (rarely short-stalked) or coincident; Cu_{1a} and Cu_{1b} separate (sometimes very approximated basally), except that in *angusta* n. sp. the veins are connate from angle of cell; 1A+2A with short basal fork; pterostigma developed. Hindwing under 1; lanceolate or linear-lanceolate; cilia 2–2½; M_1 and M_2 long-stalked; M_3 and Cu_{1a} separate, connate or variously stalked. Abdomen without spines on tergite.

Male genitalia: Uncus usually indefinite. Tuba analis developed, usually weakly sclerotized, and fused with gnathos, forming a large complex (subscaphium), on which a linear sclerotized band exists in most species. At distal end of gnathos long spines present or absent. Socius expanded to form a large lobe, with several hairs (sometimes one or rarely absent) on rounded top, and with many specialized scales on internal surface. Vinculum subrectangular, W-shaped or nearly so in ventral aspect, never produced into V- or Y-shaped saccus; sometimes saccus greatly extended, as shown in figs. 34a and 46a. Valva simple, sparsely or densely haired, sometimes with a patch of stiff hairs in disc. Aedeagus longer than valva, and various in length; cornuti of stout spines (sometimes wanting) and/or minute spinulae. Eighth abdominal segment with a V- or Y-shaped plate. Coremata present, except that these are absent in the four species, *metallicolella* n. sp., *flavicomans* n. sp., *brockeella* and *retinella*.

Female genitalia: Papilla analis small; intersegmental membrane between papilla analis and eighth abdominal segment short to greatly extended. Apophysis posterioris longer than apophysis anterioris; apophysis anterioris branched, except for *metallicolor* n. sp. Eighth abdominal sternum set with spinulae, especially in median portion. Antrum membranous, funnel-shaped or nearly so, and usually spinulate; an incomplete,

sclerotized ring between antrum and ductus bursae in *Argyresthia*, or a broad, weakly sclerotized anterior portion in *Paraargyresthia* n. gen. Inception of ductus seminalis rising from ductus bursae. Ductus bursae long, slender, well defined in *Argyresthia*, but very short, not well distinguished from corpus bursae in *Paraargyresthia* n. gen.; membranous throughout, and in most species denticulate or spinulate anteriorly or very partially on inner surface, as illustrated in detail; corpus bursae usually set with spinulae or denticles, or varnished with pattern on inner surface, as figured in detail. In signum *Argyresthia* and *Paraargyresthia* n. gen. are quite different from each other; *Argyresthia* (figs. 72-95): single or double large, inwardly projecting processes, which are strongly sclerotized, and vary in size and shape, and which are armed with small teeth or are unarmed. *Paraargyresthia* (fig. 96): a small, lightly sclerotized, dentate plate.

This taxon was established by STANTON in 1854 as a family of the Tineina, to include four genera: *Argyresthia* HÜBNER, *Cedestis* ZELLER, *Ocnerostoma* ZELLER and *Zelleria* STANTON. Of these genera *Cedestis*, *Ocnerostoma* and *Zelleria* belong to the family Yponomeutidae, as is already known. As to the systematic position of the Argyresthiid species, all of which belong to the genus *Argyresthia*, it was thought in the past that the genus should be referable to either the Yponomeutidae or the Plutellidae, or to a distinct family. In 1847 an important paper entitled "Die Argyresthien beschrieben" by ZELLER appeared, in which he treated two genera *Argyresthia* and *Ocnerostoma*, and the former was divided into two groups: *Argyresthia* and *Cedestis*. HEINEMANN and WOCKE (1877, p. 642) recognized the family Argyresthidae, in which they included five genera: *Zelleria*, *Hofmania*, *Cedestis*, *Argyresthia* and *Ocnerostoma*. REBEL (1901, p. 134) considered the Argyresthidae defined by HEINEMANN and WOCKE as a subfamily (Argyresthiinae), and included them in the Yponomeutidae. MEYRICK (1895, p. 761) placed the *Argyresthia* in the Plutellidae. SPULER (1910, p. 441) classified the Hyponomeutidae into five subfamilies: Hyponomeutinae, Hofmaniinae, Argyresthiinae, Plutellinae and Orthoteliinae; his Argyresthiinae consisted of the genera *Argyresthia*, *Cedestis*, *Dycedestis* and *Ocnerostoma*. Both MEYRICK (1914, p. 4 and 1928, p. 727) and FLETCHER (1928, p. 1 and 1929, p. 21) placed the *Argyresthia* within the Yponomeutidae; it also was placed by PIERCE and MATCALFE (1935, p. 51) in the family, dividing into two genera: *Blastotere* and *Argyresthia*. FORBES (1923, p. 344) likewise placed the *Argyresthia* in the Yponomeutidae, but his family was a large, heterogenous one. BRUES, MELANDER and CARPENTER (1954, p. 260) recognized the Argyresthidae, comprising *Argyresthia*, *Zelleria* and *Hofmania*. WERNER (1958, p. 52), in his systematic studies of the microlepidopterous larvae, recognized the Argyresthiinae as a subfamily, including two genera *Roeslerstammia* and *Argyresthia*, within the Hyponomeutidae.

On the other hand, the name Argyresthiades was proposed by MEYRICK (1893, p. 479) for a group composed of 12 Tineid genera of the Australian Microlepidoptera; the group, however, did not include the *Argyresthia*, and consisted of the Yponomeutid and other genera.

FRIESE (1960, p. 20), in his work of a revision of the palaeartic Yponomeutidae, has for the first time clearly demonstrated that the Argyresthiidae form a distinct group of moths deserving the rank of family; in that paper he has recognized two genera: *Argyresthia* and *Blastotere*. I agree with the opinion of FRIESE in recognizing the Argyresthiidae as a distinct family of the Yponomeutoidea.

This family is defined as follows.

In male genitalia, socius with specialized scales on internal surface, vinculum subrectangular, W-shaped or nearly [so in ventral aspect, and eighth abdominal segment with a V- or Y-shaped plate.

The foregoing characteristics easily distinguish the *Argyresthiidae* from the allied families *Yponomeutidae* and *Plutellidae*.

The *Argyresthiidae* at present include two genera, *Argyresthia* HÜBNER and *Paraargyresthia* n. gen. As already mentioned, FRIESE as well as PIERCE and METCALFE treated the *Blastotere* as a separate genus, but I reduce it to subgeneric status in the *Argyresthia*.

As far as I know, the *Argyresthiid* species, with the single exception of *A. anthocephala* MEYRICK, have the univoltine generation; in repose the adults sit with the body very obliquely raised from the surface, the hind leg being laid alongside of the body, so that they appear to stand on their head. *A. anthocephala* has three or four generations a year; the adult sits appressed to the surface on which it rests.

Key to genera of *Argyresthiidae*

1. Male 2
Female 3
2. Vinculum broadly edged, the edge being remarkably black-pigmented (figs. 46a, 46b) *Paraargyresthia* n. gen.
Vinculum not as above *Argyresthia* HÜBNER
3. Ductus bursae very short, broad, not well distinguished from corpus bursae (fig. 71a); signum a small, lightly sclerotized, dentate plate (fig. 71f) *Paraargyresthia* n. gen.
Ductus bursae long, slender, well defined (figs. 47a, 52a, 57a, etc.); signum large, inwardly projecting process (figs. 72-95) *Argyresthia* HÜBNER

Argyresthia HÜBNER

Argyresthia HÜBNER, 1826, Verz. bek. Schmett.: 422.

Type-species: *Phalaena* (*Tinea*) *goedartella* LINNAEUS, 1758.

Oligos TREITSCHKE, 1830, Schmett. Eur., 8: 299 (non-descr.).

Ederesa CURTIS, 1833, Entom. Mag., 1: 191.

Type-species: *Phalaena* (*Tinea*) *pruniella* LINNAEUS, 1761.

Argyrosetia STEPHENS, 1829, Syst. Cat. Brit. Ins., 2: 205 (non-descr.)—STEPHENS, 1834, Ill. Brit. Ent., Haust. 4: 251.

Type-species: *Phalaena* (*Tinea*) *goedartella* LINNAEUS, 1758.

Ismene STEPHENS, 1834, Ill. Brit. Ent., Haust. 4: 247.

Type-species: (*Tinea nitidella* FABRICIUS, 1787=) *Ismene pruniella* STEPHENS, 1834.

Blastotere RATZBURG, 1840, Forstins., 2: 240.

Type-species: (*Argyresthia illuminatella* ZELLER, 1839=) *Tinea* (*Blastotere*) *bergiella* RATZBURG, 1840.

As described for family. This genus may be divided into two subgenera based on the shape of signum. *Blastotere*: signum (figs. 72-74) corniform, simple or armed with sparsely small teeth, arising from a rounded, rather lightly sclerotized, dentate base. *Argyresthia*: signum (figs. 75-95) with two processes, which are united at base, forming just like a curved to almost straight one, various in shape as illustrated, compactly armed with small teeth, and usually not pointed at apex; signum arising from a large, slightly sclerotized patch, which composed of many small teeth; *perbella* n. sp. is different from others, i. e. signum acute and loosely toothed.

HEINEMANN and WOCKE (1877, p. 647) divided the genus into two groups (*Argyresthia* and *Blastotere*) and subdivided one group *Argyresthia* into four groups by the use of the external morphological characters and superficial appearance. SPULER (1910, p. 446)

agreed with the classification of HEINEMANN and WOCKE in dividing the *Argyresthia* into five groups. MEYRICK (1928, p. 727) divided *Argyresthia* into two sections A and B on the basis of the stalking or separating of veins R_4 and R_5 in the forewing. PIERCE and METCALFE (1935, p. 51) divided the *Argyresthia* into two genera *Blastotere* and *Argyresthia*, basing upon the shape of signum in the female genitalia. FRIESE (1960, p. 20) followed PIERCE and METCALFE in the separation of *Blastotere* and *Argyresthia*.

Considering the rather unessential difference in the form of signum, I am much inclined to treat the *Blastotere* as a subgenus of the genus *Argyresthia*. I subdivide the two subgenera into two groups respectively.

Key to species of *Argyresthia* based on colour and venation

1. Forewing with R_4 and R_5 stalked (fig. 21) 2³⁾
 Forewing with R_4 and R_5 separate (figs. 22-25) 3
2. M_3 and Cu_{1a} of hindwing stalked, the common stem being not very short; larva
 in cone of juniper *praecocella* ZELLER
 M_3 and Cu_{1a} of hindwing connate or rarely very short-stalked (fig. 21).
 (a) Larva in terminal twig of larch *laevigatella* HERRICH-SCHÄFFER
 (b) Probably larva in cone of larch *fujiiyamae* n. sp.
3. Forewing unicolorous 4
 Forewing not unicolorous 6
4. Forewing with M_3 and Cu_{1a} coincident (fig. 24) *anthocephala* MEYRICK
 Forewing with M_3 and Cu_{1a} separate 5
5. Hindwing with M_3 and Cu_{1a} stalked *metallicolor* n. sp.
 Hindwing with M_3 and Cu_{1a} connate *flavicomans* n. sp.
6. Forewing with M_3 and Cu_{1a} coincident (fig. 25) 7
 Forewing with M_3 and Cu_{1a} separate, connate or short-stalked (figs. 22, 23) 8
7. Head and thorax shining white *nemorivaga* n. sp.
 Head and thorax pale ochreous *sabinae* MORIUTI
8. Thorax light ochreous-yellow *subrimosa* MEYRICK
 Thorax white 9
9. Tegula white 10
 Tegula yellow, ochreous, golden, brown or fuscous 13
10. Forewing with transverse fasciae 11
 Forewing without transverse fasciae 12
11. Forewing deep coppery-golden, with shining white markings
 *brockeella* (HÜBNER)
 Forewing shining white, with golden-brown markings
 *andereggiella* (DUPONCHEL)
12. Forewing predominantly testaceous, with a distinct dorsal spot *magna* n. sp.
 Forewing predominantly white, without such spot *retinella* ZELLER
13. Forewing with two conspicuous fasciae 14
 Forewing without such fasciae 15
14. Forewing dark fuscous, with golden-fuscous fasciae *chamaecypariae* MORIUTI
 Forewing deep coppery-golden, with white fasciae *perbella* n. sp.
15. Forewing with whitish interrupted dorsal streak *conjugella* ZELLER
 Forewing without such streak 16

3) The three species of this couplet are very difficult to separate on superficial characters; genitalia must be used and host-plants will serve to distinguish these species.

16. Forewing remarkably strigulated17
 Forewing faintly strigulated or not18
17. Forewing ochreous-coppery-golden*tutuzicolella* n. sp.
 Forewing ferrugineous*albicomella* n. sp.
18. Forewing with Cu_{1a} and Cu_{1b} connate from angle of cell (fig. 22).....*angusta* n. sp.
 Forewing with Cu_{1a} and Cu_{1b} separate, and Cu_{1b} usually rising from lower margin
 before angle of cell19
19. Ground-colour of forewing white20
 Ground-colour of forewing grey or purplish-fuscous21
20. Forewing with golden-yellow and golden-brown markings
 *alpha* FRIESE et MORIUTI
 Forewing with brassy-golden and coppery-golden markings
 *beta* FRIESE et MORIUTI
21. Ground-colour of forewing grey*communana* n. sp.
 Ground-colour of forewing purplish-fuscous22
22. Forewing with a median fascia.....*festiva* n. sp.
 Forewing without such fascia.....*rara* n. sp.

Key to species of *Argyresthia* based primarily on male genitalia

1. Gnathos with long spines at distal end (figs. 28a, 29a, 30a) 2
 Gnathos without such spines (figs. 26a, 27a, 31a, etc.) 4
2. Socius with 7 specialized scales; valva without a patch of stiff hairs in disc (fig.
 28a)*angusta* n. sp.
 Socius with about 18 or about 25 specialized scales; valva with a patch of stiff
 hairs in disc (figs. 29a, 30a) 3
3. Socius with about 25 specialized scales (fig. 29a); aedeagus about twice as long as
 valva*conjugella* ZELLER
 Socius with about 18 specialized scales (fig. 30a); aedeagus about 5.5 times the
 length of valva*festiva* n. sp.
4. Valva with a conspicuous conical tooth in disc (figs. 38a, 38b).....*communana* n. sp.
 Valva without such tooth (figs. 26a, 27a, 31a, 33a, etc.)..... 5
5. Aedeagus armed with denticles (figs. 26a, 27f, 40e)..... 6
 Aedeagus simple, without denticles (figs. 31d, 32d, 33d, etc.)..... 8
6. Aedeagus with five distinct strong cornuti (fig. 27f)*nemorivaga* n. sp.
 Aedeagus with cornuti of numerous spinulae and/or of one spine (figs. 26d, 40d)
 7
7. Socius with about 30 specialized scales (fig. 26a).....*laevigatella* HERRICH-SCHÄFFER
 Socius with about 15 specialized scales (Fig. 40a)*chamaecypariae* MORIUTI
8. Socius roundly produced into a elongate lobe; vinculum with a pair of denticulated
 patches at base of ventral side (figs. 34a)*brockeella* (HÜBNER)
 Socius not produced into such lobe; vinculum without denticles (figs. 31a, 32a, 33a,
 etc.)..... 9
9. Valva entirely clothed with hairs (fig. 32a).....*metallicolor* n. sp.
 Valva partly clothed with hairs (figs. 31a, 33a, 35a, etc.).....10
10. Plate of 8th abdominal segment very large (figs. 35g, 36g, 41g)11
 Plate of 8th abdominal segment small to medium (figs. 31g, 33g, 37g, 45g, etc.)...13
11. Aedeagus about 4-5 times as long as valva.....*alpha* FRIESE et MORIUTI
 Aedeagus about 2.5-3 times as long as valva12
12. Socius with about 20 specialized scales (fig. 35a).....*andereggiella* (DUPONCHEL)
 Socius with 11-13 specialized scales (fig. 41a).....*subrimosa* MEYRICK

13. Valva with a patch of stiff hairs (figs. 37a, 39a, 42a).....14
 Valva without such patch (figs. 31a, 33a, 43a, etc.).....16
14. Aedeagus about 2.5 times as long as valva.....*beta* FRIESE et MORIUTI
 Aedeagus about 2 times as long as valva15
15. Valva ovate in shape (fig. 39b); plate with arms diverging at an angle greater than
 60° (fig. 39g)*magna* n. sp.
 Valva elongate-ovate in shape (fig. 42b); plate with arms diverging at an angle less
 than 45° (fig. 42g)*tutuzicolella* n. sp.
16. Coremata absent17
 Coremata present18
17. Cornuti a distinct long spine and many spinulae (fig. 33d)*flavicomans* n. sp.
 Cornuti composed of only many spinulae (fig. 43d).....*retinella* ZELLER
18. Valva ovate in shape (fig. 31b)*praecocella* ZELLER
 Valve not ovate in shape (figs. 44b, 45b).....19
19. Plate normally Y-shaped (fig. 44g).....*anthocephala* MEYRICK
 Plate with divergent arms very small (fig. 45g)*sabinae* MORIUTI

Key to species of *Argyresthia* based on female genitalia

1. Ductus bursae shorter than corpus bursae (figs. 47a, 48a, 49a)..... 2
 Ductus bursae longer than corpus bursae (figs. 50a, 51a, 52a, etc.) 4
2. Signum single process (fig. 72).....*laevigatella* HERRICH-SCHÄFFER
 Signum double processes (figs. 73, 74) 3
3. Signum large, armed with teeth (fig. 74)*nemorivaga* n. sp.
 Signum small, unarmed (fig. 73)*fujiyamae* n. sp.
4. Ductus bursae not studded with denticles or spinules throughout (figs. 53a, 57a,
 62a) 5
 Ductus bursae clearly studded with denticles or spinules in part (figs. 50a, 51a,
 52a, etc.) 7
5. Intersegmental membrane between papilla analis and 8th abdominal segment greatly
 extended (fig. 57a).....*andereggiella* (DUPONCHEL)
 Intersegmental membrane between papilla analis and 8th abdominal segment very
 short (figs. 53a, 62a) 6
6. Antrum funnel-shaped; inception of ductus seminalis from anterior $\frac{3}{4}$ of ductus
 bursae (fig. 53a)*praecocella* ZELLER
 Antrum not funnel-shaped; inception of ductus seminalis from posterior $\frac{1}{3}$ of ductus
 bursae (fig. 62a)*magna* n. sp.
7. Signum very small (figs. 92, 93) 8
 Signum medium to large (figs. 75, 76, 77, etc.) 9
8. Antrum very short (fig. 67a); signum round at apex (fig. 92).....*retinella* ZELLER
 Antrum very long (fig. 68a); signum pointed at apex (fig. 93)*perbella* n. sp.
9. Signum with lower margin produced into an obtuse angle at middle (fig. 77).....
 *festiva* n. sp.
 Signum without such angle (figs. 75, 76, 79, etc.).....10
10. Signum very strongly curved (fig. 91).....*albicomella* n. sp.
 Signum weakly curved or nearly straight (figs. 75, 76, 79, etc.)11
11. Ductus seminalis arising from posterior half portion of ductus bursae (figs. 59a,
 60a, 61a, etc.)12
 Ductus seminalis arising from anterior half portion of ductus bursae (figs. 50a, 51a,
 54a, etc.)16
12. Corpus bursae with hexagonal patterns (fig. 63d)*chamaecypariae* MORIUTI

- Corpus bursae without such patterns13
13. Signum broad (figs. 84, 90)14
 Signum narrow (figs. 85, 86)15
14. Antrum narrow (fig. 59a)*beta* FRIESE et MORIUTI
 Antrum broad (fig. 65a)*tutuzicolella* n. sp.
15. Antrum very short (fig. 60a)*rara* n. sp.
 Antrum very long (fig. 61a)*communana* n. sp.
16. Signum armed with large teeth (figs. 79, 80)17
 Signum armed with small teeth (figs. 75, 76, 81, etc.)18
17. Apophysis anterioris not branched (fig. 54a)*metallicolor* n. sp.
 Apophysis anterioris branched, the ventral arm being very broad (fig. 55b)
*flavicomans* n. sp.
18. Signum extremely large (fig. 89)*subrimosa* MEYRICK
 Signum medium (figs. 75, 76, 81, etc.)19
19. Ductus bursae short (figs. 69a, 70a)20
 Ductus bursae long (figs. 50a, 51a, 56a, 58a)21
20. Ductus bursae studded with small denticles in anterior $\frac{3}{5}$ (figs. 69a, 69b)
*anthocephala* MEYRICK
 Ductus bursae studded with long denticles in a portion before a point of inception
 of ductus seminalis (figs. 70a, 70b)*sabinae* MORIUTI
21. Antrum small (fig. 56a)*brockeella* (HÜBNER)
 Antrum large (figs. 50a, 51a, 58a)22
22. Antrum long, elongate-triangular (fig. 58a)*alpha* FRIESE et MORIUTI
 Antrum not long, not elongate-triangular (figs. 50a, 51a)23
23. Signum rather narrow (fig. 75)*angusta* n. sp.
 Signum broad (fig. 76)*conjugella* ZELLER

Blastotere RATZEBURG, subgen.

Type-species: *Argyresthia illuminatella* ZELLER, 1839.

It is possible to divide this subgenus into two groups based essentially on the signum. One group "A" has a single robust process, and is composed of the only species *laevigatella*. The other group "B", consisting of two new species, *fujiyamae* and *nemorivaga*, has double robust processes.

Some features of the wing venation in this subgenus are as follows: forewing with R_4 and R_5 separate (in *nemorivaga*) or stalked (in *laevigatella* and *fujiyamae*); M_3 and Cu_{1a} separate (in *laevigatella* and *fujiyamae*) or coincident (in *nemorivaga*); hind-wing with M_3 and Cu_{1a} connate (in *fujiyamae*), stalked (in *nemorivaga*) and individually variable: connate or rarely very short-stalked (in *laevigatella*).

Group A

Argyresthia laevigatella HERRICH-SCHÄFFER

(Figs. 21, 26, 47, 72)

Argyresthia laevigatella HERRICH-SCHÄFFER, 1855, Schmett. Eur., 5: 272.—HEINEMANN and WOCKE, 1877, Schmett. Deutsch., 2(2): 659, no. 1042.—REBEL, 1901, Cat. Lep. Pal. Faun., 2: 136, no. 2437.—SPULER, 1910, Schmett. Eur., 2: 449.—MEYRICK, 1914, Lep. Cat., 19: 5.—ESCHERICH, 1931, Forstins. Mitteleur., 3: 169, text-f. 118, pl. 1, f. 12.—ITO, 1959, Nagano Rinyû, 1959 (9): 20, no. 3, f. D.—EIDT, 1961, Can. Ent., 93: 28, f. 8, 15, 20, 21, 29-32.—ISSIKI and MUTUURA, 1961, Microlep. pests coniferous plants Japan: 29, no. 13, f. 13.—ISSIKI and MUTUURA, 1962, Publ. Ent. Lab., Univ.

Osaka Pref., 7: 7, no. 62.—ISSIKI, KODAMA and MORIUTI, 1962, Publ., Ent. Lab., Univ. Osaka Pref., 7: 15, f. 4.—MORIUTI, 1965, Bull. Univ. Osaka Pref., (B) 16: 67, f. 1, 13-16, 31, 32, 39, 43, 48, 53, 58, 63, 68, 70, 72, 74, 78, 83, 84, 93, 98, 103, 108, 112-114.

Argyresthia atmoriella BANKES, 1896, Ent. Month. Mag., 32: 25.—REBEL, 1901, Cat. Lep. Pal. Faun., 2: 136, no. 2430.—SPULER, 1910, Schm. Eur., 2: 449.—MEYRICK, 1914, Lep. Cat., 19: 4.—MEYRICK, 1928, Rev. Handb. Brit. Lep.: 729.

Blastotere atmoriella: PIERCE and METCALFE, 1935, Gen. Brit. Tineina: 51, pl. 29.

♂ ♀. 9-12 mm. Head brownish-ochreous; face shining light yellow-white. Antenna light whitish-grey, ringed with dark grey; scape shining light yellowish-white. Palpus light brownish-ochreous, the middle segment being brown. Thorax concolorous with forewing. Legs very pale ochreous-grey; fore leg fuscous on inner side. Abdomen shining pale ochreous-gery. Forewing unicolorous, very shining ochreous, grey or bronzy-grey; cilia grey, with a darker subbasal shade along termen, the costal cilia being concolorous with forewing. Hindwing grey; cilia whitish-grey.

Male genitalia: as in fig. 26. Socius with about 30 specialized scales; top with one or two minute hairs. Valva clothed with short hairs. Aedeagus about 1.4 times the length of valva, and armed with many denticles in dorsal surface of posterior $\frac{1}{5}$ (fig. 26e); cornuti consist of a long spine and numerous spinulae.

Female genitalia: as in fig. 47. Antrum large; ductus bursae gradually widening into a large oval corpus bursae; corpus studded with spinulae (fig. 47e) throughout, and ductus not studded. Signum as in fig. 72.

Material examined: Holotype: of *atmoriella*, ♂, bearing following labels: (1) Kings Lynn; Nfk/VI. 1895/Atmore, (2) E. R. Bankes/Collection/B. M. 1928-208; allotype: of *atmoriella*, ♀, with same labels as for type, except for the following date: VI. 1893; paratypes: of *atmoriella*, 2♂, with following labels: (1) Kings Lynn/VI. 1894/Atmore, (2) E. R. Bankes/Collection/B. M. 1928-208; all in the BMNH. The type of *laevigatella* is no longer extant. Japan: Honsyû- 9♂, 3♀, Okutatesina, Nagano Prefecture, 12-13. VI. 1956 (S. MORIUTI), UOP; 3♂, 5♀, same locality, 9. VI. 1957 (S. MORIUTI), UOP; 1♂, 1♀, Tatesina, Nagano Pref., 8. VI. 1957 (T. YASUDA), UOP; 7♂, 5♀, Sigakôgen, Nagano Pref., VI. 1960 (T. KODAMA), UOP; all the specimens reared from larvae feeding into terminal twigs of *Larix leptolepis* GORDON. Extra-limital material: 10♂, 9♀, from Germany and Austria, in AMK, RNH and ZSM.

Distribution: Japan (Honsyû), Central Europe and England.

Host-plant: *Larix leptolepis* GORDON (Pinaceae) in Japan.

ITO (1959, p. 20) and ISSIKI et al. (1962, p. 15) reported on the life history of this pest in Japan.

This species is very closely allied to *A. laricella* KEARFOTT (1908), of North America, but differs in the genitalia, particularly in the shape of plate of 8th abdominal segment. EIDT (1961) gave a detailed account of differences in their morphological characters.

Group B

Argyresthia illuminatella ZELLER

Argyresthia illuminatella ZELLER, 1939, Isis, 1839: 204.

The records in the literature of this species from Japan are as follows.

Argyresthia illuminatella: MATSUMURA, 1905, Cat. Ins. Japon., 1: 236, no. 1993—INOUE, 1954, Check List Lep. Japan, 1: 39, no. 181.

In his record of this species, MATSUMURA (1905) gave no indication of the locality.

As has been mentioned earlier (p. 1), I have not found the specimen based on the record in the MATSUMURA Collection of the Entomological Institute, Hokkaido University. The occurrence of this species in Japan remains uncertain. I have examined the holotype of the European species, which is a male and bears the following labels: (1) Gross Glogau/Silesia/ante 1939/Zeller Coll., (2) Walsingham Collection/1910-427, (3) *Argyresthia/illuminatella* Z./Is. 1839. 205/TYPE, in the collection of BMNH.

This is a pest of *Abies alba* MILLER in Europe.

Argyresthia fujiyamae n. sp.

(Figs. 48, 73)

♀. 11 mm. Head yellowish-ochreous; face shining yellowish-grey. Antenna grey, faintly whitish-ringed; scape pale ochreous. Palpus pale ochreous, infuscated laterally. Thorax shining grey. Legs very pale ochreous-grey; fore leg tinged with blackish-brown on inner side. Abdomen not observed. Forewing unicolorous, shining rather dark grey; cilia dark grey. Hindwing grey, with cilia somewhat paler.

Female genitalia: as in fig. 48. Antrum cupped; ductus bursae narrow between beginning and a point of inception of ductus seminalis, which arises from the middle; posterior half of ductus gradually becoming larger to form a large ovate corpus bursae; ductus with a spinulate portion before a point of inception of ductus seminalis, as indicated in fig. 48b; corpus studded with spinulae (fig. 48e) throughout. Signum as in fig. 73.

♂: Unknown.

Holotype: ♀, Mt. Huzisan, Yamanashi Prefecture, Honsyû, Japan, 8. V. 1964 (A. NOBUCHI), emerged from pupa, UOP.

Distribution: Japan (Honsyû).

Host-plant: According to his account, Mr. A. NOBUCHI (the Government Forest Experimental Station, Tokyo) reared the type-specimen from pupa within a cocoon on cone of *Larix leptolepis* GORDON (Pinaceae).

A. fujiyamae is most closely related to the preceding species, *illuminatella*, in the female genital character, but differs from it by the much shorter ductus bursae and extremely shorter antrum.

Argyresthia nemorivaga n. sp.

(Figs. 1, 27, 49, 74)

♂ ♀. 9-10 mm. Head and thorax shining white; fore part of head (between antennae) mixed with light ochre; tegula golden-yellow. Antenna light yellow-white; scape with ochreous pecten. Palpus ochreous. Legs light whitish-yellow. Abdomen shining ochreous. Forewing shining golden-yellow, mixed with grey, and largely sprinkled with white; dorsum slenderly whitish from base to tornus; cilia shining yellow or light yellow. Hindwing pale grey; cilia pale greyish-yellow-white.

Male genitalia: as in fig. 27. Socius with about 25 specialized scales; top with one hair. Valva sparsely clothed with short hairs. Aedeagus about twice as long as valva, with minute teeth on surface (fig. 27f); five remarkable cornuti, one of which is very small (fig. 27f). Plate very small.

Female genitalia: as in fig. 49. Antrum small; ductus bursae studded partially with spinulae (fig. 49b), as shown in fig. 49a; corpus bursae with spinulae in posterior half, the anterior half being much narrower, without spinulae. Signum (fig. 74) rather large, armed with teeth, the apex being dull-pointed.

Holotype: ♂, Mt. Isizutiyama, Ehime Prefecture, Sikoku, Japan, 22. VI. 1964 (S.

MORIUTI), UOP. Paratypes: Japan: 3♂, 2♀, same data as for type, UOP; 2♂, 1♀, same locality as for type, 23. VI. 1964 (S. MORIUTI), UOP; Honsyû- 1♀, Mt. Tengudake, Nagano Pref., 11. VII. 1962 (S. MORIUTI), UOP; 1♀, Mt. Iwawakisan, Osaka Pref., 27. V. 1954 (T. YASUDA), UOP.

Distribution: Japan (Honsyû and Sikoku).

Host-plant: Unknown.

Similar to the European *A. aurulentella* STAINTON (1849) in external appearance, but is easily distinguished from it by the white-sprinkled forewing. The two species are clearly different from each other in the genitalia.

Argyresthia, subgen. s. str.

Type-species: *Phalaena (Tinea) goedartella* LINNAEUS, 1758.

In this subgenus there are two distinct species groups, "C" and "D". In the group C the species included are *angusta* n. sp., *conjugella* and *festiva* n. sp., which possess conspicuous long spines at the distal end of gnathos in the male genitalia. The group D is composed of *praecocella*, *matallicolor* n. sp., *flavicomans* n. sp., *brockeella*, *andereggiella*, *alpha*, *beta*, *communana* n. sp., *magna* n. sp., *chamaecypariae*, *subrimosa*, *tutuzicolella* n. sp., *retinella*, and probably three new species (males not known), *rara*, *albicomella* and *perbella*. These species have no long spines at the distal end of gnathos.

In the species included in this subgenus, some features of the wing venation are as follows: forewing with R_4 and R_5 separate, except that in *praecocella* these veins are stalked; M_3 and Cu_{1a} are: coincident in *anthocephala* and *sabinae*, either connate or short-stalked in *brockeella*, connate in *andereggiella* and *tutuzicolella*, and separate in the rest; in hindwing M_3 and Cu_{1a} are: slightly separate in *andereggiella* and *tutuzicolella*, connate in *festiva*, *flavicomans*, *magna* and *perbella*, either connate or stalked in *beta*, and stalked in the rest.

Group C

Argyresthia angusta n. sp.

(Figs. 2, 22, 28, 50, 75)

♂ ♀. 9-10 mm. Head shining white, mixed with light ochre on fore part (between antennae) and tinged with light yellow on face. Antenna yellow, ringed with dark purplish-brown; scape yellowish, with ochreous pecten. Palpus light yellow. Thorax shining white; tegula golden-ochreous. Legs light yellowish; fore tibia and tarsus purplish-fuscous on inner side, and spotted with dark purplish-brown on outer side; mid tibia and tarsus banded with purplish-brown, with spurs purplish; hind tarsus tinged with purplish-brown on outer side, except at base of each segment, and spotted inwardly with purplish-brown at apex of each segment. Abdomen shining grey-ochreous dorsally, and shining light ochreous ventrally. Both wings very narrow, as shown in fig. 22. Forewing fuscous, with purplish reflections; extreme costal margin blackish on basal $\frac{1}{5}$; anterior $\frac{4}{5}$ of costa suffused with yellow-white, and dotted with dark brown; distal $\frac{1}{5}$ with several white dots on margin; three indistinct dark fuscous spots, viz. the basal one just below fold at $\frac{1}{5}$, the median on fold at middle, largest, and sometimes forming an oblique fascia on median half, and the distal near inner margin at $\frac{2}{3}$ and smallest; a shining white dorsal streak to beyond fold, and irregularly strigulated with dark brown; cilia purplish-fuscous, towards tornus greyish, and round apex and termen with white-ochreous basal and postmedian shades. Hindwing pale grey, tinged with dark grey on apical area; cilia light ochreous-grey.

Male genitalia: as in fig. 28. Subscaphium with a rather broad sclerotized band; three long spines at distal end of gnathos. Socius with seven specialized scales, the posterior one of which is a highly modified shape, as shown in fig. 28c₁; top with two hairs. Saccus narrowly elongate. Valva long, densely clothed with hairs distally and ventrally. Aedeagus extraordinarily long and bending in median portion; cornuti of a long spine and many spinulae. Plate with very long arms.

Female genitalia: as in fig. 50. Ductus bursae long and slender; inception of ductus seminalis from anterior $\frac{1}{3}$; ductus studded with spinulae (fig. 50b) on the entire portion between a point of inception of ductus seminalis and corpus bursae; corpus decorated with patterns (fig. 50c), which is much thicker posteriorly than anteriorly. Signum as in fig. 75.

Holotype: ♂, Mt. Kurodake, Ôita Prefecture, Kyûsyû, Japan, 8. VII. 1937 (S. ISSIKI), ISSK. Paratypes: Japan: Kyûsyû- 1♀, same data as for type, UOP; 1♀, Mt. Sobosan, Ôita Pref., 4. VII. 1937 (S. ISSIKI), ISSK; Honsyû- 1♂, Mt. Hieisan, Kyôto Pref., 22. IX. 1949 (S. ISSIKI), UOP; 1♂, Mt. Ôdaigahara, Nara Pref., VII. 1961 (S. MORIUTI), UOP.

Distribution: Japan (Honsyû and Kyûsyû).

Host-plant: Unknown.

Closely allied to *A. icterias* MEYRICK (1907), of India and Ceylon. The male genitalia, however, give the best characters for separating *angusta* from *icterias*. The long spines at distal end of gnathos are present in *angusta*, absent in *icterias*; specialized scales on socius are seven in number in *angusta* but six in *icterias*.

Argyresthia conjugella ZELLER

(Figs. 3, 19, 20, 29, 51, 76)

Argyresthia conjugella ZELLER, 1839, Isis, 1839: 204.—ZELLER, 1847, Linn. Ent., 2: 258, f. 2, 3.—HEINEMANN and WOCKE, 1877, Schmett. Deutsch., 2 (2): 647, no. 1012.—MATSUMURA, 1899, Manual Japan. Injurious Ins.: 224, f. 95.—REBEL, 1901, Cat. Lep. Pal. Faun., 2: 134, no. 2393.—MATSUMURA, 1905, Cat. Ins. Japon., 1: 236, no. 1992.—MATSUMURA, 1907, Texonomic Ent., 1: 209, f. 243.—SPULER, 1910, Schmett. Eur., 2: 447, pl. 87, f. 29.—MEYRICK, 1914, Lep. Cat., 19: 9.—FORBES, 1923, Lep. New York: 347.—MEYRICK, 1928, Rev. Handb. Brit. Lep.: 732.—MATSUMURA, 1931, 6000 Ill. Ins. Japan: 1096, no. 2262.—ISSIKI, 1932, in Icon. Ins. Japon., ed. 1: 1487, f. 2943.—PIERCE and METCALFE, 1935, Genit. Brit. Tineina: 53, pl. 31.—ISSIKI, 1950, in Icon. Ins. Japon., ed. 2: 451, f. 1215.—INOUE, 1954, Check List Lep. Japan, 1: 39, no. 180.—ISSIKI, 1957, in Icon. Het. Japon. Col. Nat., 1: 23, pl. 3, f. 77.—OKANO, 1959, in Icon. Ins. Japon. Col. Nat., 1: 274, pl. 181, no. 34.

Tinea maculosa TENGSTROM, 1847, Notis. Sällsk. Fauna Flora Fenn., 1: 136.

Argyresthia aerariella STANTON, 1871, Ent. Ann., 1871: 100.—REBEL, 1901, Cat. Lep. Pal. Faun., 2: 134, no. 2393.—SPULER, 1910, Schmett. Eur., 2: 447 (as subsp.? of *conjugella*).

Laverna herellera DUP?, MATSUMURA, 1896, Zool. Mag. (Tokyo), 8: 63-65, pl. 7, f. 1-4.—MATSUMURA, 1898, U.S. Dept. Agr. Ent. New Ser. Bull., No. 10: 36, f. 13.

♂♀. 11-14 mm. Head yellowish-white, tinged with light ochre on fore part (between antennae); orbit ochreous. Antenna light yellowish-white, ringed with black-fuscous; scape with ochreous pecten. Palpus yellow-white, the second segment being infuscated laterally. Thorax shining white; tegula purplish-fuscous. Legs yellowish-white; fore tibia and tarsus black-fuscous outside; mid tarsus spotted laterally with black-fuscous at apical end of each segment; hind tibia purplish-tinged laterally, with purplish spurs; hind tarsus with first segment purplish-fuscous laterally, and with

posterior four segments purplish-fuscous-ringed apically. Abdomen shining cinereous, paler beneath; segmental margins whitish-yellow. Forewing dark purplish-fuscous; costa dotted or strigulated with yellowish-white; a whitish costal spot before apex; distal half with some scattered whitish scales; a thick yellowish-white dorsal streak to tornus, interrupted by an oblique blackish-fuscous median fascia, which is narrowed and less distinct on costal half; cilia purplish-fuscous on costal and apical areas, with a dark purplish subbasal shade, and pale grey on inner margin. Hindwing grey, becoming paler basally; cilia pale grey.

Male genitalia: as in fig. 29. Gnathos with about 10 long spines at distal end. Socius clothed with about 25 specialized scales; top usually with five long hairs. Valva with a patch of stiff hairs in disc, and with long hairs marginally. Aedeagus about twice as long as valva; cornuti of a long spine and numerous spinulae. A large V-shaped plate.

Female genitalia: as in fig. 51. Ductus bursae very long, slender, studded with spinulae (fig. 51b) in a part before a point of inception of ductus seminalis; corpus bursae set with two kinds of small tooth-patterns; one (fig. 51c) in inner surface of dorsal side, and the other (fig. 51d) smaller, in that of ventral side. Signum as shown in fig. 76.

Material examined: Holotype, ♂, bearing following labels: (1) Zell. Coll./Walsingham/Collection/1910-427, (2) Conjugella Z./Is. 1839, 204. 4, (3) Type, (4) TYPE, in BMNH. Paratype, ♀, with following labels: (1) Esquimalt/VANCOUVER/VII-X. 1882/Walker 2485, (2) Walsingham/Collection/1910-427, (3) *Argyresthia/conjugella* Z./...../Topotype ♀, in BMNH. Japan: Hokkaidô- 3♀, Mt. Daisetuzan, Kamikawa, 22-23. VII. 1952 (A. MUTUURA), UOP; 2♂, 9♀, same locality, 24-27. VII. 1963 (S. MORIUTI), UOP; 1♀, Tesio, Tesio, 17. IV. 1957 (T. KUMATA), reared from larva feeding into seed of *Sorbus commixta* HEDL., ISSK; Honsyû- 1♀, Mt. Hakusan, Isikawa Prefecture, 30. VII. 1961 (T. SAITO), UOP; 3♂, Yumoto, Totigi Pref., 8. VIII. 1934 (S. ISSIKI), ISSK; 1♂, Kokubu-Bokuzyô, Totigi Pref., 4. V. 1964 (A. KAWABE), AK; 1♂, 6♀, Mt. Ontake, Nagano Pref., 4-5. VIII. 1953 (A. MUTUURA), UOP; 1♂, 5♀, Ôtakimura, Nagano Pref., 25. VII. 1957 (S. MORIUTI), UOP. Extra-limital material: 34♂, 40♀, from Sweden, France, Netherlands, Germany, Austria and Switzerland, in ETH, MAK, NHM, RNH, UOP and ZSM.

Distribution: Japan (Hokkaidô and Honsyû), Europe to E. Siberia and North America.

Host-plants: *Malus pumila* MILLER and *Sorbus commixta* HEDLUND (Rosaceae) in Japan.

As already mentioned, the observations on the habits and life history of the economically important species in Japan have been made by MATSUMURA (1896, p. 63; 1898, p. 36; 1899, p. 224; 1907, p. 209; 1917, p. 502), NITOBE (1906, p. 187), OKAMOTO (1917, p. 213), TAKAHASHI (1930, p. 251), TAKAHASHI (1947, p. 265), etc. Recently RÉAL and BALACHOWSKY (1966, p. 200) have given a detailed description of the biology.

Argyresthia festiva n. sp.

(Figs. 4, 30, 52, 77)

♂♀. 11 mm. Head and thorax shining white; fore part of head (between antennae) faintly tinged with light ochre; face yellow; tegula golden-yellow. Antenna whitish or yellowish, ringed with dark purplish-fuscous; scape shining white above, and golden-yellow beneath, with ochreous pecten. Palpus ochreous outside, and pale yellow inside. Legs light ochreous; fore tibia and tarsus tinged with purplish-fuscous outside, and the former with purplish-fuscous spots at near base and middle inside, and the latter with similar spots at apical end of each segment inside; mid tibia with purplish-

fuscous spots at near base and at anterior $\frac{3}{5}$ inside; mid tarsus purplish-fuscous spots at apex on each segment inside; hind tibia more or less suffused outwardly with purplish-grey, with spurs faintly purplish-tinged; hind tarsus with a purplish-grey apical ring on each segment. Abdomen not observed. Forewing purplish-fuscous; about 15 dark fuscous dots on costa from near base to about $\frac{4}{5}$; interstices between these dots light yellowish-white; a whitish costal dot before apex; terminal margin suffused with light yellow-white, and dotted with dark fuscous; a few of fine dark fuscous strigulae in disc about $\frac{1}{8}$; area between fold and dorsal margin suffused with golden-ochre, the lower half with a whitish dorsal streak; a dark fuscous median fascia from about middle of costa reaching about $\frac{3}{4}$ across wing, and sometimes obsolete on dorsal area (between fold and dorsal margin); cilia purplish-fuscous, towards tornus greyish, and round apex and termen with light yellowish basal and median lines. Hindwing grey, darker towards apex; cilia pale grey.

Male genitalia: as in fig. 30. Gnathos with many long spines. Socius with 18 specialized scales or so; top with a fine hair. Valva with a row of rather stiff hairs in disc. Aedeagus extremely long; cornuti consist of a very long spines and many spinulae. Saccus narrowly extended distally. Plate with long and slender arms, the apices of which are slightly clavate.

Female genitalia: as in fig. 52. Ductus bursae extremely long and slender, the proximate portion of corpus bursae being broad, studded with denticles (fig. 52b). Corpus bursae with large denticles (fig. 52c) in posterior half, and with small denticles (fig. 52d) in anterior half. Signum very large, as shown in fig. 77.

Holotype: ♂, Mt. Kunimidake, Nara/Mie Prefecture, Honsyû, Japan, 16. VII. 1960 (S. MORIUTI), UOP. Paratypes: Japan: Honsyû- 1♂, Nikkô, Totigi Pref., 11. VII. 1938 (H. SEKIYA), in the collection of National Institute of Agricultural Sciences, Tokyo; 1♀, Mt. Siroumadake, Nagano Pref., 15. VII. 1953 (T. KODAMA), UOP; 1♂, Mt. Ôdaigahara, Nara Pref., VII. 1961 (S. MORIUTI), UOP.

Distribution: Japan (Honsyû).

Host-plant: Unknown.

Superficially similar to *A. rara* n. sp., differing evidently in the markings of forewing as indicated in the foregoing key.

Group D

Argyresthia praecocella ZELLER

(Figs. 31, 53, 78)

Argyresthia praecocella ZELLER, 1939, Isis, 1839: 205.—ZELLER, 1847, Linn. Ent., 2: 290. —HEINEMANN and WOCKE, 1877, Schmett. Deutsch., 2 (2): 657, no. 1036.—REBEL, 1901, Cat. Lep. Pal. Faun., 2: 136, n. 2427.—SPULER, 1910, Schmett. Eur., 2: 448. —MEYRICK, 1914, Lep. Cat., 19: 4.—MEYRICK, 1928, Rev. Handb. Brit. Lep.: 730. —PIERCE and METCALFE, 1935, Genit. Brit. Tineina: 51, pl. 29.—MORIUTI, 1965, Bull. Univ. Osaka Pref., (B) 16: 68, f. 2, 17-20, 33, 41, 44, 49, 54, 59, 64, 79, 85, 86, 94, 99, 104.

♂♀. 9-12 mm. Head ochreous-white. Antenna whitish, ringed with grey. Palpus light ochreous-white. Thorax shining light ochreous. Legs light ochreous-grey; fore leg fuscous on inner side. Abdomen shining light ochreous. Forewing unicolorous, shining light ochreous; cilia somewhat lighter. Hindwing light ochreous-grey; cilia light whitish-ochreous-grey.

Male genitalia: as in fig. 31. Socius with 25 specialized scales or so; top usually with a single hair. Valva ovate. Aedeagus about twice as long as valva; cornuti a

long spine and somewhat sparse spinulae. Plate Y-shaped.

Female genitalia: as in fig. 53. Ductus bursae gradually broader anteriorly, rather short, without spinules or denticles. Corpus bursae with denticle-shaped patterns (fig. 53e). Signum as in fig. 78.

Material examined: Holotype: ♂, bearing following labels: (1) Gross Glogau/Silesia/b. v. ante 1839, (2) Walsingham Collection/1910-427, (3) praecocella 7/2. 33, (4) *Argyresthia*/praecocella, Z./Is. 1839. 205/TYPE, in BMNH. Paratypes: 20 exs. with following data: Gross Glogau/Silesia, in BMNH. Japan: Honsyû- 8♂, 22♀, Izumi-Hutyû, Osaka Prefecture, 7. IV. 1959 (T. KODAMA), reared from larvae feeding into cones of *Juniperus rigida* SIEB. et ZUCC., UOP. Extra-limital material: 10♂, 5♀, from France, Germany, Austria and Switzerland, in MAK, RNH and ZSM.

Distribution: Japan (Honsyû) and Europe.

Host-plant: *Juniperus rigida* SIEBOLD et ZUCCARINI (Cupressaceae) in Japan.

In appearance, very similar to *laevigatella* ZELLER, *glabratella* ZELLER and *illuminatella* ZELLER in the subgenus *Blastotere*. The genitalia are diagnostic, in particular the character of signum.

Argyresthia metallicolor n. sp.

(Figs. 5, 32, 54, 79)

♂♀. 13-14 mm. Head shining light greyish-yellow, mixed with ochre on crown. Antenna grey-fuscous; pecten yellowish. Palpus light yellowish-white, tinged with light brown on second segment. Thorax shining golden-grey. Legs yellowish, faintly tinged with grey; fore tibia and tarsus suffused with purplish-brown mesally. Abdomen shining greyish-ochreous above, and shining yellowish beneath; anal tuft ochreous. Forewing unicolorous, shining golden-grey; cilia light greyish-ochreous. Hindwing light grey, and darker towards apex; cilia grey-ochreous.

Male genitalia: as in fig. 32. Tuba analis long and narrow. Socius with about 35 specialized scales; top with two short hairs. Vinculum very small. Valva large, wholly clothed with many long hairs. Aedeagus 1.6 times the length of valva; cornuti of a stout spine and of many spinulae. A slender V-shaped plate.

Female genitalia: as in fig. 54. Ductus bursae extraordinarily long, the anterior portion between a point of inception of ductus seminalis and corpus bursae being gradually wider anteriorly, and entirely studded with denticles (fig. 54b). Corpus bursae with minute denticles (fig. 54e) throughout. Signum stout, as in fig. 79.

Holotype: ♂, Mt. Ontake, Nagano Prefecture, Honsyû, Japan, 21. VIII. 1954 (A. MUTUURA), UOP. Paratypes: 3♂, 1♀, same data as for type, UOP.

Distribution: Japan (Honsyû).

Host-plant: Unknown.

Allied to the European *A. certella* ZELLER (1847), but differs in the forewing with R_4 and R_5 separate instead of stalked; in the genitalia the two species are quite distinct.

Argyresthia flavicomans n. sp.

(Figs. 6, 33, 55, 80)

♂♀. 11-12 mm. Head creamy-yellow; face shining brassy. Antenna pale yellow-white, with yellowish pecten. Palpus pale ochreous-white, infuscated laterally. Thorax shining brassy. Legs very pale ochreous-white; fore leg tinged with blackish-brown on inner side; mid and hind legs, except for both femora, tinged with grey on outer side. Abdomen ochreous-grey above, and ochreous-white beneath. Forewing unicolorous,

bright shining brassy; cilia pale ochreous-grey-white, on dorsum greyish. Hindwing grey; cilia pale grey.

Male genitalia: as in fig. 33. Tuba analis and gnathos membraneous throughout; socius with about 20 specialized scales; top with two short hairs. Valva elongate-ovate, clothed with long hairs ventrally and distally. Aedeagus twice as long as valva; cornuti a distinct long spine and many spinulae. A V-shaped plate, arms of which are rather stout.

Female genitalia: as in fig. 55. Ventral arm of apophysis anterioris very broad. Antrum large, triangulate; ductus bursae long, with a distinct denticulated portion in proximity of a point of inception of ductus seminalis, as shown in fig. 55b. Corpus bursae studded with denticles; posterior denticles larger than anterior ones, as illustrated in figs. 55c and 55d. Signum very large, as shown in fig. 80.

Holotype: ♂, Mt. Apoidake, Hidaka, Hokkaidō, Japan, 30. VII. 1965 (T. YASUDA), UOP. Paratypes: Japan: 1♂, 1♀, same data as for type, UOP; Honsyū- 1♂, 4♀, Hakone, Kanagawa Prefecture, 4. VII. 1932 (S. ISSIKI), ISSK.

Distribution: Japan (Hokkaidō and Honsyū).

Host-plant: Unknown.

Superficially similar to the European *A. arceuthina* ZELLER (1839), but larger, and differing also in the head creamy-yellow instead of white and in the forewing with R_4 and R_5 separate instead of stalked.

Argyresthia brockeella (HÜBNER)

(Figs. 7, 8, 34, 56, 81)

Tinea brockeella HÜBNER, 1805, Samml. Eur. Schmett., f. 262.

Argyresthia brockeella: HÜBNER, 1826, Verz. bek. Schmett.: 422, no. 4109.—ZELLER, 1847, Linn. Ent., 2: 286.—HEINEMANN and WOCKE, 1877, Schmett. Deutsch., 2 (2): 656, no. 1032.—REBEL, 1901, Cat. Lep. Pal. Faun. 2: 136, no. 2421.—SPULER, 1910, Schmett. Eur., 2: 448.—MEYRICK, 1914, Lep. Cat., 19: 5.—MEYRICK, 1928, Rev. Handb. Brit. Lep.: 730.—PIERCE and METCALFE, 1935, Genit. Brit. Tineina: 52, pl. 30.—ISSIKI, 1950, in Icon. Ins. Japon., ed. 2: 450, f. 1214.—INOUE, 1954, Check List. Lep. Japan, 1: 39, no. 179.—ISSIKI, 1957, in Icon. Het. Japon. Col. Nat. 1: 23, pl. 3, f. 78.—OKANO, 1959, in Icon. Ins. Japon. Col. Nat., 1: 274, pl. 181, no. 34. *Argyresthia fulguralis* MATSUMURA, 1931, 6000 Ill. Ins. Japan: 1096, no. 2263.

♂ ♀. 11-13 mm. Head white, slightly tinged with light grey on face. Antenna pale yellowish-white, ringed with dark purplish-fuscous; scape with yellowish pecten. Palpus light shining ochreous-yellow. Thorax shining white. Fore leg light yellow outside, and dark fuscous inside, the coxa being yellowish-white; mid leg light ochreous-yellow, the tibia and spurs being dark fuscous on outer side, and the tarsus being dark fuscous outwardly on posterior $\frac{1}{4}$ of basal, on posterior half of second, and on remaining three segments; hind leg pale yellow, the tibia and tarsus being wholly suffused with dark grey-fuscous on lateral side. Abdomen deep shining grey dorsally, and light ochreous ventrally. Forewing deep coppery-golden; six shining white markings, viz. an oval spot on base of dorsum, a fascia at $\frac{1}{8}$, dilated to dorsal margin, semioval spots on costa at middle, at $\frac{3}{4}$ and before apex, the distal one being smallest, and a large semicircular spot on tornus; (in some European specimens I have examined, the fascia is connected with adjacent costal and dorsal spots); costal cilia deep shining grey, tipped with greyish-white at costal spots; terminal and dorsal cilia light grey, with a dark grey basal shade along termen. Hindwing grey; cilia somewhat paler.

Male genitalia: as in fig. 34. Tuba analis long. Socius peculiar in shape, forming

a very elongate lobe, on which about 25 specialized scales (which are the distinct form as shown in fig. 34c) are present, and the apex of which bears no hair. Vinculum with a pair of patches of denticles at base on ventral side, as shown in fig. 34a; saccus roundly produced. Valva round, densely clothed with stiff hairs distally and ventrally. Aedeagus twice as long as valva, bending ventrad; cornuti composed of a large spine and of many spinulae. A V-shaped plate with arms long and slender.

Female genitalia: as in fig. 56. Antrum small, narrow; ductus bursae rather short, the proximate portion of corpus bursae being broad, with denticles (fig. 56b). Corpus bursae wholly varnished with patterns (fig. 56e). Signum as in fig. 81.

Material examined: Holotype: of *fulgurialis*, ♂, Sapporo, Hokkaidō (S. MATSUMURA), HU. The type of *brockeella* was lost. Japan: Hokkaidō- 1♂, Sapporo, Isikari, 15. VII. 1919 (S. ISSIKI), ISSK; Honsyū- 1♀, Yumoto, Totigi Prefecture, 7. VIII. 1934 (S. ISSIKI), ISSK; 2♂, 3♀, Sinkazawa, Gunma Pref., 13. VII. 1959 (S. MORIUTI), UOP; 1♀, Manza, Gunma Pref., 12. VII. 1959 (S. MORIUTI), UOP; 1♂, Sigakōgen, Nagano Pref., 12. VII. 1953 (A. MUTUURA), ISSK; 1♀, Kamikōti, Nagano Pref., 18. VII. 1919 (K. TAKEUCHI), ISSK. Extra-limital material: 42♂, 22♀, from England, Germany, Austria and Switzerland, in ETH, MAK, NHM, RMN, UOP and ZSM.

Distribution: Japan (Hokkaidō and Honsyū), Europe and Russia.

Host-plants: Unknown in Japan; according to MEYRICK (1928, p. 730), larvae in shoots and catkins of birch and alder in Europe.

The extraordinarily elongate socius of this species is quite unique in the genus *Argyresthia*.

Argyresthia andereggiella (DUPONCHEL)

(Figs. A, 9, 23, 35, 57, 82)

Oecophora andereggiella DUPONCHEL, 1838, Hist. Nat. Lép., 11: 469, pl. 305, f. 9.—

FISCHER v. RÖSLERSTAMM, 1840, Abbild. Bericht. Ergänzt. Schmett.: 209, pl. 74, f. 2.

Argyresthia andereggiella: ZELLER, 1847, Linn. Ent., 2: 241.—HEINEMANN and WOCKE, 1877, Schmett. Deutsch., 2 (2): 656, no. 1033.—REBEL, 1901, Cat. Lep. Pal. Faun., 2: 136, no. 2423.—SPULER, 1910, Schmett. Eur., 2: 448, pl. 87, f. 36.—MEYRICK, 1914, Lep. Cat., 19: 6.—MEYRICK, 1928, Rev. Handb. Brit. Lep.: 730.—PIERCE and METCALFE, 1935, Gen. Brit. Tineina: 52, pl. 30.

Tinea iwella HAWORTH, 1828, Lep. Brit., 4: 570 (van.).

Argyresthia andereggiella Dup. f. *kuwayamella* MATSUMURA, 1931, 6000 Ill. Ins. Japan: 1095, no. 2261.

Argyresthia andereggiella FISCHER v. RÖSLERSTAMM subsp. *kuwayamella*: INOUE, 1954, Check List Lep. Japan, 1: 40, no. 183.

On the basis of the Japanese specimens a redescription of this species may be given below.

♂♀. 9-10 mm. Head shining white, faintly tinged with light yellow on fore part (between antennae) and face. Antenna yellowish, ringed with purplish-brown; pecten light ochreous. Palpus yellowish-ochreous. Thorax shining white; tegula shining white, tinged with ochre at base. Legs yellowish; fore tibia and tarsus largely suffused with dark purplish-brown inside; mid and hind tarsi with purplish-brown lateral apical spot on each segment. Abdomen shining brownish-grey dorsally, and light shining yellowish-ochreous ventrally. Forewing shining white; costal $\frac{1}{8}$ suffused with light ochre on basal $\frac{1}{8}$ and sometimes faintly tinged with pale yellow on rest; in some specimens, costa sparsely strigulated with brown on basal half; golden-brown markings are: a fascia just before middle, obsolete on costal $\frac{1}{8}$ to $\frac{1}{4}$, and usually dilated towards costa,

each side being margined with dark fuscous scales; an outwardly-oblique fascia from costa at $\frac{2}{3}$ reaching $\frac{4}{5}$ across wing, emitting a broad branch to apex (in some specimens, an outwardly-oblique fascia reaching dorsum immediately, beyond which the apical area is golden-brown, leaving a white lunate costo-preapical spot, as shown in fig. Ac), and connected by a bar from base with upper extremity of the preceding fascia; cilia whitish, round marking golden-brown, with a yellowish median shade, and on dorsum greyish-white. Hinwing grey, and darker towards apex; cilia pale grey.

Male genitalia: as in fig. 35. Gnathos with about 20 specialized scales; top with a small tubulous process, bearing two hairs. Valva with a patch of stiff hairs in disc, and some similar hairs near distal margin. Vinculum broad. Aedeagus about three times the length of valva, evenly curved; cornuti of a stout spine and of numerous spinulae. A large V-shaped plate.

Female genitalia: as in fig. 57. Antrum long; ductus bursae slender, without denticles or spinules. Corpus bursae studded with denticles (figs. 57c and 57d). Signum as in fig. 82.

Material examined: Holotype: of *kuwayamella*, ♂, Hokkaidō (KUWAYAMA), HU; I have been unable to examine the type (♂) of *andereggiella*, which is preserved in the Muséum national d'Histoire naturelle, Paris. Japan: Hokkaidō- 1 ♂, Mt. Apoidake, Hidaka, 30. VII. 1965 (T. YASUDA), UOP; Honsyū- 3 ♂, 2 ♀, Yumoto, Totigi Prefecture, 8. VIII. 1934 (S. ISSIKI), ISSK; 2 ♂, 2 ♀, Nidoage, Gunma Pref., 27-28. VII. 1958 (A. KAWABE), AK; 2 ♂, 3 ♀, Tatesina, Nagano Pref., 19-28. VI. 1956 (S. MORIUTI), reared from larvae on leaf buds of *Malus sieboldii* REHDER, UOP. Extra-limital material: 22 ♂, 7 ♀, from France, Germany, Australia and Poland, in ETH, MAK, NHM, RNH, UOP and ZSM.

Distribution: Japan (Hokkaidō and Honsyū), Europe and E. Siberia.

Host-plant: *Malus sieboldii* REHDER (Rosaceae) in Japan.

The specimens collected from Japan vary slightly from those from Europe in the markings of forewings (fig. A), but cannot be separated specifically; a white costo-preapical area (surrounded with the golden-brown markings) of the Japanese specimens smaller than those of the European ones, in European specimens the tornal area with a white area (surrounded with the golden-brown markings) which is quite absent in Japanese ones, and a white costal dot of ground-colour just before apex present in the

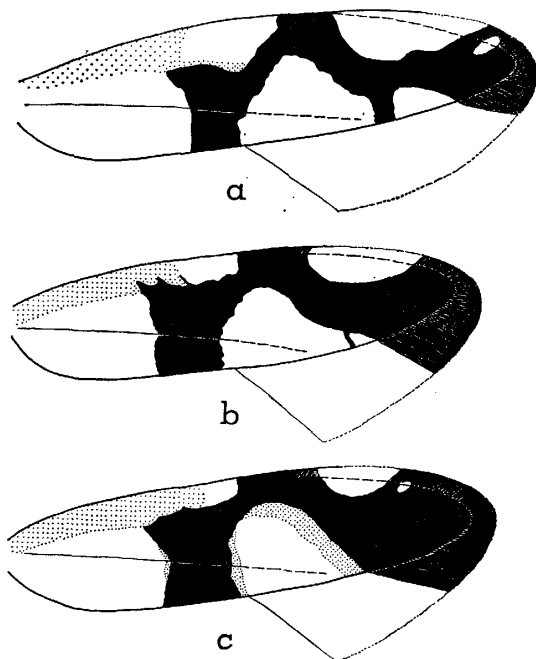


Fig. A. *Argyresthia andereggiella* (DUPONCHEL), forewing (diagrammatic), to show the variation of markings. (1) ♀, Ober-Österreich. (2) ♂, Mt. Apoidake, Hokkaidō. (3) ♀, Tatesina, Central Honsyū. (Drawn to same scale.)

European but usually extinct in the Japanese specimens.

This species is very closely allied to the North American *A. oreadella* CLEMENTS (1860), but is amply distinct from it by the genitalia, particularly in the presence of a small tubulous process at the top of socius, the shape of valva, the larger saccus, the much longer and a little slenderer aedeagus, etc.

Argyresthia alpha FRIESE et MORIUTI

(Figs. 36, 58, 83)

Argyresthia alpha FRIESE et MORIUTI, 1968, Trans. Lep. Soc. Japan, 19: 13, f. A, A1-7.

♂ ♀. 10-12 mm. Head and thorax shining white; face yellowish; tegula pale golden-yellow. Antenna pale ochreous-white, ringed with dark purplish-brown; scape shining white, with ochreous pecten. Palpus pale whitish-ochreous. Legs light yellowish-white; fore tibia and tarsus ochreous-brown inside; mid and hind tibiae ringed narrowly with purplish-brown apically. Abdomen shining grey dorsally, and shining greyish-white ventrally. Forewing shining white; costal $\frac{1}{8}$ pale golden-yellow; a golden-yellow or golden-brown quadrate spot on dorsum just before middle of wing-length, touching the costal streak, and margined with dark brownish scales on each side; terminal area nearly wholly suffused with golden-brown (sometimes except on tornus); cilia light ochreous-grey, round apex brownish, along termen with a cloudy dark subbasal shade, and on dorsum light whitish-ochreous-grey. Hindwing grey; cilia light ochreous-grey.

Male genitalia: as in fig. 36. Socius with 20-30 specialized scales; top with three to five long hairs. Vinculum with anterior projection at each distal corner. Valva sparsely clothed with hairs ventrally and distally, and with a patch of long hairs in disc. Aedeagus extremely long and slender, somewhat variable in length, about four to five times as long as valva. Cornuti of a number of minute spinulae. A large V-shaped plate.

Female genitalia: as in fig. 58. Eighth abdominal sternum with patterns consisted of many tiny circlets instead of spinulae; ductus bursae long, with a denticulated portion partially, as shown in fig. 58a. Corpus bursae garnished with strong denticles (fig. 59c) in posterior half, and with smaller ones (fig. 58d) in anterior half. Signum as in fig. 83.

Material examined: Holotype: ♂, Kamikôti, Nagano Prefecture, Honsyû, Japan, 14. VII. 1957 (A. MUTUURA), reared from larva feeding on leaf bud of *Sorbus commixta* HEDL., UOP. Paratypes: Japan: Honsyû- 1♀, same data as for type, UOP; 1♂, Manza, Gunma Pref., 13. VII. 1959 (S. MORIUTI), UOP; 1♀, Tokugôtôge, Nagano Pref., 28. VII. 1955 (S. MORIUTI), UOP; 2♀, same locality, 19. VIII. 1957 (S. MORIUTI), UOP and Deutsches Entomologisches Institut, Eberswalde; 1♀, same locality, 7. VIII. 1958 (S. MORIUTI), UOP; 1♂, Mt. Ontake, Nagano Pref., 2. VIII. 1953 (A. MUTUURA), Deutsches Ent. Inst. Additional material: Japan: Honsyû- 2♂, 2♀, Mt. Komagadake, Akita Pref., 21-25. VIII. 1950 (S. ISSIKI), ISSK; 1♂, Mt. Daisen, Tottori Pref., 11. VII. 1950 (S. ISSIKI), ISSK, 1♀, same locality, 10. VII. 1964 (S. MORIUTI), UOP.

Distribution: Japan (Honsyû).

Host-plant: *Sorbus commixta* HEDLUND (Rosaceae).

Very closely allied to the Formosan *A. taiwanensis* MORIUTI (1968), of which only the male is known, but differs from it in the following points: appreciably smaller in the size (wing expanse of 14 mm in *taiwanensis*), on the forewing the presence of dark edge at each side of dorsal spot, and paler in the colour of markings; on the male genitalia much longer aedeagus.

Argyresthia beta FRIESE et MORIUTI

(Figs. 37, 59, 84)

Argyresthia beta FRIESE et MORIUTI, 1968, Trans. Lep. Soc. Japan, 19: 15, f. B, B1-7.

♂ ♀. 10-12 mm. Head and thorax shining white; face lightly tinged with pale yellow; tegula brassy-yellow. Antenna light yellowish-white, and dark purplish-ringed; scape white, with yellowish pecten. Palpus pale whitish-yellow. Legs light yellowish-white; fore tibia and tarsus suffused with dark brown inside; mid and hind tibiae purplish-fuscous on apex of each segment. Abdomen shining cinereous dorsally, and light shining ochreous-grey ventrally. Forewing shining white; costal $\frac{1}{8}$ from base to beyond middle pale brassy-golden, containing a white costal dot at $\frac{3}{4}$ (in some specimens the dot extinct); about six deep coppery-golden strigulae on costa between $\frac{2}{5}$ and $\frac{3}{5}$; a brassy-golden or coppery-golden dorsal mark just before middle of wing, widens apically, reaching costal streak, and margined with darker scales on each side (sometimes the anterior margin indistinct); white ground-colour indicating a large triangular mark about $\frac{3}{5}$, seldom not reaching costa; distal $\frac{1}{8}$ (beyond the white mark) brassy-golden, margined with darker scales anteriorly; apex and terminal edge suffused with deep coppery-golden; white dots or spots of ground-colour as follows: a subtriangular or semi-circular spot at costal $\frac{2}{4}$, three dots on about posterior $\frac{1}{5}$ of costa, a dot at apex, about five dots on termen, and several dots in disc; cilia light ochreous-grey, round apex suffused with dark fuscous, on termen with dark subbasal and subapical shades, and on dorsum light whitish-yellow. Hindwing grey; cilia a little paler.

Male genitalia: as in fig. 37. Socius with 21-25 specialized scales; top with three short hairs. Valva sparsely haired marginally, with a patch of very long and stiff hairs in disc. Aedeagus about 2.5 times as long as valva; cornuti consist of a rather broad spine and of many spinulae arranged in form of a club. Plate with rather short prongs.

Female genitalia: fig. 59. Antrum rather narrow; inception of ductus seminalis from posterior $\frac{1}{4}$ of ductus bursae; anterior portion of ductus (between a point of inception of ductus seminalis and corpus bursae) with a distinct denticles (fig. 59b₁) in posterior $\frac{2}{5}$, and with ordinary denticles (fig. 59b₂) in anterior $\frac{3}{5}$. Corpus bursae set with large denticles (fig. 59c), except that the anterior portion is set smaller denticles (fig. 59d). Signum as in fig. 84.

Material examined: Holotype: ♂, Mt. Makinosan, Osaka Prefecture, Honsyû, Japan, 28. V. 1960 (S. MORIUTI), UOP. Paratypes: Japan: Honsyû- 2♂, 9♀, same data as for type, UOP, except for 1♂ and 1♀ in Deutsches Entomologisches Institut, Eberswalde; 1♀, same locality and date (T. SAITO), UOP; 1♂, Mt. Kasugayama, Nara Pref., V. 1956 (S. MORIUTI), UOP; 1♀, Tukigase, Nara Pref., 1-2. VI. 1956 (S. MORIUTI), Deutsches Ent. Inst.; 1♂, Sakai, Osaka Pref., 11. V. 1959 (T. SAITO), UOP; 1♂, 1♀, Kawati-Nagano, Osaka Pref., 2. V. 1954 (K. YANO), reared from larvae feeding on leaf buds of *Rhododendron macrosepalum* MAXIM., UOP; 1♀, Mt. Iwawakisan, Osaka Pref., 6. VI. 1950 (A. MUTU-URA), UOP; 1♂, same locality, 28. V. 1954 (T. YASUDA), Deutsches Ent. Inst.; 13, Mt. Kongôsan, Osaka Pref., 29. VI. 1960 (M. OKADA), UOP. Additional material: Japan: Hokkaidô- Mt. Apoidake, Hidaka, 30. VII. 1965 (T. YASUDA), UOP; Honsyû- 1♂, 1♀, Nisine, Iwate Pref., 7. VI. 1967 (T. OKU), ISSK; 2♂, 1♀, Hakone, Kanagawa Pref., 4. VII. 1932 (S. ISSIKI), ISSK; 1♀, Ina, Nagano Pref., 16. VII. 1965 (T. ARITA), UOP; 2♂, 1♀, Hida-Takayama, Gifu Pref., 24. VI. 1966 (Y. ARITA), UOP; 2♂, 4♀, Mt. Usiozan, Kyôto Pref., 25. V. 1968 (T. YASUDA), UOP; 1♀, Hanase, Kyôto Pref., 17. VI. 1962 (T. SAITO), UOP; 1♂, same locality, 16. VI. 1963 (S. MORIUTI), UOP; 1♂, Mt. Iwawakisan, Osaka Pref., 25. VI. 1920 (S. ISSIKI), ISSK; 2♂, Nose-Myôken, Osaka Pref., 20. V. 1968 (S.

MORIUTI), UOP; 5♀, Mt. Mikusayama, Hyôgo Pref., 20. V. 1964 (S. MORIUTI), UOP; 7♂, same locality, 25. V. 1968 (S. MORIUTI), UOP; 1♂, Awazisima Is., Hyôgo Pref., 1. X. 1946 (A. MUTUURA), ISSK; 1♀, Mt. Daisen, Tottori Pref., 3. VII. 1965 (S. MORIUTI), UOP.

Distribution: Japan (Hokkaidô and Honsyû).

Host-plant: *Rhododendron macrosepalum* MAXIMOWICZ (Ericaceae).

Somewhat allied to but distinct from the preceding species.

Argyresthia rara n. sp.

(Figs. 10, 60, 85)

♀. 11 mm. Head and thorax white; fore part of head (between antennae) and face yellowish; tegula golden-brown. Antenna yellowish, ringed with black; scape shining yellowish-white above, and golden-yellow beneath, with ochreous pecten. Palpus ochreous outside, and pale yellow inside. Legs light yellowish-ochreous; fore tibia and tarsus suffused inwardly with dark purplish-brown, and marked outwardly with dark purplish-brown spots on tibia at subbase, middle and subapex, and on tarsus at apex of each segment; mid tibia and tarsus with spots as in fore ones; hind tibia purplish-brown on lateral side of posterior half, with spurs purplish-tinged; hind tarsus suffused laterally and ventrally with purplish-brown except on basal area of each segment, and apical area of each segment purplish-brown inwardly. Abdomen shining dark grey dorsally, and shining light yellowish-grey ventrally. Forewing dark purplish-fuscous; costa indistinctly dotted with blackish scales on basal $\frac{3}{4}$; two whitish costal dots before apex and sometimes extinct; a shining white dorsal streak reaching to $\frac{1}{3}$ of wing; a golden-brown area between fold and dorsal streak from base to $\frac{1}{3}$ of wing, the lower margin being narrowly suffused with dark brown on distal half; cilia purplish-fuscous, towards tornus greyish, and round apex and termen a darker submedian shade. Hindwing grey, tinged with dark grey on apical area; cilia pale grey.

Female genitalia: as in fig. 60. Antrum small; inception of ductus seminalis from posterior $\frac{3}{8}$ of ductus bursae; ductus very slender in posterior $\frac{3}{8}$, and broad in anterior $\frac{5}{8}$; a denticulated portion near a point of inception of ductus seminalis posteriorly. Corpus bursae studded with denticles (fig. 60c), the anterior half being denticulated very sparsely. Signum as in fig. 85.

♂: Unknown.

Holotype: ♀, Mt. Daisen, Tottori Prefecture, Honsyû, Japan, 10. VII. 1964 (S. MORIUTI), UOP. Paratype: Japan: Honsyû- 1♀, Mt. Iwawakisan, Osaka Pref., 15. X. 1950 (S. ISSIKI), UOP.

Distribution: Japan (Honsyû).

Host-plant: Unknown.

Similar to *A. festiva* n. sp. in superficial appearance, but differs in the character given in the key.

Argyresthia communana n. sp.

(Figs. 11, 38, 61, 86)

♂♀. 10-11 mm. Head white, lightly tinged with pale grey-ochre on face. Antenna pale yellow-white, ringed with purplish-grey; scape with ochreous pecten. Palpus pale ochreous. Thorax shining white; tegula golden-yellow. Legs light yellowish-ochreous; fore leg, excluding coxa, tinged with dark purplish-brown; mid and hind tarsi with a purplish-fuscous apical band on each segment; all spurs purplish-fuscous, with light yellowish-ochreous bases and apices. Abdomen shining cinereous dorsally, and pale

greyish-ochreous ventrally. Forewing grey; about a dozen of dark fuscous dots or strigulae on costa from near base to about $\frac{4}{5}$; interstices between these dots or strigulae pale whitish-yellow; a whitish costal spot before apex; distal $\frac{1}{3}$ with some scattered whitish scales; termen dotted with dark brown; a whitish dorsal streak to tornus; a suffused golden-brown area between fold and dorsal streak, from base of dorsum to $\frac{1}{3}$ of wing-length; two suffused dark fuscous fasciae, viz. the inner one extending from middle of costa to beyond fold at $\frac{1}{3}$ (at posterior end of the golden-brown area), and tending to be reduced to three spots (at costa, in disc and beneath fold), and the outer one extending from $\frac{2}{3}$ of costa to middle of inner margin, a little distincter than inner fascia, and irregularly interrupted; cilia pale grey, with dark fuscous subbasal and subapical shades except on dorsum. Hindwing pale grey, darker posterior; cilia pale grey.

Male genitalia: as in fig. 38. Tuba analis long. Socius with 18 specialized scales or so; top with two hairs. Vinculum broad in lateral aspect. Valva nearly squared, with a patch of about a dozen of stiff hairs in disc; internal surface with a conspicuous conical tooth in disc at distal third. Aedeagus very long, about 3.5 times the length of valva, curved at apical $\frac{2}{3}$; cornuti of only spinulae. Plate very large, the apices of arms being clubbed.

Female genitalia: as in fig. 61. Antrum narrowly elongate, compactly set with spinulae; ductus bursae with a small spinulate portion near a point of inception of ductus seminalis. Corpus bursae with pattern, as shown in fig. 61c, in posterior half, and with small denticles (fig. 61d) in anterior half. Signum as in fig. 86.

Holotype: ♂, Mt. Kirisimayama, Kagosima Prefecture, Kyûsyû, Japan, 2. X. 1959 (S. MORIUTI), UOP. Paratypes: Japan: 6♂, 6♀, same locality as type, 30. IX-3. X. 1959 (S. MORIUTI), UOP; Honsyû- 1♂, 1♀, Mt. Kôyasan, Wakayama Pref., 11. IX. 1953 (S. ISSIKI), ISSK.

Distribution: Japan (Honsyû and Kyûsyû).

Host-plant: Unknown.

Somewhat similar to *A. conjugella* ZELLER in external appearance, but can be readily distinguished from it by the colour and markings of forewings.

Argyresthia magna n. sp.

(Figs. 12, 39, 62, 87)

♂♀. 12-15 mm. Head and thorax shining white; face tinged with light greyish-yellow. Antenna light yellow, ringed with dark brown; scape yellow, with ochreous pecten. Palpus ochreous, with tip yellowish, the middle segment being suffused with brown exteriorly. Legs light yellowish-ochreous; fore leg suffused with dark purplish-brown inside; all spurs brownish. Abdomen shining greyish-ochreous, and paler beneath. Forewing testaceous, nearly wholly suffused with yellowish-white on dorsal half, and irregularly strigulated with brown; costal area suffused with dark grey towards base; costa dotted on basal half and spotted or strigulated on distal half with blackish-brown; two or three whitish costal dots before apex; termen dotted with dark brown; a suffused, rather broad dark fuscous streak from end of cell to costa just before apex; veins between cell and termen marked with deep testaceous lines; a distinct dark fuscous elongate-triangular or subquadrate spot from just before middle of dorsum reaching beyond fold; cilia greyish-testaceous, towards tornus yellowish, and with a greyish subbasal shade. Hindwing light yellowish-grey, and darker towards apex; cilia light yellow-grey, with a darker subbasal shade.

Male genitalia: as in fig. 39. Socius small, with 12-15 specialized scales; top with

3 hairs. Valva quite ovate, with a patch of stiff hairs in disc. Aedeagus about twice as long as valva; cornuti of a long spine and of many spinulae. Plate with a broad basal stem, which is weakly sclerotized.

Female genitalia: as in fig. 62. Antrum small, forming a different shape as indicated in fig. 62a, the basal half (narrow portion) being set with very sparsely spinulae, and the apical half without spinulae; a sclerotized ring between antrum and ductus bursae large; both ductus bursae and corpus bursae with neither denticles nor spinules nor patterns. Signum as in fig. 87.

Holotype: ♂, Sigakōgan, Nagano Prefecture, Honsyū, Japan, 13. VI. 1953 (S. ISSIKI), UOP. Paratypes: Japan: Honsyū- 1♂, same locality as type, 14. VI. 1953 (S. ISSIKI), ISSK; 1♂, 1♀, same locality, 13. VI. 1953 (T. KODAMA), UOP; 1♀, Mt. Iwawakisan, Osaka Pref., 1. V. 1961 (T. SAITO), UOP; Sikoku- 2♀, Yanase, Kōti Pref., 3-4. V. 1951 (S. ISSIKI), ISSK.

Distribution: Japan (Honsyū and Sikoku).

Host-plant: Unknown.

An easily recognizable species.

Argyresthia chamaecypariae MORIUTI

(Figs. 40, 63, 68)

Argyresthia chamaecypariae MORIUTI, 1965, Bull. Univ. Osaka Pref., (B) 16: 69, f. 3, 6, 21-24, 34, 35, 40, 45, 50, 55, 60, 65, 76, 80, 87, 95, 100, 105, 110, 111.

Argyresthia chamaecypariae MORIUTI (MS.), ISSIKI and MUTUURA, 1662, Pub., Ent. Lab., Univ. Osaka Pref., 7:7, no. 64 (non-descr.).

♂♀. 6-9 mm. Head and thorax snow-white; face pale yellow; orbit and tegula golden-yellow. Antenna pale yellow, ringed with purplish-black; scape golden-yellow. Palpus pale ochreous. Legs pale yellow; fore femur and tibia purplish outside; mid tibia with purplish-fuscous dots at base, basal $\frac{1}{4}$, middle, and apex outside; hind tibia greyish on posterior half outside, the spurs being purplish-black, with pale yellow apices; all tarsi with purplish-black apical ring on each segment. Abdomen shining grey dorsally, and pale yellowish-grey ventrally. Forewing dark fuscous, heavily irrorated with whitish scales; costal margin narrowly shaded throughout with black-fuscous, and marked with about eight irregularly placed white dots on posterior $\frac{3}{4}$; basal $\frac{1}{3}$ deep golden-yellow, with a narrow white streak along inner margin from base to $\frac{1}{7}$ of wing-length; two broad oblique golden-fuscous fasciae, one beyond middle, and the other at $\frac{4}{5}$ and a littler narrower; cilia purplish-fuscous, and termen with a dark ochreous-grey median shade, and on dorsum ochreous-grey. Hindwing grey, darker posteriorly; cilia grey.

Male genitalia: as in fig. 40. Socius with 15 specialized scales or so; top usually with one hair. Aedeagus 2-2.5 times as long as valva; a row of about 10 denticles present on posterior extremity, as shown in fig. 40e; cornuti consist of numerous spinulae. Plate with very slender divergent arms.

Female genitalia: as in fig. 63. Ductus bursae broad, denticulate in anterior $\frac{3}{4}$; corpus bursae set with small papillary processes (fig. 63c) in area around signum, and with hexagonal patterns in the remaining area. Signum as in fig. 88.

Material examined: Holotype: ♂, Takanoko, Yamaguti Prefecture, Honsyū, Japan, 5. V. 1957 (T. KODAMA), reared from larva mining in leaves of *Chamaecyparis obtusa* SIEB. et ZUCC., ISSK. Paratypes: Japan: Honsyū- 2♂, 4♀, same locality as type, 28. IV.-13. V. 1957 (T. KODAMA), reared from *C. obtusa*; 2♂, Okutatesina, Nagano Pref., 30. V.-1. VI. 1958 (S. MORIUTI), reared from larvae mining in leaves of *Chamaecyparis*

pisifera SIEB. et ZUCC., UOP; 2♂, Ôtakimura, Nagano Pref., 24. VII. 1957 (S. MORIUTI), UOP. Additional material: Japan: Honsyû- 1♂, Yumoto, Totigi Pref., 21. VI. 1932 (S. ISSIKI), ISSK; 1♀, same locality, 7. VIII. 1934 (S. ISSIKI), ISSK; 1♂, Okutatesina, Nagano Pref., 10. VII. 1962 (S. MORIUTI), UOP; 6♂, 6♀, Ôtakimura, Nagano Pref., 24. VII. 1957 (S. MORIUTI), UOP; 1♂, Simazimadani, Nagano Pref., 27. VII. 1965 (N. TOKUNAGA), UOP; 6♂, 5♀, Mt. Hieisan, Kyôto Pref., 23. VIII. 1949 (S. ISSIKI), ISSK; 1♂, same locality, 16. VI. 1960 (S. MORIUTI), ISSK; 1♀, same locality, 7. VIII. 1951 (S. ISSIKI), ISSK; 1♀, same locality, 10. VII. 1956 (S. ISSIKI), ISSK; 1♀, Hanase, Kyôto Pref., 24. VII. 1951 (S. ISSIKI), ISSK; 1♀, same locality, 17. VI. 1962 (T. SAITO), UOP; 1♂, Mt. Iwawakisan, Osaka Pref., 15. X. 1950 (S. ISSIKI), ISSK; 1♂, same locality, 28. VI. 1957 (T. YASUDA), UOP; 1♂, 1♀, Mt. Kôngôsan, Osaka Pref., 6. VII. 1959 (S. MORIUTI), UOP; 2♂, Mt. Makinosan, Osaka Pref., 28. V. 1960 (S. MORIUTI), UOP; 3♂, 3♀, Haga, Hyôgo Pref., 30. VII. 1965 (S. MORIUTI), UOP; 1♀, Ikuno, Hyôgo Pref., 23. V. 1964 (S. MORIUTI), UOP; 1♂, same locality, 8. VI. 1965 (S. MORIUTI), UOP; 1♀, Sandankyô, Hirosima Pref., 6. VI. 1953 (S. ISSIKI), ISSK; 1♂, Mt. Daisen, Tottori Pref., 3. VII. 1965 (S. MORIUTI), UOP; Sikoku- 1♂, Uwa, Ehime Pref., 31. III. 1964 (K. KADOYA), reared from *C. obtusa*, UOP.

Distribution: Japan (Honsyû and Sikoku).

Host-plants: *Chamaecyparis obtusa* SIEBOLD et ZUCCARINI and *C. pisifera* SIEBOLD et ZUCCARINI (Cupressaceae).

The larva was described by me (MORIUTI, 1965, p. 70).

Somewhat similar to the Chinese *A. chalcocasta* MEYRICK (1935), of which only the female is known, but differs in the colour and markings; in the female genitalia the ductus bursae is short and broad in *chamaecypariae*, whereas it is extremely long in *chalcocasta*.

Argyresthia subrimosa MEYRICK

(Figs. 41, 64, 89)

Argyresthia subrimosa MEYRICK, 1932, Exot. Microlep., 4: 227.—INOUE, 1954, Check List Lep. Japan, 1: 40, no. 186.—CLARKE, 1965, Meyrick Microlep., 5: 288, pl. 143, f. 3, 3b.

Argyresthia mutuurai MORIUTI, 1964, Trans. Lep. Soc. Japan, 15: 20, f. 1-10, n. syn.

♂ ♀. 14 mm. Head, palpus and thorax light ochreous-yellow; face yellow, tinged with light grey. Antenna whitish, ringed with black; scape light ochreous-yellow. Legs light greyish-yellow; fore and mid tibiae-tarsi largely suffused with black; hind tarsus narrowly blackish-ringed, and spurs with tips blackish. Abdomen grey dorsally and light whitish-yellow ventrally. Forewing light ochreous-yellow, finely strigulated with light grey; extreme costal edge blackish on basal $\frac{1}{5}$; cilia light ochreous-yellow, with a blackish dot at apex, and on dorsum grey. Hindwing grey: cilia concolorous.

Male genitalia: as in fig. 41. Socius with 11-13 specialized scales; top with 2 rather long hairs. Vinculum narrowly expanded anteriorly. Valva with a longitudinal patch of stiff hairs in disc. Aedeagus about 2.5 times the length of valva; cornuti of a long and slender spine and of many spinulae. A large V-shaped plate, the slender arms being dilated at apices.

Female genitalia: as in fig. 64. Intersegmental membrane between papilla analis and 8th abdominal segment exceedingly extended; anterior $\frac{2}{5}$ of ductus bursae (between a point of inception of ductus seminalis and corpus bursae) set with denticles (fig. 64b₁) in anterior half, and with horny processes (fig. 64b₂) in posterior half. Corpus bursae with large denticles (figs. 64c) in posterior half, and with tiny denticles (figs. 64d) in

anterior half. The largest signum in all the Japanese species, as shown in fig. 89.

Material examined: Holotype: of *subrimosa*, ♂ labelling "Kwanhsien/China/F. 7. 25", in BMNH; in the original description MEYRICK writes: N. China, Kwanhsien, July (*Frank*); of *mutuurai*, ♂, Sapporo, Isikari, Hokkaidô, Japan, 30. VII. 1952 (A. MUTUURA), UOP. Paratypes: of *mutuurai*, 1♀, Sôunkyô, Kamikawa, Hokkaidô, Japan, 30. IX. 1957 (T. KODAMA), UOP; of *mutuurai*, 1♂ and 1 ex. (Abdomen missing), Mt. Hakusan, Isikawa Prefecture, Honsyû, Japan, 31. VII. 1961 (T. YASUDA), UOP. Japan: Hokkaidô-1♀, Sapporo, Isikari, 8. IX. 1919 (S. ISSIKI), ISSK; Honsyû- 3♀, Yuze, Akita Pref., 17. VII. 1939 (S. ISSIKI), ISSK; 1♀, Umegasima, Sizuoka Pref., 7. X. 1956 (K. MORISITA), in the collection of Mr. K. MORISITA; 1♂, Mt. Daisen, Tottori Pref., 15. VII. 1920 (K. TAKEUCHI), ISSK; 1♂, 1♀, same locality, 10. VII. 1964 (S. MORIUTI), UOP.

Distribution: Japan (Hokkaidô and Honsyû) and N. China.

Host-plant: Unknown.

This species is quite distinct from any other Japanese species.

Argyresthia tutuzicolella n. sp.

(Figs. 13, 42, 65, 90)

♂♀. 10-11 mm. Head and thorax shining white; face yellowish; tegula golden-yellow. Antenna pale ochreous, ringed with pale fuscous on apical $\frac{1}{5}$; scape whitish, with yellowish pecten. Palpus light ochreous-yellow. Legs light ochreous-yellow; fore tibia and first tarsal segment dark fuscous on inner side. Abdomen shining grey, the anal tuft and the ventral side being light ochreous-yellow. Forewing ochreous-coppery-golden, strigulated with dark brown; a suffused shining white dorsal streak to tornus, strigulated with dark brown, and sometimes the streak tinged with light ochre; cilia greyish-ochreous, with grey subbasal and subapical shades, on dorsum light yellowish-white. Hindwing grey; cilia pale greyish-white, with a greyish subbasal shade.

Male genitalia: as in fig. 42. Socius with about 15 specialized scales; top with two rather long hairs. Valva with a large patch of stiff hairs in disc, and with a few stiff hairs near dorso-distal corner. Vinculum large, forming two triangular sacci. Aedeagus about twice as long as valva, slightly curved; cornuti consist of a very long, slender spine and of numerous spinulae. A V-shaped plate moderately large.

Female genitalia: as in fig. 65. Antrum large; median third of ductus bursae set with spinulae (fig. 65b₁), and anterior third of ductus with denticles (fig. 65b₂). Corpus bursae garnished with wavy patterns in posterior half, and without patterns in anterior half. Signum as in fig. 90.

Holotype: ♂, Ôsima, Wakayama Prefecture, Honsyû, Japan, 29. IV. 1954 (A. MUTUURA), UOP. Paratypes: Japan: Honsyû- 1♂, 1♀, same locality as holotype, 29. IV. 1954 (T. KODAMA), UOP; 1♀, same locality, 30. IV. 1954 (A. MUTUURA), UOP; 1♂, Yumoto, Totigi Pref., 7. VIII. 1934 (S. ISSIKI), ISSK; 1♀, Hida-Takayama, Gihu Pref., 24. VI. 1966 (Y. ARITA), UOP; 1♀, Kokubu, Osaka Pref., 19. IV. 1956 (S. MORIUTI), UOP; 3♂, 1♀, Nose-Myôken, Osaka Pref., 20. V. 1968 (S. MORIUTI), UOP; 1♀, Mt. Iwawakisan, Osaka Pref., 27. V. 1954 (T. YASUDA), UOP; 1♀, same locality 28. V. 1954, (T. KODAMA), UOP; 2♂, 1♀, Mt. Mikusayama, Hyôgo Pref., 25. V. 1968 (S. MORIUTI), UOP; 1♂, Ikuno, Hyôgo Pref., 8. VI. 1965 (S. MORIUTI), UOP; Kyûsyû- 1♀, Mt. Hikosan, Hukuoka Pref., 25. V. 1960 (S. MORIUTI), reared from larva feeding on leaf bud of *Rhododendron dilatatum* MIQ.

Distribution: Japan (Honsyû and Kyûsyû).

Host-plant: *Rhododendron dilatatum* MIQUEL (Ericaceae).

This species is somewhat near *A. retinella* ZELLER in appearance, but they are distinct from each other.

Argyresthia albicomella n. sp.

(Figs. 14, 66, 91)

♀. 8-9 mm. Head and thorax shining white; face slightly tinged with light yellow; orbit and tegula golden-ochreous. Antenna light yellowish, ringed with black; scape shining white, with ochreous pecten. Palpus light yellow. Legs light yellowish; fore leg suffused with purplish-brown on inner side except on coxa; fore and mid tibiae dotted laterally with purplish-brown at base, $\frac{2}{3}$ and at apex; hind tibia suffused with purplish-brown on lateral side of posterior $\frac{2}{3}$; mid and hind tarsi with a purplish-brown apical ring on each segment; all basal tarsal segments suffused with purplish-brown on lateral side; all spurs suffused with purplish-brown on posterior half except at apex. Abdomen shining dark grey dorsally, and pale greyish-yellow ventrally. Forewing ferrugineous, irregularly strigulated with ferrugineous-brown; basal $\frac{3}{4}$ of costal margin suffused with light yellow and dotted with dark ferrugineous-brown; distal half sparsely sprinkled with yellowish scales; a narrow white dorsal streak from base to $\frac{1}{3}$ of wing; cilia light ferrugineous-yellow, towards tornus greyish, round apex and termen with light ferrugineous apical and submedian shades, and on costa with a whitish dot before apex. Hindwing pale grey, becoming darker apically; cilia pale grey.

Female genitalia: as in fig. 66. Antrum narrow; ductus bursae with a short spinulate portion before a point of inception of ductus seminalis. Corpus bursae with rounded denticles (fig. 66c) in posterior half, and with spinulae (fig. 66d) in anterior half. Signum as in fig. 91.

♂: Unknown.

Holotype: ♀, Ônuma, Hokkaidô, Japan, 21. VII. 1963 (S. MORIUTI), UOP. Paratypes: Japan: Honsyû- 1♀, Ôtakimura, Nagano Prefecture, 25. VII. 1957 (S. MORIUTI), UOP; 3♀, Hakone, Kanagawa Pref., 4. VII. 1932 (S. ISSIKI), ISSK.

Distribution: Japan (Hokkaidô and Honsyû).

Host-plant: Unknown.

Allied to the European *A. albistria* (HAWORTH, 1828), but differs in the forewing with the white dorsal streak narrower than that of *albistria*, without the dorsal median spot which is present in *albistria*, and with the numerous strigulae; the differences in genital characters readily distinguish between the two.

Argyresthia retinella ZELLER

(Figs. 15, 16, 43, 67, 92)

Argyresthia retinella ZELLER, 1939, Isis, 1839: 205.—ZELLEER, 1847, Linn. Ent., 2: 269, f. 4, 5.—HEINEMANN and WOCKE, 1877, Schmett. Deutsch., 2 (2): 653, no. 1025.—REBEL, 1901, Cat. Lep. Pal. Faun., 2: 135, no. 2414.—SPULER, 1910, Schmett. Eur., 2: 448. — MEYRICK, 1914, Lep. Cat., 19: 7.—MEYRICK, 1928, Rev. Handb. Brit. Lep.: 732.—PIERCE and METCALFE, 1935, Genit. Brit. Tineina: 52, pl. 30.

♀. 9-10 mm. Head and thorax shining white; fore part of head (between antennae) mixed with light ochreous; face tinged with light yellow. Antenna light yellow, dotted with pale purplish-brown above. Palpus yellowish. Legs pale yellow; fore leg with femur purplish-tinged inside, and with tibia and tarsus dark purplish-brown. Abdomen greyish-ochreous above and yellowish-ochreous beneath. Forewing shining white, irregularly strigulated with dark brown; an indistinct, rather broad, yellowish-brown longitudinal suffusion along upper margin of cell, from base to end of cell; distal $\frac{1}{4}$ variably suffused with yellowish-brown; apex with a blackish dot; cilia light ochreous-white, round apex with fuscous subbasal and apical shades. Hindwing grey; cilia light grey, tinged with light ochre.

Male genitalia: as in fig. 43. Socius with about 17 specialized scales; top with two hairs. Vinculum very small. Valva dilated distally, and densely clothed with long hairs on distal portion. Aedeagus almost twice as long as valva; cornuti of many spinulae arranged in two rows. Plate V-shaped, small, very slender.

Female genitalia: as in fig. 67. Antrum very small, cupped, without spinulae; both anterior $\frac{2}{3}$ of ductus bursae and corpus bursae garnished with uniform, small denticles (fig. 67b). Signum as in fig. 92; very small.

Material examined: Holotype: ♀, bearing following labels: (1) *retinella* Z./Is. 1839. 8. 209, (2) Zeller Coll./Walsingham Collection/1910-427, (3) TYPE, in BMNH. Japan: Honsyû- 1♀, Tokugôtôge, Nagano Prefecture, 19. VIII. 1957 (S. MORIUTI), UOP; 1♀, same locality, 7. VIII. 1958 (S. MORIUTI), UOP. Extra-limital material: 25♂, 21♀, from England, Belgium, Germany, Austria and Switzerland, in ETH, MAK, NHM, RNH, UOP and ZSM.

Distribution: Japan (Honsyû), Central Europe and England.

Host-plants: Not known in Japan; *Sarix caprea*, *Betula* and *Quercus* recorded in Europe (after WERNER, 1958, p. 62).

Having examined no male specimen of this species from Japan, I have described and figured the male genitalia based on the following European specimens for completeness' sake: 1♂, Südbayern, Schleissheim, 15. VI. 1924 (OSTHELDER) and 1♂, same locality, 12. VI. 1926 (OSTHELDER), both in ZSM.

Argyresthia perbella n. sp.

(Figs. 17, 68, 93)

♀. 14 mm. Head and thorax shining white; face yellow; tegula deep coppery-golden. Antenna white, ringed with deep purplish-brown; scape yellow, with yellowish pecten. Fore leg pale yellow, tinged with purplish-brown inside; mid leg pale yellow, the tarsus spotted with purplish-brown posteriorly on each segment; hind leg pale yellow, tinged with purplish-brown above. Abdomen shining grey above, and shining greyish-ochreous beneath. Forewing deep coppery-golden, a narrow, slightly outwardly-oblique white fascia at $\frac{1}{4}$, narrowed at costa, and edged with dark purplish-brown; a similar, slightly narrower, outwardly-oblique fascia at $\frac{4}{7}$; three white spots: one at costal $\frac{3}{4}$, another on costa before apex, and the third on tornus; cilia coppery-golden, on dorsum grey. Hindwing grey, and darker posteriorly; cilia concolorous.

Female genitalia: as in fig. 68. Antrum long, without spinulae; anterior $\frac{2}{3}$ of ductus bursae set with denticles (fig. 68b) throughout. Corpus bursae studded with rounded denticles (fig. 68c) posteriorly, and with a similar, but smaller ones (fig. 68d) anteriorly. Signum as in fig. 93; a peculiar form as described in the characters of the genus.

♂: Unknown.

Holotype: ♀, Mt. Ôginosen, Hyôgo Prefecture, Honsyû, Japan, 3. VII. 1966 (Y. ARITA), UOP.

Distribution: Japan (Honsyû).

Host-plant: Unknown.

A beautiful species with exceptional signum.

Argyresthia anthocephala MEYRICK

(Figs. 24, 44, 69, 94)

Argyresthia anthocephala MEYRICK, 1936, Exot. Microlep., 4: 622.—INOUE, 1954, Check List Lep. Japan, 1: 40, no. 185.—KAWABATA, 1957, Bull. Kagoshima-Ken Forest Exp. Sta., 7: 4, figs.—ISSIKI, 1957, in Icon. Het. Japon. Col. Nat., 1: 22, pl. 3, f. 76.—

ISSIKI and MUTUURA, 1961, *Microlep. pests coniferous plants Japan*: 31, no. 18, f. 18.—ISSIKI and MUTUURA, 1962, *Pub., Ent. Lab., Univ. Osaka Pref.*, 7: 7, no. 62.—MORIUTI, 1965, *Bull. Univ. Osaka Pref.*, (B) 16: 70, f. 5, 7-12, 29, 30, 38, 46, 51, 56, 61, 66, 77, 81, 89, 96, 101, 106, 109, 115, 116.—CLARKE, 1965, *Meyrick Microlep.*, 5: 280, pl. 139, f. 1, 1b.

♂♀. 7-10 mm. Head yellow; face shining white. Antenna purplish-grey, indistinctly ringed with grey on basal half; scape light yellow. Palpus whitish, mixed with pale grey. Thorax glossy purplish-grey. Legs whitish-grey; fore and mid legs largely suffused with dark grey outside. Abdomen shining whitish-grey. Forewing unicolorous, glossy purplish-grey, with grey cilia. Hindwing light grey, with cilia white-grey.

Male genitalia: as in fig. 44. Socius with about 15 specialized scales; top with a single hair. Valva sparsely clothed with short hairs. Aedeagus about twice as long as valva; cornuti of a strong spine and of many spinulae. Plate Y-shaped, small, the basal stem being very slender.

Female genitalia: as in fig. 69. Ductus bursae denticulated in about $\frac{3}{5}$. Corpus bursae garnished with denticles (fig. 69c), which are sparser anteriorly. Signum as in fig. 94.

Material examined: Lectotype: ♂, labelled "Kyoto/Japan/SI. 34" in BMNH. Paralectotype: ♀ with same label as for lectotype, in BMNH. In the original description MEYRICK states: Japan, Honsyû, Kyoto, April (*K. Takeuchi*); 2 ex. Japan: Honsyû- 1♀, Anamizu, Isikawa Prefecture, 29. VII. 1961 (A. KAWABE), AK; 2♀, Hanase, Kyôto Pref., 2. VI. 1951 (S. ISSIKI), ISSK; 1♂, same locality, 16. VI. 1963 (S. MORIUTI), UOP; 3♂, 2♀, same locality, 7-20. V. 1966 (S. MORIUTI), reared from larvae feeding in buds of *Cryptomeria japonica* D. DON, UOP; 1♀, same locality, 18. V. 1968 (S. MORIUTI), reared from *C. japonica*, UOP; 1♀, Mt. Hieisan, Kyôto Pref., 22. IX. 1949 (S. ISSIKI), ISSK; 1♀, same locality, 2. VI. 1951 (S. ISSIKI), ISSK; 1♂, Kyôto Pref., 20. IV. 1925 (*K. Takeuchi*), ISSK; 1♂, Mt. Sanzyôgadake, Nara Pref., 29. VII. 1951 (S. ISSIKI), UOP; 1♂, Minoo, Osaka Pref., 28. VII. 1956 (S. MORIUTI), reared from *C. japonica*, UOP; 1♂, 1♀, Mt. Iwawakisan, Osaka Pref., 21. VII. 1949 (S. ISSIKI), ISSK; 1♂, 1♀, same locality, 15. X. 1950 (S. ISSIKI), UOP; 1♀, same locality, 16. IX. 1951 (S. ISSIKI), UOP; 1♂, same locality, 9. VII. 1954 (T. KODAMA), reared from *C. japonica*, UOP; 1♀, same locality, 25. VII. 1954 (S. ISSIKI), UOP; 2♀, same locality, 22. IX. 1954 (S. ISSIKI), UOP; 2♂, same locality, 9. VII. 1959 (S. MORIUTI), reared from *C. japonica*, UOP; 1♀, Mt. Izumi-Katuragisan, Osaka Pref., 21. IV. 1961 (S. MORIUTI), reared from *C. japonica*, UOP; 1♂, Mt. Usitakiyama, Osaka Pref., 8. V. 1965 (S. MORIUTI), reared from *C. japonica*, UOP; 1♂, Mt. Kongôsan, Osaka Pref., 6. VII. 1959 (S. MORIUTI), reared from *C. japonica*, UOP; 1♀, Mt. Natisan, Wakayama Pref., 25. VI. 1957 (T. KODAMA), reared from *C. japonica*, UOP; 2♂, Haga, Hyôgo Pref., 30-31. VII. 1965 (S. MORIUTI), UOP; 1♂, Mt. Daisen, Tottori Pref., 10. VII. 1964 (S. MORIUTI), UOP; Kyûsyû- 1♀, Miyazaki, Miyazaki Pref., 25. IV. 1953 (T. ITO), reared from *C. japonica*, ISSK; 1♂, 2♀, same locality, 24-25. III. 1954 (T. ITO), reared from *C. japonica*, ISSK; 2♂, Kagosima, Kagosima Pref., 18. III. 1954 (*K. Kawabata*), reared from *C. japonica*, ISSK; 1♂, same locality, 11. VI. 1954 (*K. Kawabata*), reared from *C. japonica*, UOP.

Distribution: Japan (Honsyû, Sikoku and Kyûsyû). This species are found generally throughout the range of the host-plant.

Host-plant: *Cryptomeria japonica* D. DON (Taxodiaceae).

The larva and pupa were given in my previous paper (MORIUTI, 1965, p. 71).

This species is easily recognized by the uniformly purplish-grey-coloured forewing.

Argyresthia sabiniae MORIUTI

(Figs. 25, 45, 70, 95)

Argyresthia sabiniae MORIUTI, 1965, Bull. Univ. Osaka Pref., (B) 16: 71, f. 4, 7, 25-28, 36, 37, 42, 47, 52, 57, 62, 67, 69, 71, 73, 75, 85, 91, 92, 97, 102, 107, 117, 118.

Argyresthia juniperana MORIUTI (MS.), ISSIKI and MUTUURA, 1962, Pub., Ent. Lab., Univ. Osaka Pref., 7: 7, no. 63 (non-descr.).

♂♀. 8-9 mm. Head and thorax pale ochreous; face pale yellow; tegula ochreous. Antenna pale yellow, ringed with purplish-black; scape pale ochreous. Palpus fuscous, with apex ochreous, the inner side being largely suffused pale ochre. Fore leg purplish-yellow; mid and hind legs pale yellow; all tarsi pale yellow, with a purplish apical ring on each segment. Abdomen shining grey. Forewing ochreous; costal edge blackish towards base; markings fuscous; three or four narrow outwardly-oblique streaks from costa reaching about $\frac{1}{5}$ across wing, one at $\frac{1}{6}$, and remaining two or three placed together in middle; a rather broad outwardly-oblique streak from dorsum at $\frac{1}{8}$, tending to connect with innermost costal streak; a fascia, which is as broad as the preceding streak, from $\frac{2}{8}$ of dorsum to $\frac{2}{8}$ of costa (sometimes interrupted); distal $\frac{1}{8}$ more or less suffused with pale fuscous scales; cilia ochreous, on termen with a pale ochreous antemedian shade, and on dorsum pale greyish-ochreous. Hindwing pale grey-ochreous; cilia pale greyish-ochreous.

Male genitalia: as in fig. 45. Socius with about 18 specialized scales; top with a minute hair. Valva with several long hairs along ventral margin. Aedeagus about twice as long as valva; cornuti composed of a strong spine and numerous spinulae. Plate with divergent arms slightly produced.

Female genitalia: as in fig. 70. Ductus bursae studded with long denticles (fig. 70b) in a portion before a point of inception of ductus seminalis. Corpus bursae varnished with patterns (fig. 70e). Signum as in fig. 95.

Material examined: Holotype, ♂, Kumamoto, Kumamoto Prefecture, Kyûsyû, Japan, 10. IV. 1962 (Z. KURANAGA), reared from larvae mining in leaves of *Juniperus chinensis* L. var. *procumbens* ENDL., UOP. Paratypes: 15♂, 5♀, same data as for holotype, UOP.

Distribution: Japan (Kyûsyû).

Host-plant: *Juniperus chinensis* L. var. *procumbens* ENDLICHER (Cupressaceae).

The larva and pupa, along with biological notes, were described by me (MORIUTI, 1965, p. 72).

Superficially similar to *A. reticulata* STAUDINGER (1877), of Switzerland, but differs sharply in the smaller size, the paler colour and in the markings of forewing.

Paraargyresthia n. gen.

Type-species: *Paraargyresthia japonica* n. sp.

With characters of *Argyresthia*, but differing only in the female genitalia, particularly in the decidedly different structure of the signum. Antrum with a broad, weakly sclerotized portion anteriorly. Ductus bursae very short, broad, not well distinguished from corpus bursae. Signum a small, lightly sclerotized, dentate plate.

Paraargyresthia japonica n. sp.

(Figs. 18, 46, 71, 96)

♂♀. 11 mm. Head shining white. Antenna white, ringed with dark purplish-fuscous; scape yellowish, with ochreous pecten. Palpus pale ochreous. Thorax light whitish-greyish-ochreous; tegula light greyish-ochreous. Legs light greyish-ochreous; fore leg infuscated inside. Abdomen not observed. Forewing with R_4 and R_5 separate,

and M_3 and Cu_{1a} separate; grey, tinged with ochreous; cilia light greyish-ochreous (imperfect). Hindwing with M_3 and Cu_{1a} separate, but very approximated basally; grey; cilia pale greyish-ochreous, with a darker subbasal shade.

Male genitalia: as in fig. 46. Subscaphium with a broad sclerotized band. Socius with about 40 specialized scales: top with one hair. Vinculum very broad, and roundly produced into large saccus, which is broadly edged, the edge being remarkably black-pigmented. Valva clothed with rather stiff hairs in ventral half. Aedeagus a little longer than valva, strongly sclerotized and stout, with numerous denticles in apical $\frac{1}{4}$ of dorsal surface; three strong cornuti (fig. 46f) and rather sparse spinulae. A rather broad V-shaped plate.

Female genitalia: as in fig. 71. As described for genus; bursa copulatrix with neither small processes (denticles and spinules) nor patterns.

Holotype: ♂, Mt. Isizutiyama, Ehime Prefecture, Sikoku, Japan, 23. VI. 1964 (S. MORIUTI), UOP. Paratypes: Japan: 1♀, same locality as holotype, 22. VI. 1964 (S. MORIUTI), UOP; Honsyû- 1♀, Mt. Makinosan, Osaka Pref., 28. V. 1960 (S. MORIUTI), UOP.

Distribution: Japan (Honsyû and Sikoku).

Host-plant: Unknown.

References

- 1) BANKES, E. R., 1896, On a new species of the genus *Argyresthia*, Hb., from England. Ent. Month. Mag., 32: 25-26.
- 2) BRUES, C. T., MELANDER, A. L., and CARPENTER, F. M., 1954, Classification of Insects. Bull. Mus. comp. Zool. Harv., 108. Cambridge.
- 3) CLARKE, J. F. G., 1965, Catalogue of the Type Specimens of Microlepidoptera in the British Museum (Natural History) described by EDWARD MEYRICK, 5: 280-288.
- 4) EIDT, D. C., 1961, The Morphology of the Larch Shoot Moth, *Argyresthia laricella* KTF. (Lepidoptera: Yponomeutidae), and Comparisons with *A. laevigatella* H.-S. Can. Ent., 93: 24-32.
- 5) ESCHERICH, K., 1931, Die Forstinsekten Mitteleuropas, 3. Berlin.
- 6) FLETCHER, T. B., 1928, Catalogue of Indian Insects, 17 (Yponomeutidae). Calcutta.
- 7) —, 1929, A List of the Generic Names used for Microlepidoptera. Mem. Dept. Agr. India., Ent. Ser. 11.
- 8) FORBES, W. T., 1923, The Lepidoptera of New York and Neighboring States. Cornell Univ. Agr. Exp. Sta., Memoir 68.
- 9) FRIESE, G., 1960, Revision der paläarktischen Yponomeutidae unter besonderer Berücksichtigung der Genitalien. Beitr. Ent., 10: 1-131.
- 10) FRIESE, G., and MORIUTI, S., 1968, Two new species of the *Argyresthia* (Argyresthiidae) from Japan. Trans. Lep. Soc. Japan, 19: 13-15.
- 11) HEINEMANN, H. v., and WOCKE, M. F., 1877, Die Schmetterlinge Deutschlands und der Schweiz. Abt. 2. Kleinschmetterling, Bd. 2, H. 1: 642-660.
- 12) HERRICH-SCHÄFFER, G. A. W., 1853-1877, Systematische Bearbeitung der Schmetterlinge von Europa, 5. Regensburg.
- 13) HÜBNER, J., 1816 (1818-1828,) Verzeichniss bekannter Schmettlinge. Augsburg.
- 14) INOUE, H., 1954, Check List of the Lepidoptera of Japan, 1. Tokyo.
- 15) ISSIKI, S., 1932, in Iconographia Insectorum Japonicorum, ed. 1: 1487. Tokyo.
- 16) —, 1950, in Iconographia Insectorum Japonicorum, ed. 2: 450-451. Tokyo.
- 17) —, 1957, in Icones Heterocerorum Japonicorum in Coloribus Naturalibus, 1: 22-23.
- 18) ISSIKI, S., and MUTUURA, A., 1961, Sin'yôzyu o kagaisuru Syôga-rui (Microlepidopterous pests of coniferous plants in Japan). Tokyo.
- 19) —, 1962, A list of the Microlepidoptera bred from coniferous plants in Japan. Pub., Ent. Lab., Univ. Osaka Pref., 7: 1-8.
- 20) ISSIKI, S., KODAMA, T., and MORIUTI, S., 1962, Microlepidopterous pests of the larch in Japan. Pub., Ent. Lab., Univ. Osaka Pref., 7: 9-17.

- 21) ITO, T., 1959, Karamatu no Gaityû ni tuite (Notes on the pests of the larch tree). Nagano Rin'yû, 1959 (9): 17-30.
- 22) KAWABATA, K., 1957, Sugi no Singaityû ni tuite (On *Argyresthia anthocephala* MEYRICK, a new pest of cryptomeria). Bull. Kagoshima-Ken Forest Exp. Sta., 7: 4-11.
- 23) MATSUMURA, M. (=S.), 1896, Apple-borer (*Laverna Herellera* DUP?). Zool. Mag. (Tokyo), 8: 63-65.
- 24) —, 1898, Two Japanese Insects Injurious to Fruit. U. S. Dept. Agr., Ent., New Series, Bull., No. 10: 36-40.
- 25) MATSUMURA, S., 1899, Nippon Gaityû Hen (Manual of Japanese Injurious Insects). Tokyo.
- 26) —, 1905, Catalogus Insectorum Japonicum. 1 (Lepidoptera). Tokyo.
- 27) —, 1907, Kontyû Bunrui Gaku (Taxonomic Entomology), 1. Tokyo.
- 28) —, 1917, Ôyô Kontyû Gaku (Applied Entomology), 1. Tokyo.
- 29) —, 1931, The 6000 Illustrated Insects of Japan-Empire. Tokyo.
- 30) MEYRICK, E., 1893, Description of Australian Micro-Lepidoptera. Proc. Linn. Soc. New South Wales, 7 (Ser. 2): 478-612.
- 31) —, 1895, A Handbook of British Lepidoptera. London.
- 32) —, 1914, in WAGNER, Lepidopterorum Catalogus, 19 (Hyponomeutidae). Berlin.
- 33) —, 1928, A Revised Handbook of British Lepidoptera. London.
- 34) —, 1930-1936, Exotic Microlepidoptera, 4. Marlborough.
- 35) MORIUTI, S., 1964, Yponomeutoiden-Studien (IX). Eine neue *Argyresthia*-Art aus Japan (Lepidoptera: Argyresthiidae). Trans. Lep. Soc. Japan, 15: 20-21.
- 36) —, 1964, Taxonomic notes on two *Acrolepia*-species of Japan (Lepidoptera: Acrolepiidae). Insecta Matsumurana, 27: 35-37.
- 37) —, 1965, Studies on the Yponomeutoidea (XII). *Argyresthia*-species (Lepidoptera: Argyresthiidae) attacking Coniferous Plants in Japan. Bull. Univ. Osaka Pref., (B) 16: 65-80.
- 38) —, 1968, Studies on the Yponomeutoidea (IV). A new *Argyresthia* (Argyresthiidae) from Formosa. Trans. Lep. Soc. Japan, 19: 85-86.
- 39) NITOBE, I., 1906, Aomori-Ken ni okeru Ringo no Gaityû (Pests of Apple tree in Aomori Prefecture). 4. Insect World, 10: 187-191.
- 40) OKAMOTO, H., 1917, On the Life-History of the Apple Fruit-Miner, *Argyresthia conjugella* ZELL. Trans. Sapporo Nat. Hist. Soc., 6: 213-219.
- 41) OKANO, M., 1959, in Iconographia Insectorum Japonicorum Colore naturali edita, 1: 274.
- 42) PIERCE, F. N., and METCALFE, J. W., 1935, The Genitalia of the Tineid Families of the Lepidoptera of the British Islands. Oundle.
- 43) RÉAL, P., and BALACHOWSKY, A. S., 1966, in BALACHOWSKY, Entomologie appliquée a l'Agriculture, 2: 199-218.
- 44) REBEL, H., 1901, Catalog der Lepidopteren des Palaearktischen Faunengebietes, 2. Berlin.
- 45) SPULER, A., 1910, Die Schmetterlinge Europas, 2. Stuttgart.
- 46) STANTON, H. T., 1854, Insecta Britannica. Lepidoptera: Tineina. London.
- 47) TAKAHASHI, S., 1930, Kazyu Gaityû Kakuron (Treatise on Orchard Insects). Tokyo.
- 48) TAKAHASHI, Y., 1947, Nogyô Gaityû Hen (Manual of Agricultural Insects). Tokyo.
- 49) WERNER, K., 1958, Die Larvalsystematik einiger Kleinschmetterlingsfamilien. Berlin.
- 50) WALSINGHAM, LORD, 1896, The supposed *Argyresthia illuminatella*, Z. Ent. Month. Mag., 32: 98-99.
- 51) ZELLER, P. C., 1839, Versuch einer naturgemäßen Einteilung der Schaben. Isis von Oken, 1839: 167-220.
- 52) —, 1847, Die Argyresthien beschrieben. Linn. Ent., 2: 234-302.

Explanation of figures 1-96

Figs. 1-18. Right wing.

1. *Argyresthia nemorivaga* n. sp., paratype, Mt. Isizutiyama, Ehime Prefecture.
2. *A. angusta* n. sp., paratype, Mt. Kurodake, Ôita Prefecture.
3. *A. conjugella* ZELLER, Ôtakimura, Nagano Pref.
4. *A. festiva* n. sp., paratype, Mt. Siroumadake, Nagano Pref.
5. *A. metallicolor* n. sp., holotype.
6. *A. flavicomans* n. sp., paratype, Mt. Apoidake, Kokkaidô.

7. *A. brockeella* (HÜBNER), Sinkazawa, Gunma Pref.
8. *A. brockeella* (HÜBNER), England.
9. *A. andereggiella* (DUPONCHEL), Tatesina, Nagano Pref.
10. *A. rara* n. sp., holotype.
11. *A. communana* n. sp., paratype, Mt. Kōyasan, Wakayama Pref.
12. *A. magna* n. sp., paratype, Sigakōgen, Nagano Pref.
13. *A. tutuzicolella* n. sp., paratype, Mt. Iwawakisan, Osaka Pref.
14. *A. albicomella* n. sp., paratype, Hakone, Kanagawa Pref.
15. *A. retinella* ZELLER, Tokugōtōge, Nagano Pref.
16. *A. retinella* ZELLER, Schleissheim, Bayern.
17. *A. perbella* n. sp., holotype.
18. *Paraargyresthia japonica* n. g. et sp., paratype, Mt. Isizutiyama, Ehime Pref.

Figs. 19-20. Head.

19. *Argyresthia conjugella* ZELLER, clothed, lateral aspect, Ōtakimura, Nagano Prefecture.
20. *A. conjugella* ZELLER, denuded, ventral aspect, Mt. Daisetusan, Hokkaidō.

Figs. 21-25. Wing venation.

21. *Argyresthia laevigatella* HERRICH-SCHÄFFER, Okutatesina, Nagano Prefecture.
22. *A. angusta* n. sp., holotype.
23. *A. andereggiella* (DUPONCHEL), Tatesina, Nagano Pref.
24. *A. anthocephala* MEYRICK, Mt. Iwawakisan, Osaka Pref.
25. *A. sabiniae* MORIUTI, paratype, Kumamoto, Kumamoto Pref.

Figs. 26-46. Male genitalia.

- (a) Ventral aspect. (b) Valva and saccus, lateral aspect. (b₁) Lateral aspect. (c) Specialized scale on socius. (c₁) Specialized scale on apex of socius of *A. angusta* n. sp. (d) Aedeagus. (e) Apical part of aedeagus. (f) Cornutus. (g) Plate of 8th abdominal segment. (Figs. 26-31, 33-38 and 40-46 drawn to same scale; figs. 32 and 39 to same scale.)

26. *Argyresthia laevigatella* HERRICH-SCHÄFFER, Okutatesina, Nagano Prefecture.
27. *A. nemorivaga* n. sp., holotype.
28. *A. angusta* n. sp., holotype.
29. *A. conjugella* ZELLER, Mt. Ontake, Nagano Pref.
30. *A. festiva* n. sp. holotype.
31. *A. praecocella* ZELLER, Izumi-Hutyū, Osaka Pref.
32. *A. metallicolor* n. sp., holotype.
33. *A. flavicomans* n. sp., paratype., Mt. Apoidake, Hokkaidō.
34. *A. brockeella* (HÜBNER), Sinkazawa, Gunma Pref.
35. *A. andereggiella* (DUPONCHEL), Tatesina, Nagano Pref.
36. *A. alpha* FRIESE et MORIUTI, holotype.
37. *A. beta* FRIESE et MORIUTI holotype.
38. *A. communana* n. sp., holotype.
39. *A. magna* n. sp., holotype.
40. *A. chamaecypariae* MORIUTI, paratype, Takanoko, Yamaguti Pref.
41. *A. subrimosa* MEYRICK, holotype of *A. mutuurai* MORIUTI.
42. *A. tutzicolella* n. sp., holotype.
43. *A. retinella* ZELLER, Schleissheim, Bayern.
44. *A. anthocephala* MEYRICK, Mt. Iwawakisan, Osaka Pref.
45. *A. sabiniae* MORIUTI, holotype.
46. *Paraargyresthia japonica* n. g. et sp., holotype.

Figs. 47-71. Female genitalia.

- (a) Ventral aspect. (b) Denticles on ductus bursae. (b₁) Denticles on median portion of

ductus bursae. (b₂) Denticles on anterior portion of ductus bursae. (c) Denticles or patterns on corpus bursae, especially on surrounding area of signum. (d) Denticles or patterns on corpus bursae, especially on anterior portion. (e) Denticles on corpus bursae. (f) Signum. (Figs. 47-63 and 65-71 drawn to same scale.)

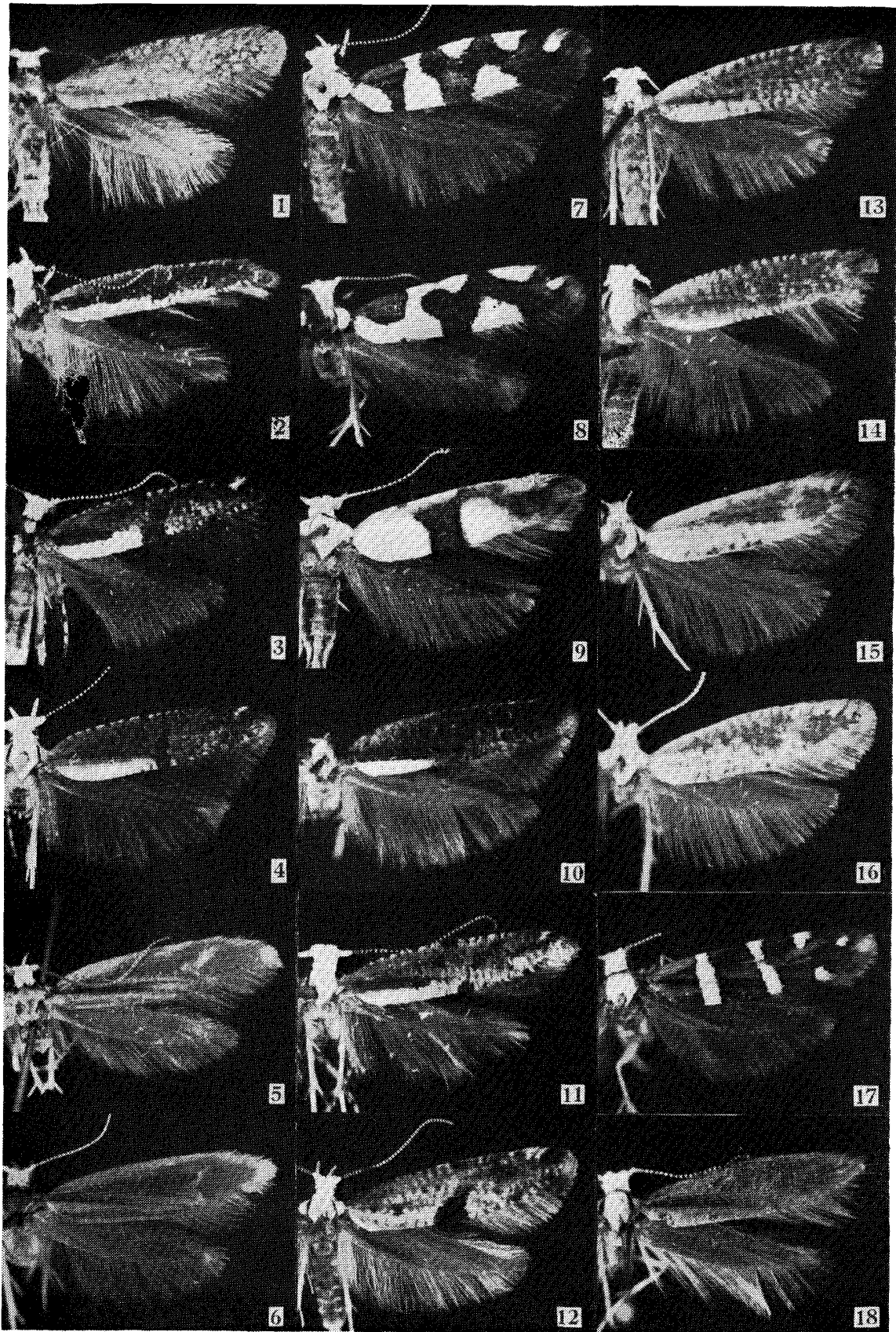
47. *Argyresthia laevigatella* HERRICH-SCHÄFFER, Okutatesina, Nagano Prefecture.
48. *A. fujiyamae* n. sp., holotype.
49. *A. nemorivaga* n. sp., paratype, Mt. Isizutiyama, Ehime Pref.
50. *A. angusta* n. sp., paratype, Mt. Kurodake, Ôita Pref.
51. *A. conjugella* ZELLER, Mt. Ontake, Nagano Pref.
52. *A. festiva* n. sp., paratype, Mt. Siroumadake, Nagano Pref.
53. *A. praecocella* ZELLER, Izumi-Hutyû, Osaka Pref.
54. *A. metallicolor* n. sp., paratype, Mt. Ontake, Nagano Pref.
55. *A. flavicomans* n. sp., paratype, Mt. Apoidake, Hokkaidô.
56. *A. brockeella* (HÜBNER), Manza, Gunma Pref.
57. *A. andereggiella* (DUPONCHEL), Tatesina, Nagano Pref.
58. *A. alpha* FRIESE et MORIUTI, paratype, Kamikôti, Nagano Pref.
59. *A. beta* FRIESE et MORIUTI, paratype, Mt. Makinosan, Osaka Pref.
60. *A. rara* n. sp., holotype.
61. *A. communana* n. sp., paratype, Mt. Kirisimayama, Kagoshima Pref.
62. *A. magna* n. sp., paratype, Mt. Iwawakisan, Osaka Pref.
63. *A. chamaecypariae* MORIUTI, Paratype, Takanoko, Yamaguti Pref.
64. *A. subrimosa* MEYRICK, paratype of *A. mutuurai* MORIUTI, Sôunkyô, Hokkaidô.
65. *A. tutuzicolella* n. sp., paratype, Kokubu, Osaka Pref.
66. *A. albicomella* n. sp., holotype.
67. *A. retinella* ZELLER, Tokugôtôge, Nagano Pref.
68. *A. perbella* n. sp., holotype.
69. *A. anthocephala* MEYRICK, Mt. Natisan, Wakayama Pref.
70. *A. sabiniae* MORIUTI, paratype, Kumamoto, Kumamoto Pref.
71. *Paraargyresthia japonica* n. g. et sp., paratype, Mt. Isizutiyama, Ehime Pref.

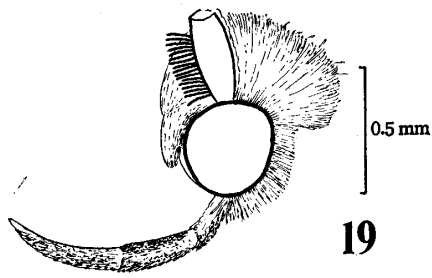
Figs. 72-96. Signum of female genitalia.

(All drawn to same scale.)

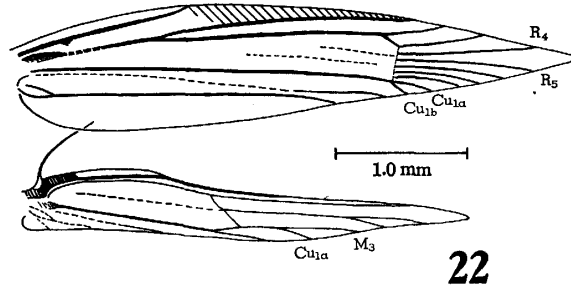
72. *Argyresthia laevigatella* HERRICH-SCHÄFFER, Okutatesina, Nagano Prefecture.
73. *A. fujiyamae* n. sp., holotype.
74. *A. nemorivaga* n. sp., paratype, Mt. Isizutiyama, Ehime Pref.
75. *A. angusta* n. sp., paratype, Mt. Kurodake, Ôita Pref.
76. *A. conjugella* ZELLER, Mt. Ontake, Nagano Pref.
77. *A. festiva* n. sp., paratype, Mt. Siroumadake, Nagano Pref.
78. *A. praecocella* ZELLER, Izumi-Hutyû, Osaka Pref.
79. *A. metallicolor* n. sp., paratype, Mt. Ontake, Nagano Pref.
80. *A. flavicomans* n. sp., paratype, Mt. Apoidake, Hokkaidô.
81. *A. brockeella* (HÜBNER), Manza, Gunma Pref.
82. *A. andereggiella* (DUPONCHEL), Tatesina, Nagano Pref.
83. *A. alpha* FRIESE et MORIUTI, paratype, Kamikôti, Nagano Pref.
84. *A. beta* FRIESE et MORIUTI, paratype, Mt. Makinosan, Osaka Pref.
85. *A. rara* n. sp., holotype.
86. *A. communana* n. sp., paratype, Mt. Kirisimayama, Kagoshima Pref.
87. *A. magna* n. sp., paratype, Mt. Iwawakisan, Osaka Pref.
88. *A. chamaecypariae* MORIUTI, paratype, Takanoko, Yamaguti Pref.
89. *A. subrimosa* MEYRICK, paratype of *A. mutuurai* MORIUTI, Sôunkyô, Hokkaidô.
90. *A. tutuzicolella* n. sp., paratype, Kokubu, Osaka Pref.

91. *A. albicomella* n. sp., holotype.
92. *A. retinella* ZELLER, Tokugôtôge, Nagano Pref.
93. *A. perbella* n. sp., holotype.
94. *A. anthocephala* MEYRICK, Mt. Natisan, Wakayama Pref.
95. *A. sabinæ* MORIUTI, paratype, Kumamoto, Kumamoto Pref.
96. *Paraargyresthia japonica* n. g. et sp., paratype, Mt. Isizutiyama, Ehime Pref.

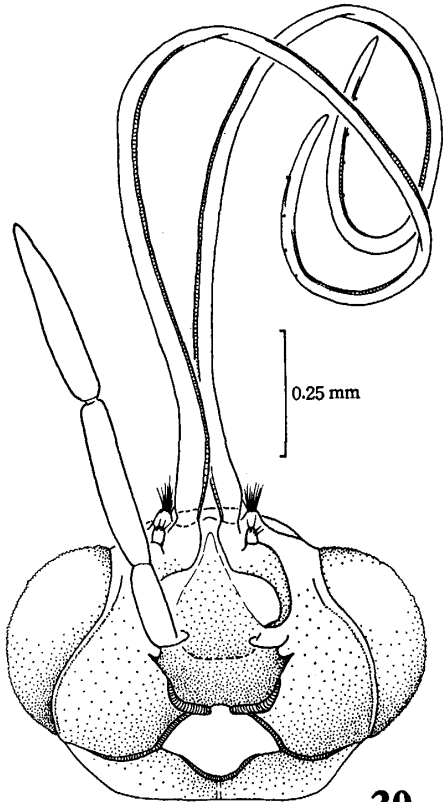




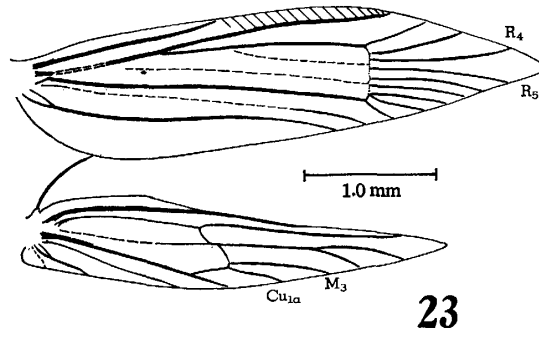
19



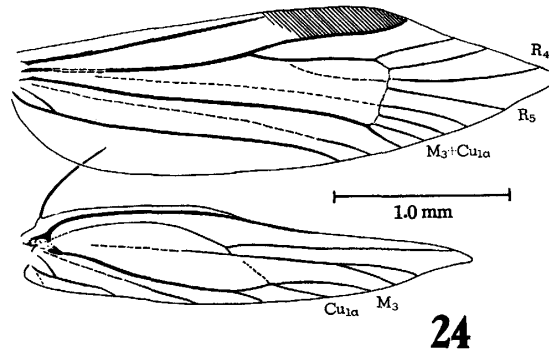
22



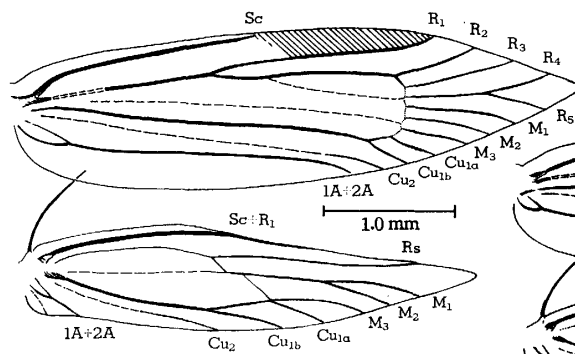
20



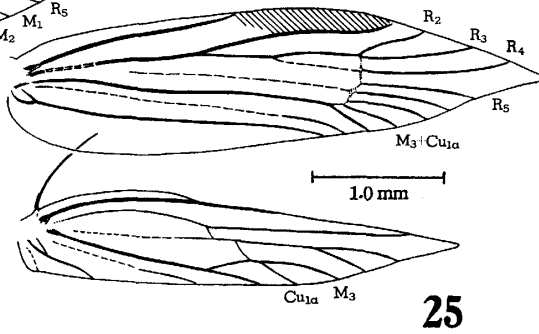
23



24



21



25

