

islands. It is, however, interesting to note that in the Hokkaido species, *O. hybridoides*, the male strongly resembles the male of one of the Honshu species, *O. spicata*, but the female of *O. hybridoides* even more strongly resembles that of the other Honshu species, *O. flavipes*. The name given to this new species is intended to point up this apparent ambivalence in genealogy.

2. Of all existing phryganeid genera, *Oligotricha* is most closely related to the North American genus *Banksiola*. This is supported by basic similarity in characters of the male and female genitalia and of the larvae. Yet there appears to be one significant discordance, for pupae of *Banksiola* have degenerate mandibles (Wiggins 1960), and pupae of at least the European species of *Oligotricha* have fully developed mandibles. Specimens of *Oligotricha* pupae and their pupal cases, associated as to species, are exceedingly rare in collections, but this is the information required to shed further light on this fundamental point. The evolutionary significance of pupal mandibles and the associated habit of closing the pupal case with an anterior sieve membrane of silk are outlined in detail elsewhere (Wiggins *op. cit.*). Observations on these aspects of the biology of the Japanese species of *Oligotricha* are totally lacking, but would be of much interest.

Literature Cited

- Fischer, F.C.J., 1964. Trichopteroorum catalogus. Vol. V. Phryganeidae, Limnacentropodidae, Molannidae. Amsterdam, Nederlandsche Entomologische Vereeniging. 214 p.
- Forsslund, Karl-Herman, 1933. Eine neue melanistische *Neuronia*-Varietät (Trich.). *Ent. Tidskr.* 54: 36.
- Hagen, Herman, A., 1864. Phryganidarum synopsis synonymica. *Verh. Zool.-Bot. Ges. Wien* 14: 799-890.
- Kuwada, Kazuo, 1965. Genshoku konchu daizukan (Iconographia Insectorum Japonicorum colore naturali edita) Vol. III. Tokyo, Hokuryukan. Pp. 163-166.
- Matsumura, Shonen, 1904. Nippon senchu zukai (Thousand insects of Japan), Vol. I. Tokyo, Keiseisha. 2, 213, 42 p.
- , 1931. Nippon konchu daizukan (6000 illustrated insects of the Japan-Empire). Tokyo, Tokoshoin. 3,3,23, 1497, 191p.
- McLachlan, Robert, 1874. A monographic revision and synopsis of the Trichoptera of the European fauna. Pt. 1. London, J. Van Voorst. Pp. 1-46.
- Milne, Lorus, J., 1934. Studies in North American Trichoptera. Pt. 1. Cambridge, Mass. 19 p.
- Scopoli, Giovanni A., 1763. Entomologia carniolica... Vindobonae. J.T. Trattner. 420 p.
- Tsuda, Matsunae, 1942. Japanische Trichopteren I. Systematik. *Mem. Coll. Sci. Kyoto Univ.*, ser. B 17 (1) art. 6: 239-339.
- Wiggins, Glenn B., 1960. The unusual pupal mandibles in the caddisfly family Phryganeidae (Trichoptera). *Can. Ent.* 92 (6): 449-457.
- Wiggins, Glenn B. and Satoru Kuwayama, 1957. The caddisfly genus *Oligotricha* in Japan with the description of a new species (Trichoptera: Phryganeidae). *Life Sci. Contr., R. Ont. Mus.* 47: 1-8.

Kontyū, 1971, 39 (4): 346-352.

GENUS BRENTHIA (LEPIDOPTERA: GLYPHIPTERYGIDAE) OF JAPAN

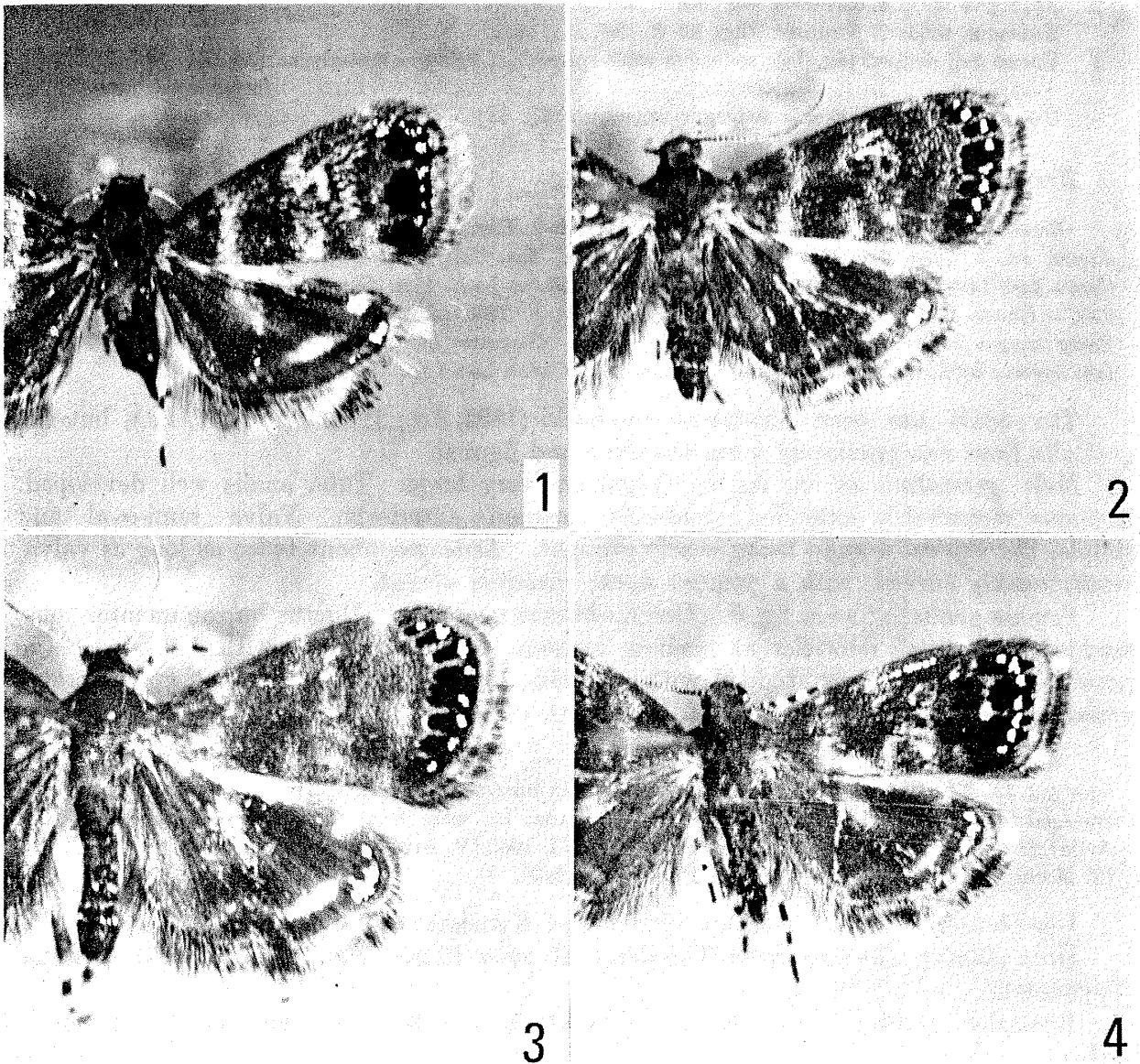
YUTAKA ARITA

Entomological Laboratory, Faculty of Agriculture, Meijo University, Showa-ku, Nagoya

During the course of my study of the Japanese Glyphipterygid moths of the genus *Brenthia* Clemens, two new species were discovered, *Choreuthis kiiensis* Matsumura was

disclosed to be a junior synonym of *Brenthia japonica* Issiki, and a Formosan species, *Brenthia formosensis* Issiki, was ascertained to occur in Japan. These four species are described and figured in this paper.

This work was carried out in the Entomological Laboratory, University of Osaka Prefecture. I wish to express my sincere thanks to Prof. S. Ito, of the University, for his direction and encouragement. I am especially grateful to Mr. S. Moriuti, of the University, for his guidance and kindness, without whose help this work would not have been possible. My gratitude is also expressed to Emeritus Prof. S. Issiki, Osaka, for furnishing me with Formosan specimens of *Brenthia formosensis* Issiki, and to Dr. T. Kumata for affording me facility to study material in the collection of Entomological Institute, Hokkaido University.



Figs. 1-4. Right wings: 1. *Brenthia japonica* Issiki, Kasuga, Nara Prefecture; 2. *B. formosensis* Issiki, Is. Ishigaki-jima, Ryukyus; 3. *B. pileae* n. sp., paratype, Kurama, Kyoto Prefecture; 4. *B. yaeyamae* n. sp., paratype, Is. Ishigaki-jima, Ryukyus.

Key to Japanese species of *Brenthia* based on maculation

- | | |
|---|---|
| 1. Fore wing with a black terminal fascia divided into three blotches (figs. 1 & 4) | 2 |
| - Fore wing with a black terminal fascia divided into seven blotches (figs. 2 & 3) | 3 |

2. Fore wing with a distinct white dot in disc at 5/6 (fig. 4) *yaeyamae* n. sp.
- Fore wing without such a dot (fig. 1) *japonica* Issiki
3. Fore wing with a white dot on costa at about 3/4; hind wing with a white subterminal line broad (fig. 3) *pileae* n. sp.
- Fore wing without such a dot; hind wing with a white subterminal line narrow (fig. 2) *formosensis* Issiki

Key to Japanese species of *Brenthia* based on male genitalia

1. Valva fused basally with juxta (figs. 6a, 7a & 8a) 2
- Valva never fused with juxta (fig. 5a) *japonica* Issiki
2. Aedeagus with a cornutus (fig. 8b) *pileae* n. sp.
- Aedeagus without cornutus (figs. 6b & 7b) 3
3. Uncus well defined (fig. 7a); aedeagus with apical half being extremely narrow (fig. 7b) *formosensis* Issiki
- Uncus ill-defined (fig. 6a); aedeagus otherwise (fig. 6b) *yaeyamae* n. sp.

Brenthia japonica Issiki (Figs. 1, 5 & 9)

Brenthia japonica Issiki, 1930, Ann. Mag. Nat. Hist. (10) 6: 424. — Issiki, 1932, Icon. Ins. Japon. ed. 1: 1484, f. 2937. — Issiki, 1950, in Icon. Ins. Japon. ed. 2: 457, f. 1235. — Inoue, 1954, Check List Lep. Japan 1: 49, no. 240. — Issiki, 1957, in Icon. Het. Japon. Col. Nat. 1: 33, pl. 4, f. 126. — Okano, 1959, in Icon. Ins. Japon. Col. Nat. 1: 273, pl. 181, no. 6. — Kodama, 1970, in Early Stages Japan. Moths in Col. 2: 122, f. 230. *Choreutis kiiensis* Matsumura, 1931, 6000 Ill. Ins. Japan: 1078, no. 2185, n. syn. — Inoue, 1954, Check List Lep. Japan 1: 50, no. 244.

The adult has been illustrated by Issiki (1932, *l.c.*; 1952, *l.c.*; 1957, *l.c.*), but the genitalia have not previously been described and figured.

Male genitalia: as in fig. 5. Tegumen very large. Tuba analis well developed. Sacculus remarkably extended, gradually tapered anteriorly. Valva semi-oval and simple, the ventral margin being nearly straight. Aedeagus about twice as long as valva, stout, weakly curved, with a pointed apex; cornutus absent.

Female genitalia: as in fig. 9. Ostium bursae moderate. Ductus bursae membranous, studded with small denticles at median portion. Corpus bursae with two signa, the posterior one of which is studded with denticles, and the anterior is much larger, transversely elongate, and convex at middle on both margins.

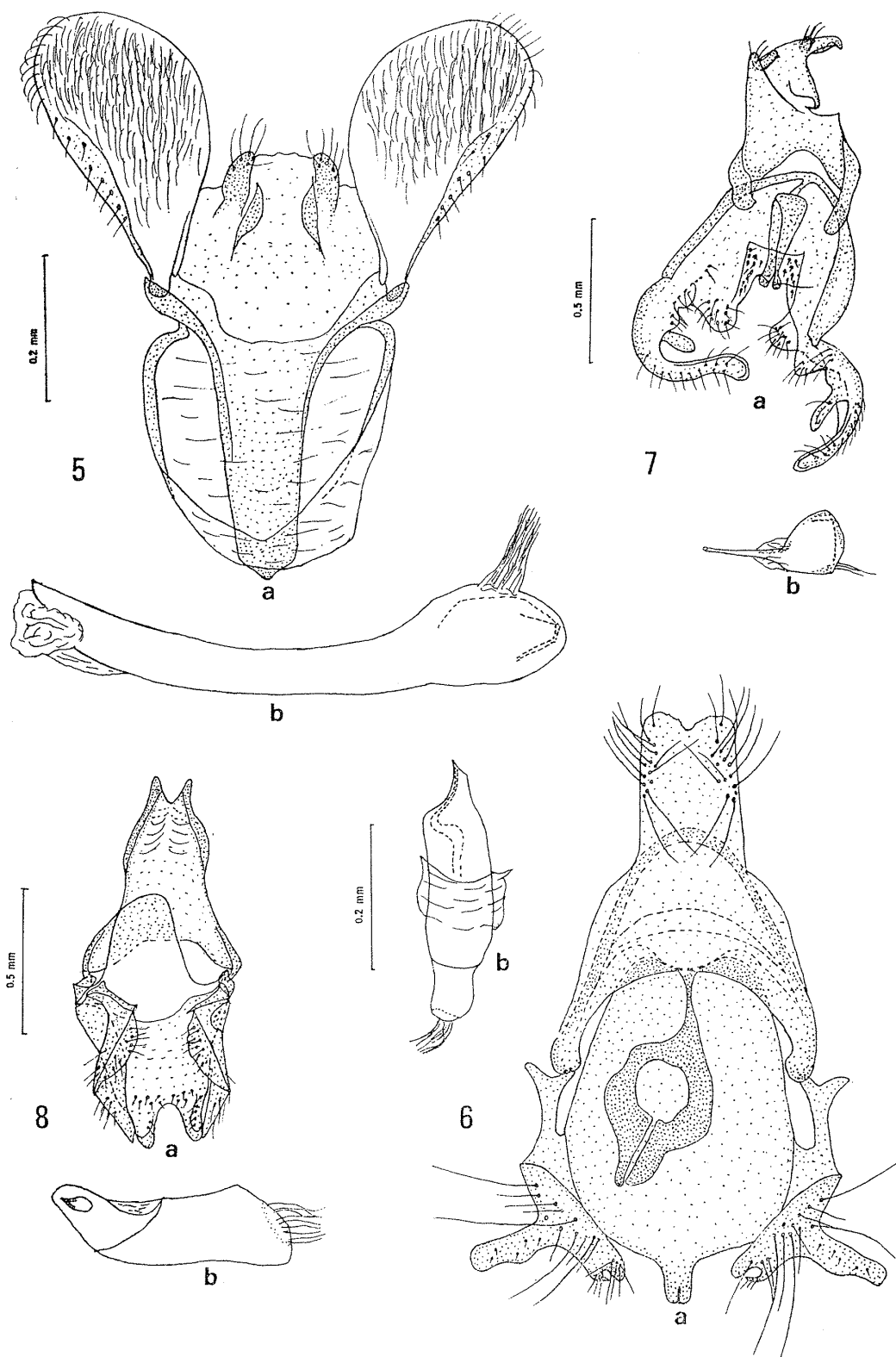
Material examined: Honshu – 1♀, Hanase, Kyoto, V. 1966 (S. Moriuti); 2♂, 1♀, Kasuga, Nara, emerged 13. VI. 1965 (Y. Arita), reared from larvae on *Quercus acuta* Thunberg; 1♀, same locality, emerged 16. VI. 1965 (Y. Arita), reared from *Q. acuta*; 1♀, same locality, emerged 1. VII. 1965 (Y. Arita), reared from *Q. acuta*; 1♀, same locality, 29. VI. 1965 (Y. Arita); 1♀, same locality, 23. VI. 1965 (S. Moriuti); 1♂, same locality, 1 VII. 1967 (S. Moriuti).

Distribution: Japan (Honshu, Shioku and Kyushu).

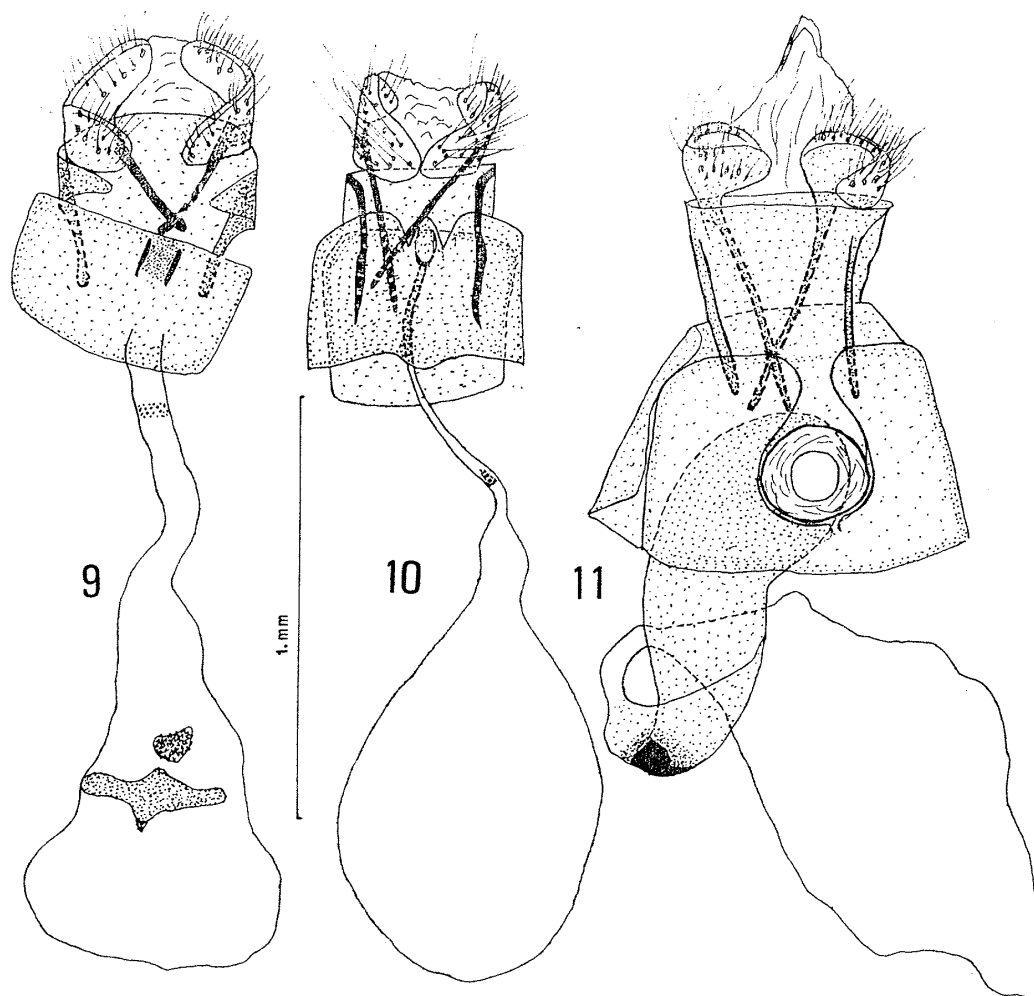
Host plants: *Quercus acuta* Thunberg, *Q. gilva* Blume and *Q. myrsinaefolia* Blume (Fagaceae).

Remarks: Although the stalking of veins R_2 and R_3 of forewing in *B. japonica* is rather anomalous for this genus, both the superficial and genitalic characteristics show it to be a typical member of the genus. This species is very similar to *B. yaeyamae* n. sp. in colouration, and the distinguishing character will be noted under the latter species.

Ecological notes: Probably three or four generations a year. The larva lives on the under, or sometimes upper, surface of the leaf of host plant, forming a woven web, eating the green tissue between the veins, and making a small hole through the leaf near the diverging point of veins in general. When touched or pricked, the larva darts through the hole to the opposite surface of leaf. Pupation occurs in a white diamond-shaped cocoon within a dense web. Adults appear from May to September.



Figs. 5-8. Male genitalia; a. ventral aspect., b. aedeagus: 5. *B. japonica* Issiki, Kasuga, Nara Prefecture; 6. *B. yaeyamae* n. sp. paratype, Is. Ishigaki-jima, Ryukyus; 7. *B. formosensis* Issiki, Is. Ishigaki-jima, Ryukyus; 8. *B. pileae* n. sp. paratype, Kurama, Kyoto Prefecture.



Figs. 9–11. Female genitalia, ventral aspect: 9. *B. japonica* Issiki, Kasuga, Nara Prefecture; 10. *B. formosensis* Issiki, Is. Ishigaki-jima, Ryukyus; 11. *B. pileae* n. sp. paratype, Kurama, Kyoto Prefecture.

Brenthia yaeyamae n. sp. (Figs. 4 & 6)

♂. 9 mm. Head and thorax fuscous. Antenna dark fuscous above, white below. Palpus white; second and third segments with dark fuscous basal and subapical bands. Legs white; all tarsi dark purplish-fuscous, ringed with white; fore and mid tibia with dark purplish-fuscous basal and median bands; hind femur tinged with purplish-brown; hind tibia with dark purplish-fuscous basal and apical bands. Abdomen dark fuscous. Fore wing dark fuscous; a suffused white transverse streak at about 1/4; an irregular transverse fascia of whitish suffusion at about middle; a black terminal fascia divided into three large blotches by fuscous bars, the apical blotch being elongate and the median blotch nearly round, each with two brilliant violet-blue metallic dots, transversely arranged before termen, and the tornal blotch largest, with three similar dots; a distinct white dot in disc at 5/6, midway between costa and dorsum, and touching both median and tornal blotches of the black terminal fascia; an interrupted brilliant violet-blue metallic line along costa from 1/4 to 3/4; cilia fuscous, with a dark fuscous median shade, and with two white apical dots just below apex and above tornus. Hind wing dark fuscous; an irregular whitish-fuscous mark in disc before middle; an ill-defined, sinuate, subterminal line nearly parallel to termen, clear white about its median 1/3, and terminating in whitish spots on costa and dorsum; a conspicuous elongate violet-blue metallic streak at apex; cilia dark fuscous, with a darker

basal line and a white median line along termen, and marked with white at apex.

Male genitalia: as in fig. 6. Tegumen broad, haired laterally, the caudal margin being weakly concave. Sacculus rather small, rounded. Juxta well developed, forming a large plate, with a short process at middle of anterior margin, the apex of which is a little cleft. Valva small, fused basally with juxta, with a distinct finger-like process at about anterior 1/3, and with a short, curved spine-like process at distal corner. Aedeagus short, pointed at apex; cornutus absent.

♀. Unknown.

Holotype: ♂, Mt. Omoto-dake, Is. Ishigaki, Ryukyus, Japan, 31. VIII. 1965 (Y. Arita), Entomological Laboratory, Meijo University. Paratypes: 1♂, same data as holotype; 1♂, same locality as holotype, 10. IX. 1965. All deposited in Ent. Lab. Meijo Univ.

Distribution: Japan (Ryukyus).

Host plant: Unknown.

Remarks: This species is allied to *B. japonica* Issiki, but differs in the fore wing with a distinct white dot in disc at 5/6, which is absent in *japonica*; also allied to *B. formosensis* Issiki and *B. pileae* n. sp., differing in the fore wing with a black terminal fascia divided into three large blotches instead of seven small ones. In genital character, these four species are quite distinct from one another.

Brenthia formosensis Issiki (Figs. 2, 7 & 10)

Brenthia formosensis Issiki, 1930, Ann. Mag. Nat. Hist. (10) 6: 425. — Issiki, 1932, Icon. Ins. Japon. ed. 1: 1484.

The genitalia have not hitherto been illustrated.

Male genitalia: as in fig. 7. Uncus, a well-defined arm, strongly curved, with a conical tooth at about middle and a sub-triangular extension near base, the apex being acutely pointed. Tegumen short and broad. Sacculus rather small, rounded. Juxta large; anterior margin convex at middle, with a deep median cleft. Valva rather narrow, fused with juxta basally; cucullus very slender, with a finger-like process at middle. Aedeagus short, the apical half being extremely slender and the basal half rounded; no cornuti.

Female genitalia: as in fig. 10. Ostium bursae very small. Ductus bursae narrow, with a small patch of denticles before anterior end. Corpus bursae without signum.

Material examined: Yakushima Island - 1♀, Anbo, 12. VI. 1965 (T. Kumata). Ryukyus - 1♂, Yuwan, Is. Amami-ohshima, 27. IV. 1959 (K. Kojima); 1♂, 2♀, Yuwan, Is. Amami-ohshima, 8. X. 1965 (H. Kuroko); 1♂, Koniya, Is. Amami-ohshima, 11. X. 1965 (H. Kuroko); 2♂, Is. Tokunoshima, 7. IX. 1969 (M. Nagai); 1♀, Is. Miyako, 24. IV. 1962 (G. Kuno); 2♂, Mt. Banna-dake, Is. Ishigaki, 30. VIII. 1965 (Y. Arita); 2♂, 2♀, Mt. Omoto-dake, Is. Ishigaki, 31. VIII. 1965 (Y. Arita); 1♂, same locality, 2. IX. 1965 (Y. Arita); 1♂, 1♀, same locality 10. IX. 1965 (Y. Arita); 1♂, Is. Iriomote, 18. IV. 1962 (G. Kuno); 1♂, Tendabana, Is. Yonakuni, 13. V. 1963 (Y. Arita); 1♂, Tabarugawa, Is. Yonakuni, 15. V. 1963 (Y. Arita). Extralimital material: Formosa - 1♂, Tikusiko, 9. IX. 1933 (S. Issiki); 1♂, Sozan, 24. IX. 1933 (S. Issiki).

Distribution: Japan (Yakushima Island and Ryukyus) and Formosa.

Host plant: Unknown.

Remarks: This species is very closely allied to the next species, *B. pileae* n. sp.; the discriminating characters are noted under the latter species.

Brenthia pileae n. sp. (Figs. 3, 8 & 11)

♂♀. 9.5-10.5 mm. Superficially most closely similar to *B. formosensis* Issiki, but differs from the latter in the following points: comparatively larger in size (wing expanse 8.5-9.5 mm. in *formosensis*); fore wing with a white dot on costa at 3/4 in

pileae (without such a dot in *formosensis*); and hind wing with a broader white subterminal line.

Male genitalia: as in fig. 8. Tegumen long, with a bifid apex (uncus?). Sacculus long, tapering. Juxta very large, broad, with a deep excavation at middle of anterior margin. Valva fused completely with, and as long as, juxta, broadest at middle, and thence narrowed distally. Aedeagus broad, somewhat curved, with a conspicuous thorn-like cornutus.

Female genitalia: as in fig. 11. Ostium bursae round, exceedingly large. Ductus bursae broad, membranous, except for a short sclerotized portion about middle. Corpus bursae without signum.

Holotype: ♂, Kurama, Kyoto, Japan, 21. VIII. 1966 (Y. Arita). Deposited in Ent. Lab. Meijo Univ. Paratypes: Honshu- 4♂, 2♀, same data as type; 10♂, 6♀, same locality, 19. VIII. 1967 (Y. Arita); 4♂, 2♀, same locality, 21. VIII. 1965 (Y. Arita), reared from larvae on *Pilea petiolaris pseudopetiolaris* Kitamura. Shikoku- 1♀, Jôjusha, Ehime, 16. VII. 1957 (F. Takechi). 19 paratypes are deposited in Ent. Lab., Meijo Univ., and the other 10 in Ent. Lab., Univ. Osaka Pref.

Distribution: Japan (Honshu and Shikoku).

Host plant: *Pilea petiolaris pseudopetiolaris* Kitamura (Urticaceae).

Remarks: This species is very similar to the preceding three in superficial appearance, but differs markedly from them in the markings of wings as indicated in the foregoing key.

Ecological notes: In larval habit this species is very similar to *B. japonica*; in the form of cocoon, however, the former is quite different from the latter. Pupation occurs in the white spindle-shaped cocoon spun amongst a web on the under, or sometimes upper, surface of the leaf. Adults emerge from July to September.

Kontyû, 1971, 39 (4): 352-358.

THE JAPANESE SPECIES OF THE GENUS *GRISELDA* HEINRICH, WITH DESCRIPTIONS OF THREE NEW SPECIES (LEPIDOPTERA: TORTRICIDAE)*

TOSHIO OKU

Tsukigaoka 1-chome 20-20, Morioka, Japan

The genus *Griselda* Heinrich has hitherto been represented by six species from the Holarctic region, but no species has been known to occur in Japan. In the course of taxonomic study on Japanese Olethreutinae I have found four species belonging to the present genus, of which three are new to science and the other is new to Japan. In this paper a key to the Japanese species and their descriptions are given. The type material will be deposited in the collection of the Entomological Institute, Hokkaido University.

I wish to express my sincere thanks to Prof. C. Watanabe for his kind advice, and to Prof. S. Issiki, Prof. K. Iwata, Prof. M. Okano, Mr. S. Suzuki, Mr. S. Yamane, Dr. K. Kobayashi, and Mr. Y. Maeta, for their kindness in providing me all facilities they could afford for the study.

Genus *Griselda* Heinrich

Griselda Heinrich, 1923, Bull. U. S. Nat. Mus. 123: 186; Obraztsov, 1945, Z. Wien. Ent. Ges. 30: 33; Hannemann, 1961, Tierwelt Deuts. 48: 153; Bentinck & Diakonoff, 1968, Nederl. Bladrollers: 188.

* Notes on Japanese Tortricidae VII.