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A Revision of the Japanese Species of *Homoneura* (*Homoneura*) (Diptera, Lauxaniidae) Part 2*

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Synopsis Five new species, *H. crucifera*, *lagena*, *matsumurai*, *sphincta* and *triphylla*, are described. Biology of *H. interstincta* is presented.

The second group of the Japanese species of *Homoneura* (*Homoneura*) is easily distinguishable from the previous group by having arista pubescent. It can be subdivided into two species-groups, *interstincta* and *acrostichalis*. The males of *interstincta* group are characterized by having the 6th abdominal sternite with strong bristles or spines on posterior margin. The males of the 7 medium-sized species of this group can, therefore, be separated by the characters of the 6th sternite and genitalia. All the new species described below, except *matsumurai*, were named for the specific shape of the 6th sternite. While, the females can be very hard to distinguish, excepting *extera*.

19. *Homoneura extera* CZERNY

CZERNY, 1932, Die Flieg. palaearkt. Reg. **50**: 14; IKEUCHI & SASAKAWA, 1978, Akitu, *N. Ser.* **17**: 1.

Diagnosis. This yellow to testaceous species is characterized by having 4 rows of acrostichal setae and wings with only both cross-veins bordered faintly.

Discussion. The male 6th abdominal sternite is the greatest expanded posteriorly (almost as wide as long) of all the species of the *interstincta* group, and is provided with about 10 small spines at middle of posterior margin. The aedeagus is striated on membrane. The females can be distinguished from all other females in this group by the presence of spines on dorsal sides of cerci.

Specimens examined. HOKKAIDO- 2 ♂ 5 ♀, Sarobetsu-genya, Wakkanai, 1. VII. 1967, T. SAIGUSA; 4 ♂ 3 ♀, Shari, seaside, Abashiri, 2. VIII. 1967, H. SHIMA; 5 ♂ 4 ♀, Funadomari, Is. Rebun, 13. VIII. 1958, M. SASAKAWA.

Distribution. Japan (Hokkaido), U. S. S. R. (Ussuri).

20. *Homoneura interstincta* (FALLÉN)

FALLÉN, 1820, Dipt. Svec. Ortal. 33; CZERNY, 1932, Die Flieg. palaearkt. Reg. **50**: 15; IKEUCHI & SASAKAWA, 1978, Akitu, *N. Ser.* **17**: 2.

* Contribution No. 189 from Lab. Entomol., Kyoto Pref. Univ.

Diagnosis. This small, yellowish species is distinct in having 4 rows of acrostichals and 2 pairs of spines on posteroventral corners of epandrium, and not having gonapophysis.

Discussion. The wings of this species are similar to those of *extera*, both having the r-m and m-m bordered. The apical clouds on apices of R_{2+3}, R_{4+5} and M_{1+2} are sometimes invisible. The 6th abdominal sternite of male is vasiform in outline as in *lagena*, but is provided with smaller number of spines on posterior margin.

Specimens examined. HOKKAIDO- 1 ♂, Mt. Yûbaridake, 14. VII. 1967, H. SHIMA; 1 ♂, Jyôzankei, 10. VI. 1954, M. SASAKAWA. HONSHU- 1♀, Mt. Zao, Yamagata Pref., 7. IX. 1966, M. SUWA; 1 ♀, Yoshidani, Ojiya, Niigata Pref., 30. VII. 1972, K. YAMAGISHI; 2 ♂ 9 ♀, Osadano, Fukuchiyama, Kyoto Pref., 9. V. 1977 & 27. VII. 1977, S. IKEUCHI; 39 ♂ 46 ♀, Midoroga-ike, Takaraga-ike, Iwakura & Saga, Kyoto City, 2–4., 13., 24. & 31. V. 1978, 2. & 15. VI. 1978, IKEUCHI; 3 ♂ 2 ♀, Mt. Daisen, Tottori Pref., 31. V.–1. VI. 1974, Y. SHIOZAWA. SHIKOKU- 1 ♂, Mt. Tsurugisan, Tokushima Pref., VI. 1957, M. SASAKAWA. KYUSHU- 1 ♂ 1 ♀, Mt. Aburayama, Fukuoka Pref., 2–4. VI. 1957, SASAKAWA; 4 ♀, Kamiozoegawa, Saga Pref., 28. IV., 16. VI. & 10. VIII. 1973, K. YAMAGISHI.

Distribution. Europe, Japan, North Africa.

Biology. Emerging period of adults begins late in April and extends to the beginning of September, with peak late in May in Kyoto. The mean durations of egg, larval and pupal periods are as follows: 3.1 (2–9), 25.4 (18–46) and 10.5 (10–11) days, respectively, under laboratory condition (25°C).

Characters of immature stages. The egg is minutely netty on surface and provided with about 12 irregular ridges running along long axis. Third instar larva: mouth hook consists of 2 teeth; anterior spiracles each with 7 (4–8) spiracular openings; cuticular processes minute, papillate and arranged on dorsal side of prothoracic segment and lateral sides of 1st–8th abdominal segments, while in *euaresta* and *unguiculata* spinulate, arranged on dorsal sides of pro- and mesothoracic segments, ventral side of mesothoracic segment and lateral sides of 1st–8th abdominal segments.

21. ***Homoneura matsumurai*** SASAKAWA et IKEUCHI, n. sp.

Diagnosis. This species is closely related to *interstincta* in number of rows of acrostichals and partially spotted pattern of wings, but has distinctly longer acrostichals in median 2 rows and clear wing tip. Also, males can be easily distinguished by the bifurcated 6th abdominal sternite and the females by the incised 9th sternite.

Description. Body length 2.9–4.4 mm, wing length 2.9–4.4 mm. Yellow to testaceous yellow; arista brown but yellow at base; mesonotum very scarcely whitish-gray pruinose, abdomen moderately pruinose; scutellum paler; cerci brown. Legs

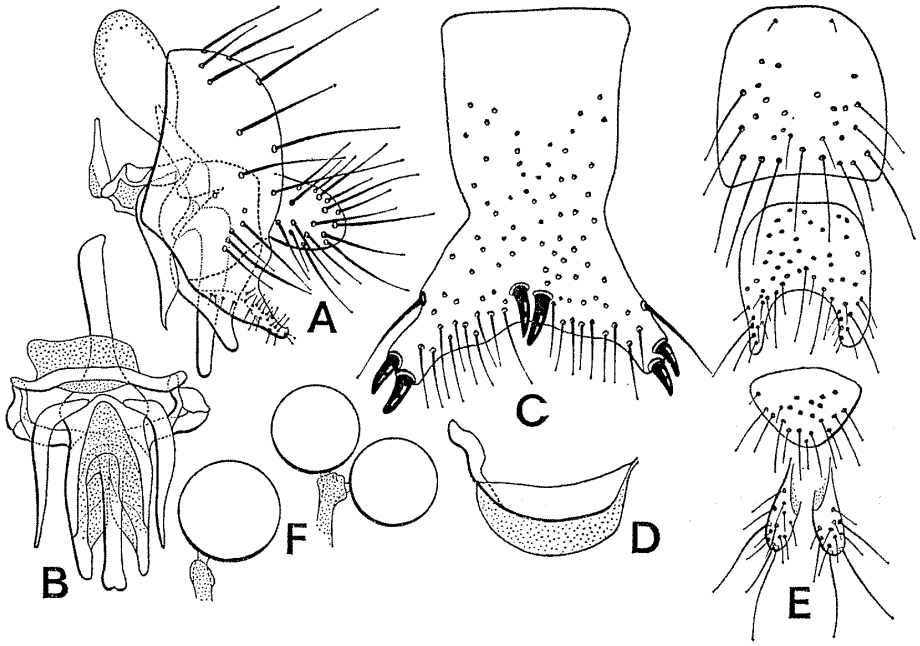

Fig. 16. Male and female genitalia of *Homoneura matsumurai* n. sp. A, Epandrium and phallus, lateral view; B, hypandrium and phallus, ventral view; C, 6th abdominal sternite of male; D, ejaculatory apodeme; E, 8–10th sternites and cerci of female; F, spermathecae.

and halter yellow. Wings faintly tinged with brownish yellow, usually clouded around both cross-veins.

Frons as wide as long, parallel-sided or slightly divergent ventrally, 1.4–1.7 times as wide as eye; *oc* as long as anterior *or*; gena 1/4–1/5 height of eye; 3rd antennal segment slightly longer than broad. Mesonotum with 0+3 *dc*, *acr* in 4 rows, 4–6 pairs of *acr* on median 2 rows distinctly longer than others, *prsc* subequal to 1st *dc*. Wing with costal sections in proportion of 32: 10: 6; ultimate section of M_{1+2} 1.9–2.9 times as long as penultimate; r-m slightly beyond middle of discal cell; ultimate section of M_{3+4} 1/4–1/5 of penultimate.

Genitalia: Epandrium with surstyli narrowing distally and minutely pointed on dorsal tip; hypandrium narrow; gonapophysis sharply pointed on apices; aedeagus with a pair of lateral sclerites and a rod-like median sclerite; ejaculatory apodeme 50 μ long. Sixth abdominal sternite of male bifurcated posteriorly, bearing 2 stout spines and 1 strong bristle on and near tip of each branch in addition to median 2 (1–3) stout spines. Ninth abdominal sternite of female deeply incised on posterior margin; spermathecae 70–75 or 80 μ in diameter.

Holotype ♂ (KPU 220), Kutsugata, Is. Rishiri, 7–9. VIII. 1958, M. SASAKAWA. Paratypes: HOKKAIDO- 1 ♂, same data as holotype; 2 ♀, Funadomari, Is. Rebun, 13. VIII. 1958, SASAKAWA; 1 ♂ 1 ♀, Sarobetsu-genya, Wakkanai, on seaside, 1. VII. 1967, T. SAIGUSA; 1 ♀, Bifuka, 29. VII. 1966, M. SUWA; 1 ♀, Sapporo, 8. VIII. 1966, SUWA; 3 ♀, Sapporo, 12–15. VIII. 1977, IKEUCHI; 6 ♂ 6 ♀, Betsukari,

Mashike, Rumoi, 20–23. VIII. 1971, K. YAMAGISHI. HONSHU- 2 ♂ 1 ♀, Ooe Exp. Forest, Kyoto Pref. Univ., Kyoto, 27. IX. 1977, IKEUCHI; 4 ♂ 8 ♀, Yamanaka, Higashi-tottori, Osaka Pref., 11. VI. 1975, YAMAGISHI; 2 ♂ 1 ♀, Mt. Gozaisho, Mie Pref., 15. V. 1962, T. OKADOME; 8 ♀, Mt. Gozaisho, 5. IX. 1965, T. KUNOU; 2 ♂, Mt. Daisen, Tottori Pref., 6. VII. 1966, OKADOME. SHIKOKU- 8 ♂ 2 ♀, Matsuyama-shi, Ehime Pref., 25. V. 1967, H. SHIMA. KYUSHU- 1 ♀, Komoda, Is. Tsushima, 28. VII. 1930, HORI & CHÔ; 1 ♀, Mt. Hikosan, Buzen, 6. VIII. 1940, K. YASUMATSU; 2 ♀, Mt. Fukuchiyama, Kitakyushu-shi, 23. IX. 1965, S. IDE; 1 ♀, Kamiozoegawa, Fuji, Saga Pref., 16. VI. 1973, YAMAGISHI; 1 ♀, Kurio, Is. Yakushima, 1–4. IV. 1971, YAMAGISHI. U. S. S. R.- 1 ♂ 2 ♀, Oodomari (Korsakov), Saghalien, 28. VII. 1914, ADACHI & ISSHIKI.

Distribution. Japan, U. S. S. R. (Sakhalin).

Remarks. Three specimens from Saghalien preserved in the Entomological Institute, Hokkaido University, were labeled as *Rhinotora infuscata* n. sp. by MATSUMURA. But, he did not describe it. We have much pleasure in dedicating this species to the late Dr. S. MATSUMURA, who had came first to his knowledge.

22. ***Homoneura sphincta*** SASAKAWA et IKEUCHI, n. sp.

Diagnosis. This yellowish species has clear wings, setulose frons and sparsely hairy eyes, as is found in *crucifera*, but can be distinguished by the absence of long

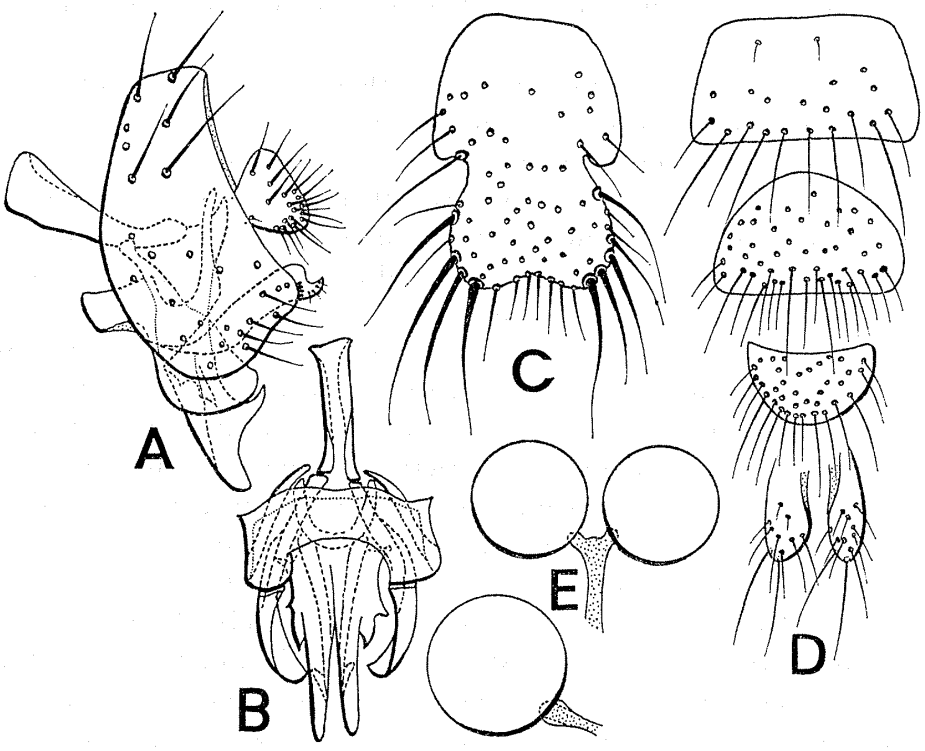

Fig. 17. Male and female genitalia of *Homoneura sphincta* n. sp. Abbreviation: see Fig. 16.

acrostichals in median rows. The 6th abdominal sternite of male is constricted at middle of each lateral side and only bristly along posterolateral margins.

Description. Body length 2.6–3.8 mm, wing length 2.9–3.8 mm. Yellow to testaceous yellow; face and gena sparsely whitish pruinose; arista brown; thorax and abdomen very sparsely whitish-gray pruinose, scutellum and pleura paler, abdominal tergites sometimes infuscated irregularly, cerci dark brown. Wing hyaline, very faintly tinged with brownish yellow; halter yellow. Legs yellow to ocherous yellow, distal 1 or 2 tarsal segments slightly brown-tinged.

Frons as wide as long, parallel-sided, bearing setulae on ventral 1/2; *oc* subequal to anterior *or*; eyes very sparsely hairy; gena 1/4–1/5 height of eye; 3rd antennal segment 1.4 times as long as broad. Mesonotum with 0+3 *dc*, *acr* in 6 rows, becoming sparser behind level of 2nd *dc*, 3–6 pairs of *acr* on median 2 rows only slightly longer than others, *prsc* shorter than 1st *dc*. Wing with costal sections in proportion of 26.5: 10: 5.3; r-m at or slightly beyond middle of discal cell; ultimate section of M_{1+2} 1.7–2.5 times as long as penultimate; ultimate section of M_{3+4} 1/4–1/5 of penultimate.

Genitalia: Epandrium with 4 minute spines on each posteroventral corner, surstyli abruptly pointed on ventral tip; hypandrium rather broad, bearing minute hairs almost all over the surface; gonapophysis lobate in lateral view; aedeagus well-sclerotized, with lateral sclerites projected spine-like on lateral and dorsoapical sides. Sixth abdominal sternite of male constricted at middle, bearing 3–6 pairs of bristles along posterolateral margins. Ninth and 10th sternites of female more or less semicircular; spermathecae 75 or 80 μ in diameter.

Holotype ♂ (KPU 221), Midoroga-ike, Kyoto, 13. V. 1978, S. IKEUCHI. Paratypes: HONSHU- 2 ♂, same locality as holotype, 2. VI. 1978, IKEUCHI; 3 ♀, Kiimiidera, Wakayama Pref., 9. VIII. 1975, K. YAMAGISHI; 1 ♂, Mt. Daisen, Tottori Pref., 6. VII. 1966, T. OKADOME; 1 ♀, Suigenchi, Kashiwazaki, Niigata Pref., 24. VIII. 1972, YAMAGISHI. IS. HACHIJO- 1 ♀, Okago-Fuji, 26. V. 1964, 1 ♂ 2 ♀, Kamogawa, 27. V. 1964, 1 ♂, Sueyoshi, 28. V. 1964, 2 ♀, Mitsune-Kantoyama, 30. V. 1964, 1 ♂ 2 ♀, Eigo, 2. VI. 1964, 2 ♀, Sokoto, 4. VI. 1964, Y. HIRASHIMA et M. SHIGA. SHIKOKU- 1 ♀, Matsuyama, Ehime Pref., 25. V. 1967, H. SHIMA. KYUSHU- 2 ♂, Mt. Fukuchiyama, Kitakyushu-shi, 23. IX. & 10. X. 1965, S. IDE; 4 ♂ 2 ♀, Mt. Inunakiyama, Wakamiya, Fukuoka Pref., 3. V. 1969, M. HONDA; 25 ♂ 3 ♀, Mt. Tachibanayama, Fukuoka Pref., 17. V. 1974, YAMAGISHI; 27 ♂ 16 ♀, Mt. Tachibanayama, 1. VI. 1973 & 1974, YAMAGISHI; 2 ♀, Mt. Tachibanayama, 10. IX. 1967 & 6. V. 1968, N. YOSHIDA; 1 ♀, Wakasugiyama, Chikuzen, 3. V. 1931, ESAKI *et al.*; 1 ♂ 3 ♀, Asamo, Is. Tsushima, on *Fagopyrum vulgare*, 5. X. 1959, HIRASHIMA; 1 ♂ 3 ♀, Okinoshima, Chikuzen, 25–28. VII. 1958, HIRASHIMA, MURAKAMI & MIYATAKE; 1 ♂ 1 ♀, Kamiozoegawa, Fuji, Saga Pref., 19. V. & 16. VI. 1973, YAMAGISHI; 1 ♂ 1 ♀, Mt. Shiroyama, Kagoshima Pref., 6. V. 1973, H. MAKIHARA; 2 ♀, Cape Sata, Satuma, 8. X. 1956, T. HIDAKA; 1 ♂, Miyanoura, Is. Yakushima, 11. IV. 1971, T. MURATA.

Distribution. Japan (Honshu, Shikoku, Kyushu).

23. *Homoneura crucifera* SASAKAWA et IKEUCHI, n. sp.

Diagnosis. This species is closely related to *sphincta* in general appearance. But, the males can be distinguished by the 6th abdominal sternite being cruciform and spinose in 2 groups posteriorly, and the females by the 9th sternite being concave on posterior margin.

Description. Body length 3.0–3.6 mm, wing length 3.0–3.6 mm. Yellow to ocherous yellow; face and gena sparsely whitish-pruinose; arista brown; mesonotum, meso- and sternopleura slightly brownish; abdomen testaceous, tergites sometimes infuscated irregularly, cerci dark brown; thorax and abdomen sparsely whitish-gray pruinose; wings hyaline, faintly tinged with brownish yellow; legs yellow to ocherous yellow.

Frons as wide as long, parallel-sided, about 1.7 times as wide as eye, setulose on ventral 1/2; *oc* subequal to anterior *or*; eyes very sparsely hairy; gena about 1/4 height of eye; 3rd antennal segment barely longer than broad. Mesonotum with 0+3 *dc*, *acr* in 6 rows, becoming sparser behind level of 2nd *dc*, 5–6 pairs of *acr* on median 2 rows longer than others, *prsc* shorter than 1st *dc*. Wing with costal sections in proportion of 31 (29–32): 10: 6 (5.5–6.5); r-m slightly beyond middle of discal cell; ultimate section of M_{1+2} 1.9–2.7 times as long as penultimate; ultimate section of M_{3+4} 1/4–1/6 length of penultimate. Mid tibia with 2 spurs.

Genitalia: Epandrium with ventral margin projected roundly, surstyli well-projected backwards and minutely pointed on dorsal tips; hypandrium very narrow;

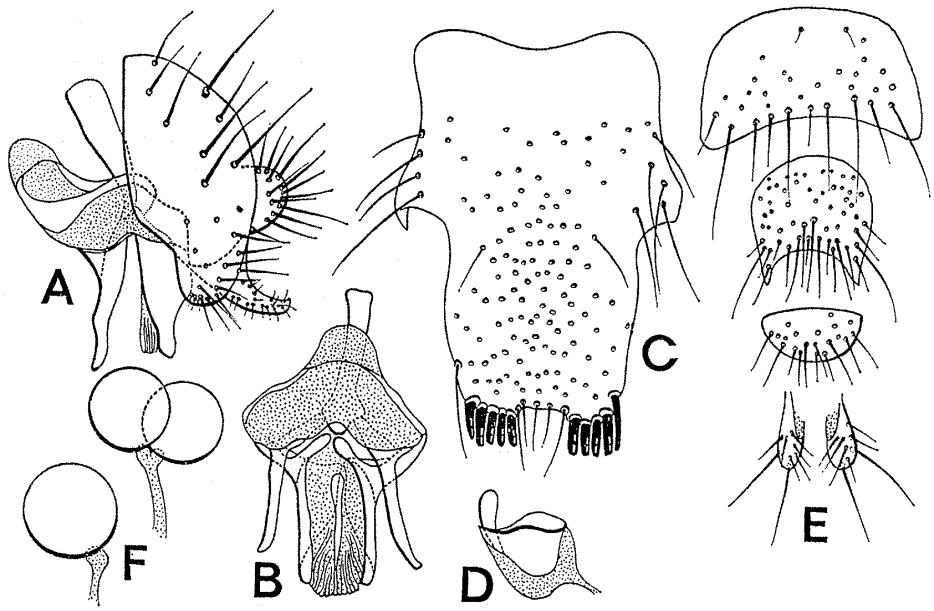

Fig. 18. Male and female genitalia of *Homoneura crucifera* n. sp.

gonapophysis rod-like; aedeagus membranous, with a pair of lateral sclerites; ejaculatory apodeme 45 μ long. Sixth abdominal sternite of male somewhat cruciform, with posterior margin weakly incised at middle, bearing 3–5 stout spines on each posterolateral margin. Ninth sternite of female incised on posterior margin; spermathecae 55–60 or 70 μ in diameter.

Holotype ♂, Sarobetu-genya, Wakkanai, Hokkaido, 1. VII. 1967, T. SAIGUSA; preserved in coll. at Biol. Lab., College Gener. Educ., Kyushu Univ. Paratypes: HOKKAIDO- 8 ♂ 6 ♀, same data as holotype; 9 ♂ 9 ♀, Onpetu, Onpetu-mura, on seaside, 31. VII. 1967, SAIGUSA; 1 ♂, Shari, Abashiri, 3. VIII. 1967, SAIGUSA. HONSHU- 1 ♂ 1 ♀, Osadano, Fukuchiyama, Kyoto Pref., 18. V. 1977, S. IKEUCHI; 1 ♀, Osadano, 27. VII. 1977, IKEUCHI. KYUSHU- 1 ♀, Komoda, Is. Tsushima, 28. VII. 1930, HORI & CHÔ.

Distribution. Japan (Hokkaido, Honshu, Kyushu).

24. ***Homoneura lagena*** SASAKAWA et IKEUCHI, n. sp.

Diagnosis. The wing pattern and the shape of male 6th abdominal sternite of this new species are somewhat similar to those of *hymenophallus* SASAKAWA et IKEUCHI and *interstincta* (FALLÉN), respectively. However, the former related species has the plumose arista, and the latter has the wings clear along the anterior margins.

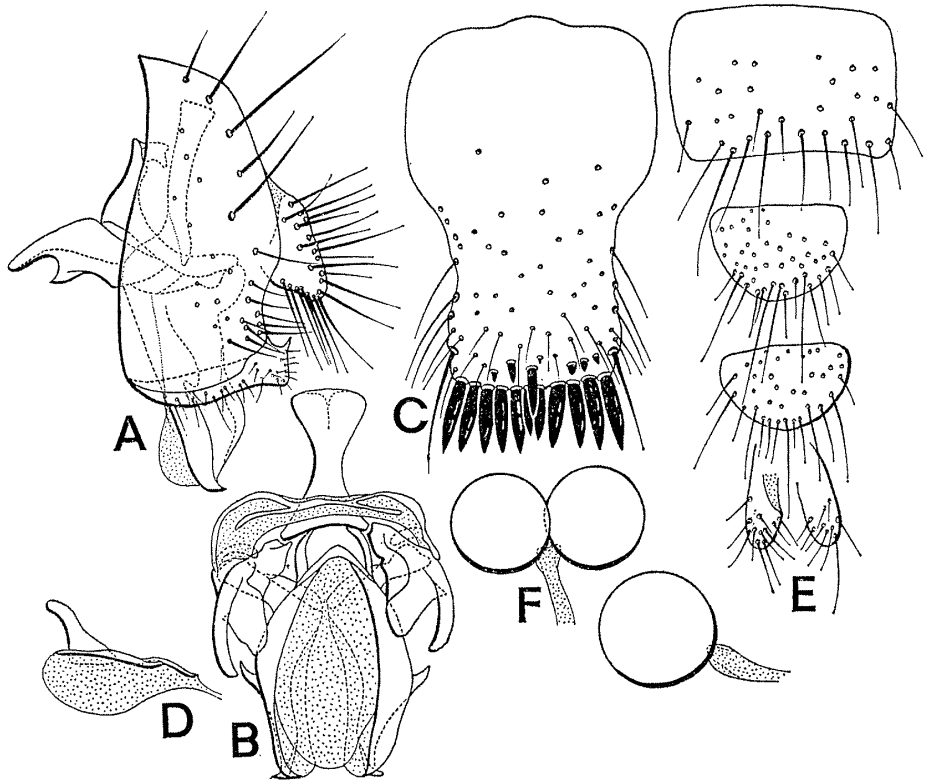

Fig. 19. Male and female genitalia of *Homoneura lagena* n. sp.

Discussion. This species differs from *grahami* MALLOCH, from China, by having dark bands on both cross-veins.

Description. Body length 2.9–3.9 mm, wing length 3.2–4.0 mm. Testaceous yellow to testaceous; head with ventral occiput, arista and palpi brown, parafacialia sparsely whitish pruinose; wing with anterior margin fuscous, extending from costa to anterior half of cell R_3 laterad of apex of R_1 and connecting with apical cloud (1/7 of whole length of wing) which is slightly beyond apex of M_{1+2} posteriorly, both cross-veins clouded, band on r-m anteriorly connected with anterior marginal cloud; legs testaceous yellow.

Frons as wide as long, slightly divergent ventrally, slightly wider than eye, setulose on ventral 1/2; *oc* as long as anterior *or*; gena 1/5–1/6 height of eye; 3rd antennal segment about 1.5 times as long as broad. Mesonotum with 0+3 *dc*, *acr* in 6 irregular rows, *prsc* as long as 1st *dc*. Wing with costal sections in proportion of 30: 10: 6.5; r-m slightly beyond middle of discal cell; ultimate section of M_{1+2} 1.3–1.9 times as long as penultimate, ultimate section of M_{3+4} 1/6–1/7 of penultimate. Mid tibia with 2 spurs.

Genitalia. Epandrium with surstyli truncated on caudal margins and sharply pointed upwards; hypandrium weakly sclerotized; gonapophysis large, bifurcated distally; aedeagus with a pair of lateral sclerites, bearing spinose processes at middle; ejaculatory apodeme 45 μ long. Sixth abdominal sternite of male with many stout and several minute spines on posterior margin. Ninth and 10th sternites of female somewhat semicircular; spermathecae 75 or 85 μ in diameter.

Holotype ♀ (KPU 222), Hanase, Kyoto, 17. VII. 1978, S. IKEUCHI. Paratypes: HOKKAIDO- 1 ♀, Yubari Hütte, Sorati, 15. VII. 1967, M. HONDA. HONSHU- 1 ♂ 3 ♀, same locality as holotype, 7., 14. & 17. VII. 1978, 19. VIII. 1978, IKEUCHI; 2 ♀, Mt. Fujimidai, 8. VIII. 1962, T. OKADOME. SHIKOKU- 1 ♀, Omogokei, Ehime Pref., 11. VI. 1961, OKADOME; 1 ♂, Jojusha, Iyo, 5. VIII. 1959, M. OKADA.

Distribution. Japan (Hokkaido, Honshu, Shikoku).

25. ***Homoneura triphylla*** SASAKAWA et IKEUCHI, n. sp.

Diagnosis. This medium-sized, partially spotted species is unique in having a pair of spines on posteroventral corners of the epandrium and trifurcated 6th abdominal sternite in male.

Discussion. This species can easily be separated from *stackelbergi* CZERNY, known from Ussuri, by having a cloud between apices of Sc and R_1.

Description. Body length 2.7–3.1 mm, wing length 3.0–3.4 mm. Head yellow, ocellar triangle slightly brownish, arista pale brown but basally yellow; mesonotum testaceous, with prescutellar area between *dc* yellow, sparsely whitish-gray pruinose, lateral sides of notum, scutellum and pleura yellow; abdomen testaceous yellow to brown. Wings hyaline, but brown on apical 1/3 of cell Sc, around both cross-veins and on apices of R_{2+3}, R_{4+5} and M_{1+2} (1/5 of whole length of wing), the latter 3

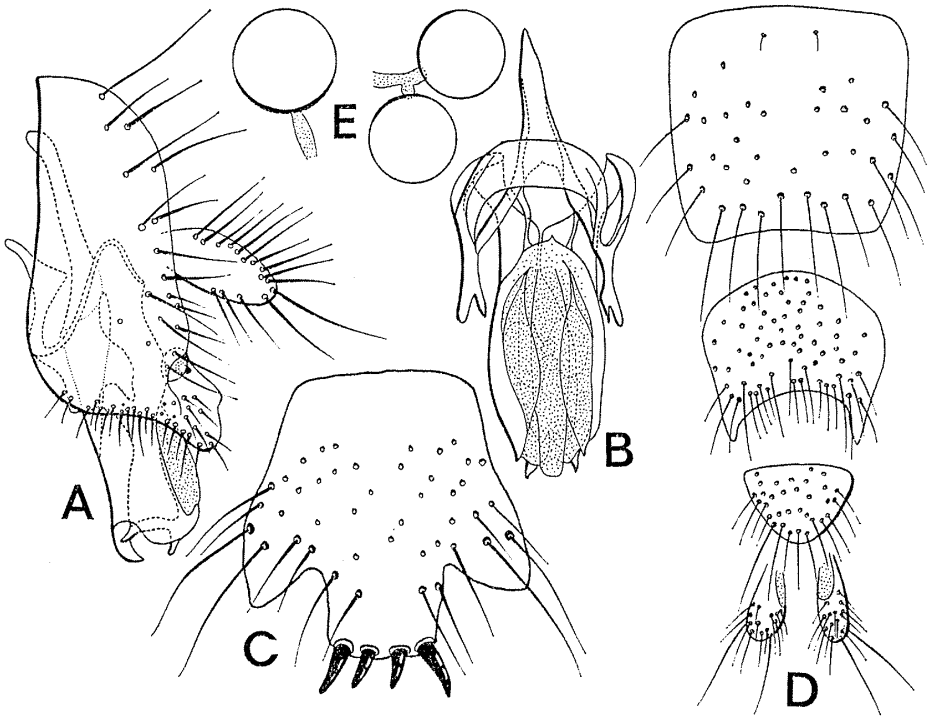

Fig. 20. Male and female genitalia of *Homoneura triphylla* n. sp.

clouds sometimes fused one another. Legs yellow.

Frons slightly wider than long, 1.7 times as wide as eye, very slightly converging ventrally; *oc* subequal to anterior *or*; gena 1/5–1/6 height of eye; 3rd antennal segment 1.4 times as long as broad. Mesonotum with 0+3 *dc*, *acr* in 6 rows, 5–6 pairs of *acr* on median 2 rows slightly longer than others, *prsc* slightly shorter than 1st *dc*. Wing with costal sections in proportion of 25 (23–28): 10: 6; r-m slightly beyond middle of discal cell; ultimate section of M_{1+2} 1.4–1.6 times as long as penultimate; ultimate section of M_{3+4} 1/6 length of penultimate. Mid tibia with 1 spur.

Genitalia: Epandrium with a pair of spines near posteroventral corners, surstyli rounded apically; hypandrium narrow; gonapophysis bifurcated at apical ends; aedeagus with a pair of lateral sclerites bearing 3 spinose processes on each apex and a pair of dorsal sclerites notched mesally. Sixth abdominal sternite of male trifurcated posteriorly, with 4 stout spines on median broad lobe and 2 long bristles on lateral lobes. Ninth sternite of female incised on posterior margin; spermathecae 65 or 75 μ in diameter.

Holotype ♂, Sobosan, Bungo, Kyushu, 4. VII. 1932, HORI, FUJINO & CHÔ; preserved in coll. at Entom. Lab., Fac. Agric., Kyushu Univ. Paratypes: HONSHU-1 ♂, Mt. Daisen, Tottori Pref., 31. V. 1974, Y. SHIOZAWA, on silde. KYUSHU-1 ♀, same data as holotype.

Distribution. Japan (Honshu, Kyushu).