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The Cicadidae (Homoptera, Auchenorrhyncha) from East and Central Nepal

(Part II)[1,2]

By

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(Communicated by Tadashige HABE)

In the first part of this paper, I recorded 30 species of the subfamily Cicadinae; in the second part, I am going to enumerate 6 species of the other subfamily, Tibicininae, from East and Central Nepal. Some taxonomic notes at the generic level are also given in this part.

Subfamily Tibicininae

Genus *Abroma* STÅL, 1866

Abroma STÅL, 1866, Hem. Afr., **4**: 27 (as a subgenus of *Tibicen*) (type-species: *Cicada guerinii* SIGNORET).

Abroma bengalensis DISTANT, 1906

(Fig. 47)

Abroma bengalensis DISTANT, 1906, Fn. Brit. Ind., Rhynch., **3**: 166.

Specimens examined. 1 ♂, Godavari (1,600 m), Kathmandu, C. Nepal, 8. vi. 1963, M. HARADA leg. (NSMT); 2 ♂♂, Goldiagong (2,080 m) ~ Dumuhan (800 m), E. Nepal, 3. vii. 1963, T. FUJIOKA leg. (NSMT); 1 ♂, Taplejung (1,800 m), E. Nepal, 6. vii. 1963, T. FUJIOKA leg. (TF); 1 ♂, Lelep (1,550 m), E. Nepal, 9. vii. 1963, T. FUJIOKA leg. (TF); 2 ♂♂, 1 ♀, Gupa Pokari (2,900 m) ~ Gurza (2,100 m), E. Nepal, 23. vi. 1972, H. MAKIHARA leg. (KUF); 1 ♀, Papun (2,100 m), E. Nepal, 15. vii. 1972, Y. NISHIDA leg. (KUF).

Male genitalia (Fig. 47): Pygophore elliptical in ventral view, with dorsoapical margin deeply incised and with a long tail-like projection; ventrolateral margins of pygophore with a sharp hook on each side; uncus without lobes, situated over

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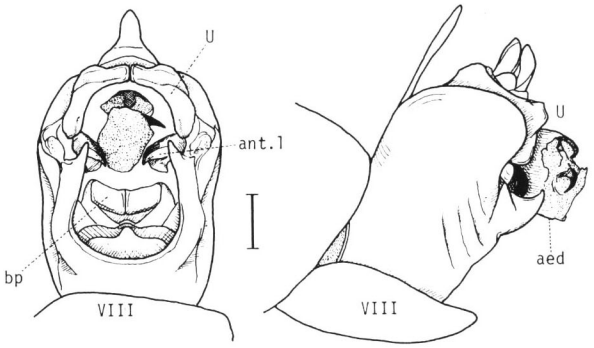

Fig. 47. *Abroma bengalensis* DISTANT, ♂ genitalia. Ventral view (left) and lateral view (right). bp: basal plate, VIII: 8th abdominal sternum. Scale, 0.5 mm.

aedeagus; anterior lobes curved to inner side with acute tip; two basal plates contigulated to a rectangular plate.

This species has hitherto been unrecorded from Nepal.

Genus ***Lemuriana*** DISTANT, 1905

Lemuriana DISTANT, 1905, Ann. Mag. nat. Hist., (7), **16**: 32 (type-species: *Cicada apicalis* GERMAR).

Lemuriana apicalis (GERMAR, 1830)

(Fig. 48)

Cicada apicalis GERMAR, 1830, Thon's Ent. Arch., **2**: 44.
Tibicen apicalis: STÅL, 1861, Ann. Soc. ent. Fr., (4), **1**: 618.
Tibicen (*Abroma*) *apicalis*: STÅL, 1866, Hem. Afr., **4**: 28.

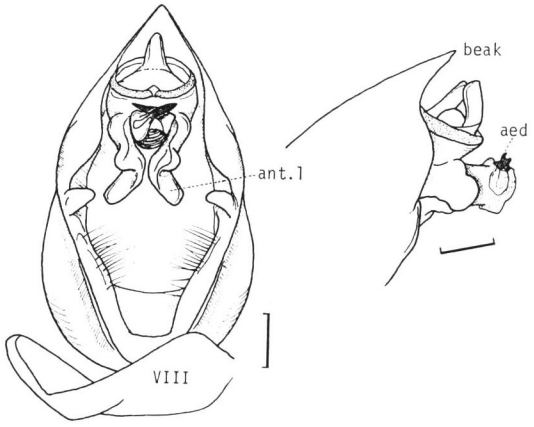

Fig. 48. *Lemuriana apicalis* (GERMAR), ♂ genitalia. Left: ventral view, right: apical part in lateral view. Scales, 0.5 mm.

Lemuriana apicalis: DISTANT, 1905, Ann. Mag. nat. Hist., (7), **16**: 33.
Cicada semicincta WALKER, 1850, List Hom., **1**: 142.

Specimens examined. 3 ♂♂, 18 ♀♀, Dharan (500 m), E. Nepal, 23. vi. 1963, T. FUJIOKA leg. (NSMT & TF); 3 ♂♂, Goldiagong (2,080 m) ~ Dumuhan (800 m), E. Nepal, 3. vii. 1963, T. FUJIOKA leg. (TF); 1 ♀, Dharan, E. Nepal, 9. viii. 1963, T. FUJIOKA leg. (TF); 1 ♂, Amrecganj (300 m), C. Nepal, 5. vii. 1974, T. AOKI & S. YAMAGUCHI leg. (TASY).

Male genitalia (Fig. 48): Pygophore, in ventral view, ovate with triangular beak; ventrolateral margins of pygophore respectively furnished with a process projecting to inner side; uncus separated into two lobes outside of aedeagus, with round apex in lateral view; anterior lobes divergent; aedeagus with two spine-like processes, extending obliquely and crossed to each other.

Genus ***Graptotettix*** STÅL, 1866

Graptotettix STÅL, 1866, Hem. Afr., **4**: 4 (type-species: *Graptotettix guttatus* STÅL).

Graptotettix guttatus STÅL, 1866

(Figs. 49, 50)

Graptotettix guttatus STÅL, 1866, Berl. ent. Z., **10**: 170.

Specimens examined. 1 ♀, 6 exuviae, Ghorepani (2,700 m), C. Nepal, 7. vi. 1974, T. AOKI & S. YAMAGUCHI leg. (TASY).

Exuvia (Figs. 49, 50): Body lustrous and ochreous with posterior margins of pronotum, mesonotum and metanotum, teeth of fore femur, tip of fore tibia, anal margins of wing-pads and apical margins of 1st–8th abdominal terga black or much infuscated; body long and slender, narrowed at base of abdomen; frontoclypeus swollen anteriorly; eye capsule comparatively small; antenna 7-segmented, with the ratio of about 14: 12: 13: 9: 9: 8: 9 (1=1/16 mm); fore femur almost as long as wide, furnished with 5-toothed anterior comb, a very small intermediate spike and a short and thick posterior spike, which is originated at middle; outer surface of the femur with a longitudinal hair-band; trace of venation seen as carinae; abdominal tergum, at apical part, furnished with a transverse row of scattered hairs; ventrolateral margins of 9th segment strongly dentate; ♂ 10th segment, longer than wide, with thick lobe

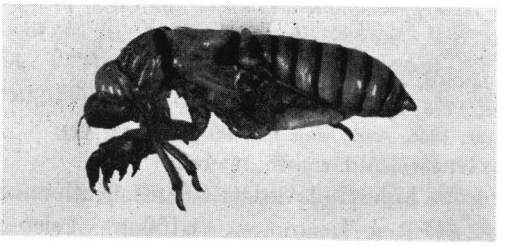

Fig. 49. Exuvia of *Graptotettix guttatus* STÅL, in lateral view.

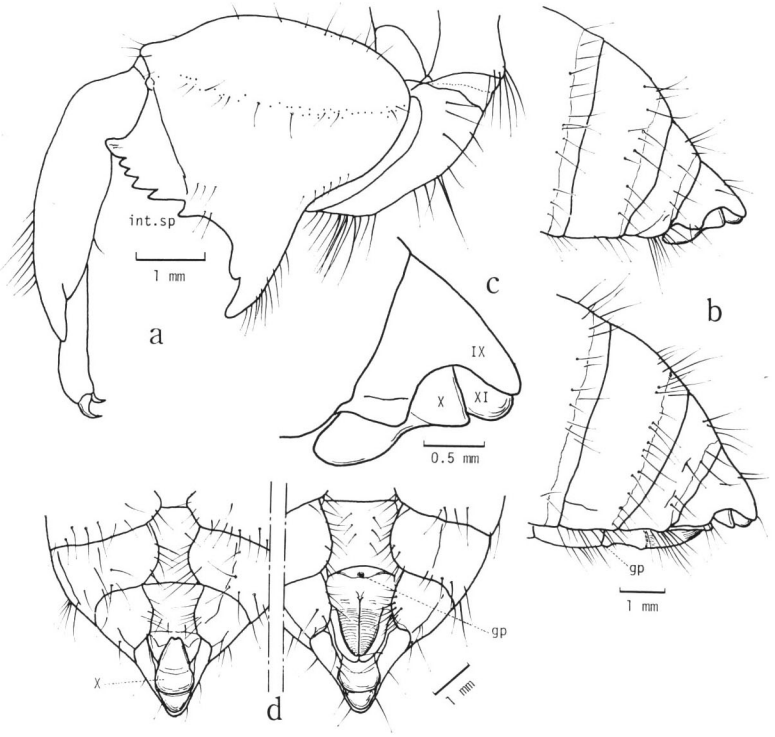

Fig. 50. *Graptotettix guttatus* STÅL, exuvia. a: left fore leg; b: lateral view of apical part of abdomen (above: ♂, below: ♀); c: apex of ♂ abdomen in lateral view; d: apical part of abdomen in ventral view (left: ♂, right: ♀). IX, X and XI: 9th, 10th and 11th abdominal segment, respectively.

extending anteriorly, tip of which is slightly dentate at middle; ovipositor rather wide, about 1/2 length of 8th sternum. Body length, 22.3–24.8 mm.

Genus *Scieroptera* STÅL, 1866

Scieroptera STÅL, 1866, Hem. Afr., **4**: 4 (type-species: *Tettigonia splendidula* FABRICIUS).

Scieroptera splendidula (FABRICIUS, 1775)

(Fig. 51)

Tettigonia splendidula FABRICIUS, 1775, Syst. Ent., p. 681.
Cicada splendidula: GOEZE, 1778, Ent. Beyträge, Hem., **2**: 150.
Heuchys splendidula: WHITE, 1846, Ann. Mag. nat. Hist., (1), **17**: 332.
Scieroptera splendidula: STÅL, 1866, Berl. ent. Z., **10**: 169.

Specimens examined. 1 ♀, Godavari (1,600 m), Kathmandu, C. Nepal, 18. vi. 1963, T. FUJIOKA leg. (TF); 1 ♂, Andewa (1,100 m)~Lelep (1,550 m), E. Nepal, 8. vii. 1963, T. FUJIOKA leg. (TF); 1 ♂, 2 ♀♀, Phulchouk (2,770 m), Kathmandu,

C. Nepal, 3. vii. 1964, R. KANO leg. (NSMT); 1 ♀, Ghandrung (2,200 m), C. Nepal, 21. vi. 1974, T. AOKI & S. YAMAGUCHI leg. (TASY); 1 ♀, Godavari, Kathmandu, C. Nepal, 28. vi. 1974, T. AOKI & S. YAMAGUCHI leg. (TASY); 1 ♀, Hetauda (450 m), C. Nepal, 6. vii. 1974, T. AOKI & S. YAMAGUCHI leg. (TASY).

Male genitalia (Fig. 51): Pygophore obovate in ventral view with triangularly pointed beak, and with two pairs of ventral lobes, an apical pair being thick laterally; apical part of 10th segment with small triangular lobe, which is flattened horizontally; anterior lobes wide at base, and narrow and long at distal part; the lobes somewhat divergent distally; aedeagus separated into two projections at apex.

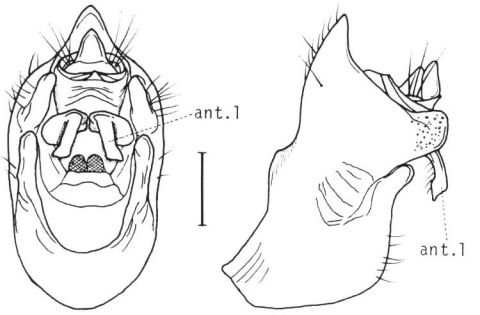

Fig. 51. *Scieroptera splendidula* (FABRICIUS), ♂ genitalia. Ventral view (left) and lateral view (right). Scale, 0.5 mm.

Genus *Cicadetta* KOLENATI, 1857

Cicadetta KOLENATI, 1857, Mal. Ent., **7**: 19 (type-species: *Cicada montana* SCOPOLI).

Cicadetta zenobia (DISTANT, 1912)

(Fig. 52)

Melampsalta zenobia DISTANT, 1912, Ann. Mag. nat. Hist., (8), **9**: 649.
Cicadetta zenobia: METCALF, 1963, Gen. Cat. Hom., Fasc. 8, **2**: 397.

Specimens examined. 1 ♂, detailed data unknown (13. ix.), Nepal, MIYASHITA leg. (TASY); 6 ♂♂, 2 ♀♀, north of Namche Bazar (3,500 m), E. Nepal, 13–14. ix. 1971, Y. YAMAGATA leg. (NSMT & MH); 3 ♂♂, 1 ♀, Namche Bazar (3,400 m), E. Nepal, 13. ix. 1972, Y. YAMAGATA leg. (MH); 2 ♂♂, Hile (2,100 m), E. Nepal, 22. viii. 1974, T. AOKI & S. YAMAGUCHI leg. (TASY); 2 ♂♂, Gurza (2,100 m), E. Nepal, 1. ix. 1974, T. AOKI & S. YAMAGUCHI leg. (TASY); 3 ♂♂, Darapani (900 m) ~ Dhalan Bazar (300 m), E. Nepal, 10. ix. 1974, T. AOKI & S. YAMAGUCHI leg. (TASY).

Male genitalia (Fig. 52): Pygophore, in ventral view, ovate, widened near middle with acuminate beak; lateral parts of pygophore somewhat raised ventrally; posterior lobe flat and triangular in shape; anterior lobes, curved inwardly, with cuneate apex.

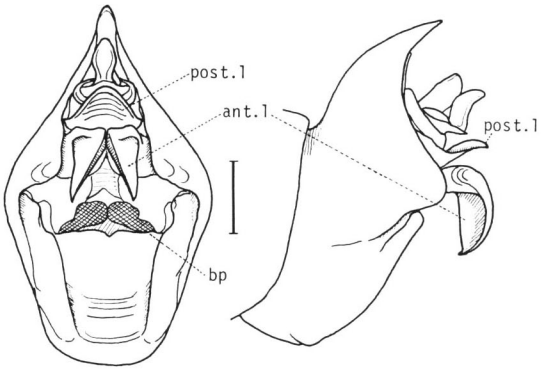

Fig. 52. *Cicadetta zenobia* (DISTANT), ♂ genitalia. Ventral view (left) and lateral view (right). post. l: posterior lobe. Scale, 0.5 mm.

Genus ***Pauropsalta*** GODING et FROGGATT, 1904

Pauropsalta GODING et FROGGATT, 1904, Proc. Linn. Soc. N.S.W., **29**: 615 (type-species: *Pauropsalta leurensis* GODING et FROGGATT).

Pauropsalta exaequata (DISTANT, 1892)

Melampsalta exaequata DISTANT, 1892, Mon. Orient. Cicad., p. 144.
Pauropsalta exequata (sic): DISTANT, 1906, Fn. Brit. Ind., Rhynch., **3**: 174.

Specimens examined. 1 ♀, Methirum (1,000 m)~Tiwa (1,400 m), E. Nepal, 29. v. 1972, H. SHIMA leg. (KUF); 1 ♀, Taplejung (1,800 m)~Handhrung (800 m), E. Nepal, 26. vi. 1972, H. SHIMA leg. (KUF).

This species has been recorded from Assam, India, and it is new to Nepal.

Undetermined Exuviae

Besides the species listed above, exuviae of four other species are collected. It is, however, impossible to identify them, even to the generic level. Only the data of the specimens are given below.

1) Sp. 1 1 exuvia, Godavari (1,600–2,000 m), Kathmandu, C. Nepal, 17. viii. 1972, H. MAKIHARA leg. (KUF).
2) Sp. 2 1 exuvia, Tank (1,900 m)~Penmaten (2,600 m), E. Nepal, 29. vi. 1972, H. MAKIHARA leg. (KUF); 1 exuvia, Papun (2,100 m), E. Nepal, 15. vii. 1972, Y. NISHIDA leg. (KUF).

This species seems to belong to the genus *Oncotympana* or its allies, though not determined with confidence.

3) Sp. 3 2 exuviae, unnamed place (1,700 m) to a point (2,800 m), Lelep (1,550 m)~Tapche (2,400 m), E. Nepal, 10. vii. 1963, T. FUJIOKA leg. (TF).

4) Sp. 4 2 exuviae, Taplejung (1,800 m), E. Nepal, 5. vii. 1963, T. FUJIOKA leg. (TF).

Taxonomic Notes

In METCALF's Catalogue (1963), the genera comprising the species listed above are included in the following tribes:

Tribe Tibicenini ..... *Pycna*, Cryptotympana*
Tribe Polyneurini ..... *Polyneura**
Tribe Dundubiini
Subtribe Terpnosiaria ..... *Terpnosia, Euterpnosia*
Subtribe Leptopsaltriaria .....
..... *Leptopsaltria, Tanna, Rustia, Oncotympana*, Mata*
Subtribe Tosenaria ..... *Tosena*, Haphsa**
Tribe Gaeanini ..... *Gaeana, Balinta*
Tribe Platylomiini ..... *Platylomia*
Tribe Psithyristriini
Subtribe Pomponiaria ..... *Pomponia**
Tribe Moganniini ..... *Mogannia*
Tribe Taphurini ..... *Abroma, Lemuriana*
Tribe Huechysini ..... *Graptotettix, Scieroptera*
Tribe Cicadettini ..... *Cicadetta, Pauropsalta.*

It is necessary to make comments on the positions of the six genera indicated by asterisks. Some taxonomic notes at the generic level, with morphological and systematic discussions, are given below.

Although the genus *Pycna* AMYOT et SERVILLE was treated as a member of the tribe Tibicenini, it seems more reasonable from morphological characters such as the male genitalia, wings, sound-producing apparatus, etc., that *Pycna* as well as *Platypleura* AMYOT et SERVILLE are included in the tribe Platypleurini, as was already pointed out by DISTANT (1906 b).

The monotypic genus *Polyneura* WESTWOOD, the type-genus of the tribe Polyneurini, is characterized by the venation with numerous longitudinal veins. Only the two genera *Polyneura* and *Angamiana* DISTANT have currently been included in this tribe, which has been considered a monophyletic group. Considering the other characters than venation, however, two more genera *Graptopsaltria* STÅL and *Formotosena* KATO should be classified in the same monophyletic group. The common characters of this group[4] are as follows: Frontoclypeus projecting posteriorly

4) The following species of this group are examined: *Polyneura ducalis* WESTWOOD from Nepal, *Angamiana aetherea* DISTANT from India, *A. floridula* DISTANT from Laos, *Graptopsaltria nigrofuscata* (MOTSCHULSKY) from Japan, *G. tienta* KARSCH from China, *G. bimaculata* KATO from Japan (Ryukyus) and *Formotosena seebohmi* (DISTANT) from Taiwan. In comparison with this group, I examined some species of other Oriental genera; *Tosena fasciata* (FABRICIUS) from Sumatra, *T. melanopteryx* KIRKALDY from Laos, *T. depicta* DISTANT from Malaysia, *Ayuthia spectabile* DISTANT from Malaysia, *Gaeana maculata* (DRURY) from Hong Kong and *G. sulphurea* (WESTWOOD) from Nepal.

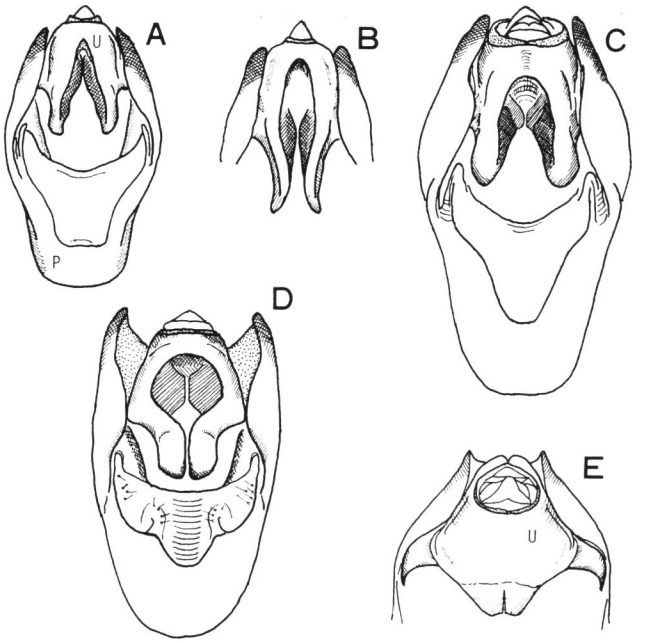

Fig. 53. Sketch of ♂ genitalia in ventral view. —— A: *Polyneura ducalis* WESTWOOD, B: *Angamiana aetherea* DISTANT, C: *Formotosena seebohmi* (DISTANT), D: *Graptopsaltria nigrofuscata* (MOTSCHULSKY) and E: *Tosena fasciata* (FABRICIUS).

beyond hind coxae; ♂ opercula slightly overlapped or adjacent to each other at middle; wings opaque or translucent; uncus of ♂ genitalia swollen ventrally, not concealed with pygophore; uncus lobes largely separated from each other from the base (Figs. 53 A–D, 54); ♀ abdomen shorter than the length from tip of head to cruciform elevation; ovipositor not extending beyond 9th segment. The venation of *Polyneura* and *Angamiana* seems to be an apomorphic character, and the species of *Polyneura* has a nodal line as a distinct vein in the forewing (Fig. 3 in Part I), which seems also to be apomorphic. In *Angamiana*, the male operculum is obviously longer than wide (shorter than wide in the others), and the longitudinal veins of the forewing are about a half as many as those in *Polyneura*. Further, the uncus lobes of *Angamiana* are long and slender, divergent and slightly curved upwards at subapex, and extending beyond the middle of the pygophore (Figs. 53 B, 54 B). In the Taiwanese monotypic genus *Formotosena*, the uncus is apparently similar in shape to that of *Polyneura* but the uncus lobes are shorter and thicker with round apices. The inner margins of both lobes are contiguous to form a semicircle at the base (Figs. 53 C, 54 C). Although this genus was placed in the subtribe Hamzaria of the tribe Gaeanini in METCALF's Catalogue, the subtribe Hamzaria is represented by the Oriental genus *Hamza* DISTANT, which is, from the morphological point of view, rather allied to the tribe Platypleurini (ESAKI & MIYAMOTO, 1975). This genus is also similar to the

genus *Tosena* AMYOT et SERVILLE in the general shape of body and the opaque wings, but is fundamentally different from *Tosena* in the shape of the male genitalia (uncus lobe) (Figs. 53 C, E). In the genus *Graptopsaltria*, the abdomen is shorter than the length from the tip of head to the cruciform elevation. The pygophore of the male genitalia is wide in proportion to the length, especially wide at the apical part. The uncus lobes are widely apart at the basal part (both lobes are contiguous at the extreme base), becoming closer to each other at the apices; the inner margins of the lobes form a circle in the caudal view of the uncus (Figs. 53 D, 54 D). This genus was put in the subtribe Tosenaria of the tribe Dundubiini in METCALF's Catalogue, together with the genus *Tosena*.

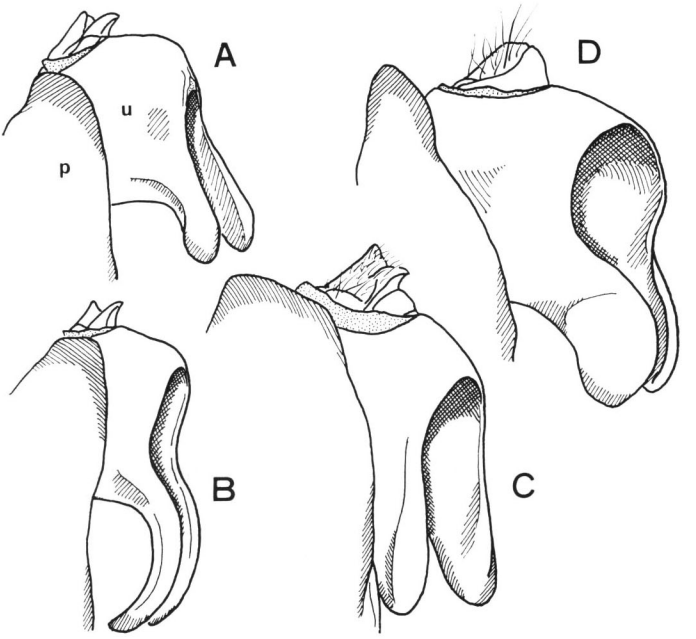

Fig. 54. Uncus of ♂ genitalia, in obliquely lateral view. A–D, same as in Fig. 53.

The marginal (ambient) vein of *Tosena dives* becomes closer to the margin of the forewing near its posterolateral corner, as stated before. In the other species examined of the genus *Tosena*, the space between the marginal vein and the margin of the forewing does not become narrow even at the corner. This character seen in *T. dives* is recognized in all the species of the genera *Gaeana* AMYOT et SERVILLE and *Balinta* DISTANT (Figs. 10–11 in the Part I).

ISHIHARA (1961) established a new tribe Oncotympanini, represented by the genus *Oncotympana* STÅL. Judging from morphological characters (*e.g.*, short abdomen, uncus of ♂ genitalia, thecal process, etc.), I agree with his opinion that

the genus *Oncotympana* is entirely different from the other genera of the subtribe Leptopsaltriaria and may represent an independent tribe, Oncotympanini.

The species of the genus *Haphsa* DISTANT are allied and similar to those of the genus *Meimuna* DISTANT in many points. Therefore, it is difficult to find out the generic differences to divide the tribe. In the Catalogue, however, *Haphsa* was placed in the tribe Dundubiini (subtribe Tosenaria) and *Meimuna* in the tribe Platylomiini.

METCALF put the genus *Pomponia* in the tribe Psithyristriini, which is represented by the Philippine genus *Psithyristria* STÅL. So far as my investigation goes, *Pomponia* does not seem to belong to this tribe, as DISTANT suggested in 1912 (d) and again in 1914; the venation in *Psithyristria* is peculiar and unusual. More detailed study should be required to reconfirm their relationship.

Postscript

Very recently, NARUSE and TAKAGI (1977)[5] published a paper on the Cicadidae from Napal, in which six species were recorded including a new species, *Suisha himalayana* NARUSE. The description and nomenclature were entirely made by Mr. K. NARUSE. Unfortunately, his description is made only on the markings and coloration. Through the courtesy of Professor S. TAKAGI of Hokkaido University, I had an opportunity to examine the type-series (1 ♂ holotype and 1 ♂ paratype) of the cicada in question. As the result, I should express my opinion with additional description.

The species *himalayana* is closely similar and probably allied to *montana* M. HAYASHI, and is distinguished from the latter by the following points: Body smaller; abdominal pleura and sterna black and lustrous, covered with sparse hairs (not lustrous and covered with dense hairs in *montana*); uncus lobe of ♂ genitalia wider in proportion to length, especially at apical portion, and curved inwardly at ca. 105° (Figs. 55 A, B); extension of aedeagus (theca) beyond uncus lobe, etc.

NARUSE placed his species in the genus *Suisha* KATO dependent only on a single character of the width of the head. The genus *Suisha* is separable from the genus *Pycna* AMYOT et SERVILLE of the Oriental Region by the following characters: Head as wide as or slightly wider than base of mesonotum; pronotal paranotum narrow, more or less rounded; mesonotum more convex dorsally; tymbal cover globose laterally; ♂ operculum convex at outer lateral base; wings wider; costal membrane (precostal area) much developed and arched, and a costal area (an area between veins C and Sc+R) distinct; pygophore of ♂ genitalia covered with very long hairs, while uncus lobe is scarcely pilose (in *Pycna*, pygophore is covered with short sparse hairs and uncus lobe pilose, especially on its central part); uncus lobe very long and slender (Figs. 55 C, D).

5) NARUSE, K., & S. TAKAGI, 1977. Records of six species of Cicadidae from Nepal, with description of a new species (Homoptera). Scientific results of Hokkaidô University Expedition to the Himalaya, Entomology, No. 27. *Ins. Matsum.*, (N.S.), 11: 73–80.

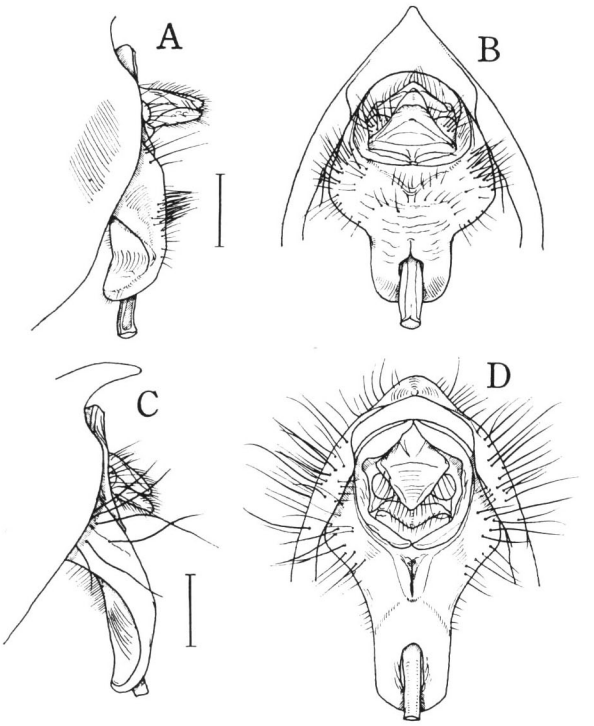

Fig. 55. Uncus in lateral (A, C) and ventral (B, D) views. A, B: "*Suisha*" *himalayana* NARUSE (paratype). —— C, D: *Suisha formosana* (KATO) from Taiwan. Scales, 0.5 mm.

From the above-mentioned facts, I propose to transfer NARUSE's species to the genus *Pycna*:

Pycna himalayana (NARUSE, 1977), comb. nov.

Suisha himalayana NARUSE, 1977, Ins. Matsum., (N.S.), 11: 75.

It is very probable that these two species, *himalayana* and *montana*, are descendants from a common ancestor; *himalayana* seems to have become differentiated in mountainous areas of Central Nepal, and *montana* in those of East Nepal.

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