

SOME MORE GENERA AND SPECIES OF TYPHLOCYBINAЕ (CICADELLIDAE:HOMOPTERA) FROM EAST PAKISTAN

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Abstract. Ahmed⁴ described eleven species under five genera in the tribe Erythroneurini of the subfamily Typhlocybinae in East Pakistan. Prior to this work these leaf-hoppers were known very little, and only through sporadic works of Ghauri,^{6,7} Ahmed³ and a few others. The present account is the second in this series and consists of five species under five genera, i.e. *Hameedia erythrocephala*, new genus, new species, *Mahmoodiana acuta* Ahmed, *Typhlocyba bengalensis*, new species, *Sylhetia punctata*, new genus, new species and *Erythroneura verticalis* Ahmed.

In an earlier attempt the author⁴ described from East Pakistan the Erythroneurine genera and species of subfamily Typhlocybinae, as well as briefly reviewed the fragmentary work done so far by workers like Distant,⁸ Ghauri^{6,7} and Lefroy¹ on Typhlocybinae fauna of India. The author's description contained eleven species under five genera of the tribe Erythroneurini. The present work contains some more genera and species studied from East Pakistan, and would be helpful for workers on leaf-hopper fauna. In the tribe Dikraneurini the species *Mahmoodiana acuta* Ahmed which was first described from West Pakistan⁵ has been reported from East Pakistan also. *Hameedia*, new genus, based on a new species *H. erythrocephala* also belongs to the tribe Dikraneurini. In the tribe Typhlocybini the genus and species *Sylhetia punctata* as well as the species *Typhlocyba bengalensis* are new to science. The species *Erythroneura verticalis* described from West Pakistan by Ahmed² is presently being reported from East Pakistan also. Host and food plants of the species, as well as keys to identify the new taxa have been given along with their descriptions.

Key to Identify Typhlocybinae Genera so far Known from East Pakistan

1. Hind-wing with submarginal vein present, extending beyond apex of vein 'R+M', then based along costal margin.....2.
Hind-wing with submarginal vein present or absent at wing apex.....4.
2. Fore-wing with third apical cell much longer than broad, with base transverse, not stalked. *Dikraneura* Hardy.
Fore-wing with third apical cell petiolate, triangular.....3
3. Pygofer with posterodorsal margin incurved into a long setaceous process.....
.....*Mahmoodiana* Ahmed
Pygofer with posterodorsal margin not incurved, not setaceous.....*Hameedia*, new genus
4. Vannal veins separate apically.....5.
Vannal veins fused apically.....7.

5. Hindwing with submarginal vein present at wing apex, confluent with vein 'R+M'.....
.....*Empoasca* Walsh
Hind-wing with submarginal vein absent at wing apex, fused with apical part of vein Cu₁....6
6. Male plate much reduced, shorter than pygofer.....
.....*Sylhetia*, new genus
Male plate normal, longer than pygofer.....
.....*Typhlocyba* Germar
7. Style with extreme posterior apex always tapered, and directed caudad.....8
Style with extreme posterior apex usually not tapered, rather broad and modified variously.....10
8. Style with a subapical, lateral, spur like outgrowth.....
.....*Helionidia* Zachvatkin
Style without a lateral spur like subapical outgrowth.....9
9. Male plate with lateral margin mostly incurved, and closely applied, with a hook like development in distal half; pronotum with a pair of contiguous triangular ridges.....
.....*Thaia* Ghauri
Male plate with lateral margin not incurved, and without any hook like development; pronotum with a number of spot like markings, not ridges.....
.....*Pakeasta* Ahmed
10. Style with a single apical extension, extreme posterior apex truncate.....
.....*Zygina* Fieber
Style with a second apical extension also, developed from the 'heel' of first extension.....11
11. Preapical lobe of style with a dorsal stout process like outgrowth rounded posteriorly; male plate with posterior tip truncated, appearing triangular posteriorly.....
.....*Mendera* Ahmed
Preapical lobe of style without any additional outgrowth, posterior tip of plate smoothly rounded.....
.....*Erythroneura* Fitch

Hameedia, new genus

Type species: *Hameedia erythrocephala*, n. sp.

Fore-wing. First apical cell with base angulate, cell long; second apical cell broad at base, narrow at apex; third apical cell petiolate, triangular in shape; fourth apical cell quadrilateral; costal plaque present.

Hind-wing. Vannal veins fused at base, separate in apical half; Cu_2 joining the submarginal vein in basal half of wing; submarginal vein reaching wing apex, beyond the apex of vein 'R+M', then based along costal margin; vein Cu_1 appearing branched apically.

Male genitalia. Male plate much exceeding the pygofer in length, in lateral view curved dorsad slightly beyond midlength, plate with a row of five macrosetae in middle on ventral surface; pygofer in lateral aspect longer than broad, posterior margin projected caudad into a narrow lobe, with a dorsal process remaining inside along dorsal margin, terminal part of process projecting out of posterodorsal margin, disc with a single macroseta in mid-dorsal position, anal tube elongate, narrow; style with cephalic part narrower, equal in length to caudal part, ending in a broad lobe, with a finger like outgrowth from mesocaudal part of style; connective broadly V-shaped, arms wide apart, base broad; aedeagus with preatrium nearly equal to shaft in length, dorsal apodeme present, shaft directed caudad, truncated terminally, processes lacking, gonopore terminal.

Female seventh sternum with posterolateral margin expanded posteriorly to a mild degree, posteromedian part assuming the form of a prominent angular projection.

Comparison. The genus *Hameedia* belongs to the *Dikraneura* complex of genera on the basis of venation of hind-wing, style and shape of connective, but differs in its venation of fore-wing, which has the third apical cell petiolate. The pygofer and aedeagus differ considerably from the other related genus *Mahmoodiana*. The key already given on previous pages would help in separating the genus from related genera of *Dikraneura* complex reported from Pakistan.

Hameedia erythrocephala, n. sp. (Fig. 1).

Length of male 3.40 mm, head conical in front; median length of crown 0.30 mm, of pronotum 0.40 mm, of scutellum 0.40 mm, interocular width of crown 0.35 mm, transverse width of pronotum 0.75 mm, face orange brown, posterior part of frontoclypeus whitish, crown mostly orange brown, epicranial suture prominent midway to median apex, with a pair of longitudinal, slender, whitish stripes laterally, pronotum and scutellum orange brown, with whitish patches, fore-wings greenish brown, apex with marginal black, and costal margin with whitish patches, all bordered by black, abdomen pale, straw coloured.

The species has been collected from the plant Gulab jam, from Dacca, East Pakistan.

Holotype male, Dacca, East Pakistan 10 XI 70 (M. Ahmed) Gulab jam, allotype female, and seven paratypes, same data in Zoological Museum, University of Karachi, Karachi.

Mahmoodiana acuta Ahmed

The species was described by Ahmed and Waheed⁵ from Lahore, on Rose (*Rosa indica*). It belongs to the tribe Dikraneurini, of the subfamily Typhlocybinæ, and occurs on the host plant in large numbers. Presently the species was collected in small numbers from Dacca, on grass.

Typhlocyba bengalensis, n. sp. (Fig. 2).

Length of male 2.70 mm; head projected, conical convex in front; median length of crown 0.25 mm, of pronotum 0.30 mm, of scutellum 0.40 mm; interocular width of crown 0.30 mm; transverse width of pronotum 0.60 mm; general colour of face, crown, pronotum, scutellum fore-wings and abdomen creamish yellow, with a number of small sized dark brown or blackish spots all over the fore-wing, a few or a pair of rows of such spots on the scutellum and pronotum.

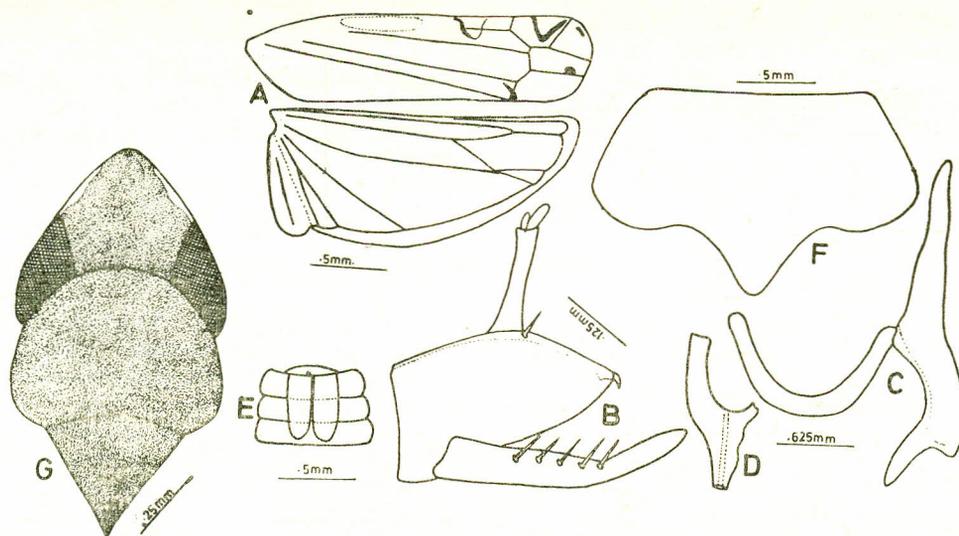


Fig. 1. *Hameedia erythrocephala*, new species. (A) Fore and hind-wings, (B) Pygofer and male plate, lateral view, (C) Style and connective, dorsal view, (D) Aedeagus, lateral view, (E) Sternal apodemes, (F) Female seventh sternum, (G) Head and thorax, (male) dorsal view.

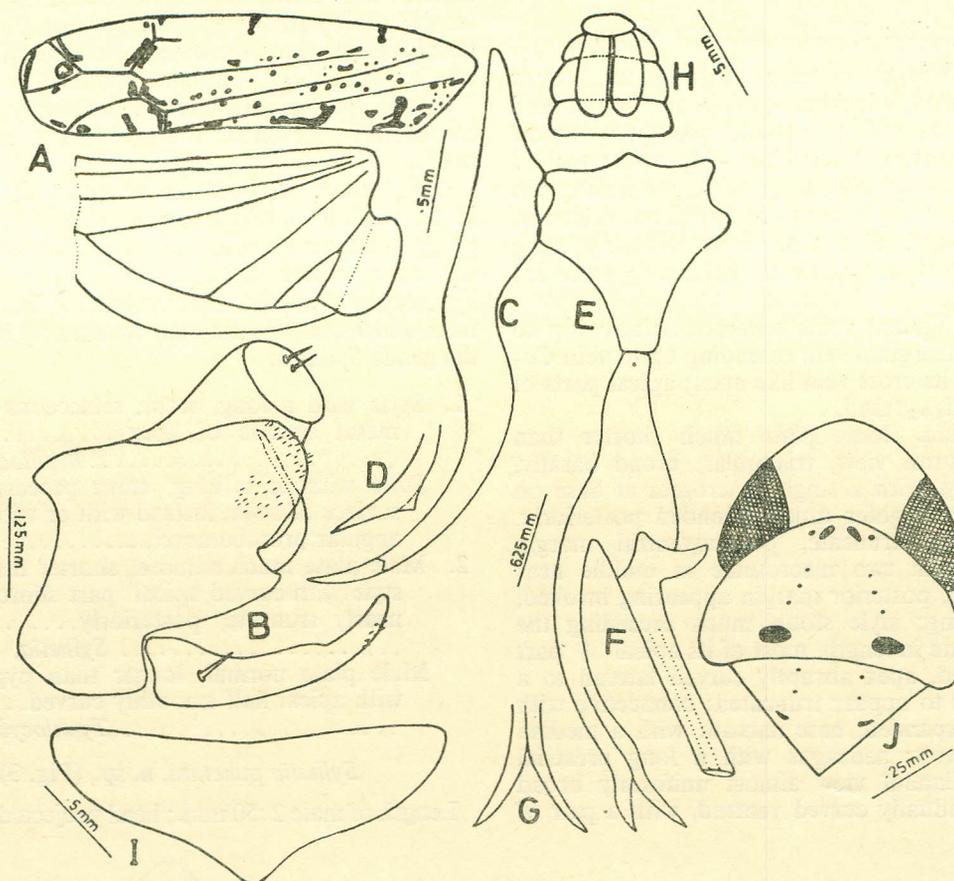


Fig. 2. *Typhlocyba bengalensis*, new species. (A) Fore and hind-wings, (B) Pygofer and male plate, lateral view, (C) Style, dorsal view, (D) Style apex, mesal aspect, (E) Connective dorsal view, (F) Aedeagus, lateral view, (G) Aedeagal apex, dorsal view, (H) Sternal apodemes, (I) Femal seventh sternum, (J) Head and thorax (male), dorsal view.

Wings. Fore-wing with first apical cell longer than broad, with base angulate; second apical cell subtending the posterior half of wing apex; third apical cell triangular, with a long petiole; fourth apical cell broad and long.

Male Genitalia. Male plate in lateral view narrowed in apical region, with a single macroseta on ventral surface near base; pygofer with posterodorsal margin large, rounded, lobe like, with a stout process arising from posteroventral margin and incurved to remain inside the pygofer, disc of pygofer lacking macrosetae; style stout, with apical half gradually curved laterad, apex tapered, directed laterad, mesodorsal margin of apex possessing a strong angular protuberance visible laterally; connective pepilionaceous; aedeagal articulation with connective terminal, preatrium well developed, dorsal apodeme present, shaft tubular, blunt at apex, atrium with a stout ventral process bifurcating mid-way to give rise to a diverging pair of processes.

Female seventh sternum with posterior margin converging to a posteromedian rounded, narrow projection.

Comparison. The species appears close to *T. karachiensis* Ahmed in the characters of pygofer con-

nective, style and to some extent in the shape of female seventh sternum. It however differs from the above species in the characters of aedeagus. The aedeagal shaft in lateral view is expanded in *T. karachiensis*, whereas it is tubular in *T. bengalensis*. Moreover, *T. karachiensis* possesses prominent red patterns on all over the dorsal surface but *T. bengalensis* has black punctation on the dorsal surface of its body. The species has been collected on the plant *Barnilia*, in Comilla. The following key would help in separating it from the related species referred above.

1. Aedeagal shaft in lateral view expanded, with a pair of atrial processes, separate throughout their length, slightly longer than $\frac{1}{2}$ of shaft; gonopore subterminal *T. karachiensis* Ahmed
2. Aedeagal shaft in lateral view tubular throughout, with the pair of atrial processes fused basally, separate apically, processes longer than shaft; gonopore terminal *T. bengalensis*, new species

Type and other Material. Holotype male, Comilla, East Pakistan, 13 XI 70 (M. Ahmed) *Barnilia*, allotype female, and seventeen paratypes, same data; in Zoological Museum, University of Karachi, Karachi.

Sylhetia, new genusType species: *Sylhetia punctata*, n. sp.

Fore-wing. Wings narrow throughout, apex smoothly rounded, blackish spots along costal and claval margins as well as around apex; first apical cell narrow, short, not reaching wing apex; second apical cell largest of all apical cells, subtending the posterior half of wing apex; third apical cell petiolate, triangular in shape, subtending the costal half of wing apex; fourth apical cell quadrilateral, hardly extended to wing apex.

Hind-wing. Vannal veins separate apically up to midlength; submarginal vein extending up to vein Cu_1 and fused with its cross vein like apex; apical parts of veins 'R' and M_{1+2} fused.

Male Genitalia. Male plate much shorter than pygofer, in ventral view, triangular, broad basally, angular apically, with a single macroseta at base on ventral surface; pygofer much extended posteriorly, posterior margin truncate, posteroventral margin oblique, disc with two macrosetae in middle near anterior margin, posterior margin appearing inrolled, processes lacking; style stout, much exceeding the pygofer and plate in length, most of its apical $\frac{2}{3}$ part uniformly broad, apex abruptly curved laterad to a short tip, so as to appear truncated; connective with cephalic half expanded, base narrow, with a median cephalic concavity; aedeagus with a long preatrial part, shaft in lateral view almost uniformly broad throughout, gradually curved ventrad, with a pair of

lateral atrial processes, slightly exceeding the shaft in length, shaft narrowed at apex, with a pair of lateral, terminal, setaceous processes, directed laterad, dorsal apodeme lacking, gonopore terminal.

The female seventh sternum smoothly curved posterolaterally, posterior margin with a mild median notch.

Comparison. *Sylhetia*, new genus is remarkable in the reduced development of male plate, and in the exaggerated development of style. These two characters do not bear any relationship to the genera of *Typhlocyba* complex already known from Pakistan, from which the following key would help in separating the genus *Sylhetia*.

1. Style with a long, stout, setaceous process on mesal surface of apex.....
.....*Byphlocyba* Ahmed
- Style without a long, stout process on mesal surface of apex, instead with or without a mild angular protuberance.....2
2. Male plate much reduced, shorter than pygofer; style with curved apical part short, appearing nearly truncate posteriorly.....
.....*Sylhetia*, new genus
- Male plate normal, longer than pygofer; style with apical half smoothly curved.....
.....*Typhlocyba* Germar

Sylhetia punctata, n. sp. (Fig. 3)

Length of male 2.50 mm.; head projected anteriorly,

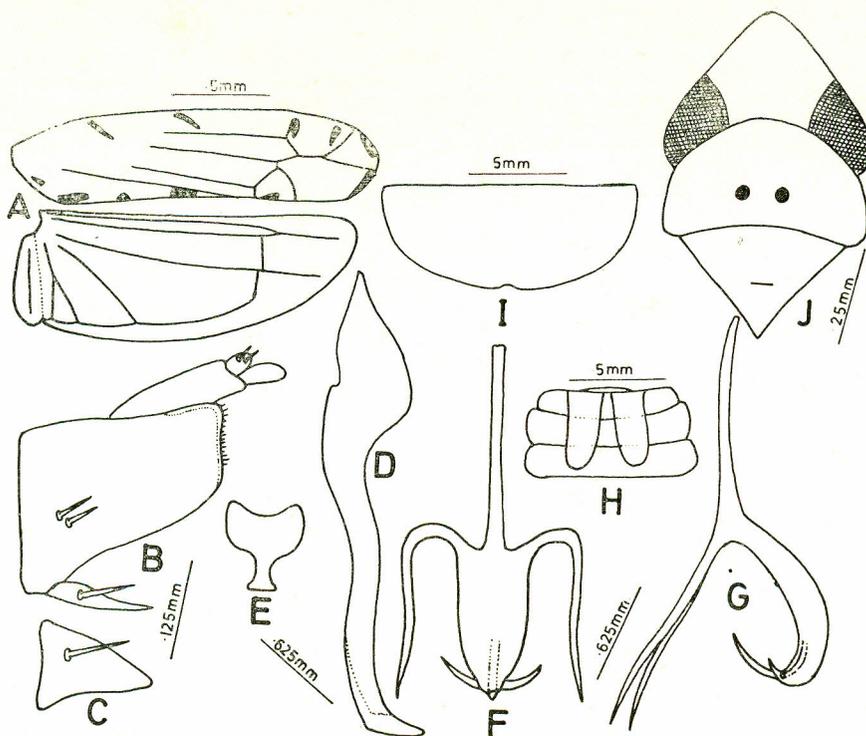


Fig. 3. *Sylhetia punctata*, new species. (A) Fore and hind wing, (B) Pygofer and male plate, lateral view, (C) Male plate, ventral view, (D) Style, dorsal view, (E) Connective, dorsal view, (F) Aedeagus, dorsal view, (G) Aedeagus, lateral view, (H) Sternal apodemes, (I) Female seventh sternum, (J) Head and thorax (male) dorsal view.

conical in appearance; median length of crown .275 mm, of pronotum .25 mm, of scutellum .30 mm; interocular width of crown .30 mm, transverse width of pronotum .50 mm; general body colour brownish yellow, anterolateral margins of crown pale white, epicranial suture prominent, disappearing slightly before anteromedian tip, pronotum and scutellum similar in tinge, forewings greenish yellow, with tiny black patches along posterior and anterior margins, abdomen pale yellow, with tip of ovipositor black in female, claws of legs blackish.

The species occurs on the plant *Shahora*, *Shorea robusta* in various localities of East Pakistan. The leafhopper is quite common in April and May, but the population remains low in December and January.

Type and other Material

Holotype male, Mymensingh, East Pakistan, 16 XII 70 (M. Ahmed) Shahora, allotype female, and seventeen paratypes, same data in Zoological Museum, University of Karachi, Karachi.

Erythroneura verticalis Ahmed

The species was described by Ahmed² from Peshawar, on the common grass *Cynodon dactylon*. The original description was based on only a few specimens. Later on, however, the author collected a large number of specimens of the species on a wild variety of grass, locally called 'jhund' at Sukkur, Sind (Pakistan). Presently the species is being reported from Rajshahi, on Boro paddy. The leafhopper resembles the common Typhlocybinae rice leaf hopper of East Pakistan, *Thaia oryzivora* in the orange brown colouration of crown, pronotum and

scutellum, but lacks the triangular ridges characteristically present on the pronotum of *Thaia oryzivora*. The internal male genitalia of the two species are also widely different. The two species have been found mixed in random samples on paddy.

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