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On Some Species of the Genus Typhlocyba from Pakistan

(Homoptera, Cicadellidae, Typhlocybinae)

With 42 Figures

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Abstract. During a recent survey of typhlocybine leafhoppers of fruit and vegetable plants in Pakistan, five new species of the genus *Typhlocyba*, *T ghanii*, *T juglansae*, *T neelamensis*, *T rahmani*, and *T ismaili* were studied and are being described.

CHRISTIAN (1953) redescribed the leafhopper genus *Typhlocyba* GERMAR (Typhlocybinae Cicadellidae). AHMED (1970, 1971) studied quite a few species of the genus from Pakistan. During a recent survey (1973–78) of the typhlocybine leafhoppers of fruit and vegetable plants in Pakistan, five more new species of the genus were studied and are being described below.

Typhlocyba ghanii n. sp. (Fig. 1)

External features

Length of male 2.9 mm; head broadly convex, with yellow and orange areas; pronotum and scutellum with red, yellow and orange patches; median length of crown 0.2 mm; interocular width of crown 0.3 mm; sternal apodemes on abdomen reaching fourth sternum.

Fore wing with red, yellow and black patches; inner and outer apical cells not reaching wing apex; second apical cell broad at apex; 3rd apical cell triangular, and stalked.

Male genitalia

Male plate broad at base, with a dorsolateral extension in distal half, extension possessing microsetae, macrosetae scattered all over the plate on ventral surface; pygofer with posterior part narrowed to a posterior lobe, possessing marginal macrosetae, microsetae in distal half of disc, posterior margin of pygofer inrolled; style with apical part slightly curved laterad, smoothly narrowing to a pointed apex; connective lammellate; aedeagal shaft tubular, broad at base, narrowed at apex, with a pair of long atrial processes; gonopore subterminal, dorsal apodeme well developed.

The new species *Typhlocyba ghanii* can be related to species *T babai* ISHIHARA from Japan, and *T aptera* DWOR. from China, (DWORAKOWSKA, 1979).

The male plates in *T babai* and *T aptera* are narrow with thin and comparatively long subapical prolongation, whereas in *T ghanii* n. sp. the male plate is broad at base, with a hammer shaped dorsolateral extension in distal half; extension possessing microsetae, macrosetae present all over the plate on ventral surface. The shapes of the pygofer in *T babai*, *T aptera* and *T ghanii* n. sp. are similar, but the posterior margin is not inrolled in *T babai* and possesses microsetae only, whereas the posterior margin is inrolled in *T ghanii* n. sp. and possesses a row of macrosetae.

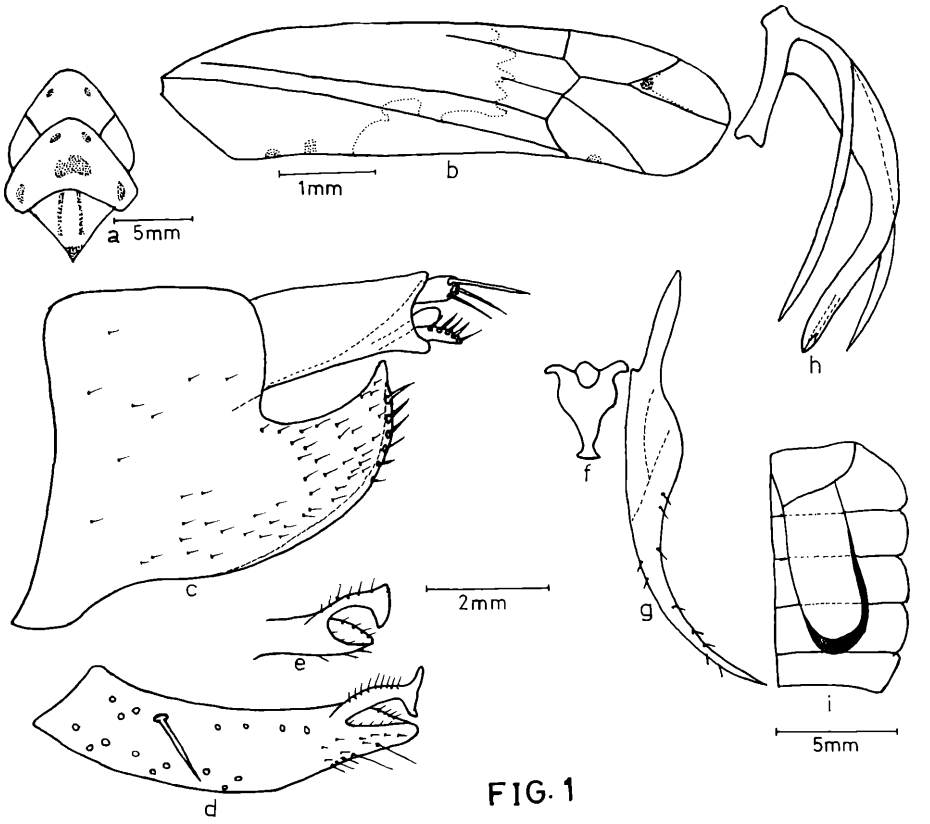

Fig. 1. *Typhlocyba ghanii* n. sp.
a Head and thorax, dorsal aspect – b: Fore wing – c: Pygofer and anal tube, lateral aspect – d: Male plate, lateral aspect – e: Apical part of male plate – f Connective, dorsal aspect – g Style, dorsal aspect – h: Aedeagus, lateral aspect – Sternal apodeme.

Holotype male, Athmuqam (Azad, Kashmir), Pakistan, 17 V 1977 (SIRAJ), Apple (Malus pumila), a single specimen in the Zoological Museum, University of Karachi, Karachi, Pakistan.

Typhlocyba juglansae n. sp. (Fig. 2)

External features

Length of male 2.6 mm; head convex in front; median length of crown 0.15 mm; interocular width of crown 0.3 mm; colour of head, pronotum and scutellum yellowish brown.

Fore wing with a rounded patch covering base of 1st apical cell; inner and outer apical cells short, not attaining wing apex; second apical cell much broader at apex than at base, covering more than $^1/_2$ of apex; third apical cell also broader at apex than at base; wing apex smoothly rounded.

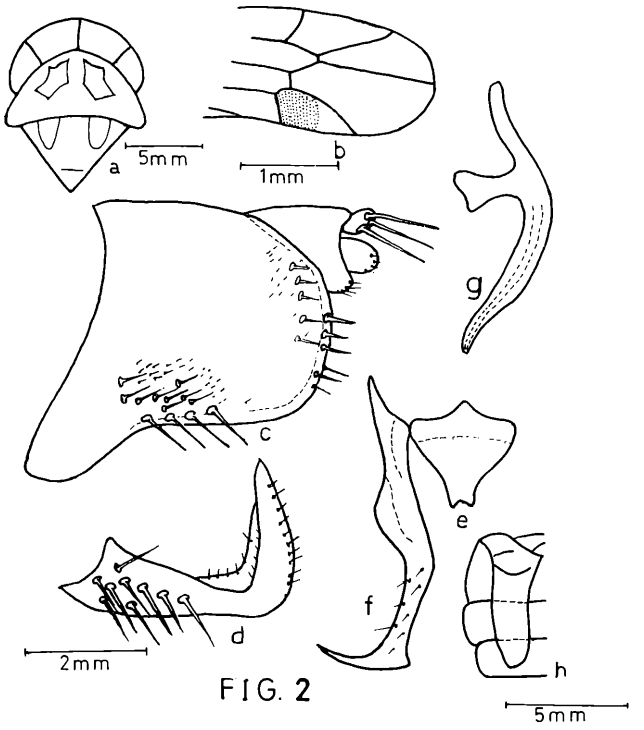

FIG. 2

Fig. 2. *Typhlocyba juglansae* n. sp.
a: Head and thorax, dorsal aspect – b: Fore wing, apical portion – c: Pygofer and anal tube, lateral aspect – d: Male plate, lateral aspect – e: Connective, dorsal aspect – f Style, dorsal aspect – g: Aedeagus, lateral aspect – h: Sternal apodeme.

Male genitalia

Male plate, with apical half abruptly curved dorsad, apex tapered in lateral view, with a group of macrosetae on ventral surface in basal half, microsetae in rows in apical half, on lateral and mesal margins; pygofer with posterior margin rounded, microsetae and macrosetae marginal as well as submarginal, and a group of macro – and microsetae on disc in midventral position, just opposite to outer basal angle of male plate, posterior margin of pygofer somewhat inrolled and sclerotized; anal tube provided with macrosetae, anal hooks absent; style gradually curved laterad apically to a sharply tapered long apex, style possessing microsetae along lateral and dorsal surfaces; connective V-shaped, with a median cephalic lobe; aedeagus without processes; dorsal apodeme present, shaft tubular, slightly curved dorsad; gonopore terminal.

The species is close to *T variata* AHMED. However, it can be differentiated on the basis of colouration of head and tegmen. The male plate in *T juglansae* n. sp. is curved dorsad in middle at about 90 °, a feature not seen in any related species.

Holotype male, Paras (Hazara), Pakistan, 19. IV 1975 (RAHMAN), Walnut (Juglans regia), paratypes 2 males, same data, in Zoological Museum, University of Karachi, Karachi, Pakistan.
The specimens were also collected from Garhi Habibullah on the same host plant.

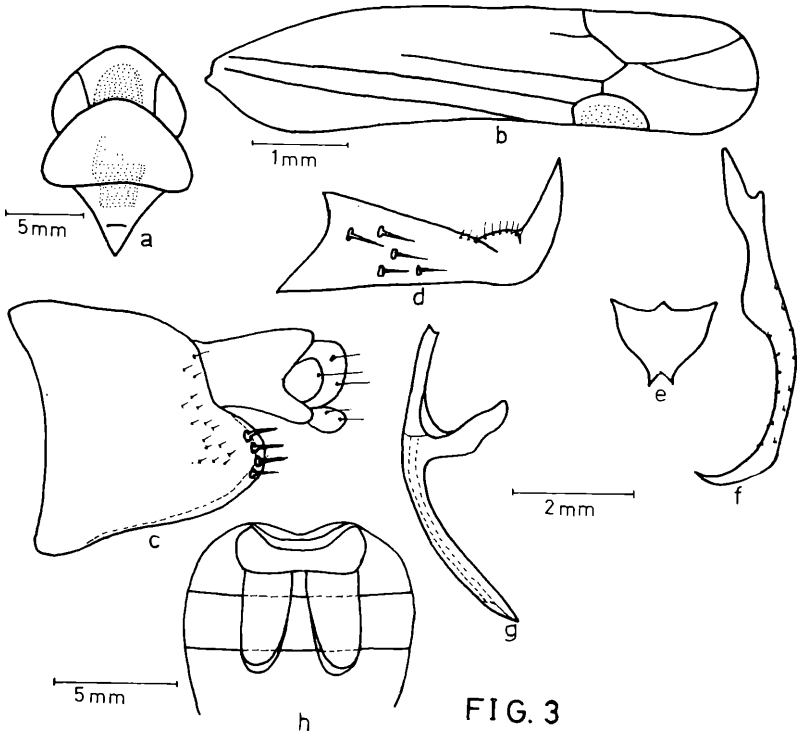

Fig. 3. *Typhlocyba neelamensis* n. sp.
a: Head and thorax, dorsal aspect – b Fore wing – c: Pygofer and anal tube, lateral aspect – d: Male plate, lateral aspect – e Connective, dorsal aspect – f: Aedeagus, lateral aspect – h: Sternal apodemes.

Typhlocyba neelamensis n. sp. (Fig. 3)

External features

Length of male 2.8 mm, of female 3.00 mm; head convex in front; median length of crown 0.2 mm, interocular width 0.2 mm, colour of head, pronotum and scutellum brownish yellow sternal apodemes reaching third abdominal sternite.

Fore wing with a light red patch at base of 1st apical cell; 1st apical cell very short, not attaining wing apex; second apical cell much broader at apex than at base; third apical cell also broader at apex, triangular and stalked.

Male genitalia

Male plate, with apical portion curved dorsad abruptly, apex pointed in lateral view, with a group of macrosetae on ventral surface in basal half, a row of microsetae on apical, lateral and mesal margins; pygofer with posterior margin rounded, with a row of macrosetae posterodorsally, posterior margin inrolled, and serrated; anal hooks absent; style gradually curved laterad, possessing microsetae along lateral and dorsal surfaces; connective V-shaped, with a median cephalic lobe; aedeagus without processes, shaft tubular, slightly curved dorsad; gonopore subterminal and ventral.

T neelamensis n. sp. is close to *T juglansae* n. sp. *described* hitherto in the structure

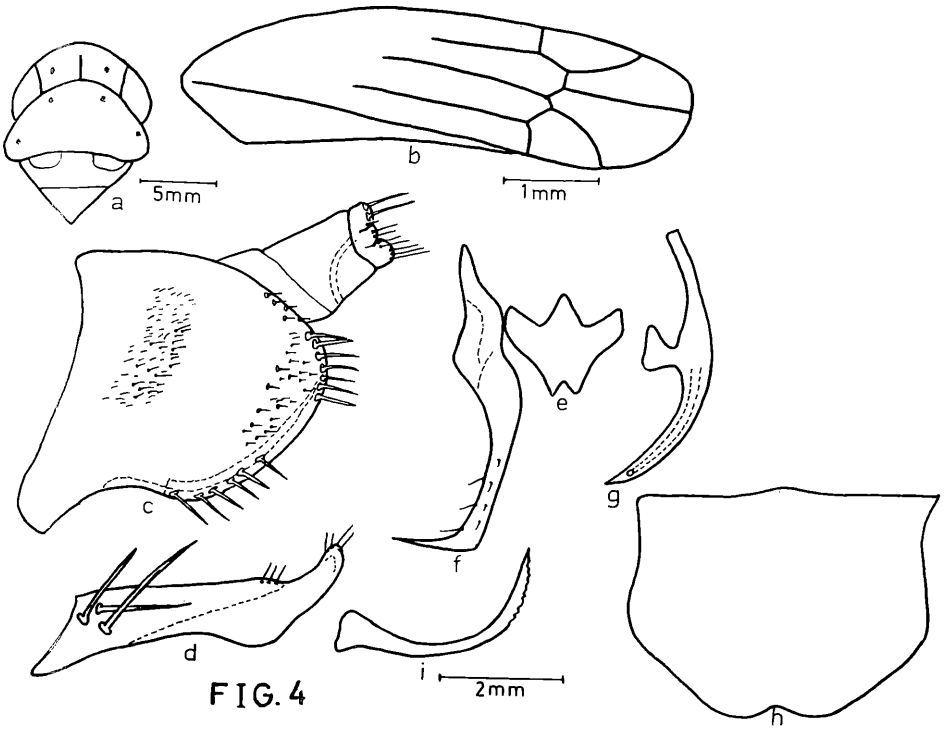

Fig. 4. *Typhlocyba rahmani* n. sp.
a: Head and thorax, dorsal aspect – b: Fore wing – c: Pygofer and anal tube, lateral aspect – d: Male plate, lateral aspect – e Connective, dorsal aspect – f: Style, dorsal aspect – g: Aedeagus, lateral aspect – h Female seventh sternum – i: Ventral pygofer process.

of male plate, and style, but differs in colour pattern, chaetotaxy and shape of pygofer, and aedeagus. In *T juglansae* n. sp. the gonopore is terminal, and the shaft is tubular slightly curved dorsad, whereas in *T neelamensis* the gonopore is subterminal, ventral in position.

Holotype male, Athmuqam, Pakistan, 17 V 1974 (RAHMAN), Apple (Malus pumila), paratype one female, in Zoological Museum, University of Karachi, Karachi, Pakistan.

Typhlocyba rahmani n. sp. (Fig. 4)

External features

Length of male 2.5 mm; head broadly convex in front; median length of crown less than interocular width; crown, pronotum, and scutellum lemon yellow, with brownish patches, abdomen lemon yellow ventrally, dark brown dorsally; wings transparent, abdominal apodemes absent.

Fore wing with inner and outer apical cells short, not attaining wing apex; second apical cell much broader at apex than at base; third apical cell petiolate.

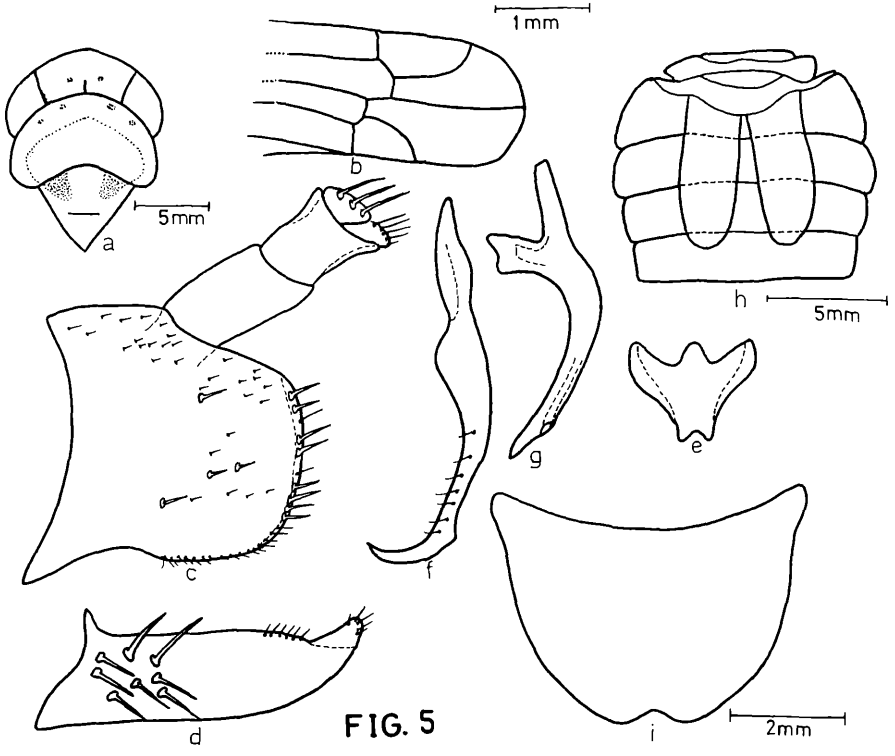

Fig. 5. *Typhlocyba ismaili* n. sp.
a: Head and thorax, dorsal aspect – b: Fore wing, apical half – c: Pygofer and anal tube, lateral aspect – d: Male plate, lateral aspect – e: Connective, dorsal aspect – f: Style, dorsal aspect – g: Aedeagus, lateral aspect – h Sternal apodemes – Female seventh sternum.

Male genitalia

Male plate curved dorsad in apical 1/3, apex tapering and rounded, plate with three macrosetae on ventrolateral surface near base, and a bunch of microsetae at apex pygofer with posterior margin more or less rounded, pygofer process remaining within disc, and running along pygofer margin, apical 1/2 of process with serrated margin and sclerotized, anal hooks absent; style stout, with a row of microsetae in apical half on mesal margin, apical curved part long, tapered; connective massive, W-shaped with a median cephalic lobe; aedeagus with preatrium and dorsal apodeme developed, processes absent, shaft tubular slightly curved dorsad, tapering to a needle like tip, gonopore subterminal.

Female seventh sternum with a median broad area, posterior part bilobed, dent in middle.

T rahmani n. sp. appears close in genitalic characters to *Typhlocyba variata* AHMED and *T spinosa* AHMED. However, it lacks the prominent spine present on the surfarce of style in apical half in *T spinosa*. *T rahmani* n. sp. possesses pygofer process which is absent in *T variata*, and *T spinosa*.

Holotype male, Paras (Hazara), Pakistan, 19. IV 1975 (RAHMAN), Walnut (Juglans regia), paratypes 13 specimens, same data, in Zoological Museum, University of Karachi, Karachi, Pakistan, 5 specimens in U.S. National Museum, Washington, U.S.A., and 2 specimens (♀♀) in Staatliches Museum fuer Tierkunde Dresden, G.D.R.

Typhlocyba ismaili n. sp. (Fig. 5)

External features

Length of male and female 2.7 mm; head strongly convex in front; median length of crown 0.25 mm; interocular width of crown 0.3 mm; pronotum with posterior margin slightly concave; abdominal apodemes extending beyond 3rd sternite; general body colour yellowish, head with two brown dots in median region, anterior margin of pronotum with brown patches.

Fore wing with 3rd apical cell sessile, broad based.

Male genitalia

Male plate in lateral view broad in basal $^2/_3$ part, apical $^1/_3$ much narrowed, and only slightly curved dorsad, apex rounded, plate with a bunch of marcosetae near base on ventral surface; pygofer with posterior margin broad, margin appearing inrolled with a row of marginal macro and microsetae, $^1/_2$ of disc covered with macro- and microsetae in a scattered manner, pygofer processes and anal hooks absent; style stout, its apex slightly expanded at point of lateral curve; connective W-shaped, with lateral arms broad, median cephalic lobe present; aedeagus with dorsal apodeme well developed, shaft tubular, its apex tapered, curved dorsad, processes absent, gonopore ventral and subterminal.

Female seventh sternum with a median notch on posterior margin, forming a bilobed structure.

The new species *T ismaili* is close to *T variata* AHMED in its general pattern of male genitalia, but can be separated on the basis of shape and chaetotaxy of pygofer and male plate.

Holotype male, Abbottabad (Hazara), Pakistan, 17 V 1974 (JAVED), Walnut (Juglans regia), paratypes 8 males and 3 females, same data, in Zoological Museum, University of Karachi, Karachi, Pakistan, 2 specimens in U.S. National Museum, Washington, U.S.A., and 2 specimens (♂, ♀) in Staatliches Museum fuer Tierkunde Dresden, G.D.R.

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