

**A NEW GENUS AND TWO NEW SPECIES OF NIRVANINAE
(CICADELLIDAE—HOMOPTERA) FROM PAKISTAN**

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The subfamily Nirvaninae has not been so far reported from Pakistan. The Indian species of the subfamily are poorly described and with uncertain relationships. The genus *Quercinirvana*, n. gen. has been recorded from both East and West Pakistan. Presently two new species (*Q. longicephala*, n. sp. and *Q. bengalensis*, n. sp.) of the genus have been described. The genus appears close to the genera *Nirvana* Kirkaldy and *Kana* Distant.

The leafhopper subfamily Nirvaninae was first recognised as a separate group of leafhoppers by Baker¹ in 1923, and characterized by Kramer², Evans,^{3,4} Matsumura⁵ and Ishihara.⁶ They have their form somewhat depressed, crown extended anteriorly, produced much beyond the eyes, and ocelli on crown in front of the eyes. The subfamily is mostly distributed in the Old World, with a great diversity of its genera and species, a majority of which require revisionary studies.

The Indian fauna of Nirvaninae has been described by Distant,^{7,8} under the subfamily Jassinae. The species have been poorly described as is the case with other leafhoppers of Cicadellidae. Evans³ recognised 10 genera of Indo-Ceylonese Nirvaninae. The taxonomic position of these genera can however be regarded only tentative until a revision of Indian genera is made. None of these genera has been reported from the territories now included in East and West Pakistan.

The following description of *Quercinirvana*, n. gen. is based on the material collected from East and West Pakistan and appears quite close to *Nirvana* Kirkaldy and *Kana* Distant in venational characters, and head structure.

Genus *Quercinirvana*, n. gen.

Type of the genus, *Quercinirvana longicephala*, n. sp.

Hindwings.—Vein 1V branching from vein 2V proximad to midpoint; posterior branch of 'R' not fused with vein M_{1+2} ; vein Cu_1 appearing branched apically; submarginal vein extending around wing apex and confluent with extremity of posterior branch of vein 'R'; vein Cu_2 confluent with submarginal vein opposite vein m-cu.

Forewings.—Appendix present, extending around wing apex, or only up to the first apical cell; first apical cell twice as long as second; fourth apical

cell triangular or quadrilateral; one antepical cell present on costal margin.

Male Genitalia.—Male plate longer than pygofer, in ventral aspect with macrosetae spread in distal half, with numerous microsetae along lateral margin and at apex; pygofer with rounded posterior margin, with a group or groups of marginal or discal macrosetae, with a stout ventral process; style with a preapical lobe, apical extension conical, or tapered, directed laterad, or postero-dorsad; connective Y-shaped, with arms much divergent, stem shorter or longer than style; aedeagal shaft tubular, curved dorsad, with processes arising variously; dorsal apodeme generally well developed; preatrium usually reduced.

On the basis of external morphological characters as well as wing venation, the genus appears close to genera *Nirvana* Kirkaldy and *Kana* Distant, reported from Ceylon and Southern India. The type species of the genus *Nirvana* is not traceable, (Distant 1908: 282) nor it has been figured by the author. Venational characters of other species of the genus, e.g. *N. pallida* Melichar as illustrated by Matsumura⁵ show a marked difference from *Quercinirvana*, n. gen., which has an appendix in forewing and the submarginal vein in hindwing confluent with vein 'R'. While in *N. pallida* the appendix in forewing is absent, and the submarginal vein is extending beyond the vein 'R'. The head in the case of *Kana* Distant has crown slightly longer than wide, whereas it is much longer than wide in *Quercinirvana*, n. gen. None of the species of the two genera *Nirvana* and *Kana* has been properly described so as to allow a more reliable comparison, nor any other genus can be placed in the subfamily Nirvaninae from Indo-Pakistan with much certainty. *Quercinirvana*, n. gen. appears also close to the Western genera *Neonirvana* Oman, and *Krocozzota* Kramer, but differs in having stout connective, and aedeagus with varied development of processes. The type species of the genus *Krocozzota* Kramer is however based on a female, and its true characteristics would be

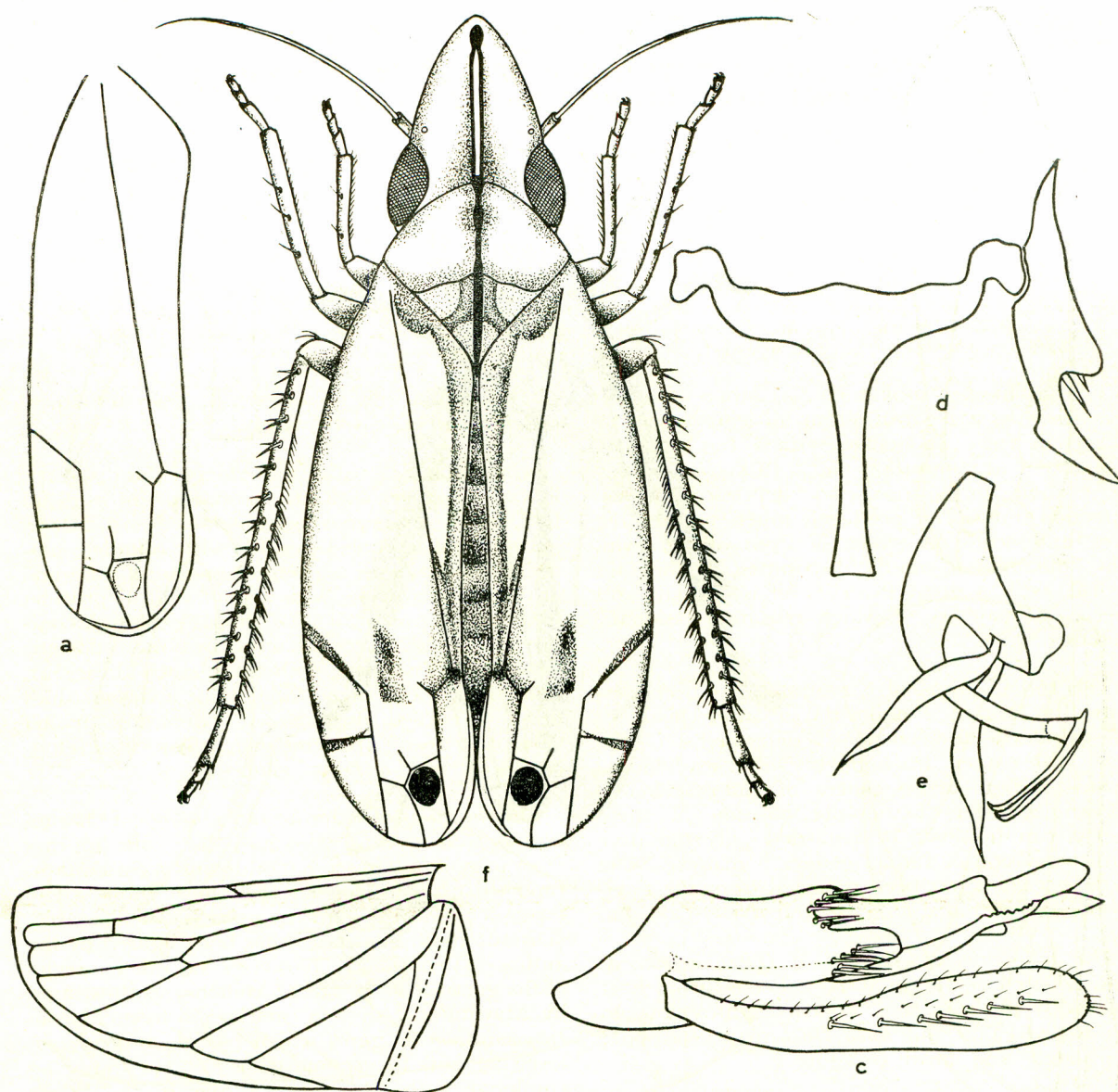


Fig. 1.—*Quercinirvana longicephala*, n. sp. (a) forewing, (b) hindwing, (c) genital capsule, lateral view, (d) style and connective, dorsal view, (e) aedeagus, lateral view, (f) adult female.

established when males are known of the type species *K. langura* Kramer.

Key to the species of genus Quercinirvana, n. gen.

1. Pygofer process flattened, serrated dorsally at tip; connective V-shaped.....
Q. longicephala, n. sp.
- Pygofer process tapered, not serrated at tip; connective Y-shaped.....
Q. bengalensis, n. sp.

***Quercinirvana longicephala*, n. sp.**
(Fig. 1)

Form.—Length 5.2 mm; head with median length of crown greater than width between eyes; pronotum broader than long, posterior margin slightly concave; colour pale yellow, with a double black or reddish line extending from near tip of crown to posterior margin of pronotum in median position, fore wings with black or red stripes and a large black spot near wing apex.

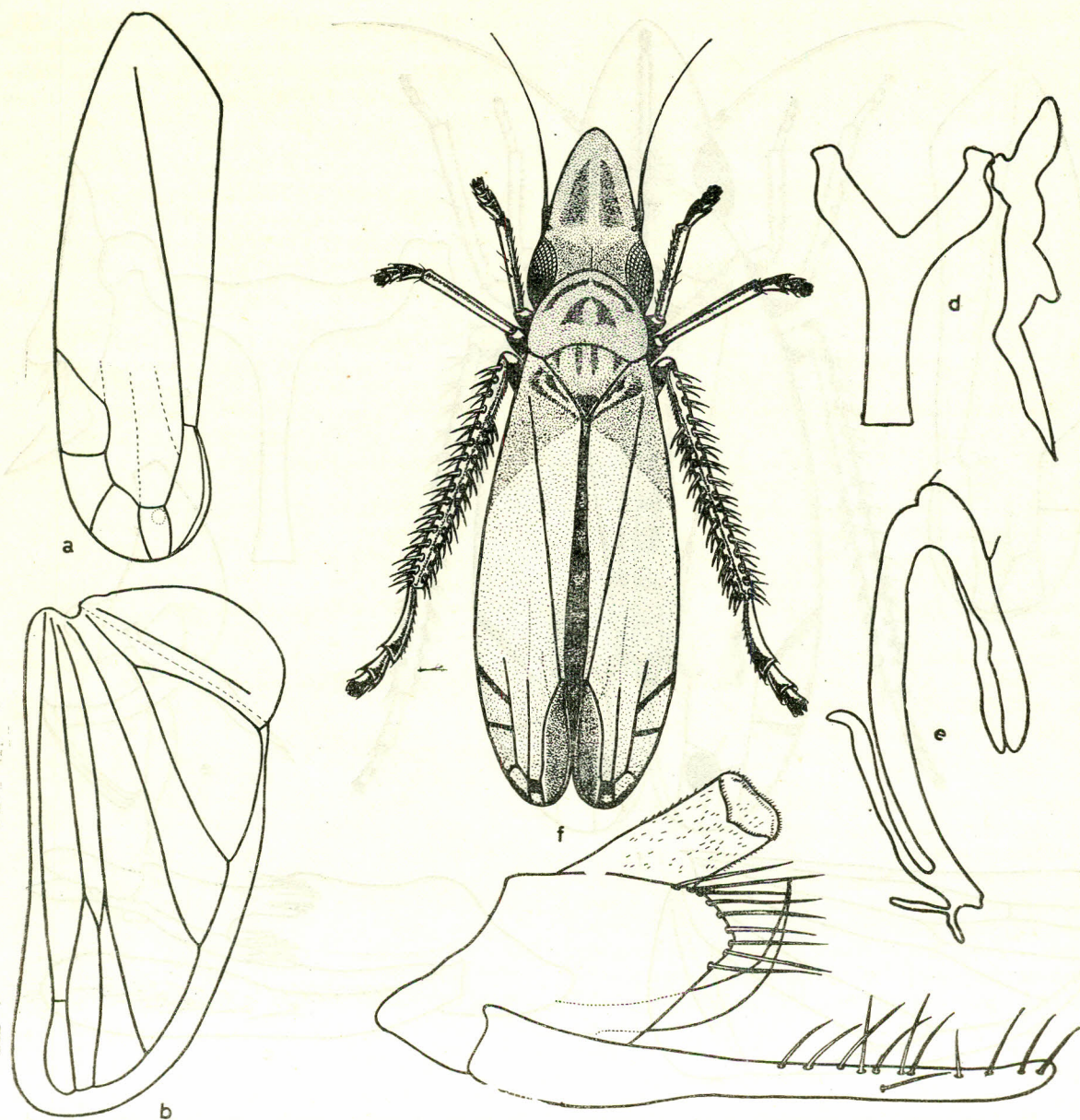


Fig. 2.—*Quercinirvana bengalensis*, n. sp. (a) forewing, (b) hindwing, (c) genital capsule, lateral view, (d) style and connective, dorsal view, (e) aedeagus, lateral view, (f) adult female.

Wings.—Forewings with appendix extending around wing apex; first apical cell twice as long as second; second apical cell broad at base, narrow at apex; fourth apical cell triangular.

Male Genitalia.—Male plate longer than pygofer, in ventral aspect with a row of 7 or 8 macrosetae spread from middle to apex; pygofer with two groups of marginal macrosetae located posteriorly

and postero-dorsally, process serrated at tip; style with preapical lobe broad, apical extension directed laterad; connective with stem longer than style; aedeagal shaft with a pair of atrial and terminal process, both arising dorsally and directed ventrad.

Host and Food Plants.—The species has been described from chestnut, *Aesculus indica* Colber;

but occurs in equal proportions on plants of oak group e.g. *Quercus dilatata* Lindl. and *Viburnum nervosum* D. Don. in Murree, West Pakistan. The population of the leafhopper is never high and it is capable to breed on more than one plant species.

Holotype male, Abbotabad, W. Pakistan, 27 VI 64 (M. Ahmed), dogwood, allotype female, three paratypes, same data, three paratypes, Swat, W. Pakistan, 29 VI 64 (M. Ahmed), apricot, and three paratypes, Abbotabad, W. Pakistan, 19 VI 64 (M. Ahmed), fig, in the Zoological Museum, University of Karachi, Karachi, West Pakistan.

***Quercinirvana bengalensis*, n. sp.**

(Fig. 2)

Form.—Length of male 4.1 mm, of female 4.7 mm, median length of crown much greater than width between eyes; a pair of median stripes, blackish pale to pale brown, running from anterior tip of crown to posterior margin of pronotum, general colour pale; body depressed.

Wings.—Forewings with appendix extending to first apical cell, cell broad in middle; second apical cell slightly narrowed towards apex; third and fourth apical cells broadened towards apex; fourth apical cell quadrilateral.

Male Genitalia.—Male plates tapered distally, much exceeding pygofer, in lateral aspect with a row of long macrosetae in apical half; pygofer with a fringe of long macrosetae on posterodorsal margin, with a strong ventral process directed dorsad, tapered at extremity, style with a prominent preapical lobe, apical extension tapered at extremity, directed posterodorsad; connective Y-shaped, stem shorter than style; aedeagus with preatrium reduced, shaft tubular, slightly curved dorsad, with a pair of short terminal, and an unpaired long subterminal processes arising ventrally; dorsal apodeme double pronged; gonopore terminal.

Holotype male, Dinajpur, East Pakistan 5 XII 63, I.A. Khan; five paratypes from Dinajpur, five paratypes from Rajshahi, three paratypes from Mymensingh, two paratypes from Jessore, nine paratypes from Chittagong, fourteen paratypes from Dacca, and four paratypes from Rayikhali, in Zoological Museum University of Karachi, Pakistan; one paratype from Dinajpur, five paratypes from Sylhet, six paratypes from Chittagong Hill tracts, six paratypes from Comilla, and one paratype from Cox's bazar, in U.S. National Museum Washington.

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