



10-1-1988

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Recommended Citation

Ahmed, Manzoor; Qadeer, A.; and Malik, K. F. (1988) "Some new cicadellids from grasslands of Karachi, Pakistan (Homoptera: Cicadellidae)," *Great Basin Naturalist Memoirs*: Vol. 12 , Article 3.

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SOME NEW CICADELLIDS FROM GRASSLANDS OF KARACHI, PAKISTAN (HOMOPTERA: CICADELLIDAE)

Manzoor Ahmed¹, A. Qadeer¹, and K. F. Malik¹

ABSTRACT.—A brief survey of grassland leafhoppers of Karachi during 1985 revealed the existence of five new species of the family Cicadellidae. These include *Exitianus major*, *E. minor*, *Chiasmus karachiensis*, *C. lobosa*, and *Goniagnathus bifurcatus*.

Recent studies of grassland leafhoppers of Pakistan by Ahmed (1986), Ahmed and Rao (1986), and Ahmed and Yunus (1986) showed that leafhoppers form a very important component of the phytophagous fauna of our grasslands. The leafhopper fauna described by these and other workers, e.g., Blocker et al. (1972) from USA and Theron (1982) from South Africa, appears to be widely diversified. Andrezejewska (1984) believed that species composition of Auchenorrhyncha in grasslands depends to a high degree on immigrant species, which indicates that most of the species encountered in grasslands move in from the neighboring crops when the latter are harvested. Thus, grasslands serve not only as alternate feeding grounds for leafhopper pests of a number of crops but also as breeding places for many species of leafhoppers during their off-crop seasons. Studies of grassland leafhoppers could therefore be useful from many aspects.

The leafhoppers described herein have been studied following the methodology outlined by Ahmed (1985).

Exitianus Ball

The genus *Exitianus* Ball is known from all major regions of the world. Oman (1949) re-described the genus and listed the Nearctic species. Metcalf (1967) listed 35 world species, and Ahmed and Rao (1986) recorded *E. capicola* (Kb.) and described *E. peshawarensis* from Pakistan. During the present study two more new species of the genus were collected from Karachi, Pakistan, and are described below.

Exitianus major Ahmed & Qadeer, n. sp. (Figs. 1 A-K)

LENGTH.—Male 4.2 mm, female 4.8 mm; head broad, rounded at anterior apex; median length of crown nearly equal to or slightly less than the interocular width; transocular width of head slightly more than midlength of crown; ocelli close to mesal margin of eyes on anterolateral margin; crown with dim brown markings, transverse band of dark brown color in middle, rest of crown pale brown; frontoclypeus narrowing anteriorly; anteclypeus longer than broad, narrowing anteriorly; lora broad; pronotum possessing tiny spots of brown color on disc; scutellum dim brown, with two brownish spots anterolaterally.

Forewings with apex smoothly rounded; maximum width slightly prior to midlength; appendix broad, extending around wing apex up to 4th apical cell; apical cells 5; subapical cells 3; veins in the basal region possessing brownish markings all along; hind wings with 4 closed apical cells.

MALE.—Plate in ventral view broad in basal half, narrowed in apical half, possessing 6–7 macrosetae on ventrolateral surface; pygofer with posterior margin extended into narrow posterodorsal lobe, with one long and one small blackish macrosetae on lobe, style in dorsal view massive, sclerotized in marginal areas, membranous in middle, with broad, bluntly rounded lobe, apical extension spinose, curved laterad; connective Y-shaped with arms quite close to each other; aedeagus with preatrium reduced, dorsal apodeme well

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Figs. 1 A-K. *Exitianus major*, n. sp.: A, head and thorax, dorsal view; B, head, ventral view; C, forewing; D, hind wing; E, genital capsule, lateral view; F, male plate, ventral view; G, style, dorsal view; H, connective, dorsal view; I, aedeagus, lateral view; J, aedeagus, dorsal view; K, female seventh sternum.

developed, shaft in lateral view broad in basal 2/3, narrowed apically, smoothly curved dorsally at apex.

FEMALE.—Seventh sternum narrowed posteriorly, posteromedian margin sinuate.

Exitianus major appears quite close to *E.*

capicola (Stal) in venation and shape of aedeagus, but differs in its smaller size, shape of connective, chaetotaxy of male plate, and to some extent in the shape of female seventh sternum.

HOLOTYPE (male).—PAKISTAN: Karachi, grass,

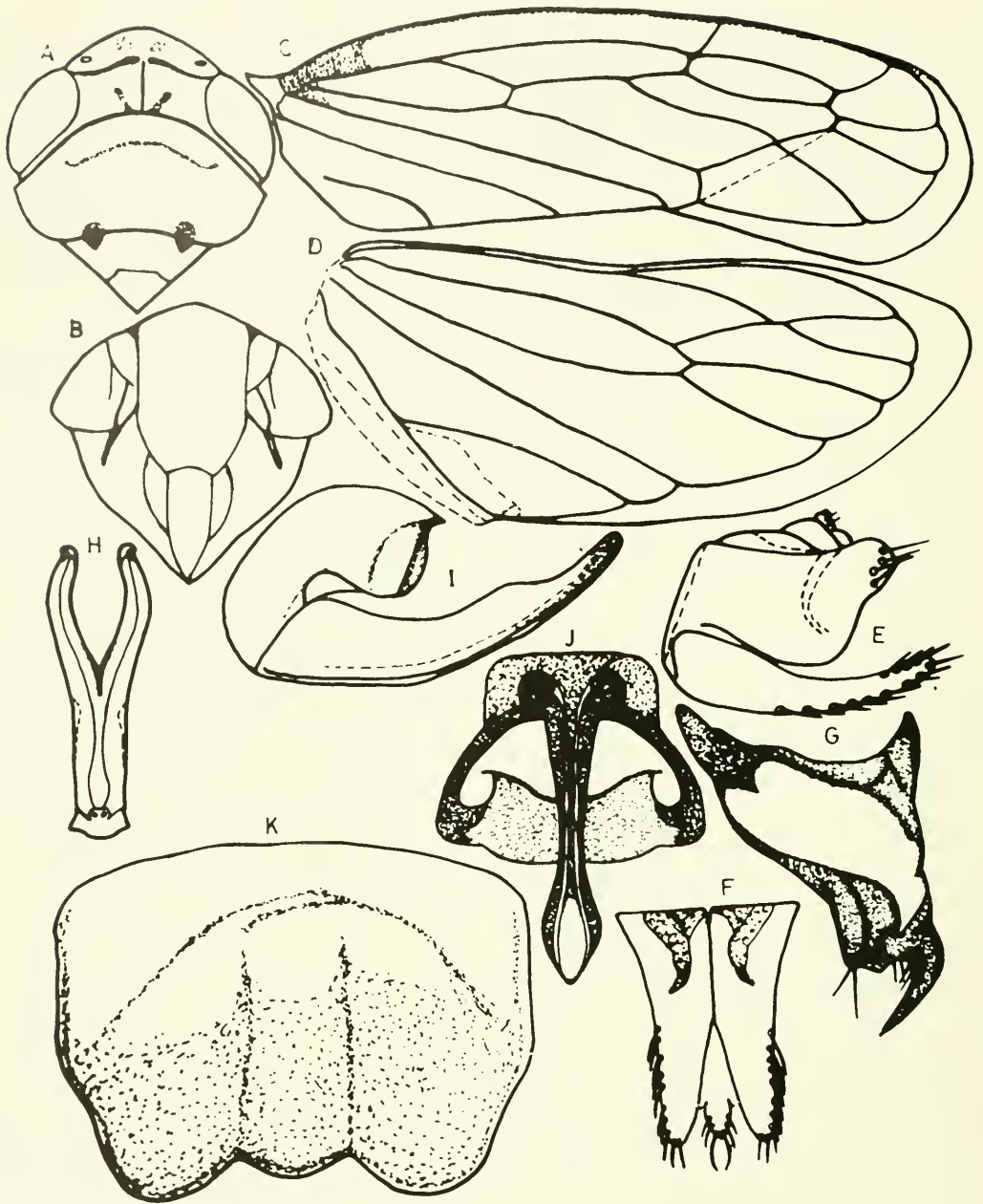


Fig. 2 A-K. *Exitianus minor*, n. sp.: A, head and thorax, dorsal view; B, head, ventral view; C, forewing; D, hind wing; E, genital capsule, lateral view; F, male plates, ventral view; G, style, dorsal view; H, connective, dorsal view; I, aedeagus, lateral view; J, aedeagus, dorsal view; K, female seventh sternum.

26.VI.85, Qadeer. Seven paratypes, same data as holotype, all in Zoological Museum, University of Karachi, Karachi, Pakistan.

Exitianus minor Ahmed & Qadeer, n. sp.
(Figs. 2 A-K)

LENGTH.—Male 4.00 mm, female 4.5 mm;

head projected in front, broadly rounded at anterior apex; median length of crown less than interocular width; transocular width of head nearly equal to transverse width of pronotum; coronal suture present up to more than midlength; ocelli on anterolateral margin

of crown, close to eyes; crown with brownish markings on disc and transverse brownish band at the level of anterior margin of eyes; ground color of crown more or less pale brown; frontoclypeus nearly parallel sided, narrowed at apex; anteclypeus narrowed anteriorly, much longer than broad; lora broad; pronotum with some tiny spots in middle in anterior region, with posterior margin nearly transverse; scutellum pale brown, with oval-shaped, brownish spots anterolaterally.

Forewing with apex broadly rounded; apical part slightly broader than basal part; appendix broad, extending up to 5th apical cell; apical cells 5; subapical cells 3; hind wing with 4 closed apical cells.

MALE.—Plate in ventral view, broad basally, narrowed apically, possessing 4–5 macrosetae near apex on lateral margin, long row of 9–10 macrosetae from near base to apex on ventral surface; pygofer with posterior margin directed into posterodorsal broad and rounded lobe, lobe possessing 4–5 brownish macrosetae; style in dorsal view massive, membranous in middle, sclerotized along margins, preapical lobe flattened, almost truncate mesally, possessing 3–4 macrosetae, apical extension prominent, spinose, extreme apex directed caudolaterad; connective Y-shaped, with arms smaller than the stem, converging at their apex; aedeagus in lateral view, with preatrium reduced, dorsal apodeme present, appearing broad in dorsal view, shaft tubular, curved smoothly dorsad, apical part narrowed.

FEMALE.—Seventh sternum with posterior margin possessing three lobes, lateral lobes more projected than the median.

Exitianus minor appears close to *E. karachiensis* Ahmed and *E. major* described hitherto in its venation and general pattern of male genitalia, but differs in its shape of connective and female seventh sternum.

HOLOTYPE (male).—PAKISTAN: Karachi, grass, 12.V.1985, Qadeer. Thirty paratypes, all in Zoological Museum, University of Karachi, Karachi, Pakistan.

Chiasmus Mulsant and Rey

Distant (1908) recorded *Chiasmus uzelli* Melichar from Ceylon. Pruthi (1930) described three new species from various parts of India and reassigned *Kartwa mustelina* Distant to the genus *Chiasmus*. The present

description of two new species in *Chiasmus* is the first record of the genus from Pakistan.

Chiasmus karachiensis Ahmed & Qadeer, n. sp.

(Figs. 3 A–J)

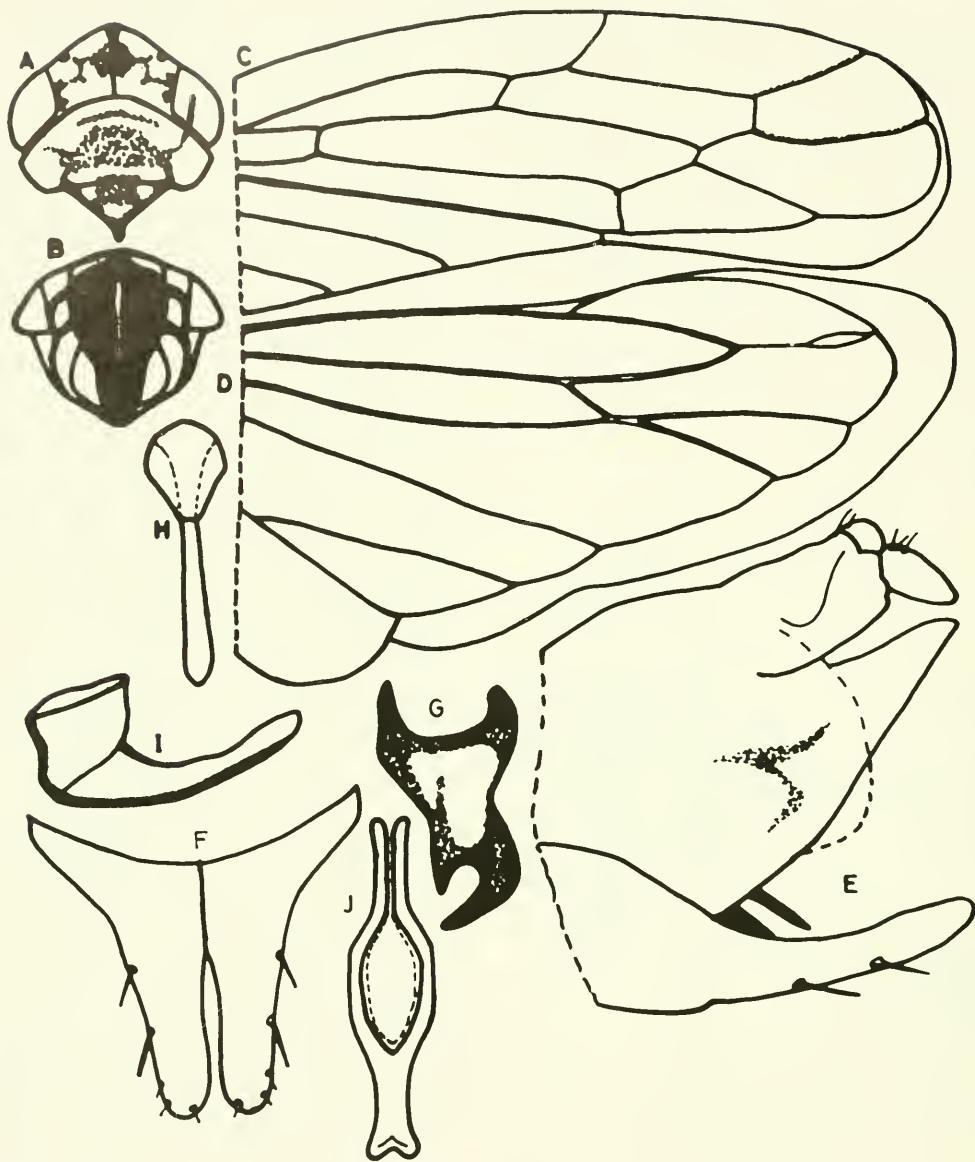
LENGTH.—Male 2.3 mm; head strongly projected in front, apex of crown narrowed and rounded; median length of crown much less than interocular width; transocular width of head slightly more than transverse width of pronotum; coronal suture present up to more than midlength of crown; ocelli on anterolateral margin of crown, close to eyes; color of eyes blackish; crown possessing blackish brown dots throughout; ground color of crown pale yellow; pronotum yellowish, its posterior margin nearly straight; scutellum dim yellow; frontoclypeus narrowing anteriorly, blackish in color throughout, except median, longitudinal stripe of yellow color; anteclypeus black in middle; lora broad, expanded.

Forewing with apex smoothly rounded; maximum width of wing slightly prior to midlength; appendix broad, extending to 3rd apical cell; apical cells 4; subapical cells 2; hind wing with 4 closed apical cells.

MALE.—Plate in ventral view broad at base, middle and apical parts much narrowed, macrosetae 2–3 on ventral surface in apical half, apex of plate rounded and directed caudad; pygofer in lateral view with posterior margin narrowed into angular, posterodorsal, much-projected lobe, processes and setae usually absent; style in dorsal view membranous in middle, sclerotized along margins, preapical lobe short, narrow, and angular, apical extension dark brown in color, spinose and curved laterad; connective Y-shaped, with arms longer than the stem, arms apposed most of their anterior part, forming nearly rounded space in middle; aedeagus in lateral view with preatrium reduced, dorsal apodeme absent, shaft tubular, somewhat curved dorsad towards apex, processes absent.

C. karachiensis appears close to *C. alata* Pruthi in general appearance as well as pattern of venation and genitalia, but differs in the shape of pygofer.

HOLOTYPE (male).—PAKISTAN: Karachi, grass, 1.XI.85, Qadeer. One paratype, same data as holotype, both in the Zoological Museum, University of Karachi, Karachi, Pakistan.



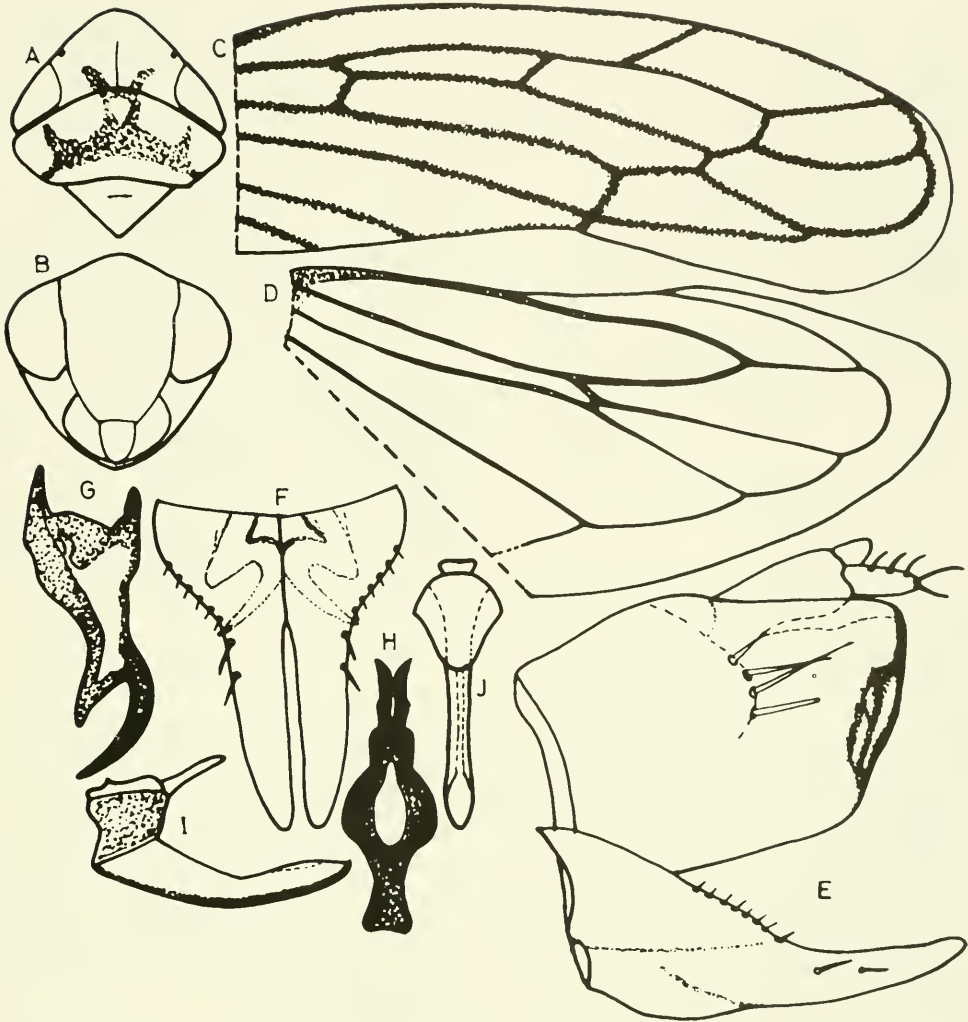
Figs. 3 A-J. *Chiasmus karachiensis*, n. sp.: A, head and thorax, dorsal view; B, head, ventral view; C, forewing; D, hind wing; E, genital capsule, lateral view; F, male plates, ventral view; G, style, dorsal view; H, connective, dorsal view; I, aedeagus, lateral view; J, aedeagus, dorsal view.

Chiasmus lobata Ahmed & Qadeer, n. sp.
(Figs. 4 A-J)

LENGTH.—Male 2.5 mm, female 3.0 mm; head projected and narrowed in front, apex rounded; median length of crown nearly equal to or slightly less than interocular width; transocular width of head equal to transverse width of pronotum; coronal suture present up to more than midlength; ocelli present on

anterolateral margin of crown, close to eyes; crown possessing few, dim, brownish spots in middle along posterior margin; frontoclypeus broad, narrowed in apical 1/3; anteclypeus longer than broad; lora broad; pronotum possessing rows of brownish markings.

Forewing with apical margin smoothly rounded; apical cells 4; appendix broad, reaching 3rd apical cell; subapical cells 2;



Figs. 4 A-J. *Chiasmus lobata*, n. sp.: A, head and thorax, dorsal view; B, head, ventral view; C, forewing; D, hind wing; E, genital capsule, lateral view; F, male plate, ventral view; G, style, dorsal view; H, connective, dorsal view; I, aedeagus, lateral view; J, aedeagus, dorsal view.

veins with brownish shades along their length; hind wing with 3 closed apical cells.

MALE.—Plate in lateral view broad at base, narrowed in apical half, apex rounded, possessing row of 2–3 macrosetae on ventral surface in apical half, another row of 7–8 microsetae on lateral margin from near base to mid-length, length of plate more than the pygofer, apposed mesally at base; pygofer in lateral view with posterior margin broad, dented, more projected posterodorsally, disc with dorsoventral row of 4 macrosetae; anal tube moderately developed; style in dorsal view

with preapical lobe narrowed, angular, apical extension thin, spinose, directed laterad; aedeagus in lateral view with preatrium reduced, dorsal apodeme present, shaft tubular, somewhat curved dorsad in middle, apex rounded and thin, directed caudad; connective Y-shaped, with arms much longer than stem, arms confluent again forming space in middle.

Chiasmus lobata appears quite close to *C. karachiensis* as well as to *C. niger* Pruthi and *C. jagdishii* Pruthi in the pattern of male genitalia, but differs from them in the peculiar

shape of pygofer, particularly the posterodorsal margin.

HOLOTYPE (male).—PAKISTAN: Karachi, 15.XII.85, grass, Qadeer. One paratype, same data as holotype, both in Zoological Museum, University of Karachi, Karachi, Pakistan.

Goniagnathus Fieber

The genus *Goniagnathus* Fieber was re-described by Dlabola (1954). Distant (1918) described three species of the genus from India. Ahmed and Yunus (1986) reported *G. guttulinervis* Kirsch. from Pakistan. Another species of the genus is described here from grass.

Goniagnathus bifurcatus Ahmed &
Qadeer, n. sp.
(Figs. 5 A-1)

LENGTH.—Male 5.0 mm; head with anterior margin broadly convex, smoothly rounded in front; median length of crown much less than the interocular width; transocular width of head slightly more than the transverse width of pronotum; coronal suture up to more than midlength; ocelli on anterolateral margin of head, close to apex; anteclypeus longer than broad; lora broad; pronotum with few brownish black dots along anterior margin and on posterior margin; scutellum grayish black throughout.

Forewing with apex broad and rounded; maximum width of wing in basal half; appendix broad, extending to 4th apical cell; apical cells 5; subapical cells 3; black markings present in appendix, 2nd, 3rd, and 4th apical cells, in some discal subapical cells and along all the veins; hind wing with 4 closed apical cells.

MALE.—Genital segment strongly sclerotized, dark brown in color; plates in ventral view fused completely to form a single ovid structure, width of plate decreasing smoothly to rounded apex, with few blackish macrosetae and marginal microsetae in apical part; pygofer in lateral view with posterior margin broad, nearly truncate, slightly sinuate posterodorsally, with at least three prominent groups of stout macrosetae, one closely placed group posterodorsally, one mixed group of short and long in middle of posterior margin in middle, and one group in posteroventral region of disc, microsetae dispersed throughout

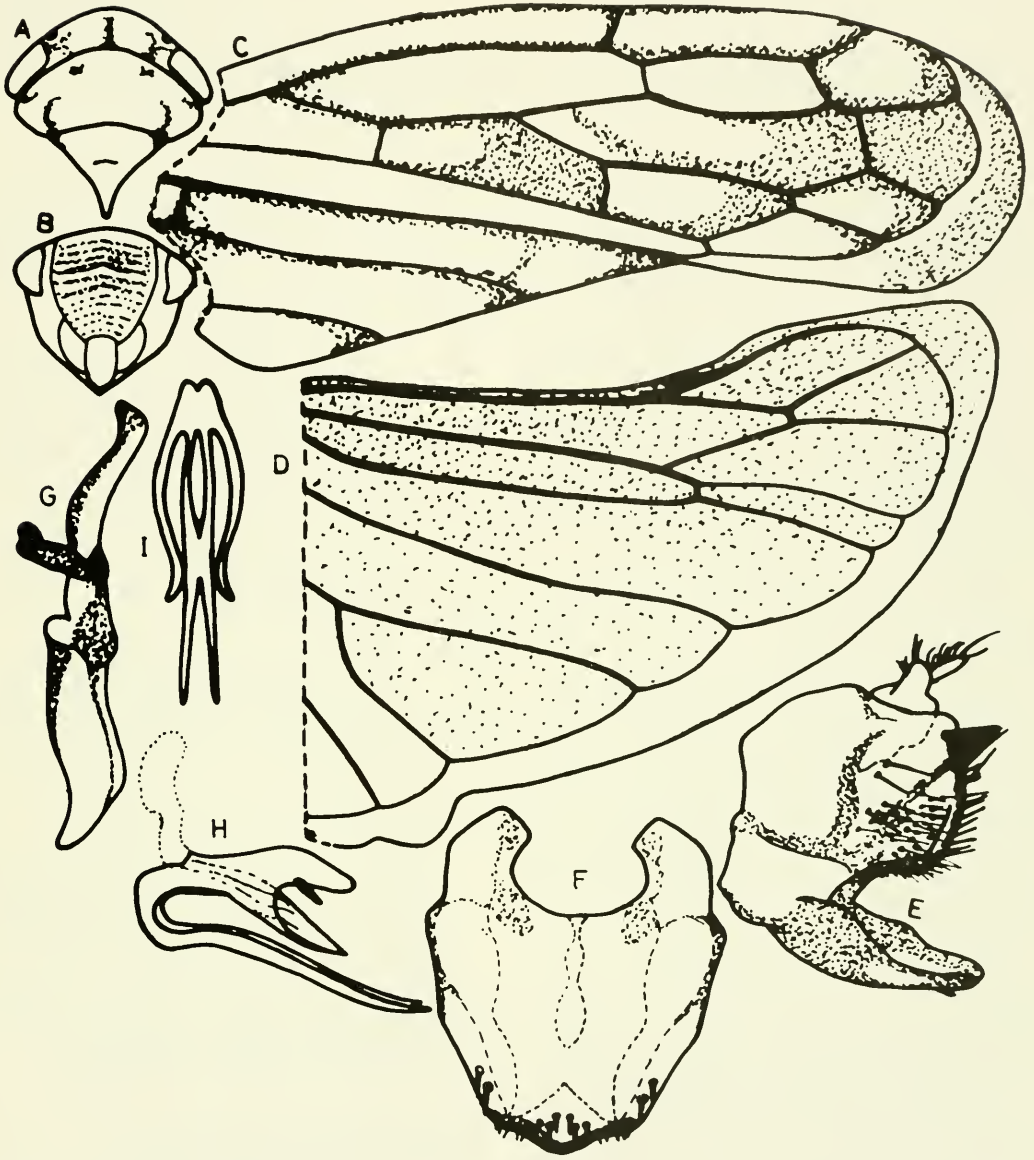
pygofer; anal tube moderately long, possessing fine microsetae; posterior margin of pygofer finely dentate; style in dorsal view with preapical lobe minutely developed, apical part expanded, with extreme apex obliquely truncate; connective in dorsal view rod-shaped, arms indistinct, connective curved in middle; aedeagus in lateral view with preatrium reduced, dorsal apodeme well developed, closely associated with connective; shaft of aedeagus short, tapered apically, long processes arising from atrium, subparallel to shaft, exceeding shaft in length; gonopore subterminal on dorsal surface.

Goniagnathus bifurcatus is close to *G. guttulinervis* Kirschbaum in the general pattern of male genitalia, particularly the male plate and aedeagus, but differs in the shape of style, pygofer, and connective.

HOLOTYPE (male).—PAKISTAN: Karachi, grass, 10.XI.85, Qadeer. One paratype, same data as holotype, both in Zoological Museum, University of Karachi, Karachi, Pakistan.

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Figs. 5 A-I. *Goniagnathus bifurcatus*, n. sp.: A, head and thorax, dorsal view; B, head, ventral view; C, forewing; D, hind wing; E, genital capsule, lateral view; H, aedeagus and connective, lateral view; I, aedeagus, dorsal view.