

## NEW MALAYAN CIXIIDÆ (HOMOPTERA)

By F. MUIR

*Of the Hawaiian Sugar Planters' Experiment Station, Honolulu*

### TWO PLATES

The three genera dealt with in this paper all possess a well-developed subantennal process in the shape of a keel across the gena. In this they differ from *Myndus* and allied genera. Measurements are from the apex of vertex to anus and from the apex to base of the tegmen. The types are deposited in the Hawaiian Sugar Planters' Experiment Station collection, and they bear the type numbers of that collection; the paratypes are in Prof. C. F. Baker's collection.

#### Genus *KINNARA* Distant, Plate 1, fig. 1

*Pleroma* MELICHAR, Hom. Fauna Ceylon (1913) 41, pl. 1, figs. 12, a-c, nom. praeoc.; BIERMAN, Notes Leyden Mus. 29 (1908) 154, pl. 3, fig. 3.

*Kinnara* DISTANT, Fauna Brit. India, Rhynchota 3 (1906) 289; 6 (1916) 59; MUIR, Proc. Haw. Ent. Soc. 2<sup>e</sup> (1913) 265.

The genus *Kinnara* Distant is of interest as it combines characters of both the Cixiidæ and the Achilidæ. The claval veins are fairly thick and fork near the apex of clavus; in some species they end at the apex of the clavus, in others they join the suture a little before the apex. The tegmina are tectiform or subtectiform, the hind margins are not greatly produced beyond the clavus and do not overlap when at rest. The median ocellus is present in all the species that I have examined.

In the female the genital styles are very short and do not form a complete ovipositor, a condition found in the Achilidæ. The posterior abdominal tergites of the female are mostly membranous, flattened, and form a large wax-secreting area. The male pygofer is flattened laterally and is cixiidlike in construction. There is a lateral appendage on each side which arises near the base of the genital styles and is more or less connected with the sides of the pygofer. The ædeagus is complex, with a long, semimembranous, curled tube at the apex.

Until we have a greater knowledge of the morphology of the Cixiidæ and Achilidæ, I think it is best to place all fulgorids with

a median ocellus in the Cixiidæ. In *Kinnara* other characters indicate that family as the best locality in which to place this genus.

In considering the venation I have concluded that R touches M for a short distance (Plate 1, fig. 1). Only a study of the traheation of the wing pad will settle this point beyond doubt.

This genus has a distinct subantennal flange and a smaller one at a right angle to it beneath the antenna.

*Kinnara spectra* Dist. Plate 1, fig. 2.

*Kinnara spectra* DISTANT, Fauna Brit. India, Rhynchota 6 (1916) 60.

One male and one female from Singapore agree with the description, which contains no mention as to sex or genitalia.

The lateral process on the male pygofer is long, subspatulate and subtruncate at apex; slightly dorsad of this process the margin is produced into a squarish process with the apex oblique. Anal segment large with rounded apex and concave on the ventral surface. The genital styles are subtriangular with the longest side forming the outer margin, which is sinuous; apex produced into two small processes, a slender, curved process and a smaller process. *Ædeagus* complex.

Anterior genital style of female subtriangular, width of base about half the length, apex rounded with a small notch slightly before apex; a transverse ridge across the base.

A comparison of these genitalia with those of the Indian specimens is necessary to confirm this identification.

*Kinnara flavofasciata* Dist. Plate 1, fig. 3.

*Kinnara flavofasciata* DISTANT, Fauna Brit. India, Rhynchota 6 (1916) 59.

Four males from Basilan and one female from Zamboanga, Mindanao, Philippine Islands (*Baker 13353*), I refer to this species until the genitalia of the Indian specimens have been examined.

In the male the lateral process of the pygofer is narrow, subequal in width to the apex which is rounded. The genital styles are narrow on basal two-thirds with subparallel sides, the apex is expanded, the outer corner produced into a beanlike process, the inner corner rounded.

*Kinnara penangensis* sp. nov. Plate 1, fig. 4.

*Female*.—Length, 3.5 millimeters; tegmen, 5.4. Stramineous; mesonotum slightly darker. Tegmina hyaline, slightly stramin-



eous, a faint fuscous band across from stigma to apex of clavus, veins stramineous. Wings hyaline, veins yellowish. Vertex about square; carinæ on mesonotum obsolete. Anal segment small, not reaching apex of genital styles. Anterior genital style triangular, length about one and one-half times the width of base with a small notch at apex on the inner side.

Penang Island (*Baker*), 1 female. Type No. 1032.

*Kinnara nigrolineata* sp. nov. Plate 1, fig. 5.

*Male*.—Length, 2 millimeters; tegmen, 3.5. Only three apical median veins,  $M_2$  lacking; claval vein joining suture slightly before apex. Vertex wider than long. Lateral appendages of pygofer long, narrow, curved, and recurved, apex bluntly rounded. Genital styles small, narrow, inner margin slightly curved, outer margin slightly sinuate, apex truncate, outer angle produced into an acute point. Light stramineous; brownish along carinæ of face and clypeus. Tegmina hyaline, very slightly stramineous, veins slightly darker, a dark, fuscous mark from crossvein between M and Cu in middle of tegmen to apex of  $M_3$ ; wings hyaline, basal and anal areas fuscous.

NEGROS, Cuernos Mountains (*Baker*), 1 male. Type No. 1033.

*Kinnara bakeri* sp. nov. Plate 1, fig. 6.

*Male*.—Length, 1.7 millimeters; tegmen, 3. Vertex about as long as broad. The base of Sc + R joined to the base of M for a very short distance. The lateral processes of pygofer long, narrow, slightly broadened in the middle, the apex acute. Genital styles, in lateral view, strongly curved at the base, broad on basal two-thirds and tapering to acute apex. Anal segment rounded at apex. Head, legs, and lateral portion of pronotum stramineous; mesonotum and abdomen dark brown. Tegmina dark fuscous, veins fuscous, lighter clear areas around the stigma and in the apical cells. Wings fuscous with dark veins.

*Female*.—Length, 1.8 millimeters; tegmen, 3.3. In color similar to the male. The anterior genital styles triangular, length about one and one-half times the width of base, a small flange along the base produced into a small rounded process on the inner corner.

Singapore (*Baker 9924*), 2 males and 1 female. Type No. 1034.

This species comes near *K. brunnea* Muir, but the color is somewhat distinct and the process at the base of the anterior styles of female is not so large.

*Kinnara marginalis* sp. nov. Plate 1, fig. 7.

*Male*.—Length, 2 millimeters; tegmen, 3. Veins Sc, R, and M joined at their bases into a very short stalk. Costal cell broad, the margin all around broad, more especially along the costa. Vertex slightly wider than long. The lateral processes of pygofer narrow, long, and slightly curved. The genital styles curved, nearly straight on inner margin, outer margin concave in middle, apex rounded. Anal segment large, rounded at apex. Head, thorax, and legs stramineous or light brown, the posterior part of the mesothorax and the carinæ darker, abdomen brown. Tegmina and wings hyaline, uniformly light brown, veins darker.

BORNEO, Sandakan (*Baker 9923*), 1 male. Type No. 1035.

I have three females from Dapitan, Mindanao (*Baker*); although these are similar to *K. bakeri*, I feel sure that they will prove to be distinct when the male is known.

#### Genus EURYPHLEPSIA novum

Type, *E. amboinensis* sp. nov.

Tegmina comparatively narrow, subparallel-sided or slightly widened toward apex which is rounded. Margins with distinct border all around, widening out at stigma; costal cell large, Sc and R joined together to near stigma with their bases joined to M to about middle of clavus, the common base and the Sc + R thickened and joined to the stigma; forking of Cu slightly before apex of clavus. Two apical Rs, five apical Ms with the  $M_1$  arising from  $M_2$  in some specimens. Claval vein joining margin before apex, forking about middle, first claval vein thickened at base (Plate 1, fig. 8).

Vertex longer than wide, widest at base, which is slightly and roundly emarginate, lateral carinæ well developed, continuing unbroken on to the face, median frontal carina projecting at apex, a transverse carina about middle. Base of face about half the width of apex, apical half roundly ampliate at sides, median carina distinct to median ocellus. A distinct subantennal process across gena touching the lateral carina of face a little before apex. Clypeus large, sides flattened, lateral and median carinæ distinct. In profile median portion of face slightly protruding near apex. Antennæ short, first segment very short, second segment shorter than broad, in apical view broader than deep (Plate 2, fig. 1). Eyes slightly emarginate along ventro-anterior margin. Prothorax short, hind margin widely and subangularly emarginate, posterior lateral angles acute, no dis-



tinct carinæ. Mesonotum tricarinate, slightly flattened between carinæ, hind margin forming about an equilateral triangle. Female with complete ovipositor projecting about two-thirds beyond pygofer, which forms a small, round, wax-secreting area. Posterior tibiæ unarmed.

This genus comes into the Oecleini, in which tribe the bases of Sc, R, and M form a common stalk, thus only two veins arise from the basal cell.

*Euryphlepsia amboinensis* sp. nov. Plate 1, fig. 8; Plate 2, figs. 1, 2.

*Male*.—Length, 3 millimeters; tegmen, 3.7. Ochraceous orange or ochraceous buff; slightly darker on carinæ of head and on mesonotum. Tegmina hyaline, ochraceous, veins of same color, apices of apical veins and apical crossveins brownish. Wings hyaline, with ochraceous veins. Lateral margins of pygofer produced into a small subangular projection about middle, medioventral projection conical in outline. Anal segment large and consisting of three pieces, a large basal piece produced into a small process at the sides, a small triangular middle portion and a large, lanceolate apical portion, slightly curved and concave on ventral surface. This apical portion is possibly the anal style. Genital styles large, narrow at base, widest in middle, inner margin convex, outer margin slightly sinuous, apex narrow, very slightly bilobed. *Ædeagus* complex.

*Female*.—Length, 3 millimeters; tegmen, 4. Darker than the male; in some specimens the dark markings over the apical veins and crossveins more extensive and the costal cell and clavus quite fuscous.

Described from specimens from several localities. The type consists of a male and a female from Amboina (*Muir 1036*). Among the paratypes are both light and dark females as follows: Seven dark females from Amboina and one from Piroe, Ceram (*Muir*); two males and three females from Sandakan, Borneo (*Baker 10063*), which are darker than the Amboina males; two light males and four dark females from Dapitan, Mindanao (*Baker 4413, 4415, 13349*); one dark female from Butuan, Mindanao (*Baker 10075*); one dark female from Malinao, Tayabas, Luzon (*Baker*); one light male from Kolambugan, Mindanao (*Baker 13643*); one dark female from Puerto Princesa, Palawan; one light male and four light females from Mount Maquiling, Luzon (*Baker 1323, 9350, 9364, 10068; Muir*).

This species was named and described before I found that the Ceram, Borneo, and Philippine specimens were the same.

*Euryphlepsia papuaensis* sp. nov. Plate 2, fig. 3.

*Male*.—Length, 2 millimeters; tegmen, 3. Only four median apical veins,  $M_4$  lacking. Transverse carina of vertex obscure. Lateral margins of pygofer produced into a thin, small, acute spine in the middle, medioventral margin produced into a quadrate process longer than wide with the apex narrower than base. Anal segment truncate at apex, each apical angle produced into a long, thin, curved spine, anal style small. Genital styles small, laterally flattened, curved, apex truncate and slightly wider than base. Brown; lateral carinæ of head, labium, legs, and pronotum lighter. Tegmina hyaline, brownish, lighter in middle of apical and subapical cells. Wings hyaline, slightly fuscous, veins dark.

*Female*.—Length, 2.6 millimeters; tegmen, 3. Similar in color to male. Anal segment longer than broad, slightly flattened horizontally, apex truncate.

PAPUA, Laloki River (*Muir* 1909), 1 male and 4 females. Type No. 1037.

*Euryphlepsia pallidifrons* sp. nov. Plate 2, fig. 4.

*Male*.—Length, 2.7 millimeters; tegmen, 3.2. Lateral margins of pygofer produced into a small, acute spine in middle, ventral margin produced angularly in middle. Anal segment large, anus slightly before apex, each apical corner produced into a long, strong spine nearly as long as segment and, in lateral view, at right angle to segment. Genital styles large, angular near base, apex truncate, oblique, outer margin concave. Head, lateral portion of pronotum, and legs pale yellow; mesonotum and abdomen brown. Tegmina hyaline, fuscous brown, lighter on apical and preapical cells.

*Female*.—Length, 2.6 millimeters; tegmen, 3. In color similar to the male.

BORNEO, Sandakan (*Baker*), 1 male and 1 female. Type No. 1038.

*Euryphlepsia lineata* sp. nov. Plate 2, fig. 5.

*Male*.—Length, 3 millimeters; tegmen, 3.5. Stramineous; tegmina hyaline, stramineous, veins slightly darker, slightly fuscous over first two apical median cells and clavus. In lateral view lateral margins of pygofer slightly rounded, medioventral edge conically produced with a minute projection at each side of its base. Anal segment short, anus before apex, lateral margins at apex produced into a broad, flat angle, anal style small. Gen-



ital style small, narrow, angled and narrow in middle, apex truncate, slightly widened.

*Female*.—Length, 3 millimeters; tegmen, 3.8. In color similar to male but the lateral portions of the mesonotum brown and the dark color continuous over clavus and along tegmen to apical median cells. Wings hyaline with brown veins.

BORNEO, Sandakan (*Baker 10059, 10062, 10065*), 4 males and 6 females. Type No. 1039.

*Euryphlepsia flava* sp. nov. Plate 2, fig. 6.

*Male*.—Length, 2.6 millimeters; tegmen, 3.2 Yellow; tegmina hyaline, slightly flavous, veins darker. Wings hyaline, veins light. Lateral edge of pygofer slightly and subangularly produced in middle, medioventral process subconical in outline. Anal segment fairly large, anus before apex which is asymmetrically produced into a squarish process on the left side of apex. Genital styles slightly curved; broadest at apex, which is truncate.

BASILAN (*Baker*), 2 males.

#### Genus *STENOPHLEPSIA* novum

Type, *Stenophlepsia flava* sp. nov.

Head and thorax as in *Euryphlepsia*, the median ocellus obscure, or even lacking in some specimens. Female ovipositor complete, projecting beyond apex of abdomen. Pygofer of female forming a round, wax-bearing area. Hind tibiæ unarmed.

Sc and R forking a little before middle of tegmen, M joining Sc + R near the base. Two apical branches to R and five to M. Stigma large. Claval vein entering commissure near apex, commissure of clavus thickened; forking of claval veins about middle of clavus (Plate 2, fig. 7).

This genus differs from *Myndus* Stål in having a distinct sub-antennal process. It differs from *Euryphlepsia* g. nov. in having no thickening of Sc + R + M, or only at the extreme base, and M only joins Sc + R near base.

*Stenophlepsia flava* sp. nov. Plate 2, figs. 7, 8.

*Male*.—Length, 3.3 millimeters; tegmen, 4.6. Yellow; tegmina hyaline, veins stramineous, the apical portion of the apical veins and the apical crossveins fuscous; clavus between veins and commissure dark, opaque. Wings hyaline, veins brown, fuscous over anal area. Lateral margins of pygofer produced into two small, quadrate processes about the middle, medioventral margin produced into an angular process. Anal segment large, anus

before apex, lateral edges near apex produced into a large process with rounded apex. Genital style flattened laterally, angular before middle, broadest at apex where it is truncate and slightly oblique.

*Female*.—Length, 3.4 millimeters; tegmen, 4.7. In color similar to male.

LUZON, Laguna Province, Mount Maquiling and Los Baños (*Baker 2503; Muir*), 4 males and 3 females. Type No. 1042.

*Stenophlepsia fasciatus* sp. nov. Plate 2, fig. 9.

*Male*.—Length, 2.7 millimeters; tegmen, 3. Face, clypeus, genæ, and lateral portions of pronotum stramineous; vertex, middle of pronotum, mesonotum, and abdomen brown. Front legs with coxæ and femora dark, tibiæ light; middle femora dark, a dark band on tibiæ and on tarsi; hind tibiæ with a dark band about middle, another at apex and base of basitarsus and another small band on second and third segments of tarsi. Tegmina dark brown with lighter marks in apical portion of apical cells. Wings fuscous, veins dark. Middle of lateral margins of pygofer produced into a small, subquadrate process, ventral edge in middle produced into a subtriangular process. Anal segment fairly short, apex rounded, not produced. Genital styles curved, gradually widened to apex which is round.

*Female*.—Length, 3 millimeters; tegmen, 3.4. Similar in color to male.

MINDANAO, Davao, 1 male. BASILAN (*Baker 13641*), 1 female. Type No. 1043.

*Stenophlepsia brunnea* sp. nov. Plate 2, fig. 10.

The base of Sc + R is slightly thickened but M does not join them till near the base. I therefore include it in this genus.

*Male*.—Length, 2.7 millimeters; tegmen, 3. Head, legs, and pronotum stramineous, mesonotum and abdomen brown. Tegmina hyaline, brown, veins dark, small light spots in the middle of subapical and apical cells. Wings hyaline, fuscous, veins dark. Lateral margins of pygofer slightly angular in middle, medioventral margin produced into an angular process. Anal segment small, anus before apex, apex asymmetrical, the left side being produced into a subquadrate process; anal style small. Genital styles very thin, long, slightly curved, apex rounded.

*Female*.—Length, 2.7 millimeters; tegmen, 3. In color similar to male but slightly darker.

LUZON, Laguna Province, Mount Maquiling and Los Baños (*Baker 10069; Muir*), 2 males and 5 females. Type No. 1040.



## ILLUSTRATIONS

### PLATE 1

- FIG. 1. *Kinnara* Distant, left tegmen.  
2. *Kinnara spectra* Distant, lateral view of male genitalia.  
3. *Kinnara flavofasciata* Distant, lateral view of lower portion of male pygofer and left style.  
4. *Kinnara penangensis* sp. nov., right anterior style of female.  
5. *Kinnara nigrolineata* sp. nov., lateral view of lower portion of male pygofer and left style.  
6. *Kinnara bakeri* sp. nov., lateral view of male genitalia.  
7. *Kinnara marginalis* sp. nov., lateral view of lower portion of male pygofer and left style.  
8. *Euryphlepsia amboinensis* sp. nov., left tegmen.

### PLATE 2

- FIG. 1. *Euryphlepsia amboinensis* sp. nov., lateral and front view of head.  
2. *Euryphlepsia amboinensis* sp. nov., lateral view of male genitalia.  
3. *Euryphlepsia papuaensis* sp. nov., lateral view of male genitalia.  
4. *Euryphlepsia pallidifrons* sp. nov., lateral view of male genitalia.  
5. *Euryphlepsia lineata* sp. nov., lateral view of male genitalia.  
6. *Euryphlepsia flava* sp. nov., lateral view of male genitalia.  
7. *Stenophlepsia flava* sp. nov., right tegmen.  
8. *Stenophlepsia flava* sp. nov., lateral view of male genitalia.  
9. *Stenophlepsia fasciatipes* sp. nov., lateral view of male genitalia.  
10. *Stenophlepsia brunnea* sp. nov., lateral view of male genitalia.

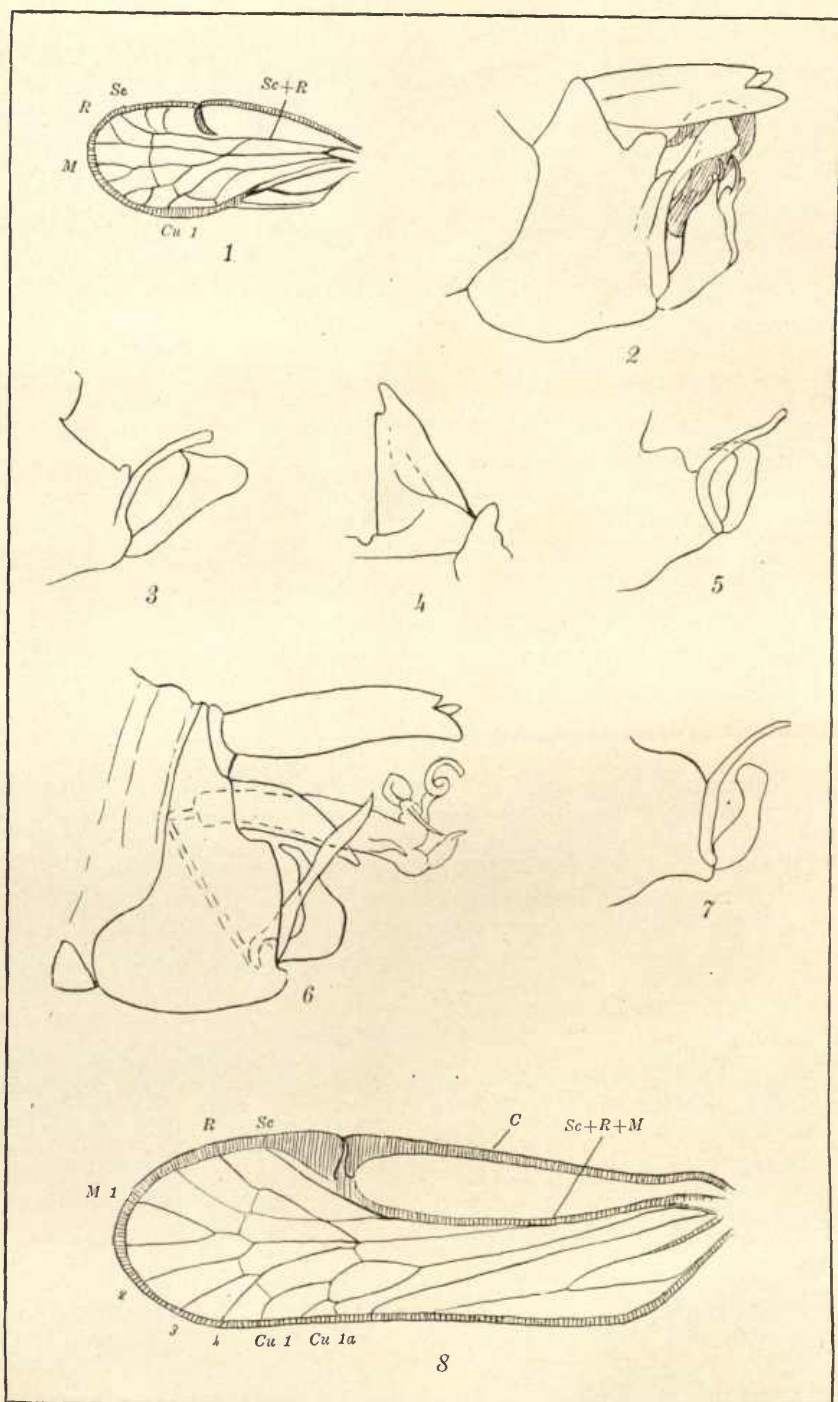


PLATE 1. NEW MALAYAN CIXIIDÆ.



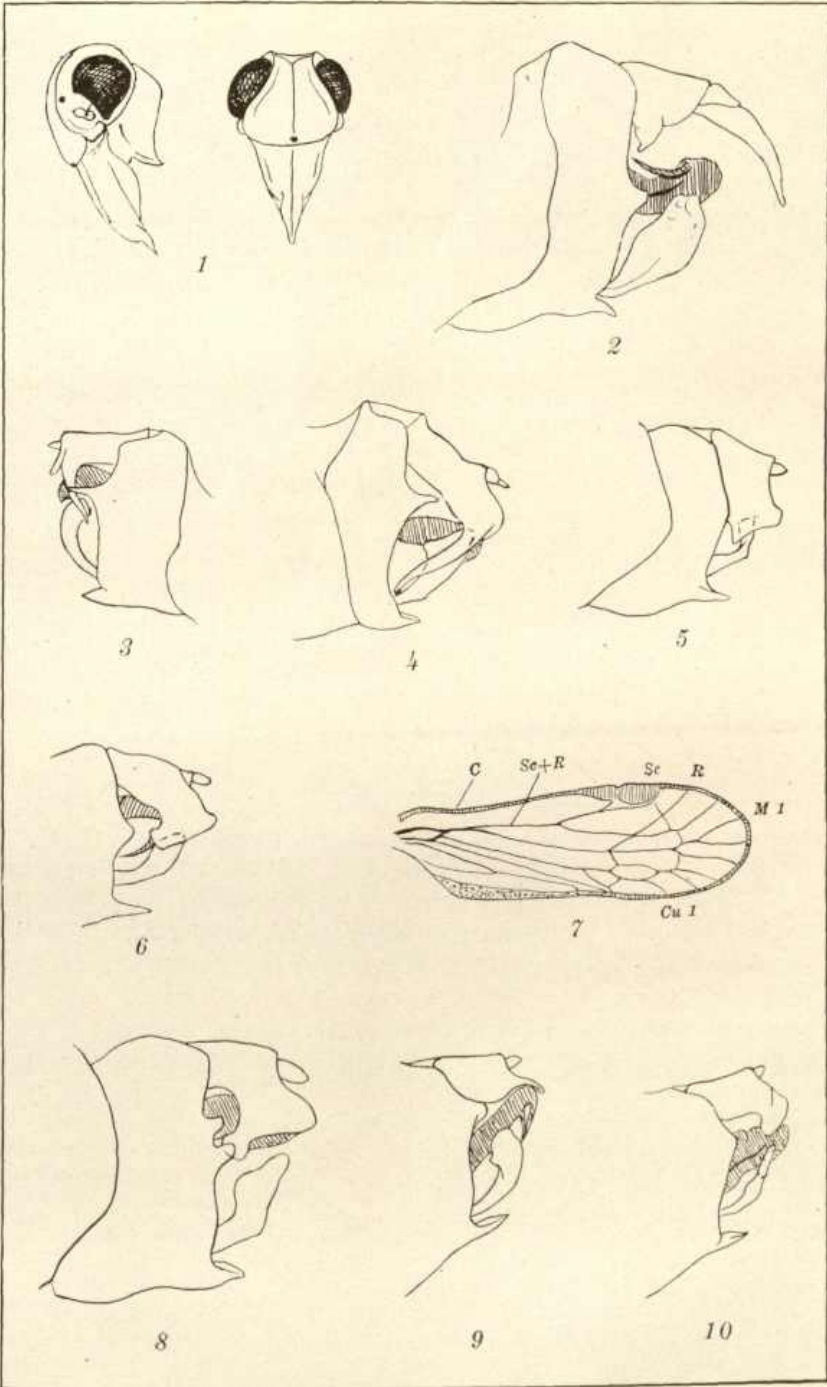


PLATE 2. NEW MALAYAN CIXIIDÆ.