

armed with two distinct spines; 5th vein half as long again as the 6th; postcosta (sub-costa) reaching the middle of the wing; arms and branches of the cubitus submarginal plainly parallel behind. Transverse vein of the discal cell never behind the middle of the wing, but situated behind the end of the sub-costa, prolonged to the 5th posterior cell. Anal corner almost straight below.

Abdomen fuscous, covered with bluish, faun-colored pubescence and short, pale, depressed hairs. Apex of 5th segment decorated with 6 black spines; 6th segment of the female shining black, depressed, twice as long as the preceding. Feet rather powerful, pale yellow brown. Anterior femora fitted below with 4 or 5 bristles.

### On Some Delphacidae from South India (Homoptera).

BY F. MUIR.

Through the kindness of Mr. E. A. Butler I have received a small but interesting collection of Delphacidae made by Dr. T. V. Campbell in British India. It consists of eight genera and ten species, one genus and four species of which I consider as new. *Columbisoga campbelli* was taken at an elevation of 8000 feet in South India, and its nearest ally is known from 10,500 feet in Columbia, South America.

My thanks are due to Dr. Campbell and Mr. Butler for the collection.

Measurements are from the apex of vertex to apex of abdomen, and from the base to apex of one tegmen. The types have been deposited in the collection of the Hawaiian Sugar Planters' Experiment Station, Honolulu.

#### TROPIDOCEPHALINI.

##### *Tropidocephala signata* (Distant).

*Orchesma signata* Distant (1912) A. M. N. H. (8). IX, p. 192; (1916) Faun. Brit. Ind. Rhynchota VI, p. 142, f. 102. Two female specimens from Chikkaballapura, South India (*T. V. Campbell*).

As the genus *Tropidocephala* stands at present I am unable to separate it from *Orchesma*. Distant (1916 t. c. p. 465) uses



the proportion of length to breadth of the face, but as this varies with the length of the vertex, it is of no generic value.

The species in the collection of the Hawaiian Sugar Planters' Association, Honolulu, can be divided as follows:

a. Apex of face truncate, no keel dividing the face from clypeus; clypeus in profile in line with face or but slightly angled. *T. brunnipennis*; *dryas*; *festiva*; *saccharivorella*; *neogracilis*; *atrata*; *nigrocacuminis*; *malayana*; *butleri*; *indica*.

b. Apex of face rounded, the lateral carinae continuing to middle and forming a carina between face and clypeus; clypeus in profile nearly at right angle to face. *T. amboinensis*; *saccharicola*; *noelegans*; *neoamboinensis*; *baguioensis*; *pseudobaguioensis*; *formosana*; *signata*.

I have not seen *flaviceps* Stal, the type of the genus, so I cannot say into which of the groups it will fall, and Stal's description gives no indication. Fieber<sup>1</sup> in describing the genus as based upon *elegans* Costa, says: "Front transversalement convex audessus du clypeus," which would very well describe the condition found in group B. If *flaviceps* belongs to group A and *elegans* to group B, then it might be convenient to use Costa's genus *Nephropsia*. The type of *Orchesma* Mel., *marginepunctata* Mel., comes into group A. Until these three types have been compared and adequate distinctions pointed out, I shall group them all under the one name.

#### ***Tripidocephala butleri* sp. n.**

Male. Macropterous; vertex three times the length of pronotum, carinae of vertex large, face slightly narrowed near base between eyes, apex truncate, no carina dividing it from clypeus; carina across gena obscure; clypeus rounded, tumid, without carinae; a distinct carina from behind eye to tegula making the pronotum 5-carinate.

Pygofer in profile entire, very shallowly emarginate on dorsal edge, medio-ventral edge deeply and roundly emarginate with the corners slightly produced and a small spine-like projection from the bottom of the emargination; anal segment small, hind margin straight all round, a single, strong, curved spine arising on right side near base and lying along side the aedeagus; the latter is semitubular, thickest at base, curved and slightly recurved at apex; genital styles similar to those of

<sup>1</sup> Rev. Mag. Zool. 1875 (3). III, p. 368.



*T. saccharicola* Muir,<sup>1</sup> broadest at base where there is a small projection, situated far within the pygofer.

Orange buff or light cadmium orange, carinae of vertex and thorax lighter with a small fuscous mark on each side of median carina at apex of vertex; apex of first joint of antennae and two rings on second fuscous; apices of genital styles black. Tegmina hyaline, light cadmium over cross veins and median portion of apical cells, a narrow, faint mark from middle of costal cell to apical portion of clavus and over apical portion of claval cells, a black spot at apex of first and second subcosta, radius and first media, a black mark on hind margin beyond clavus broken by the light Cu 1a; veins light, granules fairly numerous, white, bearing white macrotrichia; wings hyaline with brown veins. Length, 2.8 mm.; tegmen, 3.4 mm.

Female; macropterous. In color light green in place of cadmium orange. Tegmina hyaline with exceedingly faint or no markings, the black spots at apex of subcosta, radial and first media minute; no dark mark on hind margin beyond clavus. Length, 3.3 mm.; tegmen, 3.4 mm.

Described from three males and three females from Kodai Kanal, South India (*T. V. Campbell*). Type No. 1024.

#### ***Tropidocephala indica* sp. n.**

Male. Macropterous; vertex 1.4 times the length of pronotum; pronotum 5-carinate the shoulder carinae from back of eyes to tegulae distinct; no carina dividing frons from clypeus.

Genitalia on the same plan as *T. butleri*, the medio-ventral emargination of pygofer wider with the projection at bottom larger and broader; the genital styles more slender and the apex turned nearly at right angle, the basal projection larger with its apex long and acute; anal spine thin and curved.

Cadmium orange; carinae lighter, the medium carinae of vertex and nota distinctly edged with black; apex of first and two thin rings on second antennal joints black; the projection at bottom of medio-ventral emargination of pygofer, the apices of genital styles and the spine-like projection at base, black. Tegmina hyaline, slightly tinged with cadmium orange, veins slightly darker, granules fairly numerous, irregular and bearing dark macrotrichia; wings hyaline, veins brown. Length, 2.2 mm.; tegmen, 3.2 mm.

Female; macropterous. Similar to male but the color less bright, nearer to raw sienna. Length, 2.7 mm.; tegmen, 3.2 mm.

Described from two males and two females, the type couple from Kodai Kanal, the others from Devuaga Drug, South India (*T. V. Campbell*). Type No. 1025.

<sup>1</sup> Proc. Haw. Soc. II. 5, (1913). Pl. 6, figs. 7, 7a.



The above described species differ from all others of the genus that I am acquainted with by having a distinctly 5-carinate pronotum.

**Columbisoga** gen. n. figs. 1, 2, 3.

Type *campbelli*. Width of vertex at base but slightly greater than length, apex half the width of base, sides straight, apex projecting angularly in middle showing the small V at base of face, an obscure, simple carina down middle, a small pit on each side near base; base of vertex sinuous, about middle of eyes; length of face three times the width, widest in middle, sides slightly arcuate, lateral carinae distinct, median carina with a minute fork at base which projects beyond vertex in dorsal view; transverse carina on gena distinct; clypeus tricarinate on basal two thirds, curved on apical third; antennae barely reaching base of clypeus, both joints terete, second joint twice the length of first, first slightly enlarged at apex; pronotum tricarinate, lateral carinae convergingly curved, reaching hind margin, a small pit on each side near middle; mesonotum tricarinate; hind femora not reaching to apex of abdomen, much shorter than tibia, tarsi shorter than tibiae, first tarsus about equal to the other two together, spur nearly as long as first tarsus, thick, concave on inner surface, a small tooth on apex, none on hind margin. Media touching both radius and cubitus; forking of subcosta and radius and the forking of cubitus about the same level.

This genus belongs to the Tropidocephalini and comes near to *Columbiana* Muir<sup>1</sup> and *Sogatopsis* Muir,<sup>2</sup> but nearer the former. It can be distinguished from *Columbiana* by its longer and narrower face, by the shape of the vertex which has an obscure, simple median carina and no Y, and by the lateral carinae of the pronotum curving inward and reaching the hind margin. *Sogatopsis* can be distinguished from it by the angular basal joint of antenna, the rounded apex of vertex, shorter face, and the presence of a cross-vein between the media and radius and media and cubitus.

**Columbisoga campbelli** sp. n. figs. 1, 2, 3.

Male. Macropterous; light chestnut, lighter over carinae of vertex and thorax, especially the median carinae; abdomen darker. Tegmina dark chestnut except the hyaline spot over the middle of median and extending into radial cell, and hyaline in first four apical cells; veins

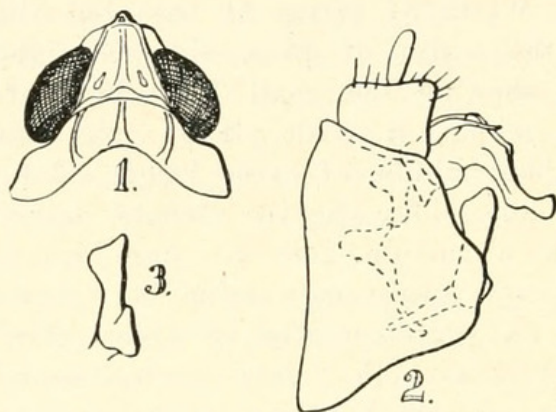
<sup>1</sup> Can. Ent. 1919, p. 35, figs. 6-a, 7-a.

<sup>2</sup> Pro. Haw. Ent. Soc. II. 5. (1913) p. 247



darker with many irregular, small granules bearing black macrotrichia; wings hyaline with dark veins.

Pygofer with edge entire, opening about as wide as long; anal segment small, without spines; styles small, obliquely truncate at apex, narrowed slightly in middle with a small projection near base; aedeagus



*Columbisoga campbelli*.

1. Dorsal view of head and pronotum.
2. Lateral view of genitalia.
3. Left genital style.

large, slightly compressed laterally, broadest at base, strongly curved before middle, the apex rounded, a strong curved spine arises from the dorsal edge of the base, curves over and lies along the left side. Length, 2.8 mm.; tegmen, 4.2 mm.

Female; macropterous. Similar to male but lighter in color, especially the tegmen; the granules along veins light in color. Length, 3.5 mm.; tegmen, 5.2 mm.

Described from two specimens from Dodabetta Hill, Ootokamund, Nilgiri Hills, South India, elevation 8000 feet. On bamboo (*T. V. Campbell*). Type No. 1026.

#### ***Pundaluoya ernesti* (Kirby).**

One male and one female from Chikkaballapura, South India (*T. V. Campbell*). The female is considerably lighter in color than the male and confirms my remarks elsewhere<sup>1</sup> that *P. simplex* (Kirby) is only the light colored female of *P. ernesti*.

<sup>1</sup> Can. Ent. (1919) p. 7.



## DELPHACINI.

**Perkinsiella insignis** (Distant).

*Pundaluoya insignis* Distant (1912) A. M. N. H. (8). IX, p. 190; (1916) Faun. Brit. Ind. Rhynchota VI, p. 135; Muir (1919) Can. Ent., p. 7.

One male specimen from Chikkaballapura, South India. The medio-ventral edge of pygofer forming a plate with each apical corner drawn out into a short, flat spine; the anal spines long and thin reaching nearly to base of genital styles which are slightly curved.

**Phyllodinus pulchellus** (Distant).

*Pundaluoya pulchella* Distant (1912) t. c. p. 190; (1916) t. c. p. 135; Muir Can. Ent. 1919, p. 7.

One female specimen from Chikkaballapura, South India (*T. V. Campbell*).

**Sardia campbelli** sp. n.

Male. Macropterous; head greatly produced in front, vertex half the length of thorax and abdomen, base slightly wider than apex, lateral carinae well developed, an obscure median carina on basal fourth faintly furcate at apex; frons long and narrow, lateral margins carinate and subparallel to near base where they become obscure, the lateral carinae of vertex continued on to middle of frons separate to middle where they form a single carina, in lateral view apex truncate, a carina from front of eye to near apex where it becomes obscurely fused with lateral carina of frons; clypeus small, tricarinate, curved at apex; antennae small, reaching base of clypeus, basal joint about as long as wide, second joint about double the length of first. Pronotum tricarinate, lateral carinae convergently curved, not quite reaching hind margin. Tibial spur large, thin, laminate, with many small teeth on hind margin.

Black; antennae, legs and base of abdomen yellow or light brown. Tegmina black or deep fuscous, veins slightly darker with minute granules bearing black macrotrichia; wings lighter fuscous with dark veins.

Pygofer opening about as wide as long, margins entire, dorsal emargination deep with the anal segment sunk into it; anal spines slender, near together at base but not contiguous; genital styles flat, short, truncate at apex. Length, 3 mm.; tegmen, 2.7 mm.



Described from three specimens, one of them, the type, from Coonoor, Nilgiri Hills, 5000 feet elevation, and two from Lovedale, Nilgiri Hills, 7500 feet elevation, on grass in marshy places. Type No. 1027. I have taken Australian species in a similar situation in the lowlands.

Female. Brachypterous; vertex only one-third the length of thorax and abdomen. The median carina of face simple, otherwise the carination similar to the male. Tegmina reaching to posterior margin of sixth abdominal segment, rounded at apex.

Color similar to male but lighter, the carinae of head and thorax brown. Tegmina brownish with similarly colored veins. Length, 2.8 mm.; tegmen, 1.2 mm.

Described from two females from Kodai Kanal, South India. It is possible that they are the females of a distinct species, but only the capture of the male will settle the question.

There is a tendency for species of this genus to vary in the length of the head and this one only differs from the genotype in the amount of the elongation.

***Gelastocephalus fasciatus*** (Distant).

*Akilas fasciatus* Dist. (1916) Faun. Brit. Ind. Rhynchota, VI, p. 138, f. 99.

One female from Kodai Kanal, South India (*T. V. Campbell*). After comparing it with the type of *Gelastocephalus* Kirk. I can find no generic differences. The length and shape of the tegmina in these brachypterous specimens is not of generic value.

***Megamelus furcifera*** (Horv.).

One male and one female, the former from Chikkaballapura and the latter from Mandidrug, South India (*T. V. Campbell*).



Muir, F. 1921. "On some Delphacidae from South India (Homoptera)."  
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