Homopterous Notes

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K. emoloa sp. nov. Pl. V, figs. 19, 19a.

Spur tectiform, hind margin with numerous small teeth. Tegmina not reaching to middle of abdomen.

♂ Light brown or stramineous; antennae dark with a longitudinal light mark, legs with longitudinal darker marks; fuscous over the lateral portions of abdominal tergites and sternites; genitalia dark brown. Tegmina stramineous, veins concolorous with membrane, a small dark spot at apex of clavus.

Pygophor subquadrate, lateral edges considerably produced; anal segment sunk into pygophor, each ventro-posterior corner produced into a strong spine with blunt apex; genital styles strongly diverging, strongly bent about middle; aedeagus straight, tubular, with apical portion strongly incrassate and beset with teeth.

Length 2.3 mm.; tegmen 1 mm.,

♀ Lighter in color, slightly infuscate between carinae of head and thorax; antennae light with two dark, longitudinal marks, longitudinal marks on legs more distinct; neuration of tegmina lighter than membrane; five more or less distinct light marks down dorsum of abdomen.

Length 3.3 mm.; tegmen 1 mm.

Hab. Oahu, Palolo Valley (Timberlake, July, 1916), Kuliouou (Swezey, June, 1916), off *Eragrostis variabilis* Gaud., which is called by the Hawaiians "emoloa".

Homopterous Notes.

BY F. MUIR.

The material pertaining to these notes forms part of the material collected by members of the staff of the Hawaiian Sugar Planters' Experiment Station during the course of economic work in the Malay and Oriental regions, also material belonging to Prof. C. F. Baker of Los Banos, Luzon, P. I. The types of new species have been placed in the collection of the H. S. P. A. Experiment Station.

The interesting feature of this work has been the finding of several species so widely distributed. *Kelisia paludum* Kirk. hitherto only known from the Hawaiian archipelago is now known from several localities in the south, southwest and west Pacific. *Delphacodes anderida* (Kirk.), which is most likely the same as *Delphax sordescens* Motsch. from Ceylon, is now

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* Pro. Haw. Ent. Soc. III, pp. 168-221, 1916.

Plate V.

Figure 1. *Leialoha lehuae lanaiensis*, aedeagus.
2. *Nesodryas antidesmae*, aedeagus; *a*, genital style.
3. " *terryi*, aedeagus.
4. " *piilani*, aedeagus.
5. " *eugeniae*, aedeagus; *a*, genital style.
6. " *munroi*, aedeagus.
7. *Nesosydne lobeliae*, aedeagus; *a*, genital style.
8. " *nephelias*, aedeagus.
9. *Nothorestias badia*, aedeagus.
10. *Nesosydne koebelei*, ¾ view of pygophor; *a*, aedeagus.
11. " *sola*, ½ view of pygophor; *a*, aedeagus.
12. " *disjuncta*, full view of pygophor; *a*, aedeagus.
13. " *asteliae*, aedeagus.
14. " *timberlakei*, aedeagus.
15. " *gunnerae*, aedeagus.
16. " *nesogunnerae*, aedeagus side view; *a*, end view.
17. " *hamata*, aedeagus side view; *a*, ventral view.
18. *Kelisia paludum*, aedeagus; *a*, genital style.
19. " *emoloa*, aedeagus; *a*, genital style.
20. " *swezeyi*, aedeagus; *a*, genital style.
21. " *sporobolicola*, aedeagus; *a*, genital style.
22. *Anectopia atrata*, pygophor, side view; *a*, genital style; *b*, aedeagus.
23. *Delphacodes terryi*, pygophor, full view.
24. " *meridianalis*, pygophor, full view; *a*, aedeagus.
25. *Phyllodinus sauteri*, aedeagus; *a*, genital style.
26. *Dicranotropis fuscifrons*, pygophor, full view.
27. *Perkinsiella pseudosinensis*, pygophor, ¾ view.
28. " *thompsoni*, pygophor, right half, full view.
29. *Phyllodinus punctata*, genital style.
30. *Perkinsiella fuscipennis*, aedeagus.
31. " *graminicida*, aedeagus.
32. " *manilae*, pygophor, ¾ view.

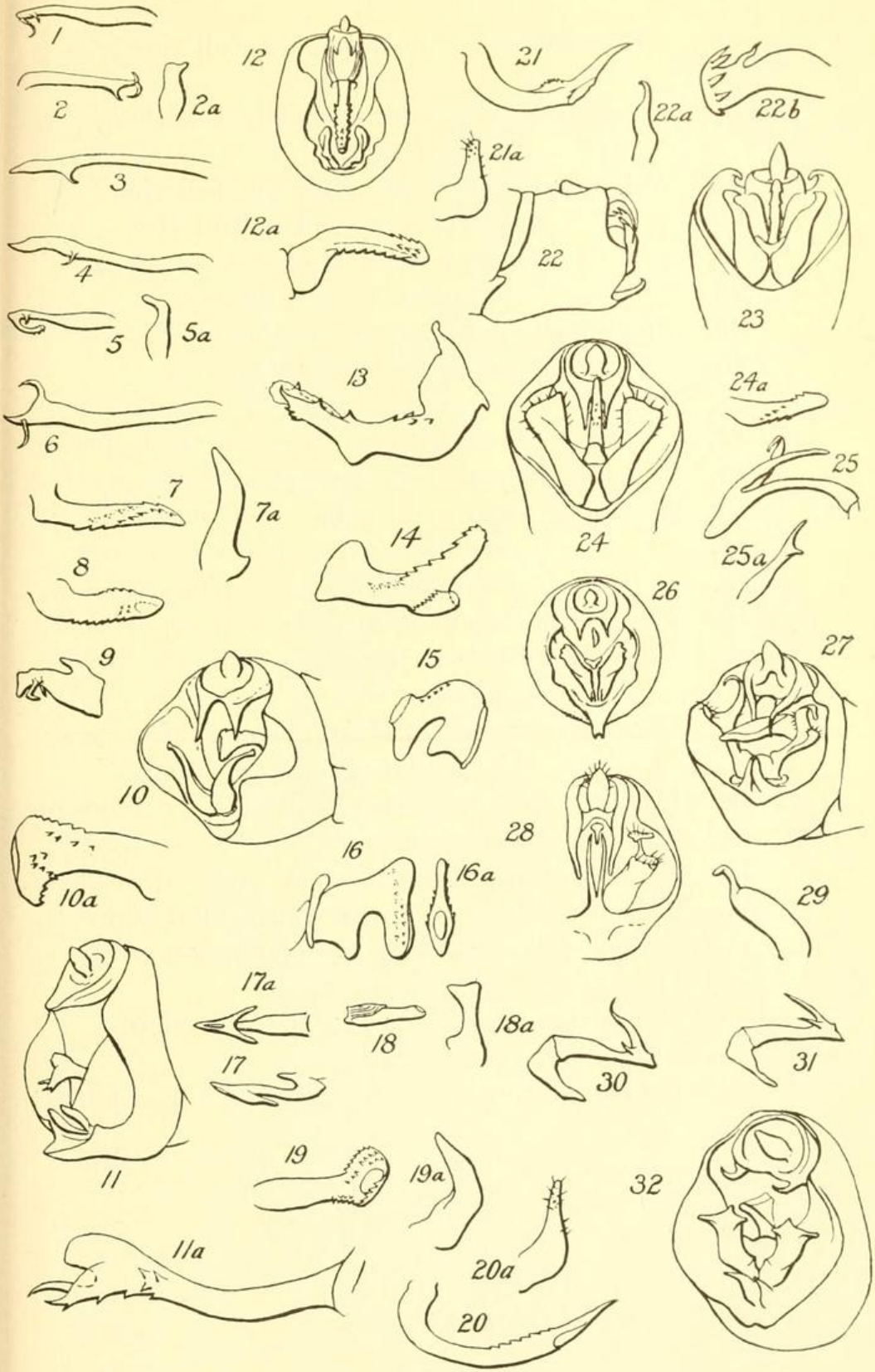
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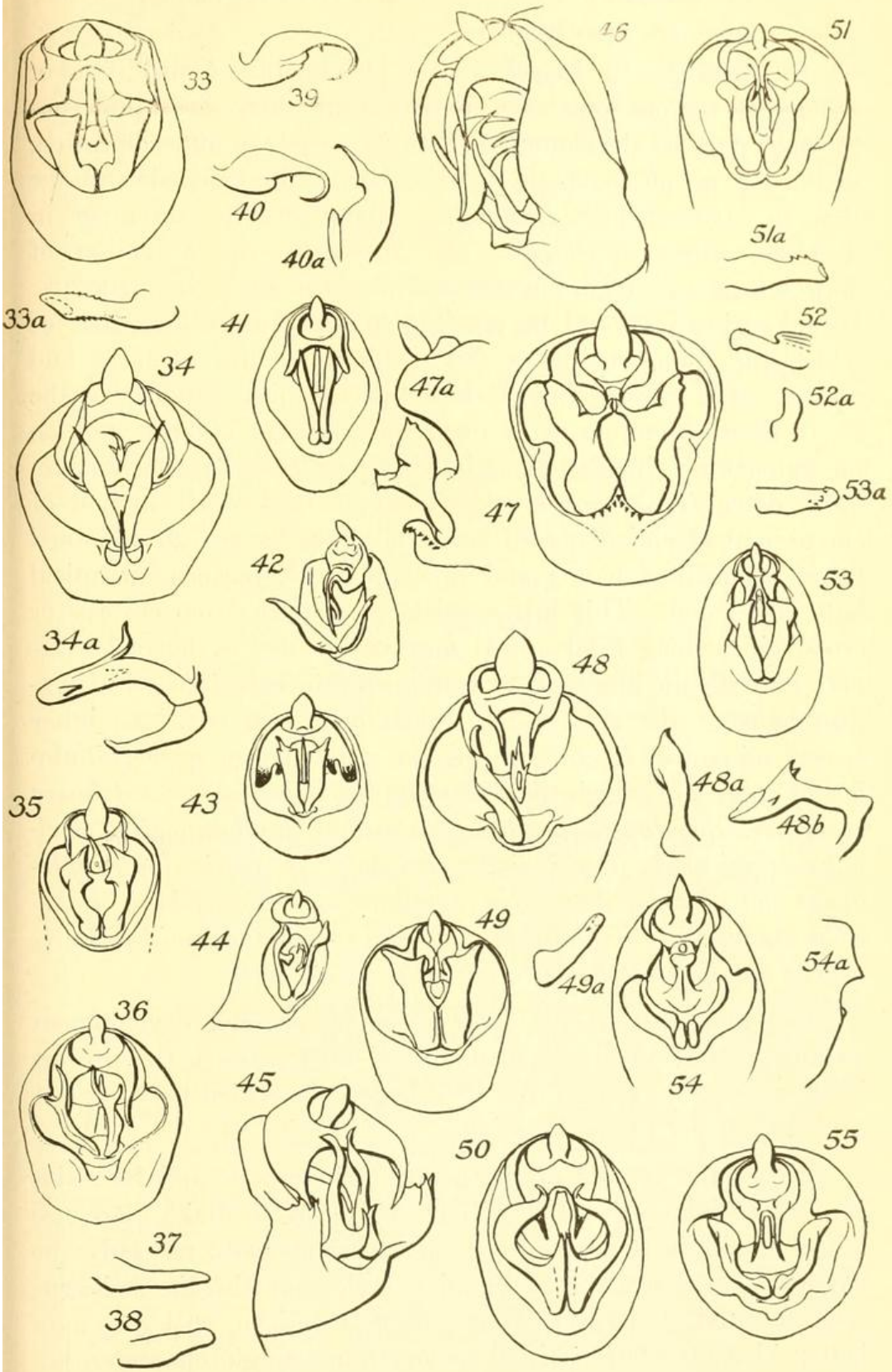
Plate VI.

Figure 33. *Nesosydne nigroceps*, pygophor, full view; *a*, aedeagus.
34. *Dicranotropis cognata*, pygophor, full view; *a*, aedeagus.
35. *Delphacodes anderida*, pygophor, full view.
36. " *cervina*, pygophor, full view.
37. " *propinqua*, aedeagus.
38. " *neopropinqua*, aedeagus.
39. *Stenocranus agamopsyche*, aedeagus.
40. " *philippinensis*, aedeagus; *a*, genital style.
41. " *neopacificus*, pygophor, full view.
42. " *nigrifrons*, pygophor, ¾ view.
43. " *bakeri*, pygophor, full view.
44. " *taiwanensis*, pygophor, ¾ view.
45. " *pseudopacificus*, pygophor, ¾ view.
46. *Phyllodinus nigromaculosus*, pygophor, ¾ view.
47. *Delphacodes bakeri*, pygophor, full view; *a*, side view.
48. *Dicranotropis fuscicaudata*, pygophor, full view; *a*, genital style; *b*, aedeagus.
49. *Kelisia fieberi*, pygophor, full view; *a*, aedeagus.
50. *Stenocranus luteus*, pygophor, full view.
51. *Sardia brunnia*, pygophor, full view; *a*, aedeagus.
52. *Kelisia kirkaldyi*, aedeagus; *a*, genital style.
53. *Delphacodes lactepennis*, pygophor, full view; *a*, aedeagus.
54. *Megamelus albicollis*, pygophor, full view; *a*, side view.
55. *Delphacodes nigripennis*, pygophor, full view.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known from several spots between Fiji and China. Other species have an equally wide range.

In working over a collection of Delphacidae from different zoological regions one soon notices that there are numerous cases of parallel development, both in structure and coloration, which has no phylogenetic significance. The expansion of the legs in *Asiraca* and *Phyllodinus*, and of the antennae in *Asiraca copicerus*, *Delphax* and *Purohita*, the reduction of both wings and tegmina, are a few such cases in structure. In coloration it would be possible to draw up a long list, of which the following are a few: Light carinae of head and thorax with darker intercarinal spaces; light spots on the face; light pronotum with dark mesonotum; a dark spot on metapleurum; rings and longitudinal marks on legs; a median mark down frons, vertex and thorax; a dark mark at end of clavus and at end of costal cell; these marks are often joined by an ill-defined band; and the "crescent" pattern on apical half of tegmen. This last consists of a mark from costa over cross-veins, along hind apical margin to apex or beyond; this pattern with an increase or decrease of infuscation, with hyaline spots at the end of the apical cells and with the other apical veins also fuscous, forms the markings of a great number of species of which the following list is but a few: *Stobaera concinna*, *Sogatopsis pratti*, *Bambusibatus albolineatus*, *Delphax crassicornis*, *Perkinsiella variegata*, *P. pallidula*, *Phyllodinus macaoensis*, *Anectopia mandane*, *Kelisia fieberi*, *Bakerella maculata*, *Dicranotropis koebelei*, *D. pseudomaidis*, *Peregrinus maidis*, *Delphacodes limbata*.

I cannot account for these cases of parallel development on any utilitarian principal and if I must classify the process it must be under some form of orthogenesis, which may give us a name but not an explanation.

Before the species of the genus *Delphacodes* and its allies can be straightened out it will be necessary to make more use of the genitalia than has been up to the present; not only the pygophor, anal segment and genital styles but also the aedeagus must be used. The last-named organ, I believe, will give us a better idea of relationship than any other single character.

Measurements are made from apex of head to vent, and from the base to the apex of one tegmen; in measuring the tarsal joints I have taken from the base of the first joint to the base of the second joint and then to the apex of the third joint, thus the spines at the apex of the first joint are not included in the length of that joint.

DELPHACIDAE.

Genus Dicranotropis Fieb.

D. fuscifrons (Muir). Pl. V, fig. 26.

Perkinsiella fuscifrons Muir, H. S. P. A. Ent. Bull. 9, (1910), p. 11.

This was originally described from a single female. I now have males and females from the same locality. The second segment of the antenna is cylindrical. It comes next to *D. pseudomaidis** (Kirk.).

D. koebelei (Kirk.).

Formerly known from Fiji, Queensland, Philippines and Java, now known from Borneo, New Guinea and Ceram Island.

D. muiri Kirk.

One male specimen from Formosa (Muir, January, 1916); Luzon, Los Banos (Baker coll.). Formerly known from China, Java and Borneo.

D. cognata sp. nov. Pl. VI, figs. 34, 34a.

♂ Brachypterous; tegmen reaching to base of seventh abdominal segment, neuration normal. Length of vertex equal to the width at base; medio-frontal carina forking level with lower margin of eyes; antennae reaching near to the middle of clypeus, cylindrical; lateral carinae of pronotum divergingly curved, not reaching hind margin; front and middle tibiae and femora not flattened; length of first joint of hind tibia equal to the other two together, spur slightly longer than first tibial joint, broad, laminate, many minute teeth on hind margin.

Ochraceous-tawny, a few very faint spots on face, the apex of first and base of second antennal joint dark, carinae of thorax slightly

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* In H. S. P. A. Ent. Bull. III, on page 136 fourth line from end read Plate XIII for Plate XII.

lighter, a round, brown mark on metapleura, abdomen dark on lateral portions, pygophor and styles dark brown. Tegmina hyaline, light ochraceous, a black mark covering the apical cells, veins concolorous with membrane, without granules. The genitalia figured.

Length 2 mm.; tegmen 1.3 mm.

♀ One female from Baguio which I associate with this species is of a uniform liver brown.

Length 2.5 mm.; tegmen 1.4 mm.

Hab. Queensland, Cairns and Brisbane (Perkins and Koebele, 1904); Fiji, Rewa (March, 1906, Muir); Luzon, P. I., Benguet, Baguio (Baker), Mount Benahao (Muir).

With the exception of the normal legs and neuration of tegmina this species shows close affinity with *Phyllodinus nigromaculosus* Muir and its allies. It is probable that the species of the genus *Phyllodinus* are polyphyletic.

D. fuscicaudata sp. nov. Pl. VI, figs. 48, a, b.

♂ Light buff, pygophor and styles fuscous brown. Tegmina light buff, opaque with a thin waxy secretion, veins concolorous with membrane, granules minute and concolorous with veins; wings hyaline, veins yellowish. Genitalia figured.

Length 2 mm.; tegmen 2.6 mm.

♀ The female I place with this species is brachypterous and also uniformly light buff.

Length 2.6 mm.; tegmen 1.3 mm.

Hab. Luzon, Los Banos (Muir, September, 1915). This uniformly colored species is easily recognized by the male genitalia.

D. cervina sp. nov. Pl. VI, fig. 36.

♂ Length of vertex equal to width at base, apex slightly narrower than base, carination of the usual *Dicranotropis* type but the median carina nearly obsolete; length of face nearly twice the width, sides subparallel sided except at base between the eyes, where it is slightly narrowed, median carina forking slightly before lower margin of eyes; antennae reaching to the middle of clypeus, second segment nearly twice (1.9) the length of first; hind tarsus a little shorter than tibia, first tarsal joint 1.5 times the length of the other two together, spur about two-thirds the length of first joint, moderately wide, with about 25 small teeth on hind margin; lateral pronotal carinae divergingly curved, not reaching hind margin of pronotum.

Burnt sienna or light chestnut, four pair of lighter spots on frons, carinae and some spots on the lateral portion of pronotum lighter; abdomen chestnut brown, lighter on pleura, the hind margin of some segments and a narrow mark down middle, genital styles dark brown.

Tegmina hyaline slightly tinged with ochraceous, veins to crossveins light ochraceous, apical portion fuscous, granules small, con-

colorous with veins, a fuscous mark on hind margin at apex of clavus.

Length 2.7 mm.; tegmen 3.4 mm.

♀ The two specimens of females that I place with this species are similar in build but slightly darker in color, the neuration of tegmen being fuscous from base to apex. The pygophor is dark but the lateral plates light.

Length 2.8 mm.; tegmen 3 mm.

Hab. Luzon, Los Banos (Muir, September), one male and two females.

Genus Phyllodinus V. D.

P. nigromaculosus sp. nov. Pl. VI, fig. 46.

♂ Head as wide as thorax; vertex wider than long; medio-frontal carina forking near middle; antennae reaching to middle of clypeus or beyond, second segment slightly clavate; first and second femora and tibiae distinctly flattened but not so wide as in *P. serratus* V. D.; tegmina reaching to pygophor.

Dark brown; lateral areas of pronotum, carinae of head and thorax, second joint of antennae, spots on frons, base and apex of femora and tibiae, hind tarsi and along hind tibiae, base of abdomen and anal tube lighter brown or yellowish. Tegmina hyaline, very light brown, fuscous over apical area, veins white with distinct black granules each bearing a white hair.

Pygophor short dorsally, long ventrally, aperture longer than broad, medio-ventral edge forming a small quadrate lip; anal segment large, with a long, curved spine at each apical corner; styles long, thin, diminishing to apex, slightly sinuate; aedeagus complex, thin at the base, the apex forming a large barb with the corners projecting basad, that on the left forming a curved spine, that on the right a longer and thinner spine with a shorter one near base.

Length 2 mm.; tegmen 1.4 mm.

♀ Similar to male in coloration.

Length 2.7 mm.; tegmen 1.7 mm.

Hab. Luzon, Los Banos (type, Muir, September, 1915), Mt. Maquiling (Baker) very light in color; Papua, Laloki River (Muir, 1909) slightly lighter in color than the type, otherwise typical.

P. sauteri sp. nov. Pl. V, figs. 25, a.

♂ This species is similar to *P. nigromaculosus* Muir except in the genitalia. Medio-ventral edge of pygophor with very small lip, lateral edges produced below anal segment and partly embracing it, spines on anal segment small; genital styles small with a small prong on outer edge near apex; aedeagus also differing from *P. nigromaculosus*.

Length 2 mm.; tegmen 1.4 mm.

Hab. Formosa, Daimokko (Muir, Sauter, January, 1916), swept from grass.

P. punctata sp. nov. Pl. V, fig. 29.

♂ Except in genitalia this species is structurally the same as *P. nigromaculosus* Muir. Color also similar except that the vertex, thorax between carinae and lateral margins light brown, thorax laterad of carinae dark brown; frons, clypeus and antennae fuscous, frons with light spots.

Medio-ventral edge of pygophor produced into a small quadrate plate wider than long with the apical margin roundly emarginate, lateral margins of pygophor slightly sinuous; apical corners of anal segment each with a long, thin, curved spine; genital styles broad on basal two-thirds, apical third thinner and twisted; aedeagus with spine on right side small, acute, left side longer, curved.

Length 2 mm.; tegmen 1 mm.

Hab. Formosa, Daimokko (Muir, January, 1916). Swept from grass.

P. luzonensis Muir has the first and second pair of femora and tibiae much wider and more foliaceous than in *P. nervatus* V. D. and I think it represents *Platybrachys* Bierman. The latter name is preoccupied in *Heteroptera* (Stål, 1860) but as it is likely to be a synonym I refrain from creating a new name.

Genus Smicrotatodelphax Kirk.

S. kirkaldyi sp. nov.

♂ Testaceous; abdomen, with the exception of the base and pleura, fuscous. Tegmina light testaceous, veins concolorous with membrane with a few minute granules; margins of tegmina slightly incrassate and lighter in color.

Pygophor about as wide as deep, dorsal edge deeply emarginate where the anal segment is sunk into it, the corners of the emargination simple, not produced or turned down; anal segment small, ventral edge of apex produced into a small point turned ventrad; genital styles very similar to *S. perkinsi*.

Length 1.3 mm.; tegmen .6 mm.

Hab. Java, Roban (Muir, 1907), one male swept from grass.

This is very close to the type species but the shape of the pygophor makes it easily recognizable. Kirkaldy's measurements of *S. perkinsi* is given as 1½ mill. but the true meas-

urement is the same as this species. They are the smallest Delphacids I am acquainted with.

Genus Stenocranus Fieb.

Some of the species under this genus appear to belong to *Sogata* Distant, but until I can examine the type species (*S. doughertyi* Dist.) I cannot place them correctly, as some of the critical characters of this and other genera are omitted in Distant's descriptions and figures.

S. bakeri sp. nov. Pl. VI, fig. 43.

S. pacificus Muir not Kirk., Phil. Jour. Sci. 1916, Sec. D, vol. xi, No. 6, p. 382.

♂ Width of head including eyes to length of head and thorax 1 to 1.90; width of face to length 1 to 2.90; first segment of antenna to second as 1 to 2. Spur with many (25-30) small teeth on hind margin. Vertex longer than wide, base wider than apex; sides of face nearly straight, base slightly narrower than apex.

Buckthorn brown (Ridgway standard), a white median line down head and thorax, blackish on face between carinae, a small black spot on mesopleurum, claws and spines on legs black; abdominal tergites ochraceous orange, anal spines fuscous. Tegmina hyaline, slightly tinged with buckthorn brown, darker over clavus, claval margin whitish, veins darker, granules very minute; wings hyaline, veins brown.

Apical corners of anal segment produced into wide, apically rounded plates with a small, slightly curved, blunt spine at their inner base; genital styles truncate at apex with an acute process arising from the hind margin of apex; aedeagus simple, slender, slightly curved.

Length 2.5 mm.; tegmen 3.6 mm.

♀ Unknown.

Hab. Luzon, Los Banos, on grass (Baker, Muir), Baguio, Benguet (Baker coll.).

S. neopacificus sp. nov. Pl. VI, fig. 41.

♂ In structure similar to *S. bakeri*, the first joint of antenna a little longer in comparison with second (1 to 1.70). In color similar to *S. bakeri* but the white line down thorax and vertex continued down frons. Anal spines broad, obtusely pointed; genital styles simple, apex acute, narrow, a small knob at base; aedeagus tubular, thin, with three small curved spines about middle of dorsal surface.

Length 2.8 mm.; tegmen 4 mm.

♀ The groove down pygophor narrow, posterior edge of pygophor slightly emarginate; lateral plates narrow, subequal in width, except at base where it is narrower, apical margin deeply emarginate, leaving the corner projecting; ovipositor sheaths narrow. Similar in color to male.

Length 3.6 mm.; tegmen 5 mm.

Hab. Amboina (type); Papua, Laloki River (Muir). This is the simplest form of the Malay species that I have studied.

S. nigrifrons sp. nov. Pl. VI, fig. 42.

♂ Width of head including eyes to length of head and thorax 1 to 1.6; width of face to length 1 to 2.5; first joint of antenna to second 1 to 2.4; otherwise structurally as in *S. neopacificus*. Thorax buckthorn brown, carinae of face and a median mark down thorax and vertex lighter; face between carinae, genae below eyes and clypeus between carinae black; a minute black spot on pleurum; spines on legs and teeth on spur black; abdomen ochraceous orange, genital styles brown. Tegmina hyaline, light buckthorn brown, darker over clavus, veins darker with minute granules, claval margin whitish; apical veins blackish spreading into fifth and sixth apical veins.

The apical corners of anal segment are brought together making segment diamond shape, the spines long, thin, ensate and curved; aedeagus curved, ensate, slightly flattened laterally, resting between the anal spines.

Length 2.6 mm.; tegmen 3.5 mm.

♀ Much darker than male, the abdomen nearly all black, tegmina darker with most of the veins blackish. Ovipositor sheaths narrow, laterally flattened on apical half; groove narrow; lateral plates small, inner margin arcuate, entire.

Length 3.6 mm.; tegmen 4 mm.

Hab. Formosa, Kanshirai (Muir, 1916), swept from reeds.

S. pacificus Kirk.

♀ Lateral plates about one-fourth length of pygophor, narrow, edge emarginate at middle, the plate elevated at that point.

S. agamopsyche Kirk. Pl. VI, fig. 39.

♀ Lateral plates of female nearly half the length of pygophor, narrow, margins entire.

S. pseudopacificus Muir. Pl. VI, fig. 45.

Male genitalia figured, female with apical edge of pygophor medianly emarginate, latero-apical portions forming small, blunt, conical projections; ovipositor sheaths narrow; lateral plates reach-

ing about one-third along pygophor, basally wide, apically graduating to a point, a deep emargination near base.

S. philippinensis sp. nov. Pl. VI, fig. 40.

♂ Antennae reaching slightly beyond base of clypeus, second joint 3.2 times the length of first; first joint of hind tarsus as long as the other two together, spur as long as first joint, wide, laminate, with minute teeth along hind margin.

Ochraceous-buff, fuscous or black between the carinae of head and slightly so on the pronotum, a round black spot on lateral margin of pronotum, slightly fuscous between the carinae of mesonotum, legs darker ochraceous with a longitudinal mark on femora, more distinctly so on hind femora; abdomen dorsally dark, lighter at base and along middle, pygophor and styles dark brown. Tegmina hyaline, veins colorless on basal half, brown on apical half.

Length 3 mm.; tegmen 3.6 mm.

♀ Unknown.

Hab. Luzon, P. I., Mount Maquiling. This is a Philippine form of *S. agamopsyche* Kirk. of Queensland. The form of the pygophor is similar but the genital styles are distinct and it has a distinct black spot on the side of the pronotum.

S.? taiwanensis sp. nov. Pl. VI, fig. 44.

♂ Length of vertex equal to width, projecting slightly in front of eyes, apex slightly arcuate, base slightly wider than apex, carination similar to that of *Delphacodes*; lateral pronotal carinae straight, slightly diverging, reaching hind margin; width of head including eyes to length of head and thorax 1 to 2.1; width of face to length 1 to 1.7, very slightly narrower at base than at apex, median carina unforked; antennae reaching to apex of face, length of first joint to second 1 to 4, first joint as broad as long. Spur cultrate, concave on inner side, an apical tooth but no teeth on hind margin.

Ochraceous-orange dorsally, yellow-ocher ventrally, chocolate or black slightly over vertex and middle of pronotum, darker over most of the mesonotum, tegulae, the five median abdominal tergites and the genital styles. The dark markings very variable, in some specimens almost absent. Tegmina hyaline, ochreous, veins darker with exceedingly minute granules, clavus and cubital cells light brown, a dark mark on claval border near base and another near apex.

Opening of pygophor ventrally oblique; no spines on anal segment; aedeagus short, strongly curved, basal half deep, apical half thin, tubular, a strong curved spine from near the middle of left side along side of aedeagus to near apex, at its base a small spine standing at right angle to aedeagus.

Length 2.3 mm.; tegmen 3.5 mm.

♀ Similar to male. Pregenital plate distinct, quadrate, deeply emarginate to near base; lateral plates small, reaching about one-

third from base of pygophor, inner edge arcuate, entire. Pygopho large, wide, median depression large, posterior margin roundly emar ginate; ovipositor sheath narrow, compressed laterally on upper hal

Length 3.8 mm.; tegmen 4.1 mm.

Hab. Formosa, on reeds (Muir, January, 1916). By th tibial spur this should come into the Tropidocephalini. It may belong to one of Mr. Distant's Indian genera but I leave it in its present position until I have fuller knowledge.

S.? luteus sp. nov. Pl. VI, fig. 50.

♂ Length of vertex, pro- and mesonotum one and one-half the width of head including eyes; length of vertex one and one-half the width of base, base broader than apex; length of face two and one half the width of apex, base narrower than apex, lateral edges straight; antennae reaching nearly to middle of clypeus, second joint 1.75 times the length of first; lateral pronotal carinae straight diverging, not quite reaching to the hind margin of pronotum; basal joint of hind tarsus slightly longer than the other two together spur as long as basal tibial joint, wide, laminate, with many fine teeth on hind margin.

Capucine orange, vertex, frons and antennae slightly fuscous, an indefinite whitish mark down the middle of mesonotum. Tegmina and wings hyaline, very slightly yellowish, veins concolorous with membrane, a few minute concolorous granules on tegminal veins Genitalia figured.

Length 2.2 mm.; tegmen 3 mm.

♀ The female I place with this species has the antennae a little shorter. The pygophor is long and narrow, ovipositor laterally compressed on apical 3/5; lateral plates two-fifths along ovipositor, edges entire, at base slightly produced and touching in the middle line.

Hab. Amboina, two males and one female (Muir). This species may belong to *Sogata*, it is not typical of *Stenocranus*.

Genus Perkinsiella Kirk.

Perkinsiella manilae sp. nov. Pl. V. fig. 32.

♂ Light brown or yellow; face between eyes, antennae, clypeus with the exception of the apex, a fine line across apex of face, lateral portions of pro- and mesonotum, first and second coxae, a spot on metapleurum, longitudinal lines on femora, two bands on first and second tibiae, first and second tarsi, and the abdomen with the exception of basal tergite, dark brown; face between eyes with small, light spots. Tegmina hyaline, brown, darkest over apical third, lighter brown or clear hyaline over costal, subcostal, and a triangular mark in radial apical cells; veins concolorous with membrane, granules very minute with dark hairs, hind margin of clavus white;

wings hyaline with brown veins; spur on hind tibia slightly darker than leg.

Medio-ventral edge of pygophor with two small, laterally flattened spines; anal spines small, bent backward from near base; genital styles short, broad, flattened, sides subparallel, apex subtruncate, each apical corner produced into a small, subquadrate process with their corners produced into small points.

Length 3.5 mm.; tegmen 4.7 mm.

Female unknown.

Hab. Luzon, Manila (C. R. Jones), Bureau of Science, No. 14525.

In the table of the Philippine species of this genus* this species comes next to *P. saccharivora* Muir, but the genitalia are near to *P. saccharicida* Kirk. This is the nineteenth species of this genus, and the seventh recorded from the Philippines.

P. graminicida Kirk. Pl. V, fig. 31 Aedeagus figured.
P. fuscipennis Muir. Pl. V, fig. 30. Aedeagus figured.
P. thompsoni Muir. Pl. V, fig. 28. Genitalia figured.
P. pseudosinensis Muir. Pl. V, fig. 27. Genitalia figured.

Genus Pissonotus Van Duzee.

P. pylaon (Kirk.).

"Delphax" pylaon Kirkaldy, 1907, H. S. P. A. Ent. Bull. III, p. 160, Pl. XV, figs. 12-14.

Originally described from Queensland. I have a long series of males, all macropterous, and a short series of females, both macropterous, and brachypterous, from Formosa, also two specimens from Luzon, P. I., and one from Java. The lateral pronotal carinae are straight or but very slightly divergingly curved, and reach near to the hind margin. The first joint of the hind tibia equal to the two other together; spur slightly shorter than first tibial joint, laminate, moderately wide, with numerous small teeth on hind margin; width of head, including eyes, double the length; antennae reaching to about middle of clypeus, first joint slightly more than half the length of second (1 to 1.9). I place it in this genus provisionally, the spur is not of the *Pissonotus* type.

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* Philippine Journal Science, xi, Sec. D. No. 6, p. 378, 1916.

Genus Anectopia Kirk.

A. mandane Kirk.

Mestus morio Melichar not Motsch.?

Thanks to the kindness of Dr. Melichar, I have a male specimen of the species described and figured by him* under this name. I have not seen Motschoulsky's original description and figure, only Distant's translation. It is with great diffidence that I question the correctness of our leading Homopterist's identification of this insect; it does not agree with Motschoulsky's generic characters of *Mestus* but it is the same as *A. mandane* Kirk. Only an examination of *Motschoulsky's* type can decide this identification; should Dr. Melichar be correct then *Anectopia* Kirk. must fall to *Mestus* Motsch. In Kirkaldy's figures† the carinae of vertex and thorax are too distinct and the lateral pronotal carinae should not distinctly reach the hind margin. The habitat of this species will now be Queensland and Ceylon. That it will be found in other parts of the Austro-Malayan region I feel quite sure.

A. atrata sp. nov. Pl. V, figs. 22, 22a, 22b.

♂ Bachypterous. Vertex as long as broad, not quite so wide as the thorax; antennae reaching to near the middle of clypeus, second joint nearly twice the length of first; carinae not distinct; mediofrontal carina simple; lateral carinae of pronotum divergingly curved, not reaching to hind margin; tegmina reaching to base of pygophor; hind tarsi short, first joint not quite so long as the other two together, spur as long as first joint, laminate, hind margin without teeth.

Black or blackish brown, legs lighter brown; tegmina shiny black or blackish brown, veins with minute granules bearing black hairs.

Length 2 mm.; tegmen 1.5 mm.

Macropterous; one male similar in color to the above but having the tegmina colorless hyaline, with the veins light brown with minute granules.

Length 2 mm.; tegmen 2.7 mm.

♀ Similar to the male.

Length 2.6 mm.; tegmen 1.8 mm.

Hab. Luzon, P. I., Baguio (Baker coll.). The genitalia have an affinity with *A. mandane*, but the sides of the face

* Hom. Faun. Ceylon, Melichar 1903, p. 105, Pl. II, fig. 15.

† H. S. P. A. Ent. Bull. III, Pl. XI, figs. 11, 17 (1907).

are less arcuate. This species may be the same as *A. igerna* Kirk. described from a female.

Genus Megamelus Fieber.

M. proserpina Kirk.

Originally described from Fiji but I now have specimens from Queensland, Amboina, Java, and Luzon, P. I.

M. proserpinoides sp. nov.

♂ Macropterous. In build and coloration this species is similar to *M. proserpina* Kirk. but the genitalia are distinct. Instead of the three flat flanges on the ventral edge of the pygophor there are three conical processes, the median one the largest; the apical portion of the genital styles is not so curved and the apex is truncate; the anal spines are closely appressed at their bases.

Length 2.6 mm.; tegmen 2.8 mm.

♀ The females I cannot distinguish from *M. proserpina*.

Length 2.9 mm.; tegmen 3 mm.

Hab. Davao, Mindanao, P. I. One male and one female (Baker coll.).

M. albicollis sp. nov. Pl. VI, figs. 54, 54a.

♂ Length of vertex one and one-half the width; length of face 2.2 times the width, widest in middle, sides slightly arcuate, median carina not forked; antennae reaching to the middle of clypeus, second segment 1.6 times the length of first; lateral pronotal carinae straight, slightly diverging, reaching hind margin of pronotum; first joint of hind tarsus equal in length to other two together, spur not quite so long as first tarsal joint, moderately wide, laminate, hind edge with minute teeth; brachypterous.

Intercarinal spaces of face, genae and clypeus black or fuscous brown, vertex, antennae, sides of clypeus, legs and carinae of face and clypeus ochraceous, the median frontal carina wider and whiter than the others; brown over coxae; pronotum white or creamy white, mesonotum brown, darkest between carinae; abdomen ochraceous, brown over median portion of tergites and on some sternites, also the genital styles and ventral half of pygophor brown. Tegmina brown with a darker spot at the end of clavus; hind margin to spot at end of clavus, a small mark beyond that spot and the costal margin white; granules exceedingly minute and sparse.

Genitalia figured. A noticeable point is the great development of the process on the diaphragm below the aedeagus.

Length 1.9 mm.; tegmen .9 mm.

Hab. Luzon, Mount Benahao (Muir), described from a single male.

M.(?) furcifera (Horv.).

Delphax furcifera Horvath, 1899, Terms. Fuzetek, XXII p. 372.

Delphax kolophon Kirkaldy 1907 H. S. P. A. Ent. Bull III, p. 159, Pl. XV, figs. 9, 10, 11.

The vertex of this species is longer than broad with th apex slightly narrower than the base. It is not congeneric witl *Delphacodes mulsanti* Fieb., neither is it strictly congeneri with *Megamelus notulus* (Germar), but I think it is bette placed with the latter than with the former.

I have specimens of this species from Fiji, Amboina Ceram, India, Philippines, South China (Lo-fu-shan, 3,00 feet), Formosa and Japan. They may eventually be divide into two subspecies as the Philippines and Indian specie differ somewhat from the type.

M. geranor (Kirk.).

"Delphax" geranor Kirkaldy, 1907, t. c. 158.

M. kaha (Kirk.).

"Delphax" kaha Kirkaldy, 1907, l. c.

M. leimonias (Kirk.).

"Delphax" leimonias Kirkaldy, 1907, t. c. 159.

Genus Sardia Melichar.

S. pluto (Kirk.).

One male specimen from Formosa (Muir, December, 1916), previously known from Fiji, Queensland and the Philippines.

S. brunnia sp. nov. Pl. VI, figs. 51, 51a.

♂ Vertex longer than width of base, apex about half the width of base; medio-lateral carinae meeting before the apex; lateral pronotal carinae diverging, slightly curved, not reaching hind margin; in profile the head not projecting so far, or the medio-frontal carina so prominent, as in the type spcies; antennae reaching to about middle of clypeus, first joint half the length of second; first hind tarsal joint as long as the other two together, spur longer than first tarsal joint, broad, laminate, with minute teeth on hind margin.

Shiny warm blackish brown; antennae, apical portion of clypeus, rostrum and legs ochraceous, genital styles light brown; tegmina and

wings warm blackish brown with darker veins, veins of tegmina with small brown granules. Genitalia figured.

Length 1.9 mm.; tegmen 2.5 mm.

Hab. Amboina (type, Muir); Luzon, Pagsanhan, P. I. (Baker coll.). In the Philippine specimen the carinae of frons considerably lighter.

S. rostrata Dist.

Four females from Los Banos, Luzon (Muir, September, 1915), which are like the specimens from Borneo which I referred to this species.

Genus KELISIA Fieber.

K. kirkaldyi sp. nov. Pl. VI, figs. 52-a.

"Delphax" puella Kirkaldy not Van Duzee* (1907), H. S. P. A. Ent. Bull. III, p. 160. Pl. XV, figs. 1-3; Muir, Philippine Journl. Sci. XI, Sec. D, No. 6, p. 385, 1916.

♂ Macropterous. Vertex a little longer than the width of base, apex slightly narrower than base; frons narrowest at base between eyes, sides slightly arcuate, median carina simple; antennae reaching to base of clypeus, first joint slightly more than half the length of second; lateral pronotal carinae not divergingly curved, straight, diverging, not quite reaching hind margin, or if they do they are slightly convergingly curved near hind margin; first joint of hind tarsus not quite so long as the other two together, spur longer than first tarsal joint, wide, laminate, with numerous minute black teeth on hind margin.

Head, anterior third of pronotum, mesonotum, coxae and most of thoracic pleura shiny black or blackish brown, lateral carinae of face, the triangular space between carinae at apex of vertex, carinae of clypeus, all the pronotum except a narrow anterior margin and the posterior angle of mesonotum white or light creamy white, apex of first antennal joint and most of second joint light brown; legs light brown, femora darker than tibiae; abdomen dark brown, light over base and on pleura. Tegmina hyaline, slightly opaquely white, veins light with very minute granules, margins darker, especially the apical margin, a dark brown spot on margin at apex of clavus; wings hyaline with light veins. Opening of pygophor deeper than wide, a deep anal emargination on dorsal edge, rest of margin entire, simple; anal spines contiguous at base, divergingly curved to apex; styles small, their bases generally concealed within the pygopher so that they appear curved and acute, but dissected out and viewed flat they appear as in Pl. VI, fig. 52a; aedeagus slightly crassate at apex with three minute spines in a dorso-apical position, base with a dorsal

* See remarks under Delphacodes puella, p. 337.

enlargement which has one or two longitudinal corrugations along it

Length 1.6 mm.; tegmen 2 mm.

Brachypterous form similar to above but the tegmina only reaching to the eighth abdominal segment, white or creamy white over base and along apical margin, fuscous over median portion. Length of tegmen 1 mm.

♀ Similar to male. Macropterous forms 1.9 mm. long, tegmen 2 mm.; brachypterous forms 1.9 mm. long, tegmen 1 mm.

Hab. Fiji (type, Muir, Koebele); Queensland (Koebele Perkins); Luzon, Los Banos (Baker, Muir); Formosa (Muir) This species is a near ally of *K. paludum* Kirk.

K. paludum Kirk. Pl. V, figs. 18-a.

This species was described by Kirkaldy from specimens taken on Oahu, Hawaiian Islands, and afterward taken by D. T. Fullaway in Laysan Island to the northwest. I now find specimens among our material from Fiji, Queensland, Java, Ceylon and the Philippines. The genitalia of specimens from these widely separated localities are similar but the coloration varies. The prevailing color of the Hawaiian specimens is brownish yellow with a variable amount of infuscation on the face between the carinae and over the abdomen; there is a tendency for the mesonotum to darken and for a tinge of fuscous to appear over the claval and cubital cells. Among the nine specimens from Rewa, Ba and Navua, Fiji, the color is darker (except the pronotum and carinae of head) especially the mesonotum which is dark and shiny in some specimens; in the two Queensland specimens, the one from Pekalongan, Java, the one from Ceylon and the five specimens from Mt. Maquiling, Luzon, this tendency is carried still further. In some of the Philippine specimens the pronotum and the carinae of the frons stand out very light against the dark intercarinal spaces and the shiny dark mesonotum; the abdomen is also dark brown in these specimens.

In spite of this difference in coloration I do not feel justified in giving a specific, or even a subspecific, name to any of these geographical varieties. While the Queensland, Java and Philippine specimens could be grouped together it would be difficult to place the Fiji specimens in either groups, as

they tend towards both. The genitalia are very near to those of *K. kirkaldyi* Muir.

K. fieberi sp. nov. Pl. VI, figs. 49-a.

♂ Length of vertex 1.5 the width; sides of face subparallel except near base where the face is slightly constricted; antennae reaching beyond the apex of the face, first joint slightly longer than half of second; pronotal lateral carinae diverging, straight or slightly convergingly curved at apex where they reach, or nearly reach, the posterior margin of the pronotum; first hind tarsal joint slightly shorter than the other two together, spur as long as first joint, laminate, moderately wide with many fine teeth on hind margin.

Clypeus, genae behind carina, carinae of face, vertex, a broad median band down pro- and mesonotum, lateral portions of pro- and mesonotum, antennae and legs capucine buff or pale yellow-orange; face and genae between carinae, a broad medio-lateral band down pro- and mesonotum, coxae, most of pleura black fuscous or fuscous brown; abdomen brown with the base, a few marks on pleura and hind margins of some of the segments yellow-orange. Tegmina hyaline tinged with capucine buff, veins darker with minute granules bearing black hairs, a fuscous mark near base and another at apex of clavus, a crescent shape fuscous mark over the posterior apical portion of tegmen including the fork of media and 4-7 apcial veins, the apical half of the fourth and the fifth and sixth apical cells except on the margin where there is a subtriangular clear mark in each cell, the apical portion of the second and third apical veins also fuscous. Genitalia figured.

Length 1.9 mm.; tegmen 2.9 mm.

♀ Similar to the male but slightly lighter over face and abdomen. Pygophor long and narrow.

Length 2.3 mm.; tegmen 2.9 mm.

Hab. Luzon, P. I., a long series, mostly males, from Los Banos (Muir) and one from Mindanao, Davao (Baker coll.). I also have a specimen from Galle, Ceylon (Bainbrigge Fletcher). There is a slight amount of color variation as to the intensity of the black on face and the extent of infuscation on tegmina. I have honored this little insect with the name of Dr. F. H. Fieber to whom we are indebted for the foundations of the classification of the *Delphacidae*.

Genus Bakerella Craw.

B. maculata Craw.

Ten specimens from Mexico Valley (Koebele 1907), one male of which is brachypterous. The tegmina reach the middle

of the fifth abdominal segment, brown over the basal two-thirds of clavus, fuscous or black over the rest, the margins thick, the apical margin and hind margin of clavus white. Length 1.6 mm.; tegmen .7 mm.

Genus Delphacodes Fieber.

Delphacodes Fieb. subgenus of Delphax, logotype *mulsanti* Fieb., Verh. z. b. Ges. Wien XVI (1866), p. 524, Pl. VIII, fig. 32.

Liburnia Stål 1866, Hem. Afr. IV, pp. 176, 179, in part.
Delphax Fabricius Ent. Syst. Suppl. (1798), p. 511, in part (and other authors).

In listing the genera of Delphacidae I retained the name *Liburnia* Stål with *Delphax pellucida* Fabr. as its type* for the largest group of species in the family, thinking that by so doing it would cause the least amount of change. A reconsideration of the matter has convinced me that this name cannot be maintained.

Fabricius described the genus *Delphax* (1798) in which he placed *crassicornis*, *clavicornis* and, at a later date, *pellucida* and other species. There is no such genus as *Delphax* Latr. 1807; in that year Latreille vainly tried to fix *pellucida* Fab. as the type of *Delphax* Fab. Stål and other writers described species under *Delphax* Fab. (not *Delphax* Latr.) which were congeneric with *pellucida* but not with *crassicornis*. In 1866 Stål recognized that *crassicornis* was the type of *Delphax* and so he erected the new genus *Liburnia* to contain those species of *Delphax* which were not congeneric with *crassicornis*. As synonyms of *Liburnia* he gave *Delphax* Auctor and *Embolophora* Stål 1853, and mentioned seven species. It has been contended that the sections *a* and *a.a.* used by Stål to divide his species of *Liburnia* are subgeneric. I cannot agree with this contention as Stål nowhere states this to be the case and he gave no subgeneric names to the divisions. In the same work on pages 15 to 41 he deals with the genus *Tibicen* Latr. and divides it into subgenera which he names and describes,

* Canadian Entomologist, 1915, p. 265.

and in the subgenus *Quintilia* he uses the same method of dividing his species as he does in *Liburnia*, viz., *a*, *a.a*, *b*, *b.b*, etc,. a method he used in many other parts of the same work and elsewhere.

The subsequent history of *Liburnia* appears to be that Distant in 1906 selected *monoceros* as the type, and at a later date *monoceros* was separated from the other species as a distinct genus. Thus *Embolophora* and *Liburnia* have the same type and the former takes precedence. My knowledge of the literature from 1866 to 1906 is far from complete so that it is possible that someone separated *monoceros* from the other six species before 1906, in which case *Liburnia* still stands without a selected type, so I name *Delphax vitticollis* Stål.

Stål considered *monoceros* congeneric with *pallens* or he would not have placed them together; what his intentions were I cannot say but he made *Embolophora* and *Liburnia* synonyms. Unless new data is presented I shall consider them as such and use the name *Delphacodes* Fieber 1866 for the group that contains *mulsanti* and congeneric species.

D. ordovis (Kirk.).

"Delphax" ordovis Kirkaldy, 1907, H. S. P. A. Ent. Bull. III, p. 152.

D. parysatis (Kirk.).

"Delphax" parysatis Kirkaldy, t. c. p. 153.

D. dilpa (Kirk.).

"Delphax" dilpa Kirkaldy, t. c. p. 162.

D. dryope (Kirk.).

"Delphax" dryope Kirkaldy, 1907, t. c. p. 154.

D. lazulis (Kirk.).

"Delphax" lazulis Kirkaldy, 1907, t. c. p. 155.

D. matanitu (Kirk.).

"Delphax" matanitu Kirkaldy, 1907, l. c.

Also from Papua, Laloki River (Muir, 1909), one macropterous male.

D. hyas (Kirk.).

"Delphax" hyas Kirkaldy, 1907, t. c. p. 156.

D. disonymos (Kirk.).

"Delphax" disonymos Kirkaldy, 1907, l. c.

Delphacodes miridianalis sp. nov. Pl. V, fig. 24, 24a.

♂ Vertex as long as wide; head as wide as thorax; antennae reaching slightly beyond base of clypeus, length of first joint to second as 1 to 2.5; medio-frontal carina simple; lateral pronotal carinae divergingly curved, not reaching hind margin; brachypterous, tegmen reaching to base of fifth tergite (the pygophor being considered as the ninth abdominal segment); hind tarsus short, first joint slightly longer than the other two together, spur about as long as first joint with many minute teeth on hind margin.

Pygophor a little narrower than deep, margin entire; anal spines strong, near together, slightly curved; genital styles large, flat, broadest at truncate apex, slightly narrowed in middle, the inner apical area bent at a slightly different plane to the basal and outer area; aedeagus slightly flattened laterally, apex rounded, a row of spines from a dorso-apical point down each side to a ventro-subbasal point, a few odd spines over the ventral area.

Head, antennae, thorax and legs ochraceous-buff, frons, genae and clypeus slightly fuscous between carinae, front coxae and a round mark on metapleura dark brown; abdomen blackish brown, lighter over base and pleura; tegmina shiny blackish brown with the extreme base and the margins white or yellowish white, veins concolorous with membrane, without granules.

Length 1.8 mm.; tegmen .7 mm.

♀ There are two females among the series which are uniformly ochraceous-buff.

Length 2.2 mm.; tegmen .9 mm.

Hab. Rotorua, New Zealand (O. H. Swezey, May, 1912). This comes near to *D. dilpa* (Kirk.). from Australia but it can easily be separated by its light head and thorax and by its genitalia.

D. striatella (Fall.)

Mindanao, Davao (Baker coll.). This agrees in every way with specimens from Japan and Europe.

D. terryi sp. nov. Pl. V. fig. 23.

Brachypterous. ♂ Vertex as long as broad; antennae reaching to near the middle of clypeus, second joint double as long as first; frons narrowest at base between eyes, medio-frontal carina simple or furcate only at the extreme base; tegmina reaching to end of abdomen; first joint of hind tarsi as long as the other two together, spur laminate, as long as the first tarsal joint, with many (14-20) fine teeth on posterior edge; lateral pronotal carinae divergingly curved, not reaching hind margin.

Face, genae and clypeus between carinae black, carinae of clypeus and face, antennae, vertex, pro- and mesonotum ochraceous, pro- and

mesopleura and coxae black or fuscous, metapleura with a round fuscous spot, abdomen fuscous with the basal segments and posterior edges of 3-8 segments ochraceous. Tegmina ochraceous-buff, fuscous around apex, veins concolorous with membrane, with very minute concolorous granules. Genitalia figured.

Length 1.8 mm.; tegmen 1.3 mm.

♀ Lighter in color, especially between carinae of head.

Length 2.5 mm.; tegmen 1.5 mm.

Macropterous. ♂ Similar in coloration to the brachypterous forms. Tegmina hyaline, slightly opaquely white, veins before cross-veins light yellow, beyond cross-veins brown, apical margin brown, veins with very small granules; wings hyaline, slightly opaque, veins brown. Length of tegmen 3 mm.

♀ Similar in coloration to the brachypterous form, or slightly darker; tegmina similar in coloration and size to that of the macropterous male.

Hab. Java, Dieng Plateau, 7,000 feet elevation. Several specimens bore Dryinid sacs, (F. W. Terry, December, 1908); Formosa, 2 males (Muir, December, 1913).

D. neopropinqua sp. nov. Pl. VI, fig. 38.

♂ Brachypterous. Antennae reaching nearly to the middle of clypeus, first joint half the length of second; first joint of hind tarsus not quite so long as the other two together, spur about as long as the first joint, broad, laminate, with many small teeth on hind margin; lateral pronotal carinae divergingly curved, not reaching hind margin.

Ochraceous-tawny, darker between carinae, on face, clypeus and genae fuscous between carinae, coxae and a round spot on metapleura fuscous, abdomen dark, lighter on base, sides, the anal segment and dorsal portion of pygophor. Tegmina ochraceous-tawny, slightly darker over apex, veins concolorous with membrane, without granules.

The genitalia is near to that of *D. propinqua* (Fieb.) but the aedeagus is distinct (Pl. VI, figs. 37, 38); the genital styles have a less angular projection on the inner basal third, and the truncate apices distinctly narrowed.

Length 1.7 mm.; tegmen 1.3 mm.

Hab. Los Banos, Philippine Islands (Baker coll.). This is a Malayan form of *D. propinqua* of Europe.

D. anderida (Kirk.). Pl. VI, fig. 35.

Dicranotropis anderida Kirkaldy, 1907, H. S. P. A. Ent. Bull. III, p. 133.

The frontal carina furcates at the base of frons and I consider that it should be placed in this genus rather than in *Dicranotropis*. It is possibly the same as *Liburnia sordescens* (Motsch.).

Originally described from a series of females from Fiji and Queensland. I have a long series including a few males from Davao, Mindanao, and Mount Maquiling, Luzon (Baker coll.), also a single male from Lappa Island, South China, one from Pekalongan, Java, and one from Peroe, Ceram Island (Muir). I place them all under this species until the male from Fiji and Queensland is known.

♂ Vertex as long as wide; length of face 2.3 times the width, sides nearly straight, slightly narrowed between the eyes, furcation of medio-frontal carina sometimes indistinct; antennae reaching nearly to middle of clypeus, second joint 1.5 times the length of first; lateral carinae of pronotum divergingly curved, not reaching hind margin; hind tibiae short, first joint not quite so long as other two together with 2-4 small spines near its base, spur slightly longer than first joint, broad, laminate, with numerous small teeth on hind margin. Genitalia figured; the aedeagus is thin, cylindrical, swollen about the middle where the opening is situated, beyond this it is drawn out to a fine, curved point; anal spines larger, slightly diverging.

Blackish brown, lighter over carinae and on pronotum and legs; abdomen darker with light marks on base and pleura; tegmina hyaline, veins brown, darker on apical half, a dark mark on margin at apex of clavus; some specimens are lighter in color and more of a Sanford's brown.

Length 2 mm.; tegmen 2.8 mm.

The females are ochraceous-tawny, some slightly darker than others.

D. bakeri sp. nov. Pl. VI, fig. 47.

♂ Vertex square; frontal carina furcating at base, sides of face subparallel; antennae reaching to near middle of clypeus, second joint 1.8 times the length of first, slightly thickened especially in middle; lateral pronotal carinae divergingly curved, not reaching hind margin; first joint of hind tarsus equal to the two others together, with 2-4 small spines on basal half; spur slightly longer than first tarsal joint, wide, laminate, with numerous small teeth on hind margin.

Head, thorax and legs cinnamon brown, darker over front and middle coxae and a spot on metapleurum; abdomen black or brownish black, lighter over base, pleura and dorsal portion of pygophor and 8th and 7th tergites. Tegmina hyaline, slightly ochraceous, slightly fuscous over cubito-apical cells, veins before cross-veins con-

colorous with membrane, beyond cross-veins brown, a few very small, concolorous granules. Genitalia figured; anal spines strongly curved.

Length 2.5 mm.; tegmen 3 mm.

Hab. Los Banos, Luzon, P. I. (Muir, July, 1916), two male specimens. In build this is very much like *D. anderida* and possesses small spines on the first hind tarsal joint.

D. puella (V. D.)

I have one specimen from Columbus (det. Van Duzee) and others from Dayton and Springfield, Ohio, that agree with the original description and with Crawford's figure of the genitalia. Kirkaldy reported this species from Fiji and Queensland and figured the genitalia of a Queensland specimen*. These figures do not agree with the Ohio specimens and I can find no specimen among the Fiji and Australian material that does. I have placed *D. puella* Kirkaldy not V. D. in *Kelisia* as *K. kirkaldyi*.

D. lacteipennis sp. nov. Pl. VI, figs. 53, 53a.

♂ Head about as broad as pronotum, short; vertex a little broader than long; lateral margins of face arcuate, length of face twice the width, median carina forking at base; antennae reaching a little beyond base of clypeus, second joint 1.8 times the length of first; lateral pronotal carinae divergingly curved; first joint of hind tarsus shorter than other two together, spur as long as first tarsal joint, moderately broad, laminate, with minute teeth on hind margin.

Head and anterior portion of pronotum dark Hessian brown, vertex and carinae at base of face lighter, antennae nearly black, legs brown posterior pair lighter than anterior; posterior portion of pronotum white, creamy white or dirty yellow; meso- and metanotum light brown; abdomen Hessian brown, light on posterior edge of segments and on pleura. On the face, genae and clypeus there are scattered, fine short hairs. Tegmina and wings hyaline, opaquely white, veins yellowish with fine granules on the tegminal veins.

Genitalia figured. Anal spines long, slightly curved, approximate at base, diverging towards apex.

Length 1.4 mm.; tegmen 2 mm.

♀ Brachypterous, tegmina reaching to fourth abdominal segment, orange buff; antennae dark brown, clypeus, face and vertex lighter brown, anterior half of pronotum darker than posterior half. Tegmina hyaline, orange buff; veins concolorous with membrane with concolorous minute granules.

Length 1.6 mm.; tegmen .6 mm.

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* H. S. P. A. Ent. Bull. III (1907), Pl. XV, figs. 1-3.

Hab. Described from eight males from Fiji, four males and one female from Java and one male from Formosa (Muir).

D. nigripennis sp. nov. Pl. VI, fig. 55.

♂ Vertex square; face twice as long as broad, slightly narrowed between eyes, sides subparallel; antennae reaching to the middle of clypeus or a little beyond, second joint 1.7 times the length of first; frontal carina forking at extreme base; lateral pronotal carinae slightly divergingly curved, not reaching hind margin of pronotum; first tarsal joint about equal to the two others together, spur not quite as long as first joint, moderately wide, with small teeth on hind margin.

Light buckthorn brown or ochraceous buff, fuscous over thoracic pleura, on abdominal sternites and ventral half of pygophor. Tegmina shiny black or dark chocolate, veins concolorous, without granules. Genitalia figured.

Length 2 mm.; tegmen 1 mm.

Hab. Formosa, Daimokko (Muir, January, 1916).

TROPIDUCHINAE.

Ommatissus Fieb.

Dr. Melichar* has questioned the status of *Ommatissus lofouensis* Muir and *O. chinsanensis* Muir from China, partly on account of the geographical distribution; the only other species of the genus being found in Andalusia, Spain. I have not seen specimens of *O. binotatus* Fieb., but the two Chinese species agree with Fieber's figures and descriptions so closely that I cannot change my opinion. In the Chinese species the median vein forks at the cross-veins instead of near the apex; the face is slightly broader; in *O. chinsanensis* Muir the clypeus in profile is slightly more arcuate and in *O. lofouensis* Muir still more so, but these slight differences are not sufficient to create a new genus on. The male genitalia separate the three species.

Neommatissus Muir.

I can find no good characters upon which to separate *Stacotoides* Distant from this genus. I placed this, along with *Ommatissus* Fieb. among the Cixiids as the latter holds that position in Oshanin's Catalogue. They both possess the hairline dividing off the posterior angle of the mesonotum.

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* Mon. Tropiduchinae, Verb. Ver. Brün, 1914.