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Thysanoptera of Fiji

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INTRODUCTION

This report is founded principally upon collections made by E. C. Zimmerman during the course of the Henry G. Lapham Expedition to Fiji which was sent out by Bishop Museum in 1938. Some material collected by the late A. M. Lea and a collection made by N. L. H. Krauss in 1941 are included. In all, the report includes seven new genera (some erected to include peculiar giant thrips), one new subgenus, 31 new species, and three new varieties from Fiji, and a new species from Samoa. In addition to these new forms, 13 species and one variety previously described are recorded. *Mesothrips setidens* Moulton is transferred to *Dichaetothrips,* and *Cryptothrips niger* Moulton and Steinweden has been reduced to a synonym of it. Most of the specimens collected by Mr. Zimmerman were beaten from shrubbery or dead limbs, or were found beneath dead bark. The great diversity of the Fijian flora made field identification of the host trees almost impossible.

Little has been known regarding the Thysanoptera of the Fijian Archipelago, and there is no doubt that this report includes only a fraction of the species of thrips found there. Material from the high interior forests of Fiji has been now studied for the first time. Mr. Zimmerman believes that a specialist skilled in the collection of Thysanoptera should find many species not seen by him.

SUBORDER TEREBRANTIA HALIDAY, 1836

SUPERFAMILY THRIPOIDEA HOOD, 1915

FAMILY THRIPIDAE UZEL, 1895

SUBFAMILY HELIOTHRIPINAE KARNY, 1921

Heliothrips haemorrhoidalis Bouche, 1833. Priesner, Thysanoptera of Europe, 127, 1927.

Navai Mill, Tholo North, Viti Levu, Sept. 15, 1938, 1 female (5399), E. C. Zimmerman.

SUBFAMILY THRIPINAE KARNY, 1921

Taeniothrips mucunae Priesner var. **fijiensis,** new variety.

Priesner, Treubia **16**(4) : 475, 1938.

Holotype female: color blackish brown including all segments of antenna; legs blackish brown with fore tibiae and all tarsi yellow; fore wings clear at base except for brownish shading at extreme base and on scale followed by a broad dark-brown band covering center half of wing, another whitish band before the end, tip brown; all setae blackish brown.

Total length 2.1 mm.; head length 0.147 mm.; width 0.191 mm.; prothorax length 0.191 mm., width 0.262 mm.; pterothorax width 0.382 mm. Antennal segments length (width) II, 43 (30); III, 73 (26); IV, 83 (25); V, 50 (20); VI, 63 (20); VII, 16; VIII, 16; sense cones on segment three 66 microns; fore wing 1.0 mm. long, fore vein with 4-14-2 setae, hind vein with 17 setae.

Sigatola [Singatoka], Viti Levu, Apr. 17, 1941, holotype female, 5 paratype females (5628), N. L. H. Krauss.

The variety is separated from the species principally by the relatively shorter intermediate antennal segments and the shorter sense cones on the third segment.

Taeniothrips samoaensis, new species (fig. 1, *a*).

Holotype female, light gray brown, with yellow pigment in thorax; antennae dark gray brown with tip of segment 2 lighter and 3 abruptly yellow; legs mostly yellow with grayish shading on outer margins of middle and hind femora; fore wings clear in basal fourth followed by a grayish area which fades in distal third; all prominent setae dark.

Head wider than long, with transverse striations behind eyes and ocelli; eyes relatively large, occupying half the sides of the head; interocellar setae placed on either side of anterior ocellus and outside the ocellar triangle; a single row of setae behind eyes, the innermost longest and placed behind posterior ocelli. Antennae moderately stout, segments 3 and 4 reduced only slightly at ends and not constricted neck-like, style short. Prothorax with about 25 moderately stout setae scattered over dorsal surface; with four pairs of setae along posterior margin, the innermost longest; pair of major setae on each posterior angle long, strong and dark colored; median major setae on metanotum placed close to anterior margin; fore vein of fore wing with 4-9-1-1 and hind vein with 14 setae. Comb along posterior margin of eighth tergite complete but weak and irregular; abdominal sternites with a single row of 12 to 14 accessory setae.

Total body length 1.17 mm.; head length 0.117 mm., width 0.161 mm.; prothorax length 0.125 mm., width 0.20 mm. Antennal segments length (width) II, 36 (23); III, 46 (16); IV, 46 (16); V, 40 (14); VI, 43 (14); VII, 6; VIII, 6; total 243 microns; setae on posterior angles of prothorax 66 microns.

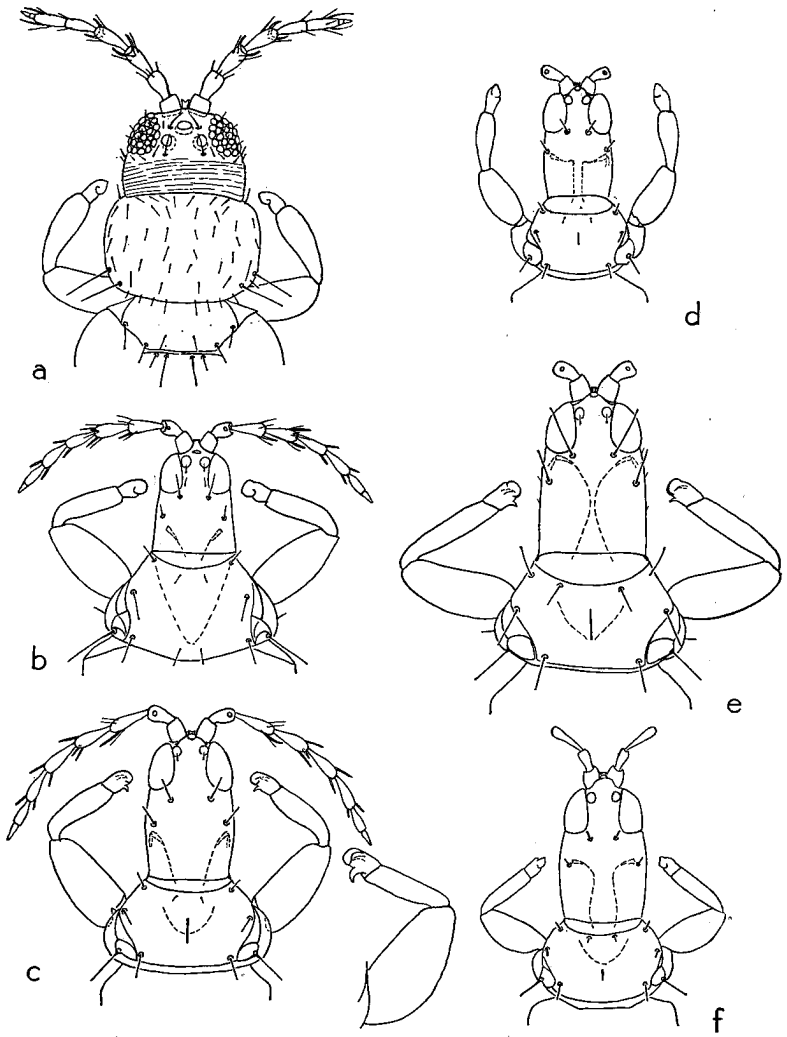

FIGURE 1.—**a,** *Taeniothrips samoaensis,* female, head and prothorax; **b,** *Gynaikothrips abnormis,* female, head and prothorax; **c,** *G. magnafemora,* female, head and prothorax and male, right fore leg; **d,** *G. novi oris,* male, head and prothorax; **e,** *G. claripes,* male, head and prothorax; **f,** *G. tenuicornis,* female, head and prothorax.

Pago Pago, Tutuila, Samoa, Apr. 12, 1941, holotype female and 15 paratype females (5629, 5630), Krauss.

This species belongs in group A of Priesner's key to Indian-Malayan Thysanoptera [Treubia **16**(4) : 509, 1938] which includes those species having a long series of basal setae on fore vein of fore wing, this series extending beyond middle of wing, and with two distal setae. It is closely related to *T. fulmeki* Priesner, but differs in the much shorter third antennal segment (46 μ as compared with 80 μ in *fulmeki*), shorter setae on posterior angles of prothorax, and four pairs of setae along posterior margin of prothorax as compared with three in *fulmeki*.

Taeniothrips kotoshoi Moulton, Annot. Zool. Japon. **11**(4) : 300, 1928.

Singatoka, Viti Levu, Apr. 17, 1941, 2 females (5628), Krauss.

Isoneurothrips malloti Priesner, Natuur. Tijdsch. Nederl. Ind. **94** (3) : 269, 1934.

Nandarivatu, Viti Levu, Sept. 6, 1938, 1 female (5391), Zimmerman.

Isoneurothrips rapaensis Moulton, B. P. Bishop Mus., Occ. Papers **15**(12) : 142, 1939.

Lami Quarry, Viti Levu, alt. 250 ft., July 24, 1938, 4 females (5396); Draiba Trail, Ovalu [Ovalau], alt. 500-1,000 ft., July 8, 1938, 4 females (5398), Zimmerman; Singatoka, Viti Levu, May 17, 1941, 4 females (5625); Bualu, Ono, Apr. 23, 1941, 5 females (5626), Krauss.

Suborder TUBULIFERA Haliday, 1836

Superfamily PHLAEOTHRIPOIDEA Hood, 1915

Family PHLAEOTHRIPIDAE Uzel, 1895

Tribe HOPLOTHRIPINI Priesner, 1927

Cryptothrips latus Uzel var. **fijiensis,** new variety.

Cryptothrips latus Uzel, Priesner, Thysanoptera of Europe, 486, 1927.

Male holotype, color blackish brown with fore tibiae and all tarsi somewhat lighter; antennal segments 1 and 4 to 8 uniformly blackish brown, 2 lighter distally, 3 brownish yellow, darker distally; hind wings slightly clouded (fore wings missing on the single specimen).

Total body length 3.22 mm.; head length 0.382 mm., width 0.260 mm. (1.47 longer than wide); prothorax length 0.191 mm., width including coxae 0.514 mm.; tube length 0.367 mm. (0.9 as long as head). Antennal segments length (width) III, 113 (46); IV, 113 (46); V, 110 (40); VI, 83 (33); VII, 66; VIII, 50; total 0.676 mm. (1.76 longer than head). Length of spines: postoculars 160, on anterior angles of prothorax 83, posterior angles 183, on ninth abdominal segment 346 microns.

Viti Levu, holotype male (3450), A. M. Lea.

The species *C. latus* is found in Europe. This new variety is nearly identical with the species but is a little larger. The fourth antennal segment is uniformly brown like the following segments, whereas in the species it is usually lighter, especially basally.

Genus **GYNAIKOTHRIPS** Zimmermann, 1900

Key to new species of Gynaikothrips

1. All tibiae clear yellow 2
   Fore and middle tibiae yellow, hind tibiae brown basally, yellow distally ..... **G. abnormis.**
   Middle and hind tibiae brown, yellow distally 4
2. Fore tarsus unarmed. Head 1.5 longer than wide, tube 0.8 as long as head, fore wings with 10 double fringe hairs, antennal segment III, 73 (26); IV, 70 (33) ..... **G. novi oris.**
   Fore tarsus with tooth 3
3. Antennae clear yellow; enlarged bases of maxillary spines within posterior third of head. Head 1.5 longer than wide, tube 0.8 as long as head, fore wings with 14-16 double fringe hairs, antennal segments III, 100 (33); IV, 96 (36) ..... **G. magnafemora.**
   Antennae darkened apically, enlarged bases of maxillary spines located immediately behind eyes. Head 1.5 longer than wide, tube 0.7 as long as head, fore wings with 17 double fringe hairs, antennal segments III, 113 (33); IV, 103 (36) ..... **G. claripes.**
4. Fore tarsus armed with tooth 5
   Fore tarsus unarmed. Head 1.58 longer than wide, tube 0.86 as long as head, fore wings with 8 double fringe hairs, antennal segments III, 90 (33); IV, 86 (33) ..... **G. tenuicornis.**
5. Fore tarsal tooth at end of segment as in *Karnyothrips*. Head 1.35 longer than wide, tube 0.8 as long as head, fore wings with 14 double fringe hairs, antennal segments III, 86 (33); IV, 86 (40), prominent setae pointed ..... **G. armatus.**
   Tarsal tooth at base or near middle of segment 6
6. Antennae and fore tibiae clear yellow, tube 1.2 longer than head, fore wings with 25 double fringe hairs, antennal segments III, 100 (36); IV, 100 (40). Setae nearly pointed ..... **G. magnus.**
   Antennae darkened apically, fore tibiae brown basally, tube shorter than head, fore wings with 15 double fringe hairs, antennal segments III, 83 (36); IV, 90 (40); setae with blunt tips ..... **G. fuscus.**

Gynaikothrips abnormis, new species (fig. 1, *b*).

Holotype female (macropterous), color reddish brown including all femora, all tibiae clear yellow except basal third of hind pair which are light brown, all tarsi clear yellow; antennal segments clear yellow beginning with the apical portion of 2, with apical portion of 7 and 8 weakly shaded with gray; wings light brown, clearer at base; all prominent setae clear.

Head typical of genus with its dorsal sculpturing, large eyes, two pairs of postoculars, these on different planes, and weak genal setae, but abnormal in shape, with cheeks gradually diverging to posterior margin; two pairs of small postocellar setae; antenna normal, segment 3 with one sense cone; mouth cone abnormal, massive at base and extending nearly across prosternum to a narrowed tip; enlarged bases of mandibular spines in posterior third of head, similar to *G. uzeli* Zimmermann. Thorax unusually heavy with the pterothorax largest; fore legs normally slender, fore tarsus unarmed; all normal prothoracic setae represented with those on posterior angles longest, more noticeably reduced in apical fifth. Wings normal, fore pair with 17 double fringe hairs. Abdomen widest at second segment, from there reduced gradually; tube longer than head, slightly swollen at base, with nearly straight sides.

Total length with abdomen normal 2.6 mm.; head length 0.323 mm., width near posterior margin 0.26 mm.; prothorax length 0.235 mm., width 0.455 mm.; pterothorax width 0.578 mm.; tube length 0.338 mm., width at base 0.102 mm. Antennal segments length (width) II, 66 (40); III, 100 (36); IV, 93 (40); V, 86 (40); VI, 83 (36); VII, 63 (30); VIII, 46; length of setae: postoculars, outer 23, inner 50, anteromarginals on prothorax 23, on anterior angles 33, midlaterals 50, on posterior angles outer 106, inner 66, on ninth abdominal segment 66, at tip of tube 33 microns.

Mt. Victoria, Viti Levu, alt. 4,340 ft., Sept. 13, 1938, holotype female (5385), Zimmerman.

The pointed mouth cone and large prothorax separate this species from other members of the genus, but it belongs here even with these abnormal characters.

Gynaikothrips magnafemora,[1] new species (fig. 1, *c*).

Female holotype (macropterous), color dark orange brown including all femora, and antennal segments 1 and 2 with 2 lighter in outer half; all tibiae and tarsi and antennal segments 3 to 8 clear yellow with 7 and 8 only slightly shaded; wings washed with yellow; setae on prothorax brownish yellow, on abdomen clear yellow.

Total length 2.62 mm.; head length 0.323 mm., width 0.220 mm.; prothorax length 0.220 mm., width without coxae 0.367 mm.; pterothorax width 0.485 mm.; abdomen at segment 2, 0.455 mm.; tube length 0.308 mm., width at base 0.088 mm., at tip 0.044 mm. Antennal segments length (width) II, 56 (36); III, 100 (33); IV, 96 (36); V, 90 (36); VI, 83 (33); VII, 66; VIII, 40, total 573 microns; length of setae: postoculars 40, on anterior angles of prothorax 46, midlaterals 66, outer on posterior angles 110, inner 66, on ninth abdominal segment 233, at tip of tube 183 microns.

[1] *Magnafemora* refers to the enlarged fore femora in the male.

Head approximately 1.5 longer than wide, forehead somewhat swollen as in *Leptothrips* Hood and slightly overhanging bases of antennae, cheeks rounded a little in middle; with two pairs of postoculars, the anterior, inner pair removed from margins of eyes about 23 microns, posterior pair farther back and near sides of head, with blunt tips. Eyes large, subovate; anterior ocellus on swollen forehead, posterior pair large, contiguous with inner margins of eyes. Mouth cone short, rounded, labrum angular. Antennal segments 3 and 4 of nearly equal length with 3 slightly longer, 3 with one and 4 with three sense cones; enlarged bases of maxillary spines placed near sides of head at about two fifths its length from posterior margin, as in *uzeli*. Head and thorax with the usual sculpturing found in the genus. Prothorax with setae normally developed, short, with blunt tips, sutures complete; pronotum with median dorsal thickening in median third. Legs with fore femora somewhat larger than the others, fore tarsus with small tooth; fore wings with 14 double fringe hairs. Abdomen reduced gradually from segment 2, with 2 pairs of sigmoid setae on segments 2 to 6; tube nearly as long as head, somewhat swollen at base then with nearly parallel sides, reduced gradually in distal fourth.

Male allotype colored as in female; with longer head and prothorax but total body length about the same as in female; head length 0.352 mm., width 0.191 mm., at eyes 0.205 mm.; 1.75 longer than wide, cheeks nearly straight, roughened, with several small genal setae; antennal segments length (width) III, 103 (30); IV, 100 (34). Prothorax heavier than in female, median thickening complete posteriorly, nearly so anteriorly; fore legs enlarged, fore tarsus with stout tooth; fore wings with 14-16 double fringe hairs; outer setae on ninth abdominal segment reduced to spurs; tube 0.8 as long as head.

Nandarivatu, Viti Levu, alt. 3,700 ft., Sept. 10, 1938, holotype female, allotype male, 1 paratype male (5403); Mt. Victoria, Viti Levu, alt. 3,000 ft., Sept. 16, 1938, paratype male; Navai Mill, Tholo North, alt. 2,500 ft., Sept. 17, 1938, paratype female (5411), Zimmerman.

This new species may be separated from *Gynaikothrips claripes,* also newly described in this paper, by the clear distal antennal segments, shorter postocular setae, the anterior pair located farther away from eyes and in the male by the enlarged prothorax and fore legs and stronger tarsal tooth. It will be observed by comparing figures 1, *e* and 1, *c* that the enlarged bases of mandibles are located immediately behind the eyes in *G. claripes* and near posterior sides of head in *G. magnafemora.*

G. interlocatus Karny from India has unarmed fore tarsi, *G. pallicrus* Karny from Malaya has much shorter intermediate antennal segments, unarmed fore tarsi and the wings are clouded at base and distally; *G. uzeli* Zimmermann has the middle and hind tibiae yellow only at the ends.

Gynaikothrips novi oris,[2] new species (fig. 1, *d*).

Male holotype (macropterous), color orange brown including all femora and antennal segments 1 and 2, with 2 lighter in outer half; antennal segments 3 to 8, all tibiae and tarsi clear yellow; wings nearly clear, setae nearly clear.

Total length 2.17 mm.; head length 0.264 mm., width 0.170 mm.; prothorax length 0.147 mm., width without coxae 0.264 mm.; pterothorax width 0.360 mm.; width of abdomen at second segment 0.308 mm., tube length 0.191 mm., width at base 0.060 mm. Antennal segments length (width) II, 50 (26); III, 73 (26); IV, 70 (33); V, 70 (30); VI, 60 (30); VII, 50; VIII, 26; total 441 microns; setae: posterior, outer postoculars 23, midlaterals on pronotum 30, outer on posterior angles 46, inner 33, inner on ninth abdominal segment 166, spurs 36 microns.

With normal sculpturing found in the genus; head 1.5 longer than wide, forehead swollen, very slightly overhanging, cheeks nearly straight, with a few minute setae, two pairs of postoculars, the anterior, inner pair placed close to eyes and on a line connecting their posterior margins, the outer posterior pair farther back and near side margins of head, these setae short and with blunt tips. Eyes large, oval; ocelli large, fore ocellus on swollen vertex, posterior pair contiguous with inner, anterior margins of eyes; sense cones on antennal segments rather long and narrow, segment 3 with one, 4 with three; mouth cone short, rounded. Sculpturing on prothorax most prominent at sides, weakened near anterior and posterior margins, with a cleared area near middle; median thickening reduced to a short, thin line; midlateral setae and pair on posterior angles short, others minute. Fore legs not enlarged, fore tarsi unarmed; fore wings with 10 double fringe hairs. Abdomen slender, reduced beyond second segment, outer setae on segment 9 reduced to spurs; with two pairs of sigmoid setae on segments 2 to 7; tube 0.7 as long as head, its sides nearly straight.

Nandarivatu, Viti Levu, alt. 2,600-3,000 ft., Sept. 9, 1938, holotype male (5415), Zimmerman.

The species is especially characterized by the clear yellow antennal segments 3 to 8 and all tibiae and tarsi, by the rather long sense cones on segments of antennae, by the position of the postocular setae and particularly by the position and shape of the mandibular spines, with their enlarged basal portions attaching to the lever-like thickenings at the sides of the head, midway between eyes and posterior margin. These extend inward, backward only a little and then make an abrupt turn downward and backward and continue almost parallel near middle of head to its posterior margin where they diverge as they enter the mouth cone. It should be observed that the enlarged basal ends of the maxillae are located immediately behind the eyes in *G. claripes* and are located in the posterior part of the head and directed obliquely backward and inward in *G. magnafemora*. Of other known species with clear yellow tibiae, tarsi, and distal antennal segments, *G. pallicrus* Karny from Malaya has pointed

[2] *Novus,* strange; *os,* mouth.

setae and antennal segment 4 longer than 3, *G. siamensis* Karny from Siam has segments 4 longer than 3 and 5 longer than 4, *G. mirabilis* Karny from Peradeniya has a shorter head but longer postocular setae.

Gynaikothrips claripes, new species (fig. 1, *e*).

Female holotype (macropterous), color dark brown, end of abdomen blackish brown, all femora dark brown, all tibiae and tarsi clear yellow, antennal segments 1 and 2 dark brown with 2 lighter distally, 3 to 8 mostly yellow with 5 slightly shaded in outer third, 6 still a little darker in outer half and 7 to 8 light brown; prothoracic setae brown, terminal abdominal setae clear; wings nearly clear, with yellowish median streaks.

Total length 3.29 mm.; head length 0.396 mm., width 0.260 mm.; prothorax length 0.235 mm., width not including coxae 0.440 mm.; pterothorax width 0.529 mm.; width of abdomen at second segment 0.529 mm.; tube length 0.308 mm., width at base 0.088 mm., at tip 0.044 mm. Antennal segments length (width) II, 70 (36); III, 113 (33); IV, 103 (36); V, 100 (33); VI, 86 (33); VII, 66; VIII, 43; total, 617 microns. Length of setae, postoculars, inner anterior 116, outer posterior 93; on anterior margin of prothorax 66, anterior angles 70, midlaterals 100, outer on posterior angles 130, inner 106, on ninth abdominal segment 223, at tip of tube 183 microns.

Head 1.5 longer than wide, sculptured as in *G. uzeli* Zimmermann, with two pairs of postoculars, an inner longer pair placed close behind eyes almost on a line across their posterior margins, and the second pair farther back and near sides of head, these with blunt tips. Antennal segment 3 has one and 4 has three sense cones. All normal setae on prothorax are moderately long; fore tarsus is armed with a small tooth. Abdomen reduced gradually beyond second segment, 2 to 6 each with two pairs of sigmoid setae; tube 0.7 as long as head, narrow and with nearly straight sides; fore wings with 17 double fringe hairs.

Male allotype is almost identical with the female but with slenderer abdomen and the outer setae on segment nine reduced to spurs. One female paratype has a still longer and narrower head, 1.9 as long as wide, but in all other characters similar to holotype.

Mt. Victoria, Viti Levu, alt. 3,000 ft., Sept. 16, 1938, holotype female and 2 paratype males (5394); Nandarivatu, alt. 2,000-3,000 ft., Sept. 9, 1938, allotype male (5415), Zimmerman.

Other members of the genus with all yellow tibiae and tarsi include *G. gracilis* Karny from Java which has a longer and more slender third antennal segment; *G. interlocatus* Karny from India with a much shorter third antennal segment and thick, black, postocular setae; *G. inquilinus* Karny and *G. siamensis* Karny, from Java and Siam, have antennal segment 4 longer than 3 and *inquilinus* has only two or three double fringe hairs on fore wings. It should be observed (fig. 1, *e*) that the enlarged bases of mandibles in this new species are placed immediately behind the eyes and the rods curve broadly backward to near center of head and diverge as they extend backwards.

Gynaikothrips tenuicornis, new species (fig. 1, *f*).

Holotype female (macropterous), color brown including all femora, bases of middle and hind tibiae and segments 1 and 2 of antennae, segments 3 to 8, fore tibiae, tips of middle and hind tibiae and all tarsi are clear yellow; setae clear, wings lightly washed with brown.

Head 1.6 longer than wide, forehead swollen and with anterior ocellus clearly overhanging bases of antennae, cheeks weakly arched; both pairs of postoculars short, blunt, one pair near inner, posterior margins of eyes, the other one third the distance back toward posterior margin and near side margins of head; eyes large, subovate, ocelli large, posterior pair contiguous with inner margins of eyes; enlarged bases of maxillary spines near middle of head. Antennae with segment 3 very slender, 4 and 5 clavate; mouth cone short, rounded.

Only epimeral setae on prothorax moderately long, blunt, others short; fore legs slender, fore tarsus unarmed; fore wings with 8 double fringe hairs. Abdomen reduced gradually beyond second segment, segments 2 to 7 each with 2 pairs of sigmoid setae; inner setae on segment 9 blunt, about half as long as the pointed outer pair; tube slender, 0.86 as long as head.

Total length 2.34 mm.; head length 0.323 mm., width 0.205 mm.; prothorax length 0.176 mm., width 0.279 mm.; pterothorax width 0.367 mm.; width of abdomen at second segment 0.338 mm.; tube length 0.264 mm., width at base 0.073 mm. Antennal segments length (width) II, 50 (26); III, 90 (23); IV, 86 (33); V, 83 (30); VI, 73 (30); VII, 53 (23); VIII, 33; total 514 microns. Length of setae: postoculars 33-20, on anterior angles of prothorax 13, midlaterals 20, epimeral 26, inner pair on posterior angles 22, inner pair on ninth abdominal segment 96, outer 150 microns.

Marona, Mango Island, alt. 200-300 ft., Aug. 14, 1938, holotype male (5412); Nandarivatu, Viti Levu, alt. 3,700 ft., paratype female (5403), Zimmerman.

This species is most closely related to *G. novi oris* but here the middle and hind tibiae are entirely clear yellow; *G. esakii* Takahashi from Japan has more compact intermediate antennal segments, 15-18 double fringe hairs on fore wings, color black; *G. moultoni* Ayyar from India has more compact antennal segments and a relatively shorter tube. It should be observed that the enlarged bases of maxillary spines (fig. 1, *f*) are quite similar to those in *novi oris* (fig. 1, *d*).

Gynaikothrips magnus, new species (fig. 2, *a*).

Holotype female (macropterous), color dark brown including all femora, fore tibiae clear yellow, lightly shaded at extreme base, middle tibiae darkened in basal third, hind tibiae brown in basal two thirds, yellow distally, all tarsi clear yellow; antennal segments 1 and 2 dark with 2 yellowish distally, 3 to 8 clear yellow; wings washed with brown, prominent setae clear.

Head approximately 1.4 longer than wide, forehead swollen but scarcely overhanging, cheeks weakly arched; two pairs of postoculars, one posterior to inner margins of eyes, the other more than halfway back between eyes and posterior margin of head and well inward from cheek margins. Eyes large, subovate, ocelli large, posterior pair contiguous with inner margins of eyes;

mouth cone short, rounded, labrum pointed, intermediate antennal segments clavate, 3, 4, and 5 of about equal length, 3 irregular on inner margin; enlarged bases of maxillary spines placed in posterior portion of head. Setae on anterior margin and angles of prothorax minute, others normally developed, the epimeral longest, all pointed; fore femora thickened, fore tarsus with small tooth; fore wings with 25 double fringe hairs. Abdomen stout, reduced beyond segment 6; tube long and slender, 1.2 longer than head, with straight sides, constricted at tip; setae on ninth segment nearly as long as tube, terminal hairs much shorter.

Total length 3.22 mm.; head length 0.367 mm., width 0.259 mm.; prothorax length 0.259 mm., width without coxae 0.472 mm.; pterothorax width 0.602 mm.; width of abdomen at second segment 0.602 mm.; tube length 0.441 mm., width at base 0.088 mm.; length of setae: postoculars 66, on anterior margin and angles of prothorax 33, midlaterals 86, epimerals 173, inner on posterior angles 83-108, on ninth abdominal segment 360, at tip of tube 130 microns. Antennal segments length (width) II, 66 (30); III, 100 (36); IV, 100 (40); V, 100 (36); VI, 86 (33); VII, 73 (30); VIII, 40; total 602 microns.

Navai Mill, Tholo North, Viti Levu, Sept. 17, 1938, holotype female (5387), Zimmerman.

This species differs from *G. uzeli* Zimmermann in the colored wings and the postocular setae arranged in different planes. *G. imitans* Karny has very small postoculars on approximately the same plane, about 12 double fringe hairs on fore wings, and the fore tarsi are unarmed.

Gynaikothrips fuscus, new species (fig. 2, *b*).

Holotype female (macropterous), color dark brown including legs except tarsi and tips of all tibiae which are clear yellow; antennal segments 1 and 2 dark, 3 to 8 yelllow, with terminal segments shaded from light brown to brown; wings and setae light brown.

Head 1.5 longer than wide, swollen in front but scarcely overhanging, cheeks nearly straight; with two pairs of postoculars, the first pair placed behind inner posterior margins of eyes and the second at sides near middle of head, these with blunt tips; mouth cone short, rounded; intermediate antennal segments clavate, with 4 and 5 slightly longer than 3; all setae on prothorax well developed except antero-marginals which are minute, all with blunt tips; fore femora somewhat thickened, fore tarsus with tooth arising at base of first segment; fore wings with 15 double fringe hairs. Abdomen reduced beyond second segment, with 2 pairs of sigmoid setae on segments 2 to 7; tube 8.5 as long as head, noticeably swollen at base followed by straight sides and reduced in apical fourth; enlarged bases of maxillary spines are located near middle of head.

Total length 2.97 mm.; head length 0.338 mm., width 0.220 mm.; prothorax length 0.259 mm., width without coxae 0.396 mm.; pterothorax width 0.514 mm.; width of abdomen at third segment 0.485 mm., tube length 0.294 mm., width at base 0.088 mm. Antennal segments length (width) III, 83 (36); IV, 90 (40); V, 90 (40); VI, 80 (40); VII, 53; VIII, 26; total 516 microns.

Allotype male, colored as in female; head longer, fore femora and fore tarsal tooth stronger, median dorsal thickening of prothorax much heavier; inner setae on ninth abdominal segment reduced to spurs.

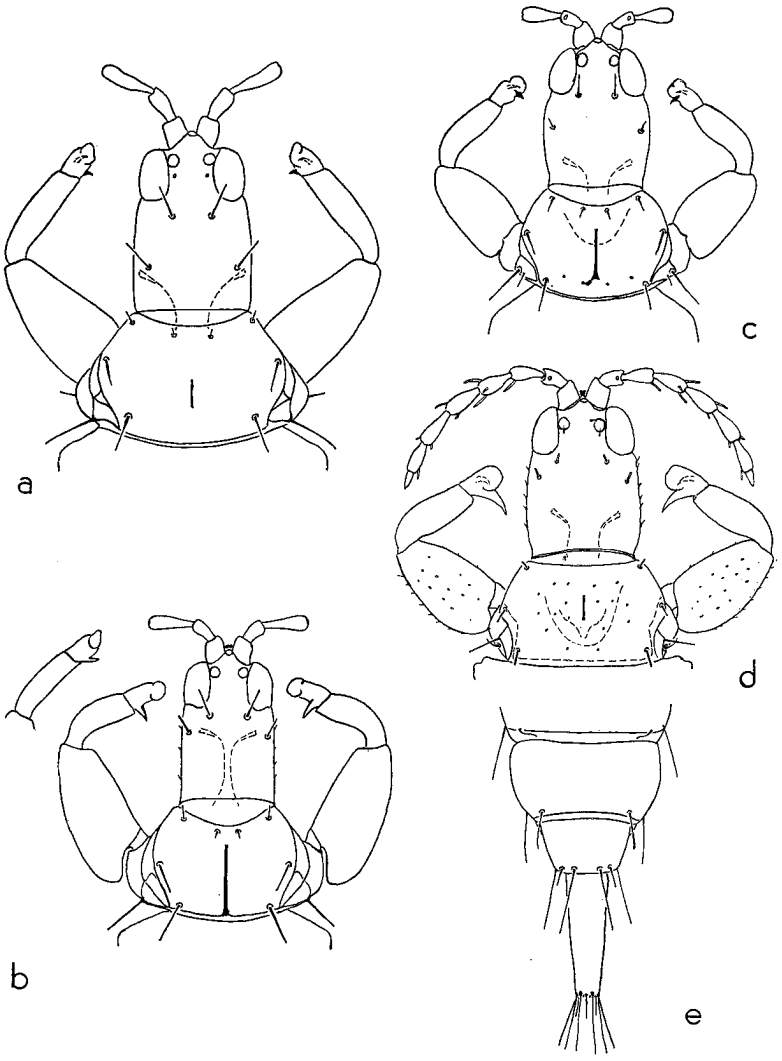

FIGURE 2.—**a,** *Gynaikothrips magnus,* female, head and prothorax. **b,** *G. fuscus,* male, head and prothorax and female, left fore leg. **c,** *G. armatus,* female, head and prothorax. **d-e,** *Parateuchothrips fuscus,* female: **d,** head and prothorax; **e,** end of abdomen.

Viti Levu, holotype female (3414); Ovalau, June, 1924, allotype and one paratype male (3455), Lea; Nandarivatu, Viti Levu, alt. 2,800 ft., Sept. 11, 1938, paratype female (5414), Zimmerman.

This species is separated from *G. uzeli* Zimmermann and *G. imitans* Karny by the position of the postocular setae; *G. chavicae* Zimmermann has a shorter head, more compact intermediate antennal segments and an unarmed fore tarsus.

Gynaikothrips armatus, new species (fig. 2, *c*).

Holotype female (macropterous), color dark brown including legs except tarsi and tips of all tibiae which are yellow; antennal segments 1 and 2 dark, 2 lighter distally, 3 to 8 yellow with 7 and 8 shaded brown; setae and wings light brown.

Head 1.35 longer than wide, cheeks very slightly reduced behind eyes and again at base; forehead swollen and overhanging bases of antennae; first pair of postoculars placed near eyes and on a line connecting their posterior margins, second pair much smaller and placed near cheek margins at center of head. Eyes large, subovate, ocelli large, posterior pair contiguous with inner margins of eyes. Antennae moderately stout, segments 3 to 6 of about equal length, clavate; mouth cone short, rounded, enlarged bases of maxillary spines located in posterior portion of head. Prothorax with incomplete median thickening; setae normal, the antero-marginals small, the epimerals longest, all with pointed tips; fore femora enlarged, fore tarsus armed with a curved tooth at distal end of first segment much as in *Karnyothrips;* forewings with 14 double fringe hairs; tube 0.8 as long as head.

Total length 2.76 mm.; head length 0.323 mm., width 0.235 mm.; prothorax length 0.191 mm., width without coxae 0.352 mm.; pterothorax width 0.500 mm.; width of abdomen at segment two, 0.514 mm.; tube length 0.258 mm., width at base 0.088 mm.; length of setae: anterior postoculars 50, lateral pair 33, on anterior margin of prothorax 26, midlaterals 53, epimerals 93, inner on posterior angles 50; on ninth abdominal segment and at tip of tube 200 microns. Antennal segments length (width) II, 53 (33); III, 83 (33); IV, 83 (40); V, 86 (40); VI, 83 (36); VII, 76; VIII, 33; total 500 microns.

Mt. Victoria, Viti Levu, alt. 3,000 ft., Sept. 16, 1938, holotype female (5394); Tholo-i-Suva, Viti Levu, alt. 500-600 ft., July 21, 1938, paratype female (5413), Zimmerman.

This species is closely related to *G. monsterae* Moulton from New Guinea but *monsterae* has unarmed fore tarsi, a shorter head and blunt setae; *G. imitans* Karny has unarmed fore tarsi, a longer tube and darker apical antennal segments; *G. moultoni* Ayyar from India has setae with dilated tips, clear wings and a shorter tube.

Genus **PARATEUCHOTHRIPS,** new genus

Head 1.35 longer than wide, with small emargination between eyes and cheeks, cheeks weakly arched, roughened, slightly constricted at base; surface of

head reticulate-striate; cheeks with numerous small setae set on warts; with two pairs of postoculars, one pair close to posterior inner margins of eyes, the other farther back and near side margins of head. Eyes large, slightly protruding, alike on both dorsal and ventral surfaces; ocelli large, posterior pair contiguous with anterior inner margins of eyes. Antennae 8-segmented, approximately 1.3 longer than head, intermediate segments moderately stout, clavate, segment 8 clearly separated from 7, 3 with one sense cone. Mouth cone short, rounded, reaching three fourths over prosternum, labrum pointed. Thorax heavy, prothorax with clearly defined sculpturing at sides but faint in middle, with heavily chitinized and blackened walls along posterior half at sides and posterior margin; antero-marginal setae wanting, others present, short, blunt, epimerals longest, dorsal surface with numerous, minute setae; prominent seta on fore coxa curved; mesa and metanota reticulate. Fore legs stocky, fore tarsus with a long, curved tooth in the female. Wings fully developed, with parallel sides, fore pair with double fringes. Abdomen moderately stout, reduced noticeably beyond sixth segment, segments 2 to 7 each with two pairs of sigmoid setae; tube 0.8 as long as head, moderately stout, its sides nearly straight and only slightly reduced in distal fourth.

Genotype, *P. fuscus,* new species.

This genus may be separated from *Teuchothrips* Hood by the longer head, larger eyes which are alike on both dorsal and ventral surfaces, two pairs of postoculars, and the clearly separated seventh and eighth antennal segments. It may be separated from *Gynaikothrips* Zimmermann by the reticulated sculpturing, thickened side walls of prothorax and the long, pointed, curved tooth on fore tarsus.

Parateuchothrips fuscus, new species (fig. 2, *d, e*).

Holotype female (macropterous), color blackish brown; legs with all femora and middle and hind tibiae blackish brown but lighter at the joints, fore tibiae yellow, darkened along outer margin, tips of middle and hind tibiae and all tarsi clear yellow; antennal segments 1 and 2 brown, 2 lighter apically, 3 to 6 mostly yellow with 5 weakly shaded in outer half and 6 light brown in outer half, 7 yellow at extreme base otherwise 7 and 8 dark brown; epimeral setae brown, other prominent body setae yellow; wings light brown, darker along median veins.

Head approximately 1.35 longer than wide, somewhat swollen and bearing the anterior ocellus in front, cheeks roughened, with numerous minute setae set on small warts, postoculars very short, the outer pair not reaching side margins of head; antennae rather compact, intermediate segments clavate, 3 with one, 2 with one short and two long, slender sense cones. Prothorax with black, thickened side walls along posterior half and along posterior margin; with a short, incomplete median thickening and numerous small setae scattered over median surface; epimeral setae alone are long and prominent, inner pair on posterior angles are about half as long as outer pair, the others minute with antero-marginals wanting; prominent seta on fore coxa is distinctly curved. Fore wings with 14 double fringe hairs. Setae on ninth abdominal segment about half as long as tube, terminal setae shorter. Tube 0.8 as long as head.

Total body length 3.00 mm.; head length 0.352 mm., width 0.262 mm.; pro-

thorax length 0.220 mm., width without coxae 0.392 mm.; pterothorax width 0.543 mm., abdomen width 0.543 mm.; tube length 0.294 mm., width at base 0.088 mm. Length of setae: both pairs of postoculars 26, on anterior angles of prothorax 20, midlaterals 40, epimerals 120, inner pair on posterior angles 66, on ninth abdominal segment 153-166, tip of tube 150 microns. Antennal segments length (width) III, 83 (40); IV, 80 (46); V, 86 (43); VI, 86 (38); VII, 66; VIII, 40; total 485 microns.

Nandarivatu, Viti Levu, alt. 2,600-3,000 ft., Sept. 9, 1938, holotype female (5415), Zimmerman.

Genus **PARACRYPTOTHRIPS,** new genus

Head 1.5 to 2.0 times longer than wide, not produced in front, cheeks nearly straight or slightly reduced behind eyes and at neck; back of head with faint transverse striations; one pair of very long, pointed postoculars, placed close behind eyes; with 6 to 8 rather stout genal setae on either side. Eyes moderately large, rounded in outer outline, angular on inner margin; ocelli large, posterior pair near median, inner margins of eyes. Antenna 7-segmented, intermediate segments quite similar to those in *Cryptothrips,* 7 with indication of a suture but this is not clearly defined; segments 3 to 6 slightly produced ventrally at tips. Mouth cone short and rounded, labrum narrowed to a point and overreaching labium. Prothorax wider than long, deeply concave in front and with anterior margin thickened, the median dorsal thickening joining this broadly; outer setae on posterior angles long, others present but small, the antero and postero-marginals very small. Legs slender, fore femora only moderately thickened, fore tibia with a small swelling or tubercle on inner, apical margin, fore tarsus unarmed in the female. Wings fully developed, with parallel sides, fore pair with a long series of double fringe hairs. Abdomen long, segments 2 to 5 of nearly equal width; lateral setae long, pointed, tergites 3 to 6 each with a single pair of sigmoid setae. Tube a little longer than head, with sides nearly parallel to distal fourth and from there gradually reduced.

Genotype, *P. inermis,* new species.

The genus has the general appearance of a large *Cryptothrips* Uzel, but is at once separated by the 7-segmented antenna and the very long postoculars and lateral abdominal setae. It might be compared with *Zaliothrips* Hood but this genus has the fore tarsus armed as in *Karnyothrips* Watson and the prothoracic sutures are not complete.

Paracryptothrips inermis, new species (fig. 3, *a, b*).

Holotype female (macropterous), color, head and thorax brown, with head darker than thorax, abdomen blackish brown; antennal segments 1 and 2 brown, 2 lighter distally, 3 to 5 mostly yellow with 3 shaded distally, 4 brown in distal fourth, 5 dark brown in distal third, 6 and 7 blackish brown; all legs sulphur yellow with distal ends of middle and hind femora and tibiae, and tarsi darkened with brown; wings clear; genal and other prominent setae brown, those on ninth abdominal segment and at tip of tube clear yellow.

Head twice longer than wide, with nearly straight cheeks which are slightly reduced at neck; with one pair of postoculars which are very long and pointed,

genal setae prominent; eyes with obtuse angles on inner margin; antenna 1.25 longer than head, sense area on segment 2 placed about one third the segment's length back from apical margin; segment 3 with uneven sides, swollen at basal third and again apically, with 2 sense cones; enlarged bases of mandibular spines placed near middle of head, the two spines extending backward in almost parallel position. The anterior margin of the pronotum is more heavily thickened in the middle where it joins broadly with the median dorsal thickening; fore wings with 44 double fringe hairs. The abdomen is long and strong, with especially long lateral setae, those on segment 9 nearly as long as tube. Tube slightly longer than head.

Total length, abdomen distended, 5.65 mm.; head length 0.602 mm.; width 0.323 mm.; prothorax length 0.338 mm., width without coxae 0.529 mm.; pterothorax width 0.735 mm.; width of abdomen at third segment 0.837 mm.; tube length 0.616 mm., width at base 0.161 mm., at tip 0.073 mm. Length of setae: postoculars 441, epimerals 191, on seventh abdominal segment 514, eighth, 296, ninth 485, at tip of tube 250 microns. Antennal segments length (width): II, 90 (50); III, 156 (56); IV, 130 (56); V, 110 (50); VI, 96 (43); VII, 116; total 780 microns.

Navai Mill, Tholo North, Viti Levu, alt. 2,500 ft., Sept. 17, 1938, holotype female (5411); Nandarivatu, Viti Levu, alt. 2,800 ft., Sept. 11, 1938, paratype female (5414), Zimmerman.

Paracryptothrips fijiensis, new species (fig. 3, *c*).

Holotype female (macropterous), color dark brown with head and apical abdominal segments blackish brown; all femora dark brown, tibiae brown to dark brown, fore tibiae somewhat lighter, all tarsi and bases of all tibiae yellow; segment 1 of antenna blackish brown, 2 blackish brown at base and long inner margin, otherwise light brown to yellowish apically, 3 yellow, shaded to brown in apical sixth, 4 yellowish in basal two thirds but darkened at extreme base, along outer margins and in distal third, 5 to 7 blackish brown; wings light brown in basal half, lighter distally, each with a darker median streak which extends to near middle of wing; short genal spines dark brown, major setae on thorax and abdomen clear yellow.

Head 1.5 longer than wide, weakly narrowed behind eyes and at base, gently arched in middle, with but a single pair of long postoculars, with six or seven stout genal spines on either side; eyes slightly protruding, angular almost to a right angle on inner margins; ocelli large, posterior pair opposite middle of eyes, not contiguous with their inner margins; third antennal segment 3.5 times longer than its greatest width near apex, with straight side margins and two sense cones, 4 to 6 broadly clavate; total length of antenna approximately 1.5 longer than head; mouth cone reaching three fifths over prosternum, rounded, labrum narrowed almost to a point; enlarged bases of mandibular spines placed close behind eyes at sides of head. Prothorax with a deeply emarginate and thickened fore margin, with all sutures complete; prominent setae with blunt tips; fore legs not greatly enlarged, fore tarsi unarmed. Pterothorax much broader and heavier; fore wings with 42 double fringe hairs. Abdomen stout, the lateral setae moderately long, those on segment 9 nearly as long as tube; segments 2 to 7 each with a single pair of sigmoid setae; tube 1.2 longer than head.

Total length, abdomen distended, 4.9 mm.; head length 0.50 mm., width 0.323 mm.; prothorax length 0.308 mm., width 0.382 mm.; pterothorax width 0.764 mm., abdomen at third segment 0.867 mm.; tube length of 0.602 mm., width at base 0.147 mm., length of setae: postoculars 233, epimerals 123, on ninth abdominal segment 514 mm.; at tip of tube 294 microns. Antennal segments length (width) I, 66 (60); II, 83 (50); III, 173 (50); IV, 130 (50); V, 90 (43); VI, 90 (43); VII, 103; total 735 microns.

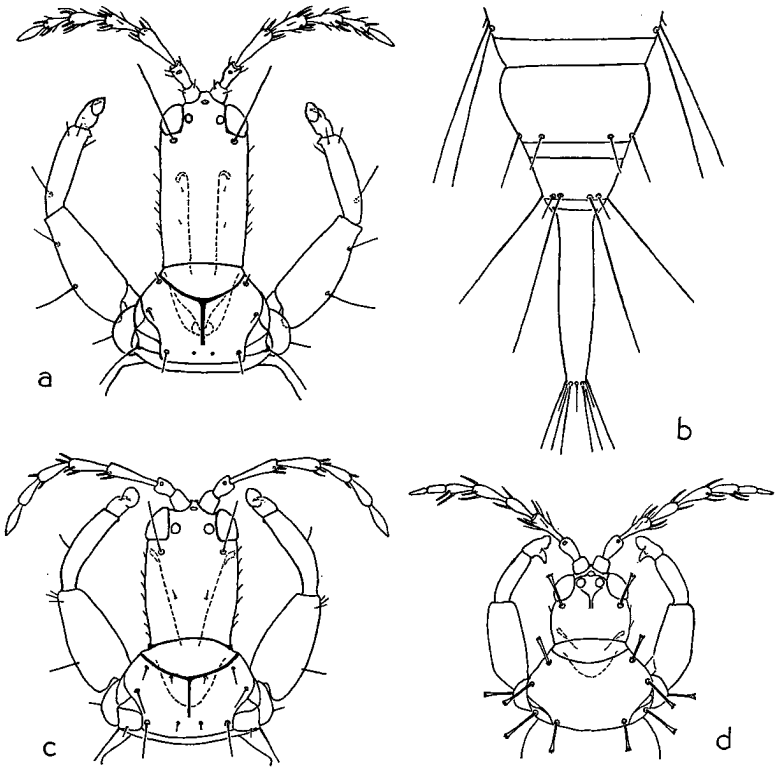

FIGURE 3.—**a-b,** *Paracryptothrips inermis,* female: *a,* head and prothorax; *b,* end of abdomen. **c,** *P. fijiensis,* female, head and prothorax. **d,** *Austrothrips* (?) *vanuaensis,* male, head and prothorax.

Toumbou, Lakamba [Tumbou, Lakemba Island], Aug. 20, 1938, holotype female (5410), Zimmerman; Ovalau, June 1924, paratype female (3447), Lea.

This species may be separated from the genotype *P. inermis* by its shorter head, the third antennal segment with nearly straight sides, and relatively longer, and the dark-brown coloring of the legs.

Genus **DIPLOCHELAEOTHRIPS,**[3] new genus

Head clearly longer than wide, 1.2 longer in the female and 1.3 in the male; cheeks straight and nearly parallel, without markings or genal setae; postoculars long, pointed, placed well back from eyes; eyes small, placed on anterior angles of head and directed mostly forward, hardly attaining the sides of the head, more or less angular in dorsal outline, roundly produced ventrally in the female while in the male this ventral surface is greatly narrowed; ocelli small in the female, wanting in the male. Antenna 7-segmented, with an incomplete suture on ventral surface of segment 7; segments 3 to 6 clavate, segment 3 with two and 4 with four short, stout sense cones. Mouth cone broadly rounded, reaching posterior margin of prosternum in the female, nearly so in the male.

Prothorax slightly shorter than head in the female but much longer than the head in the male, with normal, pointed setae, the pair at posterior angles longest; with median dorsal thickening which is stronger in the male than in the female. Fore legs somewhat enlarged in the female, greatly so in the male; fore tarsus armed as in *Karnyothrips* in the female while in the male these appear as stout teeth rather than claws. Wings fully developed in the female, wanting in the male, with parallel sides when present, fore pair with about 12 double fringes. Abdomen moderately stout, with long, stout setae on the posterior angles of the more distal segments. Tube a little more than half as long as head, stout, with straight sides which are constricted evenly from base to tip, three times wider at base than at tip; terminal hairs short.

Genotype, *D. mikrommatos,*[4] new species.

This genus is very close to *Lathrobiothrips* Hood but separated by the differently shaped eyes, smaller ocelli, the shorter tube, and the armature of the fore tarsus.

Diplochelaeothrips mikrommatos, new species (fig. 4, *a-d*).

Female holotype (macropterous), color dark brown, abdomen shading darker to black in distal segments and tube; legs brown, lighter at the joints, fore tarsi brownish yellow; antennal segments two and three brownish yellow, four darker, five to seven blackish brown; wings light brown; all prominent body spines brown to blackish brown. Fore wings of female with 12 double fringe hairs.

Total body length 2.35 mm.; head length 0.264 mm., width 0.220 mm.; prothorax length 0.213 mm., width including coxae 0.396 mm.; tube length 0.191 mm., width at base 0.132 mm., at tip 0.044 mm. Antennal segments length (width) II, 60 (33); III, 83 (33); IV, 83 (33); V, 70 (33); VI, 60 (30); VII, 66 (23); total 463 microns; postocular spines 100, pair at posterior angles of pronotum 116, on ninth abdominal segment 133 microns.

Male allotype (apterous), colored as in female; length 1.96 mm.; head length 0.280 mm., width 0.205 mm.; prothorax length 0.338 mm., width including coxae 0.514 mm.; tube same as in female.

Viti Levu, holotype female, allotype male (3414), Lea. Other data not given.

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[3] *Diplos,* double; *chelae,* claw.

[4] *Mikrommatos,* small eyed.

The characters given for the genus will clearly distinguish this species, especially the shape of the eyes, armature of the fore tarsi and shape of tube. In the male the abdominal spines are much stronger and blacker and in addition there is a pair of short, black spurs on the posterior angles of segments two to seven. The terminal hairs are short and colorless.

Liothrips urichi Karny, Ann. Mag. Nat. Hist. IX, **12**: 160, 1923.

Nandarivatu, Viti Levu, alt. 2,800 ft., one female (5415); Belt Road, Suva, Viti Levu, one male (5375), Zimmerman.

This species was found originally in Trinidad, British West Indies.

Austrothrips (?) **vanuaensis,** new species (fig. 3, *d*).

Holotype male (brachypterous), color uniformly light brown including antennae and legs except only antennal segments 1 and 2 which are light yellowish brown; all prominent setae brown, wing pads light brown.

Head as wide as long, flattened in front, cheeks rounded with a distinct emargination at junction with eyes; surface smooth, cheeks smooth, with a Y-shaped line behind ocelli and between eyes, and with two irregular transverse lines near posterior margin; postoculars long, heavy, with dilated tips and placed rather closely behind middle of eyes, with a single small genal seta on either side behind eyes. Eyes large, oval, occupying two fifths the side of the head, clearly protruding; ocelli present; antenna long, 2.5 longer than head, slender, with segment 8 weakly narrowed at base and clearly separated from 7; segment 3 longest, nearly three times longer than its greatest width, with basal two fifths narrow and with nearly parallel sides, with two sense cones; 4 and 5 elongate clavate, 4 with two and 5 with three sense cones, 6 and 7 rather broadly joined, the sense cones are long, pointed and in each case reach to near middle of following segment. Mouth cone short and broadly rounded, extending to near middle of prosternum. Prothorax shorter than head and approximately twice wider than long, its surface smooth, with complete sutures; antero and postero-marginal setae wanting, all others long and strong, with dilated tips. Fore legs enlarged, fore tarsus with a broad-seated tooth. Pterothorax hardly as wide as prothorax. Abdomen moderately stout, reduced gradually beyond fourth segment, the normal lateral spines very strong, with dilated tips, tergites 3 to 7 each with two pairs of sigmoid setae; tube approximately 0.6 as long as head, slightly swollen at base and then reduced gradually to tip, terminal hairs short and weak.

Total length with distended abdomen 1.25 mm.; head length 0.132 mm., width 0.132 mm.; prothorax length 0.117 mm., width without coxae 0.223 mm.; pterothorax width 0.216 mm.; tube length 0.083 mm., width at base 0.053 mm., at tip 0.033 mm. Antennal segments length (width) I, 26 (30); II, 33 (23); III, 63 (23); IV, 53 (23); V, 56 (20); VI, 43 (16); VII, 26 (13); VIII, 33; total 340 microns. Setae: postoculars 53; on anterior angles of prothorax 40, midlaterals 53, on posterior angles, outer and inner, 56 and 43, on fore coxae 53, on posterior angles of third abdominal segment outer 30, inner 66, on ninth 60, hairs at tip of tube 40 microns.

Buthalevu, Vanua Mbalavu, alt. 200-300 ft., Aug. 10, 1938, holotype male (5380), Zimmerman.

This species is especially characterized by its long, slender antennae, protruding eyes with an emargination between eyes and cheeks, smooth surface of body and head, and the strong, dilated tipped setae. The wings are reduced to pads.

Gastrothrips fijiensis, new species (fig. 4, *e*).

Holotype female (macropterous), head, thorax and first abdominal segments reddish brown, somewhat darkened at the sides; abdominal segments beyond the third increasingly darker, black from segment 6 to and including tube; all femora reddish brown cleared to yellowish brown apically, fore tibiae brownish yellow, darkened on margins, middle and hind tibiae like the femora but cleared to brownish yellow at extreme apices; fore tarsi yellow, middle and hind tarsi brownish yellow; antennal segments, 1 like the head, 2 darkened at extreme base and along side margins clearing from yellowish brown to yellow apically, 3 yellow at extreme base and at tip, shading to brown before the apical end, 4 lighter at both ends, otherwise dark brown, 5 to 8 blackish brown; wings light brown; prominent setae blackish brown. Head approximately 1.2 longer than

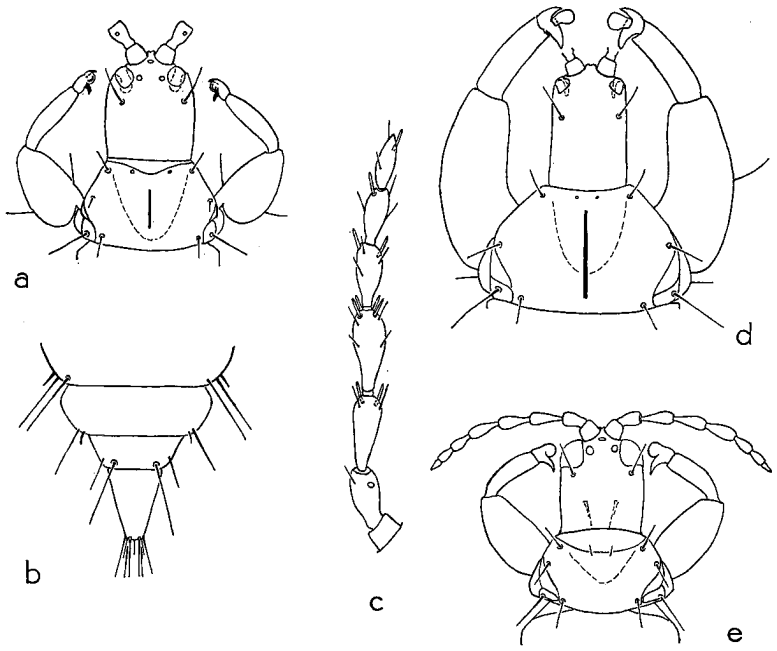

FIGURE 4.—**a-d,** *Diplochelaeothrips mikrommatos,* female: *a,* head and prothorax; *b,* end of abdomen; *c,* right antenna; *d,* male, head and prothorax. **e,** *Gastrothrips fijiensis,* female, head and prothorax.

greatest width across middle of cheeks, somewhat narrower toward posterior margin; without sculpture; cheeks smooth with only two or three minute setae on either side; postoculars long, pointed, placed behind middle of eyes, postocellar setae present but small; eyes moderately large, ocelli large, nearly contiguous with inner margins of eyes; mouth cone rounded, extending two thirds over prosternum; antennae normal to genus, 3 with two sense cones; segments 3 to 5 slightly produced ventrally at apical ends.

Pronotum with anterior and posterior margins concentric, approximately twice wider than long, with incomplete median thickening, without sculpture; all normal setae present, those on posterior margin smallest, the antero-marginals also weak, all pointed; fore legs somewhat enlarged, fore tarsus with a stout tooth which is approximately as long as the segment is wide; middle and hind legs slender; fore wings with 13 double fringe hairs. Abdomen moderately stout with lateral setae conspicuous by their dark color, tergites 2 to 7 each with one pair of sigmoid setae. Tube nearly as long as head, 2.5 times longer than its width at base, with straight sides to the abruptly constricted tip.

Total length with abdomen distended 2.6 mm.; head length 0.264 mm., width 0.225 mm.; prothorax length 0.161 mm., width 0.352 mm.; pterothorax width 0.441 mm.; tube length 0.260 mm., width at base 0.117 mm. Antennal segments length (width) II, 60 (33); III, 86 (36); IV, 83 (40); V, 73 (40); VI, 60 (33); VII, 46; VIII, 33 microns; setae: postoculars 93, on anterior margins of pronotum 23, on anterior angles 43, midlaterals 40, outer on posterior angles 113, inner 56, on ninth abdominal segment 166, at tip of tube 133 microns.

Navai Mill, Tholo North, Viti Levu, alt. 2,500 ft., Sept. 16, 1938, holotype female (5397), Zimmerman.

There are two species, *G. parvidens* Hood from Panama and *G. trinidadensis* Hood from Trinidad, in which the fore tarsus of the female has a strong tooth and the fore wings have approximately 14 double fringe hairs. In *G. parvidens,* the head and thorax are darker, nearly blackish brown, and all femora are nearly blackish brown in basal half and somewhat pale yellowish white beyond. The first antennal segments are pale yellowish white. In *G. trinidadensis,* antennal segment 3 is lemon yellow with a brown cloud in distal third or fourth, 4 is yellow in basal third, the wings are clear, and major setae are yellowish basally and clear apically.

Hoplothrips fijiensis, new species (fig. 5, *a, b*).

Holotype female (apterous), color yellowish brown including all femora except yellow distal ends, all tibiae and tarsi clear yellow; tube abruptly black with a lighter ring at extreme base and again in distal sixth; segments of antenna mostly dark brown with 2 yellow in distal half, 3 yellow in basal two thirds, brown in distal third, 4 abruptly yellow in basal third, 5 in basal fourth and 6 in pedicel only, otherwise 4 to 6 like 7 and 8 deep brown; prominent setae clear yellow.

Head approximately as wide as long, flattened in front, cheeks abruptly wider immediately behind eyes thence nearly straight and parallel to the neck-like, constricted base, the general shape of the head is nearly square; postoculars

long and pointed and placed rather close behind eyes, with three or four short, stout genal setae, each set on a noticeable swelling; eyes moderately small, flattened on outer margins where there are about five facets, not extending onto side margins of cheeks; ocelli wanting. Antenna approximately 1.8 longer than head, intermediate segments shortly clavate, 8 weakly constricted at base, sense area on 2 about one third the length of segment from apical margin, 3 with three sense cones; mouth cone extending two thirds over posternum, labium narrowly rounded, labrum pointed; enlarged bases of mandibular spines are placed immediately at inner angles of eyes. Prothorax clearly longer than head and wider than long, with normal, complete sutures; setae on anterior margin weak, those on anterior angles less than half as long as epimerals which are long and pointed, the midlaterals are minute; median dorsal thickening indistinct; pterothorax somewhat wider than prothorax; fore legs noticeably thickened, fore tarsus with a broad-seated tooth; wings wanting. Abdomen broad and heavy, lateral setae well developed but not especially conspicuous; sigmoid setae completely wanting; tube short, 0.8 as long as head, with straight sides which are reduced evenly from base to tip; terminal hairs shorter than length of tube.

Total length, abdomen distended 3.46 mm.; head length 0.264 mm., width 0.264 mm.; prothorax length 0.308 mm., width without coxae 0.470 mm.; pterothorax width 0.530 mm.; width of abdomen at third segment 0.676 mm.; tube length 0.220 mm., width at base 0.110 mm.; length of setae: postoculars 83, antero-marginals on prothorax 33, on anterior angles 56, midlaterals minute, outer on posterior angles 133, inner 106, on ninth abdominal segment 120-133, at tip of tube 200 microns. Antennal segments length (width) II, 50 (40); III,

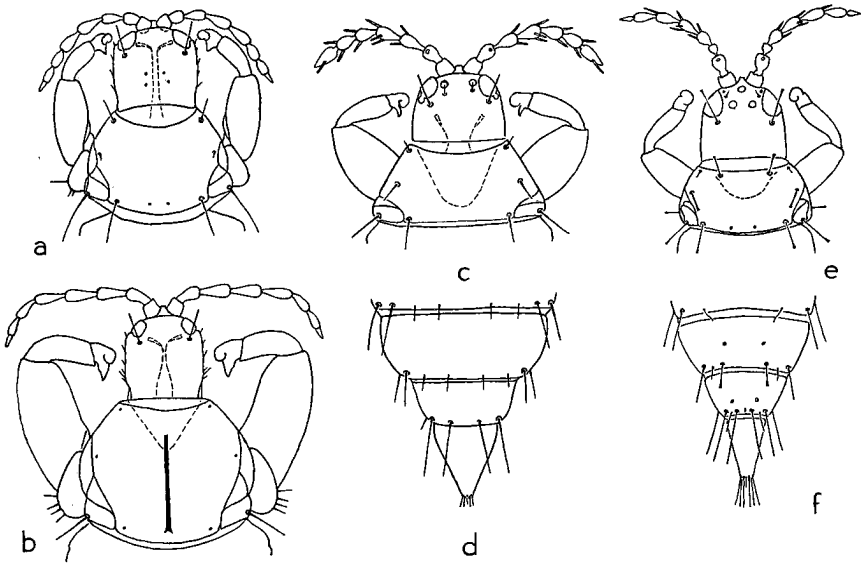

FIGURE 5.—**a-b,** *Hoplothrips fijiensis: a,* female, head and prothorax; *b,* male, head and prothorax. **c-d,** *Acallurothrips latus,* female: *c,* head and prothorax; *d,* end of abdomen. **e-f,** *Lissothrips flavitibia,* female: *e,* head and prothorax; *f,* end of abdomen.

76 (43); IV, 76 (43); V, 73 (36); VI, 66 (33); VII, 53 (30); VIII, 40; total 480 microns.

Allotype male (apterous) similar to female but with much larger and stronger prothorax, greatly enlarged fore legs and stronger tarsal tooth; the median dorsal thickening of prothorax stronger and nearly complete to posterior margin; all prothoracic setae reduced except a single one on each posterior angle; as in the female, the sigmoid setae on abdominal segments are completely wanting.

Total length 3.36 mm.; head length 0.294 mm., width 0.264 mm.; prothorax length 0.441 mm., width without coxae 0.588 mm.; pterothorax width 0.617 mm.; tube length 0.220 mm., width at base 0.110 mm.; length of setae: postoculars 83, outer pair on posterior angles of prothorax 120; on ninth abdominal segment 100, at tip of tube 200 microns. Antennal segments length (width) II, 73 (36); III, 93 (40); IV, 93 (40); V, 86 (33); VI, 80 (31); VII, 63 (26); VIII, 43; total 602 microns.

Tholo-i-Suva, Viti Levu, alt. 500 ft., July 25, 1938, holotype female, alltoype male, six paratype females (5402), Zimmerman.

This species resembles *H. trachypogon* Karny from the Malay Peninsula in the shape of the head but in this latter species the mouth cone is more rounded, the tube a third shorter than the head and the sides of the tube are almost parallel in basal half; the color is brownish black with antennal segments 3 to 6 mostly yellow. *H. ovatus* Bagnall from the Hawaiian Islands has a longer head, shorter tube, smaller prothorax and fore legs.

Acallurothrips latus, new species (fig. 5, *c, d*).

Holotype female (macropterous), color blackish brown with apical abdominal segments and tube black; antennal segments 1 and 2 light yellowish gray, 3 colored likewise at extreme base, otherwise grayish brown, 4 to 8 blackish brown; fore femora blackish brown, fore tibiae yellowish brown, blackened on the margins; middle and hind femora blackish brown in basal half, the black continuous along outer margin to apical end, the inner apical half yellowish; middle and hind tibiae blackish brown in basal half, light brown distally; all tarsi light brown; prominent setae brown; wings washed with brown, somewhat stronger along median veins.

Head 1.1 to 1.3 wider than long, flattened in front, cheeks very weakly arched, not narrowed at the base; surface without sculpturing; postoculars moderately long, pointed, postocellars short, with a single small genal seta on either side immediately behind eyes. Eyes moderately large, sub-ovate, produced posteriorly on dorsal side near side margins with one or two enlarged facets; ocelli widely separated, not contiguous with inner margins of eyes. Antenna 8-segmented with 7 and 8 joined as a unit, appearing 7-segmented, with oblique suture; 3 longest, 4 to 6 broadly clavate, 3 with two sense cones. Mouth cone broadly rounded and heavy, extending to near posterior margin of prosternum. Prothorax approximately twice wider than long, heavy, with normal complete sutures without median dorsal thickening; antero-marginal setae minute, midlaterals and those on anterior angles short, pair on posterior angles long and nearly pointed. Pterothorax wider and heavier than prothorax; fore legs greatly enlarged, fore

tarsus with a stout tooth; wings moderately short and broad, without double fringe hairs. Abdomen broad and heavy, widest at segment 6, lateral setae not especially conspicuous; tube approximately as long as head, widest at base where it is nearly as wide as long, with sides reduced evenly to just before tip where it is more noticeably constricted, the tip being approximately one fourth as wide as at base; terminal hairs weak.

Total length 1.96 mm.; head length 0.176 mm., width 0.220 mm.; prothorax length 0.19 mm., width including coxae 0.382 mm.; pterothorax width 0.470 mm.; tube length 0.176 mm., width at base 0.145 mm., at tip 0.044 mm. Antennal segments length (width) I, 30 (36); II, 50 (33); III, 63 (33); IV, 53 (36); V, 53 (33); VI, 46 (30); VII, VIII, 70; total 363 microns. Length of setae: postoculars 73, outer on posterior angles of prothorax 86, on ninth abdominal segment 183, at tip of tube 33 microns.

Allotype male (apterous), colored as in female; prothorax and fore legs more massive, tube longer and slenderer; ocelli wanting. Total length 1.78 mm.; head length 0.176 mm., width 0.191 mm.; prothorax length 0.235 mm., width including coxae 0.470 mm.; pterothorax width 0.441 mm.; tube length 0.191 mm., width at base 0.105 mm.

Navai Mill, Tholo North, Viti Levu, alt. 2,500 ft., Sept. 15, 1938, holotype female and one paratype female (5399); Belt Road, 45-50 miles west of Suva, Viti Levu, July 26, 1938, allotype male (5377), Zimmerman.

This species is readily separated from the genotype, *A. macrurus* Bagnall, by its larger size, different shape of the eyes and the broader and heavier tube in the female.

Lissothrips flavitibia, new species (fig. 5, *e, f*).

Holotype female (apterous), color light brown including all femora, all tibiae and tarsi clear yellow; all segments of antennae and tube blackish brown with tube only a shade lighter in distal half; prominent setae nearly clear.

Head approximately as long as wide with smooth, even cheeks which are only very slightly wider near posterior margin; postoculars long, with dilated tips; eyes moderately large, occupying approximately one third the head length, joining front and sides of head evenly; ocelli present; antenna 8-segmented, segments 1 and 2 widest, 3 smaller than any of the others, almost spherical with a narrow pedicel and apparently without sense cones, 4 to 6 broadly ovate with narrow pedicels, 7 elongate ovate with narrow pedicel and 8 distinctly narrowed at base; mouth cone short, reaching to middle of prosternum, its sides broadly narrowed. Prothorax considerably wider than long, with normal complete sutures; the antero-angular and postero-marginal setae greatly reduced, all others long, with dilated tips; fore legs slightly enlarged, tarsi unarmed. Pterothorax and abdomen moderately stout, lateral abdominal setae long and with dilated tips; tergites 3 to 6 each with a single, anterior pair of weak sigmoid setae, the posterior pair in each case reduced to minute straight setae, on tergite 7 both pairs are developed, with the posterior pair larger; setae on 9 approximately as long as tube; tube short and reduced with straight sides to tip.

Total length 1.63 mm.; head length 0.161 mm., width 0.176 mm.; prothorax length 0.117 mm., width with coxae 0.280 mm.; pterothorax width 0.308 mm.; tube length 0.117 mm., width at base 0.073 mm.; setae: postoculars 66, on anterior

margin of prothorax 33, midlaterals 40, on posterior angles, outer 66, inner 73, on ninth abdominal segment 150, at tip of tube 50 microns. Antennal segments length (width) I, 26 (33); II, 40 (33); III, 23 (23); IV, 36 (26); V, 43 (26); VI, 46 (23); VII, 40 (20); VIII, 33 (10); total 300 microns.

Vatuthere Ridge, Tholo North, Viti Levu, Sept. 8, 1938, holotype female (5384), Zimmerman.

This species is distinguished from *L. muscorum* by its all yellow tibiae and tarsi, the differently shaped third antennal segment (clavate in *muscorum* and almost globular in the new species), and the shorter mouth cone.

Horistothrips magnafemora, new species (fig. 6, *a*).

Holotype male (macropterous), head, thorax and first abdominal segment dark brown, blackened at sides, abdomen black, tube blackish brown; fore femora colored like thorax, fore tibiae brown at base, shading to yellowish apically, middle and hind femora and tibiae blackish brown, the latter lighter at extreme apical ends, all tarsi clear yellow; antennal segments 1 and 2 colored like the head with 2 yellowish in apical third, 3 to 5 clear yellow, with only a slight shading of brown on 5 apically (other segments broken off); prominent setae brown; wings washed with light brown.

Head nearly twice longer than wide, cheeks slightly swollen in the middle, dorsum with faint sculpturing, cheeks smooth, almost without setae; postoculars long and strong, with blunt tips, seated behind inner margins of eyes; a second pair of much smaller pointed setae placed inward from middle of cheeks. Eyes large, subovate, about one third longer on dorsal than on ventral surface; ocelli large, placed on rounded forehead, posterior pair almost contiguous with inner margins of eyes. Mouth cone narrowed and pointed, extending two thirds over prosternum. Third antennal segment with nearly straight sides which widen gradually to near apex, segments 4 and 5 more clavate, 3 with one, 4 with 2 sense cones. Thorax greatly enlarged; pronotum shield shaped, with nearly complete median thickening without sculpture; antero-marginal setae minute, antero-angulars placed onward from side margins; midlaterals placed at about posterior one third, outer pair on posterior angles longest, all of these strong, with blunt tips except the antero and postero-marginals which are reduced to minute setae. Fore femora longer and wider than head, fore tibiae truncate, fore tarsus armed with a strong tooth; middle and hind legs slender; fore wings with 14 double fringe hairs. Abdomen reduced gradually beyond second segment; lateral setae strong, with blunt tips; outer pair on segment 9 reduced to short, sharp spines. Tube 0.8 as long as head, somewhat swollen at base, more noticeably reduced in apical third, not sharply constricted at tip.

Total body length 2.24 mm., abdomen not distended. Head length 0.308 mm., width 0.161 mm.; prothorax length 0.308 mm., width excluding coxae 0.338 mm.; pterothorax width 0.441 mm.; tube length 0.235 mm., width at base 0.088 mm.; fore femora length 0.441 mm., width 0.176 mm. Antennal segments length (width) I, 46 (40); II, 53 (33); III, 93 (36); IV, 93 (40); V, 93 (36); others broken off. Length of setae: postoculars 86, on anterior angles of prothorax 53, mid-laterals 73, outer on posterior angles 106, inner 66; on ninth abdominal segment, outer spurs 50, inner 183, at tip of tube 173 microns.

Allotype female (macropterous), colored as in male but with head and thorax more deeply shaded with black.

Total length 2.64 mm.; head 0.296 mm., width 0.176 mm.; prothorax length 0.264 mm., width 0.367 mm.; pterothorax width 0.470 mm.; tube length 0.235 mm., width at base 0.080 mm.; setae: postoculars 73, on posterior angles of prothorax 90 microns.

Nandarivatu, Viti Levu, alt. 2,800 ft., holotype male, allotype female, (5414), Zimmerman.

This species is separated from *H. australis* Morgan by its longer head, smooth cheeks, head almost without sculpture, reduced anteromarginal setae of the prothorax and by the clear yellow antennal segments 3 to 5.

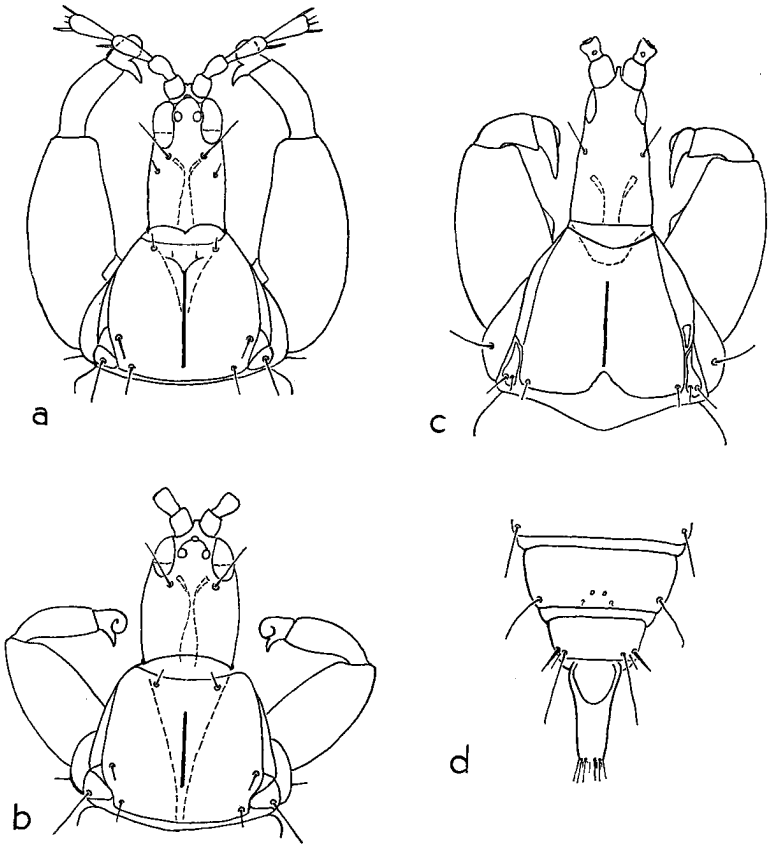

FIGURE 6.—**a,** *Horistothrips magnafemora,* male, head and prothorax. **b,** *H. fuscus,* female, head and prothorax. **c-d,** *Chelaeothrips fuscus,* male: *c,* head and prothorax; *d,* end of abdomen.

Horistothrips fuscus, new species (fig. 6, *b*).

Holotype female (apterous?), head and thorax uniformly dark brown, abdomen black, tube slightly lighter; fore legs colored like the body, with the extreme apical ends of fore tibiae and fore tarsi clear yellow; antennal segments dark brown with 3 yellowish in basal two thirds, brown apically, 4 and 5 lighter brown through the middle, darkened at the sides; prominent setae clear.

Head 1.4 longer than wide, roundly narrowed in front, cheeks slightly and evenly arched, dorsal surface without sculpture; postocular setae long, pointed, placed behind inner margins of eyes; eyes elongate-ovate, nearly twice as long on dorsal as on ventral surface; ocelli large; mouth cone massive at base, drawn out, pointed, surpassing base of prosternum; antennal segments 3 to 5 clavate, 7 and 8 closely joined, 3 with one sense cone. Prothorax fully as long as head, shield shaped, with incomplete median thickening; antero-marginal setae developed, antero-angulars wanting; midlaterals placed far back, forming an equilateral triangle with the two setae on posterior angles with pointed tips; postero-marginal setae wanting, fore legs enlarged but not as much as in *magnafemora,* fore tarsus with strong tooth; middle and hind legs lost from the unique specimen; wings wanting (or possibly broken off like the legs). Abdomen reduced gradually beyond third segment, lateral setae moderately long, pointed; tube nearly as long as head.

Total length 2.17 mm.; head length 0.264 mm., width 0.191 mm.; prothorax length 0.264 mm., width excluding coxae 0.367 mm.; pterothorax width 0.441 mm.; tube length 0.260 mm., width at base 0.088 mm. Antennal segments length (width) III, 83 (40); IV, 80 (40); V, 80 (36); VI, 66 (40); VII, 50; VIII 30 microns.

Nandarivatu, Viti Levu, alt. 2,800 ft., Sept. 11, 1938, holotype female (5414), Zimmerman.

Because of the almost uniformly dark colored antennae, this species most closely resembles *H. ischnosoma* Karny but does not have the short, dilated setae as illustrated in Karny's drawing [Arkiv. for Zoologi, Stockholm, **17A**(2): 22, 1924].

Horistothrips claruspilus, new species.

Holotype female (macropterous), head and body dark brown except abdominal segments 1 to 3 which are mostly yellow; all femora like the body, fore tibiae clear yellow with a shading of light brown in basal two thirds, middle and hind tibiae dark brown except the extreme apical ends which are clear yellow; all tarsi clear yellow; antennal segments 1 and 2 dark brown with 2 yellowish in apical portion, 3, basal three fourths of 4, basal two thirds of 5 and basal half of 6 clear yellow, 4 and 5 shaded light brown apically and 6 brown in apical half, 7 and 8 brown; wings nearly clear, only faintly shaded with yellowish brown; all prominent setae clear.

Head 1.4 longer than wide, cheeks nearly straight, sculpture weak; postocular setae long and pointed, placed behind inner margins of eyes, a second pair of shorter postoculars behind middle of eyes and nearer side margins of head. Eyes moderately large, subovate, approximately one third longer on dorsal than on ventral side; ocelli moderately large. Mouth cone broad at base, drawn out and pointed, extending beyond base of prosternum. Antenna normal, segment 3

with one sense cone. Prothorax almost as long as head, with antero- and postero-marginal setae wanting, others normal, pointed; median thickening occupying only the median third, incomplete at both ends; fore legs enlarged but relatively much smaller than in other members of the genus, fore tarsus with strong tooth; fore wings with 14 double fringe hairs. Abdomen normal, segments 2 to 7 each with two pairs of sigmoid setae, lateral setae long, pointed, those on segment 9 nearly as long as tube; tube 0.88 as long as head, with nearly straight sides to distal fourth and from there evenly reduced to tip.

Total length 2.13 mm.; head length 0.266 mm., width 0.190 mm.; prothorax length 0.216 mm., width excluding coxae 0.330 mm.; pterothorax width 0.411 mm.; tube length 0.260 mm., width at base 0.088 mm. Antennal segments length (width) III, 76 (30); IV, 83 (33); V, 76 (33); VI, 70 (33); VII, 53; VIII, 30 microns. Length of setae: postoculars 110, outer smaller pair 26, on anterior angles of prothorax 36, midlaterals 60, on posterior angles outer 116, inner 100, on ninth abdominal segment 233, at tip of tube 166 microns.

Nandarivatu, Viti Levu, alt. 2,600-3,000 ft., Sept. 9, 1938, holotype female (5415), Zimmerman.

In color this species resembles the genotype *H. australiae* Morgan, but it is easily separated by the pointed setae and the absence of antero-marginal setae on the prothorax.

Macrophthalmothrips gracilis, new species (fig. 7, *a*).

Holotype female (macropterous), brown with some reddish subhypodermal pigmentation; with a latero-dorsal yellowish stripe extending from sides of eyes, along cheeks and across prothorax where it is wider posteriorly; mesonotum, sides of metanotum and first abdominal segment also yellowish; abdominal segment 2 light brown, 3 to 6 brown, 7 to 9 darker brown, tube black in basal half, brown in apical half; central portion of head from eyes to posterior margin and within the yellowish stripes brown, central portion of pronotum and metanotum likewise brown; legs with all coxae and femora dark brown, the middle and hind femora clear yellow at apical ends; all tibiae clear yellow at both ends, with a brown band across the middle, on the fore tibiae this band is restricted to the side margins; all tarsi clear yellow with a darkened cup; wings nearly clear, washed with brown along the veins; antennae with segment 1 dark brown, 2 mostly clear yellow but darkened at base and along inner margin, 3 yellow in basal three fifths, light brown in apical two fifths, 4 to 8 dark brown with 4 lighter at extreme base; major setae clear, those at tip of tube light brown in basal portions.

Head approximately 1.4 longer than width across cheeks, cheeks rounded off abruptly to eyes, slightly swollen in the middle, minutely serrulate at the sides; swollen vertex narrowly produced above eyes, with the anterior ocellus at its tip; surface of head in the darkened area finely striate-reticulate, the lightened side areas without sculpture; postoculars minute; eyes normal to the genus, together forming an almost complete circle except where they come together in the middle posteriorly, occupying the anterior portion of the head, coming together behind swollen vertex along median line; ocelli on swollen vertex. Antennae arising from under portion of head with all of segment 1 concealed beneath eyes, shape of segments normal to the genus, 7 and 8 divided by a complete suture, 3 with

two sense cones. Mouth cone long and pointed, extending to middle of mesosternum.

Prothorax approximately 1.5 times wider (excluding coxae) than median length of pronotum, with darkened portion sculptured like the head and with a transverse furrow across the middle; all normal setae present, these short, with dilated tips. Pterothorax somewhat wider than prothorax, metanotum with longitudinal sculpturing, otherwise similar to that on pronotum. Fore femora notice-

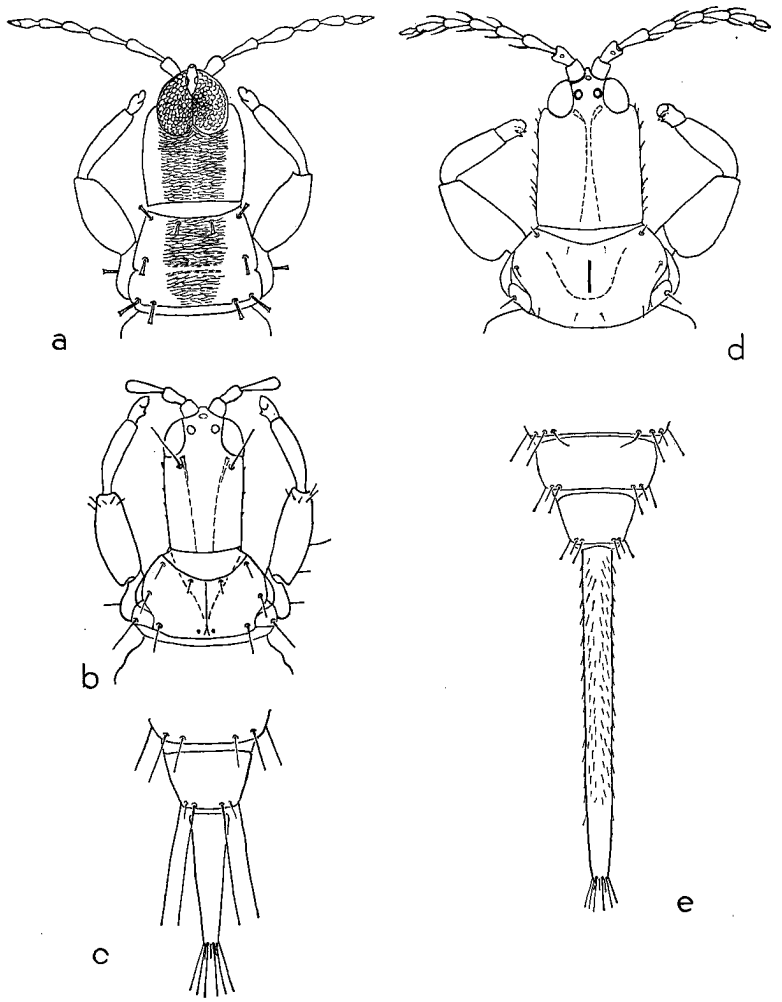

FIGURE 7.—**a,** *Macrophthalmothrips gracilis,* female, head and prothorax. **b-c,** *Neoheegeria longus,* female: *b,* head and prothorax; *c,* end of abdomen. **d-e,** *Leeuwenia spinosus,* female: *d,* head and prothorax; *e,* end of abdomen.

ably enlarged, otherwise legs slender; fore tarsus unarmed. Wings normal to the genus, fore pair with 9 double fringe hairs. Abdominal segments 2 to 6 of about equal width, terga with weak transverse anastamosing lines; lateral setae stout, with dilated tips; segments 2 to 6 each with two pairs of sigmoid setae. Tube 0.5 as long as head, reduced gradually with nearly straight sides, only weakly constricted before the tip; terminal setae nearly as long as tube.

Total length with distended abdomen 2.1 mm.; head length 0.294 mm., width 0.205 mm.; prothorax length 0.191 mm., width without coxae 0.294 mm.; pterothorax width 0.352 mm.; tube length 0.147 mm., width at base 0.058 mm. Antennal segments length (width) II, 43 (32); III, 83 (28); IV, 76 (30); V, 53 (24); VI, 53 (24); VII-VIII, 56; total 396 microns. Setae: on anterior margin of prothorax 26, antero angles 33, midlaterals 26, on posterior angles, outer 50, inner 33, on ninth abdominal segment 100, at tip of tube 100 microns.

Mvana, Vanua Mbalavu, alt. 200 ft., Aug. 9, 1938, holotype female (5406), Zimmerman.

The uniformly brown antennal segments 4 to 6 readily distinguish this species from *M. quadricolor* Karny from Malaya, which has the basal half of 4, basal third of 5 and extreme base of 6 yellow; *M. pulchellus* Hood has all brown femora while in this new species, the middle and hind femora are yellow at apical ends.

Chelaeothrips fuscus, new species (fig. 6, *c, d*).

Holotype male (apterous), uniformly dark brown including antennae and legs. Head approximately twice longer than greatest width across cheeks with the basal antennal segments occupying the entire front; cheeks joining eyes evenly, widening a short distance behind eyes, continuing toward base with nearly parallel sides; surface and cheeks smooth; postoculars placed near sides of head and about the length of an eye behind the eyes; cheek setae minute. Eyes narrowed, flattened at the sides and not extending on anterior surface of head; ocelli wanting. Antennae 8-segmented, uniformly brown in color; sense area on segment 2 placed posterior to middle of segment. Mouth cone very short and rounded, shorter than its basal width and much shorter than basal width of head.

Pronotum approximately as long as head but considerably wider near posterior margin; entire prothorax strong and massive, all major setae minute or wanting, with only a single long seta on each fore coxa; fore legs massive, the femora fully as broad as head, the fore tibiae short and stout, approximately as long as width of femora, fore tarsus about half as long as wide, with a massive tooth. Pterothorax heavy, wings wanting. Abdomen of about equal width to segment 5, thence gradually reduced to segment 9; lateral setae only moderately long on more apical segments, outer pair on segment 9 reduced to short spurs; terminal hairs minute; terga without sigmoid setae. Tube approximately 0.6 as long as head, somewhat swollen at base and narrowed evenly in apical third, not constricted before the end.

Total length with slightly distended abdomen 3.0 mm.; head length 0.352 mm., width at eyes 0.16 mm., near posterior margin 0.19 mm., prothorax length 0.352 mm., width near posterior margin and including coxae 0.543 mm.; pterothorax width 0.573 mm.; tube length 0.22 mm., width at base 0.117 mm.

Bulu near Sovi, Viti Levu, April 21, 1941, holotype male (5620), Krauss.

This species is clearly congeneric with *C. annamensis* Karny from the Malay Peninsula and *C. exunguis* Karny from Sumatra, but much larger as compared with 1.8-2.1 mm. in *exunguis* and 1.5 in *annamensis*. Its uniform dark color, especially the uniformly dark antennae, is distinctive. *C. annamensis* is black with fore tibiae and all tarsi brownish yellow and antennal segments 3 to 6 clear yellow; *C. exunguis* is light gray brown with all legs yellow, antennae grayish yellow with segments 2, 7, and 8 more yellowish than the others.

Karnyothrips flavipes Jones.

Anthothrips flavipes Jones, U.S.D.A. Bur. Ent. Tech. Ser. **25**(1): 18, 1912.

Marona, Mango Island, alt. 200-300 ft., Aug. 14, 1938, one female (5412), Zimmerman.

Neoheegeria hibisci Moulton and Steinweden, B. P. Bishop Mus., Bull. **113**: 32, 1933.

Allotype male (macropterous), colored as in female and approximately the same size; fore femora somewhat larger than in female and fore tarsus with a broad-seated tooth; abdominal tergites 2 to 7 each with a single pair of sigmoid setae (this character omitted in the description of the female); both pairs of setae on ninth abdominal segment long, outer pair not reduced to short, strong spines as in some species; with scale at base of tube.

Tumbou, Lakemba Island, Aug. 20, 1938, allotype male (5410), Zimmerman; Maturika (3474), Lea.

Neoheegeria longus, new species (fig. 7, *b, c*).

Holotype female (macropterous), blackish brown, with head and terminal abdominal segments including tube nearly black; antennal segments blackish brown with 2 in distal half and 3 in basal half yellowish brown; legs colored like the body with fore femora lighter especially through the middle, tarsi brown; prominent setae yellowish brown; wings washed with yellowish brown, darker along veins.

Head 1.68 longer than wide, flattened in front, cheeks nearly straight and parallel, only slightly reduced toward neck; back of head with fine transverse lineation, cheeks minutely serrate; postoculars long, nearly pointed, placed behind middle of eyes, with several moderately strong genal setae; eyes moderately large but still not occupying more than one fifth of the head length, protruding at sides; ocelli large, contiguous with inner margins of eyes; antennal segments 3 to 5 clavate, 6 and 7 more flattened at the sides, 8 constricted at base; sense area on 2 placed about one third the segment length from apical margin; 3 with

two, 4 with four sense cones; mouth cone long and narrowed to tip, extending to posterior margin of prosternum.

Prothorax approximately twice wider than median length of pronotum which is rather deeply concave in front; with median dorsal thickening and complete sutures; all normal setae present, the antero-marginals approximately equal to those on anterior angles, midlaterals longer, outer pair on posterior angles longest, all nearly pointed; pterothorax clearly wider than prothorax including coxae; fore legs somewhat thickened, fore tarsus unarmed; wings narrowed in the middle, fore pair with 32 to 38 double fringe hairs. Abdomen stout, reduced beyond segment 5, lateral setae moderately long, tergites 2 to 7 each with a single pair of sigmoid setae; setae on segment 9 nearly as long as tube. Tube as long or slightly longer than head, with nearly straight sides but reduced more noticeably in apical third, terminal setae two thirds as long as tube.

Total length, abdomen distended, 4.72 mm.; head length 0.47 mm., width 0.279 mm.; prothorax length 0.294 mm., width without coxae 0.514 mm.; pterothorax width 0.72 mm.; width of abdomen at third segment 0.735 mm.; tube length 0.514 mm., width at base 0.147 mm. Antennal segments length (width) II, 83 (43); III, 123 (53); IV, 143 (50); V, 136 (43); VI, 100 (33); VII, 50 (30); VIII, 63; total 808 microns. Postocular setae 50-66, on anterior angles 50, midlaterals 66, outer on posterior angles 176, inner 116, on ninth abdominal segment 500, at tip of tube 352 microns.

Allotype male colored as in female, but with third antennal segment lighter, more brownish yellow and only slightly darkened in apical fourth; fore tibiae somewhat lighter, blackened at sides, middle and hind knee joints just noticeably lighter, tarsi brown; wings narrowed in middle, fore pair with 32 double fringe hairs; head approximately 1.5 longer than wide and tube slightly shorter than head; with scale at base of tube.

Total length 3.6 mm.; head length 0.396 mm., width 0.260 mm.; prothorax length 0.264 mm., width without coxae 0.426 mm.; pterothorax width 0.558 mm.; width of abdomen at third segment 0.529 mm.; tube length 0.367 mm., width at base 0.117 mm. Antennae: II, 73 (40); III, 116 (46); IV, 123 (46); V, 113 (43); VI, 83 (33); VII, 66 (30); VIII, 53; total 705 microns.

Navai Mill, Tholo North, alt. 2,500 ft., Sept. 17, 1938, holotype female, allotype male, four paratype females (5411); same location, Sept. 16, 1938, four paratype females (5397); Zimmerman.

This species is closely related to *N. hibisci* Moulton and Steinweden, but may be separated by its darker color, larger size, and relatively longer head; also by the eyes protruding at the sides. In *N. hibisci,* the eyes join the cheeks evenly.

Haplothrips gowdeyi Franklin.

Nandarivatu, Viti Levu, alt. 2,800 ft., Sept. 11, 1938, 5 females (5414), Zimmerman. Bulu near Sovi, Viti Levu, Apr. 21, 1941, 2 females (5627); Vunidawa, Viti Levu, May 4, 1941 (5631); Krauss.

Leeuwenia spinosus, new species (fig. 7, *d, e*).

Holotype female (macropterous), head and thorax brown, abdominal segments 1 to 8 yellow, each more or less irregularly brown in middle and 3 to 7 with a brown spot on either side; segment 9 brown, tube yellowish brown; antennae clear yellow beyond segment 2; legs brown, with fore tibiae yellow in apical half and all tarsi yellow; wings lightly washed with yellowish brown.

Head approximately 1.5 longer than width across cheeks, narrowed across eyes, cheeks expanding evenly, without a groove, behind eyes and almost parallel sided to posterior margin; sculpturing on dorsal surface of head clearly defined; cheeks roughened, with numerous stout genal setae set on warts; postoculars wanting. Eyes rounded evenly on outer margin; ocelli large, contiguous with inner margins of eyes; antennae slender, approximately 1.2 longer than head, segment 3 with one and 4 with two sense cones; mouth cone short and rounded.

Prothorax more than twice wider than long, with incomplete median thickening, with normal complete sutures; setae on anterior angles short and stout, outer pair on posterior angles alone prominent, all others minute. Fore legs moderately stout, fore tarsus with a small tooth; wings fully developed, without double fringe hairs. Abdomen moderately stout, reduced beyond second segment; setae on posterior angles of segments short and stout; tergites 2 to 7 each with two pairs of sigmoid setae. Tube twelve times longer than its width at base and 2.1 times longer than head; clothed with weak, almost prostrate setae over proximal three fourths, the apical fourth almost bare.

Total length 4.0 mm.; head length 0.485 mm., width across eyes 0.270 mm., across cheeks 0.315 mm., prothorax length 0.220 mm., width without coxae 0.50 mm.; pterothorax width 0.661 mm.; tube length 1.04 mm., width at base 0.088 mm.; setae on posterior angles of prothorax 70, on ninth abdominal segment 60 microns. Antennal segments length (width) II, 63 (40); III, 93 (34); IV, 83 (40); V, 83 (40); VI, 83 (36); VII, 76; VIII, 46; total 573 microns.

Andubangda Peak, Ovalau, alt. 1,000-1,500 ft., July 18, 1938, holotype female (5374); Tholo-i-Suva, Viti Levu, July 27, 1938, paratype female (5392); Zimmerman.

This species belongs in the group where the head is clearly narrower across the eyes than across the cheeks and without a notch between the eyes and cheeks, the cheeks nearly parallel; it is distinctive from most of them because of the clear yellow abdomen, spotted with brown. *L. karnyiana* Ayyar has a pair of strong postoculars situated on the sides of the head and does not have numerous genal setae; *indicus* Bagnall is uniformly dark in color of body and has a relatively longer tube.

Leeuwenia fijiensis, new species (fig. 8, *a, b*).

Holotype female (macropterous), head, thorax, ninth abdominal segment and tube dark brown, abdominal segments 1 to 8 light brown in middle, yellow at sides; legs dark brown except apical half of fore tibiae and all tarsi which are yellow; antennal segments 1 and basal half of 2 dark brown, apical half of 2, and 3 to 8 clear yellow; wings lightly washed with brownish yellow.

Head 1.4 longer than wide across cheeks, width across eyes nearly the same

as across cheeks, cheeks slightly rounded to eyes but without a notch here, nearly parallel beyond, sculpturing on dorsum weak, cheeks with 7 or 8 stout setae, set on warts, postoculars on sides of head, short with blunt tip. Eyes large, subovate, ocelli large. Antenna normal to the genus 1.4 longer than head, sense area on segment 2 placed about one third the segment length from apical margin; 3 with one, 4 with 2 sense cones. Mouth cone short, reaching half across prosternum, rounded. Prothorax approximately 0.6 as long as head, but noticeably wider, sculpturing present but more or less irregular, with complete normal sutures; all setae reduced except single outer pair on posterior angles of prothorax, these moderately long, with blunt tips; pterothorax wider than prothorax; fore legs clearly enlarged, fore tarsus with small tooth, middle and hind legs slender; wings fully developed. Abdomen moderately stout, reduced gradually beyond segment 4, segments 3 to 9 with a short, stout seta on each posterior angle; 2 to 7 each with two pairs of sigmoid setae; tube 1.5 longer than head and seven times longer than width at base, sparsely covered with setae, the apical fourth without them.

Total length 2.97 mm.; head length 0.367 mm., width across eyes 0.235 mm., across cheeks 0.259 mm.; prothorax length 0.220 mm.; width without coxae 0.382 mm.; tube length 0.632 mm., width at base 0.088 mm. Antennal segments length (width) I, 40 (50); II, 63 (46); III, 80 (36); IV, 80 (40); V, 80 (40); VI, 66 (36); VII, 60; VIII, 46; total 514 microns.

Nandarivatu, Viti Levu, alt. 3,700 ft., Sept. 10, 1938, holotype female (5403), Zimmerman.

This species may be separated from *L. taiwanensis* from Formosa by the color of the antennae and middle and hind legs and by the shorter tube; *L. taiwanensis* is blackish brown with the apical third or fourth of middle and hind tibiae yellow, also antennal segments 3 to 8 are more or less shaded, the tube is 2.8 times longer than the head.

Phlaeothrips (Hoplandrothrips) flavitibia, new species (fig. 8, *c, d*).

Holotype female (macropterous), general color yellowish brown; head, prothorax, sides of pterothorax and first abdominal segment, all of 2 and 7 to 9 brown; median portion of pterothorax and first abdominal segment yellow, 2 slightly lighter in middle, 3 to 5 yellow, each light brownish in middle, 6 light yellowish brown, somewhat darker in middle and at sides, tube blackish brown in second and third sixths, lighter at extreme base and shading yellowish brown in apical half; antennal segments 1 and 2 dark brown, 3 grayish yellow, 4, 5 and 6 light brown, yellowish in basal half, third and at extreme base respectively, 7 and 8 brown; legs with all femora dark brown, yellowish at apical ends, tibiae and tarsi clear yellow; wings washed with light brown; prominent setae on head and thorax light brown, all others clear yellow.

Head 1.2 longer than wide, slightly swollen and broader behind eyes followed by nearly parallel cheeks, only very noticeably narrowed at base, dorsum with distinct reticulated sculpturing; postocular setae long, with widely dilated tips, three or four genal setae stronger than the others, all set on warts, those on anterior portion of head directed mostly forward, the stronger posterior pair directed more to the sides. Eyes large, ovate; ocelli large, their diameter equal to their interval, contiguous with inner margins of eyes. Antenna with segment

3 distinctly the widest and approximately twice longer than its greatest width, 3, 4 and 5 of equal length, 8 constricted at base and clearly separated from 7; segment 3 with three short, broadly rounded sense cones, the four sense cones on segment 4 are broad at base but reduced gradually to their rounded tips, they also are longer than those on segment 3. Mouth cone drawn out and pointed, reaching posterior margin of prosternum.

Prothorax twice wider than long, with all normal setae, these with widely dilated tips; with complete sutures; the sculpturing is clearly defined only at the sides and along posterior margin; pterothorax wider than prothorax; metanotum with a long dilated seta on either side. Abdomen moderately stout, reduced beyond sixth segment; all lateral setae with dilated tips; segments 2 to 7 each with two pairs of sigmoid setae; wings with a slight constriction in the middle, all three setae at base of fore wing with dilated tips, fore wings with 16 double fringe hairs.

Total body length with distended abdomen 2.59 mm.; head length 0.264 mm., width behind eyes 0.220 mm.; prothorax length 0.176 mm., width without coxae 0.352 mm.; pterothorax width 0.440 mm.; tube length 0.176 mm., width at base 0.073 mm. Length of setae: postoculars, 83, on anterior margin of prothorax 43, anterior angles 66, midlaterals 73, outer on posterior angles 76, inner 66, on ninth abdominal segment 133, at tip of tube 150 microns. Antennal segments length (width) I, 40 (43); II, 53 (33); III, 83 (43); IV, 83 (36); V, 83 (30); VI, 70 (23); VII, 56 (20); VIII, 40; total 411 microns.

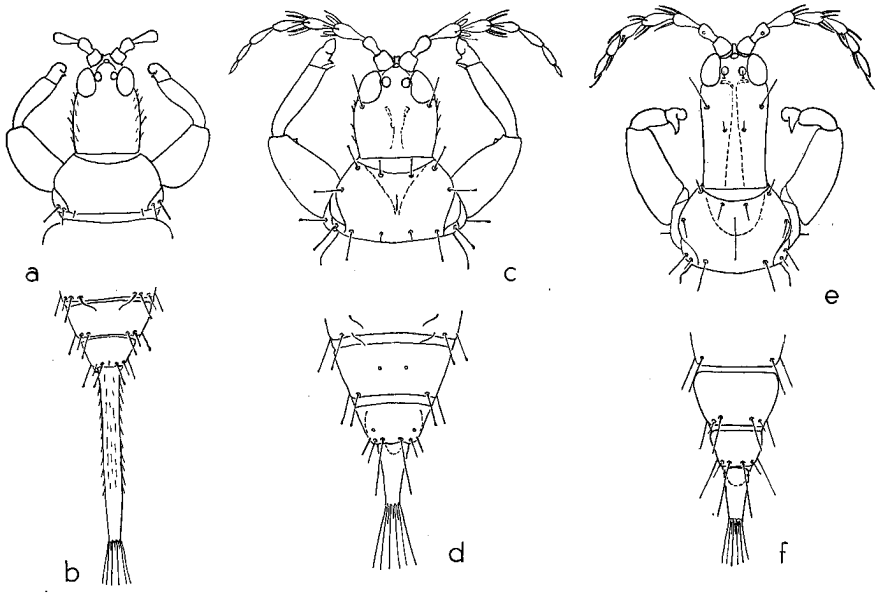

FIGURE 8.—**a-b,** *Leeuwenia fijiensis,* female: *a,* head and prothorax; *b,* end of abdomen. **c-d,** *Phlaeothrips (Hoplandrothrips) flavitibia,* male: *c,* head and prothorax; *d,* end of abdomen. **e-f,** *Ischnothrips zimmermani,* male: *e,* head and prothorax; *f,* end of abdomen.

Allotype male, colored as in female, somewhat smaller in size; fore femora more enlarged, with one tooth on inner, apical margin; fore tibia with a rounded swelling near base, fore tarsus with a stout tooth seated at base of first segment. Inner setae on ninth abdominal segment nearly as long as tube, outer pair reduced to short spines.

Munia Island, alt. 800-900 ft., August 3, 1938, holotype female, allotype male, three female and one male paratypes, (5400); Mvana, Vanua Mbalavu, alt. 200 ft., Aug. 5, 1938, two paratype females (5406); Zimmerman.

This species resembles *H. flavipes* Bagnall from East Africa in many characters; *flavipes* however has the terminal hairs longer than the tube. In *H. xanthopoides* Bagnall from St. Vincent, antennal segments 3, 4, and 5, are 88, 85, and 67 microns long respectively and the fore wings have 7 to 9 double fringe hairs. *H. vansoni* Jacot-Guillarmod is a much larger insect, with longer head and differently armed fore legs.

Phlaeothrips (Hoplandrothrips) flavitibia var. **fuscus,** new variety.

Holotype female, in all respects like the species, except that the head, thorax, and abdomen are uniformly brown.

Viti Levu, holotype female and three paratype females (3449), paratype female (3421), Lea.

Genus **GLUPHOTHRIPS,**[5] new genus

Head approximately 1.3 longer than wide, swollen immediately behind eyes, cheeks reduced gradually to a neck-like base, the extreme base broadened on either side, dorsum noticeably raised along median line; with distinct reticulated sculpturing; postocular setae placed close behind middle of eyes, moderately stout, with widely dilated tips which are strengthened by fanlike ribs; small, pointed postocellar setae present; with four or five genal setae set on warts, the two posterior pairs stronger than the others and directed more laterally. Eyes large, oval, their diameter almost equal to the interval between them; ocelli large, contiguous with inner margins of eyes, their diameter equal to their interval. Antenna 8-segmented of the *Phlaeothrips* type but with segments 7 and 8 broadly joined and formed as a unit, with complete, oblique suture; sense area on segment 2 placed midway between center and apical end, 3 with three long, pointed sense cones, 4 with four, these reaching to the middle of succeeding segments. Mouth cone drawn out and pointed, reaching posterior margin of prosternum.

Prothorax not greatly enlarged, approximately 1.5 to 1.7 wider than long, with indistinct reticulation behind anterior margin and at sides, this changing form in the middle to closely placed, longitudinal confluent lines; these change again to normal but weak reticulation along posterior margin; all normal setae present, with widely spread, fanlike, ridged tips; mesanotum with unique sculp-

[5] *Gluphe,* sculpture.

turing, this composed of transverse, confluent lines, with each small sector thickened in the middle producing a shadowed appearance; these lines turn posteriorly in the center and at the sides as they approach the posterior margin; metanotum somewhat depressed in the middle and elevated in the middle of either side into two longitudinal rudder-like processes. Fore femora enlarged but unarmed; fore tibia with a small but distinct swelling on the inside at apical end; fore tarsus with a strong, broad-seated tooth in the female (male not known). Wings fully developed, distinctly but briefly narrowed in the middle, fore pair with double fringe hairs; two setae with dilated tips and a third very long and pointed at base of fore wing. Abdomen moderately stout and elongate, reduced gradually beyond third segment; lateral setae strong, with dilated tips; segments 2 to 7 each with two pairs of sigmoid setae; ninth abdominal segment in the female prolonged into a scale on either side at base of tube; tube two thirds as long as head, reduced with straight sides.

Genotype, *G. varicolor,* new species.

This genus belongs in the Phlaeothripini and near *Phlaeothrips* Haliday but is differentiated from that genus by the structure of antennal segments 7 and 8 joined as a single unit, by the distinctive sculpturing on meso- and metanotum, by the rudder-like processes on the metanotum, the exceedingly long third seta on base of fore wing and by the prolongation of the ninth abdominal segment, scale-like on either side at base of tube in the female.

Gluphothrips varicolor, new species (fig. 9, *a, b*).

Holotype female (macropterous), head, sides of pterothorax, abdominal segments 2, 3, 6, 7, and anterior third of 8 dark brown, tube blackish brown in basal half, shading to light brown at tip; prothorax, fore legs, median portion of pterothorax, abdominal segments 1, 4, 5, apical two thirds of 8, and 9 clear yellow; the raised rudder-like processes on metanotum dark brown; middle and hind femora dark brown, clear yellow at apical ends, middle and hind tibiae and tarsi clear yellow; antennal segments 1, 2, 7, and 8 dark brown, 3 yellowish in basal half, brown distally, 4 clear yellow in basal half, abruptly dark brown in distal half, 5 yellow in basal third, 6 in basal fifth, otherwise these segments abruptly dark brown; wings lightly washed with brown; prominent setae on darkened portions of body brown, those on yellow portions clear yellow.

Characters as given for the genus; the broadened extreme base of head when viewed from the ventral side is the broadened base of the mouth cone; fore coxa with 4 or 5 short, stout spines in addition to the normal dilated seta; the third pointed seta at base of fore wing fully four or five times longer than the first two with dilated tips; fore wings with 14 double fringe hairs; tube 0.65 as long as head, with straight sides which are narrowed evenly to the end; terminal hairs shorter than tube. The enlarged bases of mandibular spines are placed immediately below posterior, inner portions of eyes, they extend inward, turn and follow in parallel position along center of head and begin to diverge just before posterior margin of head.

Total length with distended abdomen 2.9 mm.; head length 0.315 mm., width behind eyes 0.245 mm.; prothorax length 0.20 mm., width without coxae 0.323

mm.; pterothorax width 0.411 mm.; abdomen at third segment 0.411 mm.; tube length 0.205 mm., width at base 0.073 mm. Antennal segments length (width) I, 50 (50); II, 63 (33); III, 100 (43); IV, 120 (43); V, 103 (36); VI, 66 (26); VII-VIII, 83; total 602 microns. Length of setae: postoculars 50, on anterior margin of prothorax 40, on anterior angles 76, midlaterals 70, outer on posterior angles 83, inner 63, on ninth abdominal segment 83 to 93, at tip of tube 166; setae at base of fore wing 43, 50, and 210 microns.

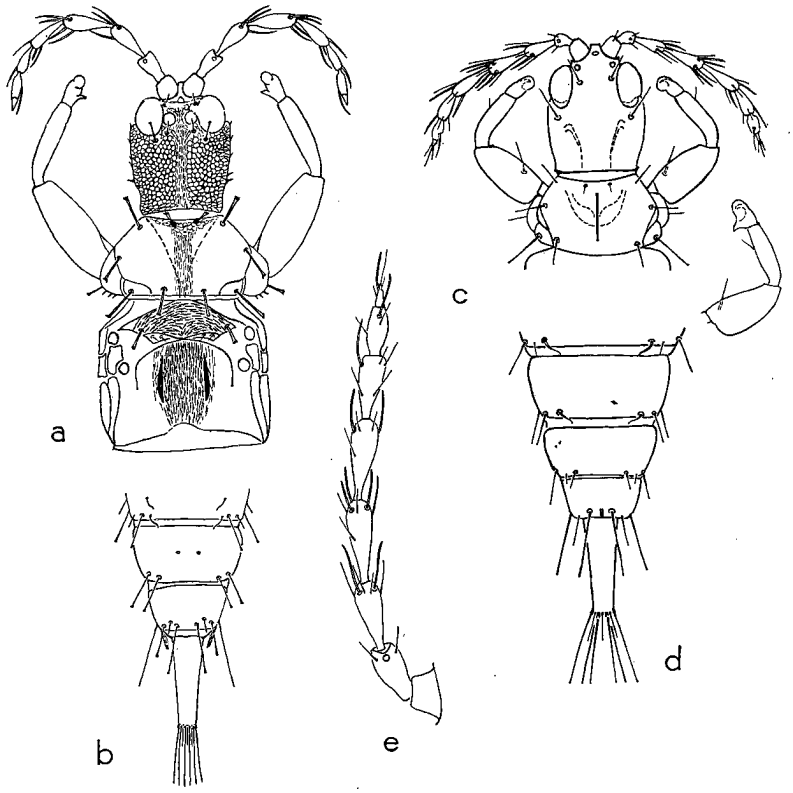

FIGURE 9.—**a-b,** *Gluphothrips varicolor,* female: *a,* head and thorax; *b,* end of abdomen. **c-e,** *Bolothrips* (*Carientothrips*) *fijiensis: c,* female, head and prothorax and male, right fore leg; *d,* female, end of abdomen; *e,* female, left antenna.

Nandarivatu, Viti Levu, alt. 2,600-3,000 ft., holotype female, one paratype female (5415), Zimmerman.

Ecacanthothrips crassiceps Karny, Arch. Naturgesch. V, **79**(1): 134, 1913.

Viti Levu (3460), Lea.

This species was described from New Guinea.

Genus **ISCHNOTHRIPS,**[6] new genus

Body and wings long and slender, tube very short. Head 2.0 longer than wide in the male holotype, 1.5 longer in the female allotype, flattened in front, cheeks nearly straight, very slightly swollen behind eyes; postoculars long, pointed, placed well back from eyes; genal setae weak. Eyes subovate, of equal length dorsally and ventrally, not protruding; ocelli moderately large, fore ocellus on flattened front surface. Antenna 7-segmented, intermediate segments clavate, sense area on segment 2 about one third the segment's length from apical margin; 3 with three long, slender sense cones, 4 with four, these reaching to near or past middle of following segment; 7 with only faint sign of dividing suture. Mouth cone reaching three fourths over prosternum, rounded, labrum distinctly narrowed and pointed at tip, maxillary palpi long, labial palpi very small.

Prothorax wider than long, with broadly rounded sides, sutures complete; male with incomplete median dorsal thickening, this wanting in the female; with normal setae which are short, pointed, only pair on posterior angles moderately long. All legs small and slender, femora in male somewhat thickened, fore tarsus with tooth in both sexes. Wings fully developed, long, narrow, with parallel sides, fore pair with 13 to 18 double fringes. Abdomen slender, with long spines at posterior angles of segments and two pairs of sigmoid setae on tergites 2 to 6. Tube about 0.4 as long as head, with straight sides, terminal hairs nearly as long as tube.

Genotype, *I. zimmermani,* new species.

This genus appears to be mostly closely related to *Compsothrips* Reuter but is separated by the 7-segmented and more clavate intermediate segments of antenna, the three sense cones on third segment, and the more slender abdomen. It approaches *Zaliothrips* Hood but is immediately separated by the differently shaped tarsal tooth, the three sense cones on the third antennal segment and the shorter tube.

Ischnothrips zimmermani, new species (fig. 8, *e, f*).

Male holotype (macropterous), brown with posterior portion of metathorax, first abdominal segment, fore tarsi, and distal portion of fore tibia and joints of middle and hind legs clear yellow; antennal segments 2 yellow except at extreme base, 3 to 6 yellow in basal halves, brown distally, 7 also yellow basally; wings washed with brown but with a clear cross band in basal fourth corresponding to the clear area at junction of thorax and abdomen.

Total body length 3.5 mm.; head length 0.514 mm., width 0.235 mm.; prothorax length 0.259 mm., width 0.426 mm.; tube length 0.205 mm. Female allotype: total body length 3.11 mm.; head length 0.470 mm., width 0.308 mm.; prothorax length 0.26 mm., width 0.47 mm.; tube 0.22 mm., width at base 0.102 mm. Antennal segments length (width) II, 73 (40); III, 93 (50); IV, 103 (50); V, 80 (43); VI, 76 (36); VII, 76 (34); total 588 microns.

In the male the head is clearly twice longer than wide, whereas in the female it is relatively broader, 1.5 longer than wide. The species is especially characterized by the long slender body and wings, seven segmented antenna with long

[6] *Ischnos,* slender.

slender sense cones, three on segment 3 and four on segment 4, the short rounded mouth cone with pointed labrum and the very short tube, this being less than half as long as head.

Navai Mill, Tholo North, Viti Levu, holotype male (5411), allotype female (5399), alt. approximately 2,500 ft., September 15 and 17, 1938, Zimmerman.

Genus **BOLOTHRIPS** Priesner, 1926

J. D. Hood has divided the genus into two subgenera, *Bolothrips* Hood, with *bicolor* (Heeger) as type and *Botanothrips* Hood with *pratensis* Hood as type. The marked prolongation of eyes on the ventral surface of the head characterizes the first subgenus, and in the second the eyes are not so prolonged on the ventral surface. Ocelli are usually wanting in apterous forms and the postero-marginal setae are not greatly reduced in size. To these a new subgenus is added and characterized as follows:

Subgenus **CARIENTOTHRIPS,** new subgenus

Eyes not prolonged on ventral surface of head, but while sub-ovate in general outline they are distinctly longer on dorsal surface of head and the wings are noticeably constricted in the middle; ocelli are present but small in the apterous form; postocellar setae are well developed.

Holotype female (macropterous), brown, abdomen shading blackish brown apically with end of tube lighter; legs brown with fore tibiae, apical portions of middle and hind tibiae and all tarsi yellow; antennal segments 1, 2, and 7 to 8 dark brown, 3 to 5 mostly yellow, 3 with a light brown band across basal third, 4 and 5 darkened distally, 6 yellow at base, otherwise dark brown; wings washed with brown; prominent setae light brown to clear yellow.

Head approximately 1.25 longer than wide, slightly but distinctly produced in front of eyes; cheeks gently rounded, somewhat constricted neck-like and with a collar-like thickening at base; back of head faintly transverse-reticulate; postoculars long, pointed, placed close to eyes, postocellars well developed, two thirds as long as postoculars; genal setae minute. Eyes large, sub-ovate, slightly protruding in front, longer on dorsal surface; ocelli placed far forward, posterior pair near but not contiguous with anterior, inner margins of eyes. Antennal segments 3 to 5 elongate clavate, 8 clearly separated from 7, 3 with two, long, slender sense cones, 4 with four such sense cones. Mouth cone short, reaching to middle of prosternum.

Type species, *Bolothrips* (*Carientothrips*) *fijiensis,* new species.

Bolothrips (Carientothrips) fijiensis, new species (fig. 9, *c-e*).

Prothorax approximately twice wider than long, with an incomplete median thickening, complete sutures; antero-marginal setae short and pointed, others normal, with blunt tips. All legs slender, fore femora only moderately thickened,

fore tarsus unarmed in the female. Wings fully developed, noticeably reduced in the middle, fore pair with 7 double fringe hairs. Abdomen rather slender, reduced gradually beyond third segment, with one pair of sigmoid setae on segments 3 to 7. Tube slender, two thirds as long as head, with straight sides which are only noticeably reduced before end.

Allotype male (macropterous), like the female except more slender form, with abdomen reduced gradually beyond second segment, the middle and hind tibiae are nearly clear yellow, fore tarsus with a stout tooth and fore wings with 5 double fringe hairs.

Paratype female (apterous), colored as in the male with middle and hind tibiae nearly clear yellow; antennal segments 3 and 4 noticeably lighter than in the macropterous female.

Head 1.4 longer than wide, clearly produced in front of eyes, broadest behind eyes, with cheeks narrowing gently to the collar-like thickening at base; eyes flattened at sides, approximately one half longer on dorsal than on ventral surface, facets rather large; ocelli, small, anterior in position; postocular setae long, pointed, placed close behind eyes, postocellars nearly as long as postoculars; antero- and postero-marginal setae on prothorax greatly reduced, pointed, others normal, with blunt tips; median thickening incomplete; legs slender with fore pair somewhat larger, fore tarsus unarmed. Abdomen stout, reduced beyond the sixth segment; tube 0.7 as long as head.

Holotype female, total length with abdomen distended, 2.45 mm.; head length 0.294 mm., width 0.235 mm.; prothorax length 0.147 mm., width without coxae 0.308 mm.; tube length 0.191 mm., width at base 0.080 mm., at tip 0.044 mm. Antennal segments length (width) II, 63 (33); III, 83 (35); IV, 100 (33); V, 93 (33); VI, 66; VII, 50; VIII, 30; total 514 microns; width of wing near base 100, at middle 75, near tip 90 microns.

Apterous female: total length with distended abdomen 2.59 mm.; head length 0.308 mm., width behind eyes 0.220 mm.; prothorax length 0.176 mm., width without coxae 0.308 mm.; pterothorax width 0.352 mm., abdomen at fourth segment 0.514 mm.; tube length 0.220 mm., width at base 0.080 mm.

Nandarivatu, Viti Levu, alt. 2,000-3,000 ft., Sept. 1, 1938 (5407); 1 paratype female, apterous, Sept. 9 (5415); Sept. 7 (5395); Munia Island, alt. 800-900 ft., Aug. 3, 1938 (5400), holotype female, allotype male, 6 female and 2 male paratypes, all macropterous; Zimmerman.

Neosmerinthothrips formosensis Priesner, Philippine Jour. Sci. **57** (3): 368, 1935.

Nandarivatu, Viti Levu, alt. 3,600 ft., Sept. 6, 1938, 1 male (5391), Zimmerman; Vanua Levu, Suva Suva [Savusavu], June 1924, 2 females (3452, 3414), Lea.

Neosmerinthothrips formosensis var. **karnyi** Priesner, Philippine Jour. Sci. **57**(3): 368, 1935.

Navai Mill, Tholo North, Viti Levu, alt. 2,500 ft., 2 females, 1 male (5399); Nandarivatu, Viti Levu, Sept. 9, 1938, 3 females, 1 male (5415); Zimmerman.

Neosmerinthothrips fructuum Schmutz, Mathem.-naturw. **122**(1): 1052, 1913.

Marona, Mango Island, alt. 200-300 ft., Aug. 14, 1938, 1 female (5412), Zimmerman.

This specimen is identified as *M. fructuum* Schmutz, but it may represent a new species. The fore tarsus of the female bears a stout tooth. There is no recorded description of the female of this species and I am not certain that the female is thus armed.

Dichaetothrips setidens Moulton.

Mesothrips setidens Moulton, Haw. Ent. Soc., Proc. **7**: 129, 1928.

Cryptothrips niger Moulton and Steinweden, B. P. Bishop Mus., Bull. **114**: 165, 1935.

Dakuiloa, Oneata, Aug. 21, 1938, 1 female (5382); Marutea, Tuamotu, May 22, 1934, 1 female (5450); Rikitea, Mangareva, June 9, 1934, 1 female (5456); Zimmerman.

The new material before me indicates clearly the above synonymy. The development of postocellar setae varies from one third to three fourths as long as the postoculars.

Rhaebothrips major Bagnall, Insects of Samoa **7**(2): 75, 1928.

Nandarivatu, Viti Levu, alt. 2,800 ft., one female (5414), Sept. 11, 1938, E. C. Zimmerman; Bulu near Sovi, Viti Levu, one male (5621), Apr. 12, 1941, Krauss.

These two specimens conform in all respects and can definitely be identified as *R. major* Bagnall; the first has 26 double fringe hairs on fore wings and the second has 22 double fringes. Another long series of specimens taken from many places in the Fiji Islands conform to *R. major* in most respects but differ in having from 15 to 22 double fringe hairs on fore wings. This is not sufficient to establish a new species or even a new variety. Most of the specimens have from 19 to 22 of these double fringes. All of these are identified as *R. major*.

Diaphorothrips hamipes Karny, Treubia **3**(3-4): 296, 1923.

Singatoka, Viti Levu, April 17, 1941, one female (5622), Krauss.

Genus **OIDANOTHRIPS,**[7] new genus

Head 2.5 longer than wide, drawn forward to a point between the bases of antennae; cheeks roundly constricted behind eyes, then swollen, nearly parallel in posterior half; head strongly swollen dorsally and concave ventrally when

[7] *Oidano,* to swell, referring to the swollen head.

viewed from the side. Postocular setae long and pointed, placed far back from eyes; a second pair of short, curved setae anterior to the postoculars and extending from the sides of the median swollen portion of head. Eyes large, ovoid, evenly protruding; ocelli placed far forward, approximate, posterior pair opposite anterior margins of eyes. Antenna 7-segmented, 1.5 longer than head; segment 1 as long or longer than 2, segment 3 nearly four times longer than greatest width near tip where it is rather sharply angular in outline; 4 to 6 clavate; segment 3 with two short sense cones. Mouth cone short and rounded.

Prothorax nearly twice as wide as median length, with complete sutures; setae on posterior angles reduced to short spurs set on warts, others inconspicuous. Fore legs enlarged, fore femora long and strong, each with a distinct swelling near base on the inside; fore tibiae swollen on inside near middle, this swelling with short spines set on warts; fore tarsus with a stout tooth. Wings fully developed, long and strong, with fringe hairs unusually short and closely placed; fore wings with a long series of double fringe hairs. Abdomen drawn out, reduced gradually from base to tip, with long lateral setae on more distant segments, those on 9 nearly as long as tube; with a single pair of weak sigmoid setae on segments 3 to 5; tube two thirds as long as head, roundly constricted in basal fourth, median third with nearly parallel sides, distal third narrowed evenly to tip.

This genus would seem to belong in the *Macrothrips* group of the Compsothripini, but it is so bizarre in form that it is distinctive from all the others.

Oidanothrips magnus, new species (fig. 10, *a-c*).

Female holotype (macropterous), head and abdominal segments 4 to 8 yellow to light brownish yellow, thorax and first three and ninth abdominal segments blackish brown, tube yellowish brown in basal half, blackish brown in distal half; antenna blackish brown with segment 3 yellow except in distal swollen portion, segments 4 and 5 lighter brown in basal half but darker again at extreme base; legs blackish brown except fore tibiae and tarsi which are mostly yellow but darkened on the margins and the middle and hind tarsi which are brown; wings brown, lighter distally, each with a median streak to past middle. Fore wings with approximately 90 double fringe hairs.

Total length 8.05 mm.; head length 1.102 mm., width at eyes 0.411 mm., across swollen portion of cheeks 0.441 mm.; prothorax length 0.514 mm., width without coxae 1.073 mm.; pterothorax width 1.220 mm., width of abdomen at third segment 1.220 mm.; tube length 0.720 mm., width at base 0.176 mm., at tip 0.088 mm. Antennal segments length (width) I, 166 (110); II, 166 (110); III, 382 (102); IV, 308 (102); V, 235 (80); VI, 191 (58); VII, 205 (44); total 1.617 mm. Length of postocular spines 396, those on posterior angles of prothorax 117 microns.

Navai Mill, Nandarivatu, Viti Levu, alt. 2,700 ft., July 27, 1938, holotype female (5395); Tholo-i-Suva, Sept. 7, 1938, one paratype female (5378); Zimmerman.

The species is especially unique because of the shape of the head, which is swollen dorsally and concave ventrally.

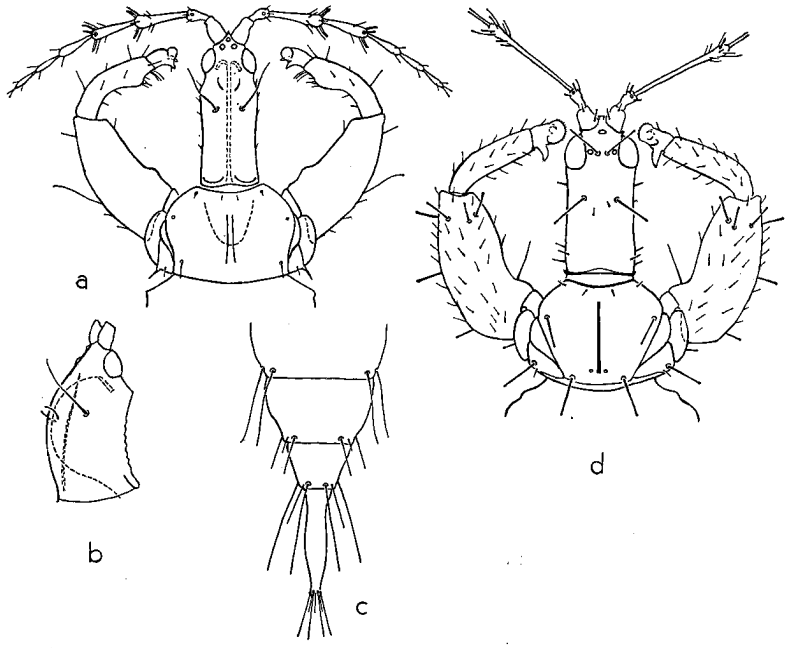

FIGURE 10.—**a-c,** *Oidanothrips magnus,* female: *a,* head and prothorax; *b,* side view of head; *c,* end of abdomen. **d,** *Campulothrips gracilis,* male, head and prothorax.

Genus **CAMPULOTHRIPS,**[8] new genus

Head slightly more than twice as long as wide, produced in front of eyes, cheeks gently reduced behind eyes and then somewhat swollen in basal third. Interocellars placed between posterior ocelli, one pair of postocular setae long, strong, with blunt tips, placed well back from eyes and in line with their inner margins; with four or five stout genal spines, a pair behind eyes, a second near middle, and a third pair nearer base stronger than the others. Eyes large, oval, slightly protruding; ocelli anterior in position, forming an equilateral triangle. Antenna 8-segmented, twice as long as head, segment 3 approximately eight times as long as wide across distal swollen portion; segments 4 and 5 similar in form but shorter; segment 3 with two sense cones. Mouth cone short and rounded, reaching half way across prosternum.

Prothorax, excluding coxae, nearly as long as wide, with median dorsal thickening which is longer and stronger in the male; midlateral setae placed far forward, about as long and strong as pair on posterior angles, all others small and inconspicuous except antero-marginals which are short but moderately stout. Legs slender, fore tarsus unarmed in the female; with a pair of stout, blunt setae near base of fore femora on outer margin, a second pair near middle of outer margin and a circlet of similar spines near distal end. In the male oedymer

[8] *Kampulos,* bent, curved, referring to bent fore femora in the male.

form, the fore femora are enlarged and strongly bent as in *Rhaebothrips* Karny and the fore tarsus is armed with a stout tooth, whereas in the gynacoid form the fore femora are very similar to those in the female but with a noticeable swelling on the inside at base, and the fore tarsus is armed. Wings fully developed, long and strong, each with a darkened median streak which fades before the end, fore pair with a long series of double fringe hairs. Abdomen long and slender, gradually reduced beyond segment 2, 7 longer than wide, lateral setae long and strong; tube longer than head, slender.

Genotype, *C. gracilis,* new species.

The female of the genus strongly resembles *Elaphrothrips* Buffa but in the latter genus the ante- and postocellar setae are usually developed and often there are two pairs of postoculars. In this new genus only the interocellar and one pair of postoculars are prominent. The male oedymer form, resembles *Rhaebothrips* Karny, but the longer head and differently shaped antennal segments separate it clearly.

Campulothrips gracilis, new species (fig. 10, *d*).

Female holotype (macropterous), blackish brown including all femora; fore tibiae mostly yellow, darkened at the sides, middle and hind tibiae light brown at base, yellowish in distal half, all tarsi yellow; antennal segments 1, 2 and 6-8 blackish brown, 6 lighter in the stalk; 3 to 5 clear yellow each with a narrow dark circle at extreme base and darkened in distal swollen portion; wings brownish, each with a darker median streak which extends from base to near tip; all prominent setae nearly black.

Total body length 5.6 mm.; head length 0.588 mm., width 0.280 mm.; prothorax length 0.396 mm., width not including coxae 0.441; pterothorax width 0.735 mm.; tube length 0.676 mm., width at base 0.147 mm., at tip 0.073 mm. Antennal segments length (width) I, 66 (66); II, 80 (46); III, 326 (43); IV, 220 (46); V, 176 (40); VI, 116 (33); VII, 93 (30); VIII, 53 microns, total 1.131 mm.

Of special mention are the long intermediate antennal segments, the development of strong interocellar and a single pair of postocular setae and the long tube. In the male oedymer form, the enlarged and bent fore femora are quite different from those in the gynacoid form but otherwise they are about the same. Fore wings have 44 to 45 double fringe hairs.

Tholo-i-Suva, Viti Levu, holotype female, allotype male and paratypes as follows: 20 females, 9 males, oedymer form and 5 males gynacoid form, Lea (3410, 3439, 3478); Zimmerman, 1938 (5390, 5401, 5407, 5408, 5409, 5413, 5418, and 5419); Krauss (5624). Also found in Thawathi, Ovalau.

The author is responsible for all statements in this paper.