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Thysanoptera from New Guinea and New Britain

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During the years 1928 and 1929, Mr. C. E. Pemberton made an extended collecting tour and spent fourteen months on the island of New Guinea. This paper is the result of his collections of thrips, which were only incidental to his other duties. A study of his material, as set forth in this paper, has produced three new genera and 28 new species out of 20 genera represented and 42 species. A few collections made by Mr. L. Wagner are also recorded here but unless otherwise stated all collections were made by Pemberton.

The types are in Bernice P. Bishop Museum, the paratypes in my collection.

I wish to express my gratitude to Mr. Pemberton for the opportunity of studying his material and to Bishop Museum for publishing the paper. I regret the long delay in presenting this report.

TEREBRANTIA

FAMILY THRIPIDAE UZEL, 1895

SUBFAMILY SERICOTHRIPINAE KARNY, 1921

Genus OCTOTHRIPS[1] new genus

Head slightly longer than wide, distinctly produced in front; cheeks straight, almost parallel; eyes oval, occupying approximately three-fifths of the head's length measured from base of antennae; ocelli elliptic, their outer margins in the line of a circle, posterior ocelli with their anterior ends directed obliquely outward toward the eyes, this ocellar circle placed opposite center of eyes and near middle of head; the ocellar orbit and dorsal surface of head back of eyes sculptured with fine, anastomosing striae, the striae in front of ocelli and eyes

[1] Oktos (eight) refers to the 8-segmented antenna.

are extremely fine or wanting. Antennae 8-segmented; segments three and four narrowed at base, widest in second and third fifths, more gradually narrowed toward tips, each with an unusually long forked trichome; segment six longest of all, seven and eight of about equal length. Mouth cone drawn out, reaching across prosternum; maxillary palpus 3- and labial palpus 2-segmented. Posterior angles of prothorax broadly rounded, without major spines; pronotum with fine, transverse, wavy, broken lines which are anastomosing only occasionally. All legs moderately slender; wings long and slender, with normally developed fringes, fore wings with two longitudinal veins, fore vein with 3-4 basal spines and 2 distal spines, hind vein with a regularly placed series. Abdomen of normal form, second to eight terga each with a pair of medium setae.

This genus is very close to *Enneothrips* Hood but separated by the 8-segmented antennae, which are 9-segmented in *Enneothrips*. Other generic characters such as the sculptured head and thorax, absence of major spines and placement of spines on fore wings, are almost identical.

Genotype: *Octothrips suspensus,* new species.

Octothrips suspensus, new species.

Male holotype: grayish yellow blotched with red pigment; head clear in front between eyes with a grayish streak extending from tip of head extension to fore ocellus, broadening behind to include entire inner ocellar area; thorax more or less blotched with grayish brown; antennae gray brown, with segments three and four clearer especially at extreme bases, one and two darkest; legs clear yellow; fore wings uniformly washed with brown, hind wings clear with a median streak extending to tip.

Total body length 0.9 mm.; head length 0.116 mm., width 0.103 mm.; prothorax length 0.103 mm., width 0.156 mm. Antennal segments length (width): I, 16 (24); II, 30 (23); III, 46 (23); IV, 50 (23); V, 36 (18); VI, 60 (16); VII, 13; VIII, 16; total 280 microns. Length of wing 0.617 mm., width near middle 0.036 mm.

Head somewhat longer than wide with cheeks almost straight and parallel, widening somewhat posteriorly, distinctly produced in front; dorsal and lateral surface sculptured with transverse, broken wavy lines which are strongest in ocellar area and finer and more closely placed back of eyes; the area in front of ocelli and eyes almost clear; eyes large occupying approximately three-fifths length of head; ocelli large, their outer margins in the line of a circle; a pair of minute setae between posterior ocelli and placed on a line connecting their anterior margins. Basal antennal segments widely separated by the head projection; segments three and four constricted beyond middle, with long, curved back U-shaped trichomes, four longer than three and six longest of all. Mouth cone drawn out, reaching half across prosternum.

Prothorax transverse, fore angles almost square, posterior angles broadly rounded, without prominent spines; pronotum sculptured with transverse, wavy lines which are only occasionally anastomosing, with scattered setae; pterothorax only a little wider than prothorax; legs normally slender; wings long and slender, fore vein of fore wing with 3-4 basal setae and two at extreme tip, hind vein with seventeen which are placed in regular series; scale of fore wing with 5-7 setae. Abdominal segments two to eight with a median pair of

setae; ninth segment with four spines along posterior margin; tenth segment with a long, straight spine on either side which is twice as long as the segment itself, and a second pair of ventral spines with inwardly curved tips.

Type material: male holotype, taken in *Cyperus* blossoms, Nov. 13, 1928 (3690)[2].

Type locality: Koitaki, New Guinea.

Anaphothrips (chaetanaphothrips) fasciatus, new species.

Female holotype: color clear yellow with basal fifth of fore wings brown and with a median brown band; distal half of fifth antennal segment and six to eight brown; eyes black, ocelli with orange-red crescents.

Total body length 1.146 mm.; head length 0.106 mm., width across eyes 0.130 mm., across cheeks 0.116 mm.; prothorax length 0.116 mm., width 0.166 mm.; pterothorax width 0.210 mm. Antennal segments length (width): III, 40, (15); IV, 36 (16); V, 36 (16); VI, 43 (14); VII, 10; VIII, 16; total 236 microns.

Head wider than long with prominent, protruding eyes, which occupy approximately half length of head, cheeks straight and parallel; interocellar spines reduced to setae, placed between posterior ocelli and on a line connecting their anterior margins; mouth cone short, blunt, reaching half across prosternum; antennae normal, 8-segmented.

Prothorax longer and wider than head, without prominent spines but with a series of 3-4 setae on either side along posterior margin; wings fully developed, with clearly defined darkened cross bands, fore vein of fore wing with 3-3 basal and 1-2 distal spines, hind vein with three spines scattered in distal half of wing. Abdomen faintly reticulate-striate like head and thorax; spines on ninth and tenth abdominal segments strong, 90 microns in length.

Type material: female holotype taken on sedge leaves Dec. 28, 1928 (3702).

Type locality: Koitaki, New Guinea.

This species is readily separated from *A. orchidii* Moulton by its shorter third antennal segment and almost uniformly brown sixth antennal segment; in *A. orchidii* the third segment is 46 microns and the sixth segment is clear yellow in basal half. In *A. aureus* Moulton, the mouth cone is long and pointed.

Anaphothrips flavicinctus Karny.

Two specimens of this species were collected on *Saccharum spontaneum* April 11, 1929 at Rabaul, New Britain (3708).

Genus MONOTHRIPS[3] new genus

Head approximately as long as width across eyes but longer than width across cheeks, angular in front, with large protruding eyes which occupy almost

[2] Numbers in parentheses are index numbers in my collection.
[3] Monos (single) refers to the simple sense cones.

three-fifths the side of head; cheeks straight, slightly and evenly constricted at base; ocelli present, small, approximate, placed far back and opposite posterior portion of eyes; head without prominent spines except interocellars which are small; mouth cone short, rounded; antennae 8-segmented, a simple sense cone of each of segments three and four. Prothorax longer than greatest width, with straight, even sides which diverge slightly toward the posterior; with two prominent spines on each posterior angle, without other spines or markings. Pterothorax only slightly wider than prothorax; wings fully developed, fore vein of fore wing with 3-2-1 basal and 2 distal spines, hind vein with seven which are fairly regularly placed. Abdomen slender, posterior margins of segments three to eight each with a row of small irregular teeth and with microsetae at the sides; ninth and tenth segments with spines approximately as long as the segments themselves.

This genus belongs in the subfamily *Sericothripinae* and near *Anaphothrips*. The wings are like *Anaphothrips*. The tooth structure on abdominal segments is rather similar to those found in *Odontanaphothrips,* but the latter has 9-segmented antennae. *Monothrips* also has the appearance of *Stenothrips,* but this genus has 7-segmented antennae, forked sense cones and the head is more rounded in front.

Genotype: *Monothrips flavus,* new species.

Monothrips flavus, new species.

Female holotype: color yellow including legs and all segments of antennae except six to eight which are abruptly dark brown; fore wings washed with brown, gradually becoming lighter toward their tips; eyes black, crescents of ocelli orange red.

Total body length 0.955 mm.; head length 0.110 mm., width across eyes 0.113 mm., near posterior margin 0.093 mm.; prothorax length 0.136 mm., width near anterior margin 0.103 mm., near posterior margin 0.133 mm.; pterothorax width 0.173 mm. Antennal segments length (width): I, 16 (23); II, 26 (23); III, 30 (15); IV, 31 (16); V, 31 (16); VI, 40 (16); VII, 10; VIII, 13; total 200 microns; interocellar spines 16, on posterior angles of prothorax, outer 23, inner 30, on ninth and tenth abdominal segments 90 microns.

Head about as long as width across eyes but clearly longer than width across cheeks, angular in front, with basal segments of antennae approximate, eyes large and protruding, occupying three-fifths the side of head, cheeks straight and slightly narrowed posteriorly. Head without markings or spines except the interocellar pair which are small and placed between posterior ocelli and rather near their inner posterior margins; ocelli small, approximate and placed opposite posterior half of eyes; antennae 8-segmented style with two segments, three and four each with one simple sense cone, mouth cone short and rounded.

Prothorax only a little wider than head and about 1.25 longer, its sides straight and slightly diverging posteriorly; without markings or spines except pair at each posterior angle which are relatively small; pterothorax only slightly wider than prothorax; legs slender; wings fully developed, fore vein of fore wing with 3-2-1 basal and two distal spines, hind vein with seven rather evenly placed spines. Abdomen slender, posterior margins of tergites three to eight each bordered with a row of irregular teeth and at the sides with oblique

striae which are bordered with microscopic setae; segments nine and ten with spines about as long as the segments themselves.

Type material: female holotype taken on leaves of *Saccharum spontaneum* April 11, 1929 (3708).

Type locality: Rabaul, New Britian.

This species could readily be mistaken for *Stenothrips granimum* upon casual examination, but it is clearly distinct as defined in the description of the genus.

Subfamily THRIPINAE Karny, 1921

Frankliniella pembertoni, new species.

Female holotype: color clear brownish white including legs and wings with lightly shaded transverse brownish bands near anterior margins of abdominal segments two to seven; antennal segments one and two clear like head, three, four, and five slightly brownish in outer third, six to eight brown; all spines dark brown.

Total body length 1.33 mm.; head length 0.10 mm., width 0.15 mm.; prothorax length 0.133 mm., width 0.183 mm. Antennal segments length (width): III, 43 (20); IV, 43 (16); V, 33 (16); VI, 43 (15); VII, 8; VIII, 16; total 216 microns. Length of spines: interocellars 33, postocellar 23, on anterior angles of prothorax 50, on anterior margin 33, on posterior angles outer 56, inner 63, fourth in series on posterior margin 33, on ninth abdominal segment 133, on tenth 100 microns.

This species belongs in the *intonsa* group having a simple pedicle on third antennal segment but the eighth antennal segment is noticeably longer than the seventh; the fourth in the series of spines along the posterior margin of prothorax is dark brown and longest, the others are of about half the length of the fourth, and are small and colorless; the outer pair of metanotal spines are placed immediately on the anterior margin while the median and larger pair are situated back just a little. Fore vein of fore wing has 13-14 and the hind vein 12-13 spines. Comb on posterior margin of eighth abdominal segment is wanting; the tenth segment has a dorsal suture for about two-thirds its length.

This species is very close to *F. dampfi* Priesner found in southern Europe and northern Africa. As in *F. dampfi* the interocellar spines are placed between the posterior ocelli, they are 33 microns long in *F. pembertoni,* 24-28 in *F. dampfi*; the postoculars are 23 microns while in *F. dampfi* they are 27-28; fore vein of fore wing with 13-15 spines while in *F. dampfi* there are 16-17.

Type material: female holotype and six female paratypes taken Jan. 29, 1929 on *Clitoria ternatea,* and Feb. 3, 1929 on an unnamed host plant (3705, 3706).

Type locality: Port Moresby, New Guinea.

Frankliniella clitoriae, new species.

Female holotype: color dark brown including all femora except the fore pair which are yellowish distally; all tibiae are lighter and yellowish toward the distal ends, tarsi yellow; antennal segments one and two are dark brown with the second darker, three and four brown, lighter especially at base, other segments brown; fore wings evenly washed with light brown.

Total body length 1.26 mm.; head length 0.117 mm., width 0.15 mm.; prothorax length 0.126 mm., width 0.186 mm. Antennal segments length (width): III, 46 (20); IV, 43 (20); V, 33 (16); VI, 43 (16); VII, 10; VIII, 16; total 233 microns. Length of spines: interocellars 33, postoculars 30, on anterior angles of prothorax 53, on anterior margin 46, pair on posterior angles subequal 53-60, fourth in series on posterior margin 36, on ninth abdominal segment outer 110, inner 100, on tenth segment 116 microns.

Head angular in front, cheeks somewhat arched, narrowed posteriorly; eyes large, occupying two-thirds length of head; interocellar spines placed between posterior ocelli. The pedicle of third antennal segment is simple, segment eight is much longer than seven. The fourth in the series of spines along posterior margin of prothorax is strong and dark colored while the others are weak and transparent; both pairs of metanotal spines are placed immediately on the anterior margin of the metanotal plate; fore vein of fore wing has 15, hind vein 12-13 spines. The eighth abdominal segment is without comb; dorsal suture on tenth segment incomplete, extending only to bases of spines.

Male allotype: colored as in female but with tips of all femora also lightened with yellow.

Total body length 1.08 mm.; head length 0.103 mm., width 0.146 mm.; prothorax length 0.103 mm., width 0.176 mm. Antennal segments length (width): III, 40 (17); IV, 38 (18); V, 39 (16); VI, 43 (16); VII, 6; VIII 13; total 216 microns. Fore vein of fore wing with 14, hind vein with 12, spines. Transparent oblong areas on sternites three to seven are conspicuous and cover approximately one-third the segment's length and two-thirds its width.

Type material: female holotype, male allotype, and one male and fourteen female allotypes taken on *Clitoria ternatea* and an unnamed host plant, Jan. 29, Feb. 3, 1929 (3705, 3706).

Type locality: Port Moresby, New Guinea.

This species is very close to *Fr. persetosa* Karny, found in Siam and Indo-China. The coloring is about the same, according to Karny's description, but comparison of measurements shows the third antennal segment to be much longer in *Fr. clitoriae* (46 microns), while in *Fr. persetosa* it is shorter (only 35 microns).

Taeniothrips euophthalmos, new species.

Female holotype: color: head blackish brown, thorax and body dark chestnut brown with side edges of thorax and tip of abdomen blackened. Antennal segments one and two blackish brown, three light brown and four to eight brown, with pedicle of three and a ring at base of four clear yellow with a dark brown ring at base on four below the clear ring. Legs mostly yellow fore femora shaded with light brown beyond base, middle and hind femora

likewise shaded with blackish brown intermediate and hind tibiae shaded brown in the middle; all tarsi clear yellow. Fore wings uniformly brown including basal fifth, hind wings of like color in basal fifth but lighter beyond except for a darkened median streak which extends to near tip. Prominent body spines clear yellow to light brown.

Total body length 1.75 mm.; head length 0.18 mm., width across eyes 0.176 mm., across cheeks 0.16 mm.; prothorax length 0.15 mm., width 0.226 mm.; pterothorax width 0.31 mm. Antennal segments length (width): I, 30 (36); II, 36 (30); III, 66 (26); IV, 73 (22); V, 43 (18); VI, 60 (16); VII, 20; VIII, 20; total 350 microns. Length of spines: interocellars approximately 20, on posterior angles of prothorax outer 73, inner 63, on ninth abdominal segment outer 133, inner 116, on tenth 133 microns.

Head slightly longer than width across eyes but distinctly longer than width across cheeks; projecting in front of eyes about one-third the length of first antennal segment; eyes prominent and protruding, with a deep constriction behind them, cheeks arched; back of head with many cross wrinkles; ocelli large, interocellar spines placed between posterior ocelli. Mouth cone short, with rounded tip. Antenna about twice longer than head, noticeably slender beyond third segment; third segment widest in middle and rather evenly constricted toward either end, fourth constricted broadly before distal end; seven and eight of even length but each fully twice longer than wide.

Prothorax with sides rounded evenly, pronotum minutely and transversly striate and covered with numerous setae; the outer of the posterior angle spines a little longer than the inner, the third of the posterior margin series longest, the others are like the dorsal setae. Metanotum transversly striate-reticulate, metanotal spines placed near anterior margin. Fore wings strong, broad at base and tapering gradually to pointed tips; fore vein with 3-4 basal and 3 distal spines, hind vein with 11 spines which are small and inconspicuous; the transparent area in basal fifth of fore wing is unusually small and oval in shape.

Abdominal segments three to eight with a darkened, transverse line near anterior margin; comb on eighth segment complete; incomplete dorsal suture on tenth segment showing only in distal third; ninth and tenth segments with long spines.

Male allotype: lighter in color than female, with antennal segments three and four yellow, five to eight light brown; all legs yellow; fore wings somewhat clearer near their bases. Total body length 1.35 mm. Comb on eighth abdominal segment complete; clear areas on sternites three to seven transverse, constricted in the middle and about half to one-third as long as the width of sternite.

Type material: female holotype, male allotype, one male and six female paratypes taken December 8, 1928 on Zingiberaceae (3697).

Type locality: Koitaki, New Guinea.

This species may be compared with *T. gracilis* Moulton but is separated by the blackened head, shorter interocellar spines, and in the male, by the reduced transverse areas on abdominal sternites.

In the type material, a male paratype is lighter in color than the allotype and the light areas on sternites are not visible; also, as in

three female paratypes, the interocellar spines are placed farther forward, not between the posterior ocelli but on a line connecting their anterior margins; there are fewer setae on the pronotum and only two on either side along posterior margin of pronotum. This may be another species but for the present it would seem better to consider these only as variations within the species.

Taeniothrips leptospteron[4], new species.

Female holotype: color of head, body and legs clear yellow; antennal segments one and two like head, three and four each clear in basal third and shaded with brown in outer half, five lighter in basal quarter otherwise brown, six to eight brown. Fore wings uniformly brown, hind wings lighter but with a brown median line extending to near tip.

Total body length 1.25 mm.; head length 0.117 mm., width at eyes 0.117 mm.; prothorax length 0.116 mm., width 0.153 mm.; pterothorax width 0.20 mm. Antennal segments length (width): III, 43 (18); IV, 50 (18); V, 40 (15); VI, 53 (13); VII, 16; VIII, 16 microns. Length of spines on posterior angles of prothorax 43, on ninth abdominal segment 60, on tenth 76 microns.

Head approximately as wide as long, eyes strongly protruding, cheeks almost straight, ocelli large, interocellar spines placed within the ocellar triangle, apparently just anterior to a line drawn between anterior margins of posterior ocelli, third antennal segment club shaped, fourth constricted neck-like in distal fourth, seventh and eighth of equal length but seven fully twice as long as wide.

Pronotum smooth and with only a few scattered setae, posterior margin with two small spines on either side inward from the regular pair at angles which are rather short. Wings unusually slender; fore vein of fore wing with 3-3 basal spines and two others at extreme tip, hind vein with thirteen. Comb on eighth abdominal segment weak and incomplete.

Type material: female holotype taken on sedge leaves Dec. 28, 1928 (3702).

Type locality: Koitaki, New Guinea.

This species is especially characterized by the slender, uniformly brown-colored wings. It belongs in the group of the genus with prominent, bulging eyes but its light yellow color separates it immediately from *I. gracilis* and *I. euophthalmos.*

Taeniothrips (Lefroyothrips) fasciatus, new species.

Female holotype: color deep yellow including all legs, with anterior margin of mesothorax edged with brown, second abdominal segment with a light brown and seventh with a dark brown cross band; ninth banded in distal third and tenth in distal two thirds; fore wings with brown bands in second and fourth quarters; antenna mostly yellow with first segment darkened at the sides and in distal half, two light yellowish brown, three and four clear yellow, five brown in distal half, six brown but clearer at both ends, seven and eight light brown. Prominent body spines brown.

[4] Leptos (slender) pteron (wing).

Total body length 2.13 mm.; head length 0.176 mm.; width 0.205 mm., prothorax length 0.205 mm., width 0.294 mm. Antennal segments length (width): I, 30 (33); II, 46 (33); III, 73 (28); IV, 70 (23); V, 53 (20); VI, 70 (20); VII, 13; VIII, 20; total 386 microns. Length of spines: interocellars 100, on posterior angles of prothorax 100, on ninth abdominal segment 200, on tenth 166 microns.

Head about 1.2 times wider than long, slightly broader across cheeks; back of head with three or four transverse lines, the anterior of which is strongest; interocellar spines long, placed within the ocellar triangle and on a line connecting anterior margins of posterior ocelli. Eyes large, three fifths as long as head, with coarse facets; ocelli well developed. Antennae slightly more than twice longer than head, segment three rather abruptly enlarged above the pedicle then narrowed and again gradually becoming wider to distal fourth where it is again rather abruptly constricted; segments four and five though smaller have much the same shape, having a swelling in basal quarter; segment six is widest in the middle and evenly narrowed to each end; eight is much longer than seven.

Pronotum smooth, with six small spines along posterior margin inward from strong postangular pair. Fore vein of fore wing with six basal and three distal spines, hind vein with sixteen. Metanotal spines placed immediately upon the anterior margin. Comb on eighth segment fully developed. Tenth abdominal segment with a complete dorsal suture.

Male allotype colored like female except that the distal third of ninth and the tenth segment are deep brown.

Total body length 1.68 mm. Ninth abdominal segment with three pairs of strong black spines, the first pair of which are longest and placed closer together than the others.

Type material: female holotype, male allotype, one female and three male allotypes taken Sept. 15, 1928 (3691).

Type locality: Koitaki, New Guinea.

This species is most closely related to *T. pictus* Hood found in southern Nigeria, Africa, but is readily distinguished by its larger size and the colored bands on the body. In *T. pictus* there are dorsal dark blotches on each of abdominal segments two to four; tergites six and seven are dark brown.

Taeniothrips hawaiiensis Morgan.

Numerous specimens of this well known species were taken Sept. 6, 9, 1928 from unknown hostplants at Koitaki, New Guinea (3687, 3688).

Taeniothrips longistylus Karny.

A few specimens taken from an unknown hostplant Dec. 20, 1928 at Koitaki, New Guinea (3699).

Taeniothrips vulgatissimus Haliday.

A single mutilated specimen of what appears to be this species

was collected on *Casuarina* in 1929, by L. Wagner. The antennae are broken from the unique specimen and its determination cannot be made with accuracy.

Thrips (epithrips) unispinus[5], new species.

Female holotype: color uniformly clear, whitish yellow including, legs, wings and antennal segments one, two and basal half of three; the distal half of three is slightly shaded, four and five are each clear in basal half, brown in distal half, six and seven are brown; spines and setae on head, thorax and wings are light brown. Ocelli with orange-red crescents.

Total body length 1.03 mm.; head length 0.086 mm., width 0.123 mm.; prothorax length 0.110 mm., width 0.146 mm.; pterothorax width 0.146 mm. Antennal segments length (width): II, 30 (22); III, 40 (16); IV, 36 (16); V, 34 (13); VI, 43 (13); VII, 13: total 216 microns. Spines on head minute and colorless, the single inner spine on posterior angle of prothorax 43 microns, median metanotal spines 26, on ninth abdominal segment outer 66, inner 60, on tenth segment 66 microns.

Head is distinctly transverse, flattened in front, with cheeks arched; all spines and setae white and inconspicuous; mouth cone clearly pointed, extending two-thirds over prosternum; eyes, ocelli, and antennae normal. Prothorax with only one, the inner, spine developed at posterior angle, a series of three setae inward from these on either side; pronotum covered with numerous light-brown setae; metanotal plate reticulate, median pair of spines situated at least half their length back from anterior margin; fore vein of fore wing with 4-3 basal and 1-2 distal spines; hind vein with 12-14 spines; comb on eighth abdominal segment developed at the sides but not observable in the middle, this may be due to transparency; spines on ninth and tenth segments well developed and clear yellow in color; sternites with accessory spines.

Male allotype: colored as in female; total body length 0.705 mm.

Type material: female holotype, male allotype, two female and three male paratypes taken from an unknown hostplant, Nov. 6, 13, 1928 (3687, 3690).

Type locality: Koitaki, New Guinea.

T. unispinus may be separated at once from *T. uzelianus* Priesner by its clear yellow color. *T. uzelianus* is gray-black and grayish yellow at the sides, the femora and fore tibiae are grayish yellow.

Thrips (isoneurothrips) malloti Priesner.

Three specimens of this species were taken from an unknown hostplant, Nov. 15, 1928 at Koitaki, New Guinea (3691).

Thrips (isoneurothrips) pallipes Moulton.

Four female and two male specimens taken from an unknown hostplant Dec. 29, 1928 at Koitaki, New Guinea (3704).

[5] The subgenus *Epithrips* has a rudimentary spine on the posterior angle of the prothorax, the inner one of the pair is normally developed. The specific name *unispinus* refers to this single spine.

In this species there are two pairs of accessory setae on abdominal sternites. In the three following species there are six pairs of accessory setae on the sternites.

Thrips florum Schmutz.

Four female specimens taken on an unknown host Nov. 9, 1928 at Koitaki, New Guinea (3688).

Thrips coloratus Schmutz.

Three female specimens taken from an unknown host Nov. 15, 1928 at Koitaki, New Guinea (3692).

Thrips hawaiiensis Morgan.

A large series of this species was taken on three unknown host-plants at Koitaki, New Guinea (3686, 3687, 3688).

Only two specimens had distinctly 7-segmented antennae; the rest had eight segments in the antennae.

Thrips saccharoni Moulton.

Numerous specimens taken from *Saccharum spontaneum* Nov. 9, 1928 (3689) and April 11, 1929 (3708), at Koitaki, New Guinea and Rabaul, New Britain. This species and the two following new species, *T. koitakii* and *T. reticulatus,* are without accessory setae on the abdominal sternites.

Thrips koitakii, new species.

Female holotype: head, thorax, legs, and all antennal segments except tip of seven, and eight, clear yellowish white, tip of seven and eight shaded lightly with grayish brown; first abdominal segment colored like the thorax but shaded lightly with brown; second and third segments brown, others increasingly darker brown; fore wings clear at base, brown in middle and becoming lighter toward the tip; body spines clear; ocellar crescents light orange yellow.

Total body length 1.29 mm.; head length 0.123 mm., width 0.146 mm.; prothorax length 0.143 mm., width 0.176 mm.; pterothorax width 0.233 mm. Antennal segments length (width): I, 13 (26); II, 23 (23); III, 53 (15); IV, 43 (16); V, 43 (16); VI, 50 (16); VII, 20; total 266 microns; length of spines, interocellar and postocellar 23, pair on posterior angles of prothorax outer 56, inner 60, median metanotal 26, on ninth abdominal segment outer 123, inner 100, on tenth 93 microns.

Head a little longer than wide, slightly rounded in front, cheeks somewhat arched; all head spines exceedingly small and inconspicuous; eyes prominent, ocelli present; first antennal segment twice wider than long, two globular, three to six unusually long and slender, segment three being 3.5 longer than wide; pronotum with a series of three spines along posterior margin on either side inward from angle spines; metanotal plate finely striate anteriorly and at sides, reticulate in center of triangle, outer pair of spines rather near anterior margin,

inner pair placed half their length back from margin; right forewing with 4-3 basal and 1-2 distal spines, left wing with 3-1-5 basal and 1-2 distal spines, hind vein with eleven spines. Comb on eighth abdominal segment incomplete, weak and irregular; tenth segment sutured for almost entire length. Sternites without accessory spines.

Type material: female holotype and three female paratypes taken on *Saccharum spontaneum,* together wth *T. saccharoni* Moulton, Nov. 9, 1928 (3689).

Type locality: Koitaki, New Guinea.

This species is especially characterized by the clear yellow head and thorax and dark abdomen, also by the slender intermediate antennal segments. These characters separate it immediately from *T. saccharoni* Moulton and *T. sacchari* Kobus. It also might be compared with *T. bicolor* Karny but in this species antennal segments three to five and also the head and thorax are brownish yellow. In Priesner's key for the genus *Thrips* (Indomalayische Thysanopteren, Natuurkundig Tijdschrift voor Nederlandsch-Indie **94** (3) : 254-290, 1934), *T. Koitakii* should follow *T. extensicornis* Priesner (loc. cit., 288) but may be separated by its color and by the more slender intermediate antennal segments.

Thrips reticulatus[6], new species.

Female holotype: head dark brown to blackish brown, thorax and abdomen brown; all legs clear yellow; antennal segments one and two dark brown, one somewhat lighter at base and two near tip; three clear, grayish in distal third, four and five each clear in basal half, grayish brown in distal half, six clear in basal third, grayish brown in distal two-thirds, seven gray brown; fore wings light in basal fifth, washed with brown otherwise but becoming lighter again toward tip; prominent body and wing spines brown.

Total body length 1.4 mm.; head length 0.132 mm., width 0.161 mm.; prothorax length 0.132 mm., width 0.220 mm.; pterothorax width 0.279 mm. Antennal segments length (width): I, 23 (30); II, 36 (26); III, 63 (22); IV, 66 (17); V, 43 (14); VI, 63 (16); VII, 16; total 310 microns. Length of spines: interocellar and post ocellar minute not over 23 microns, pair on posterior angles of prothorax outer 93, inner 86 median pair on metanotum 46, on ninth abdominal segment 96, on tenth 106 microns.

Head wider than long, cheeks arched; antenna approximately 2.5 times longer than head, segments three and four clearly constricted before their ends, three about three times longer than median width; four longest of all, five not at all constricted before the end, four and six each almost four times their width. Pair of spines on each posterior angle of prothorax long and strong, only two on either side along posterior margin. Metanotum completely reticulate, outer pair of spines near anterior margin but median pair placed back about half their length; fore vein of fore wing with 4-3 basal and 1-1-1 distal spines, hind vein

[6] Refers to the completely reticulate metanotal plate.

with 10-12 spines; comb on posterior margin of eighth abdominal segment complete but weak; segment ten sutured about three-fourths its length. Abdominal sternites without accessory setae.

Male allotype: clear yellowish white including legs, wings and first two antennal segments, other segments colored as in female; prominent spines on thorax and wings brown.

Type material: female holotype, male allotype, two female and two male paratypes, taken on unnamed hostplant Dec. 27, 1928 (3701).

Type locality: Koitaki, New Guinea.

This species may be compared with *T. fulvipes* Bagnall; but, according to the description, *T. fulvipes* has the abdomen somewhat darker than the head and thorax and antennal segments six and seven are gray brown. In *T. reticulatus* the head is darkest and the sixth antennal segment is clear in its basal third.

In Priesner's key to Indomalayan *Thrips* (Natuurkundig Tijdschrift voor Nederlandsch-Indie **94** (3) : 254-290, 1934) *T. reticulatus* would follow through to index number 60 (loc. cit., 289) where it separates by having very minute anteocellar spines. It is distinct from *T. serratus* Kobus in that the posterior margins of sternites are simple while in *T. serratus* the sternites have fully developed combs along these margins.

TUBULIFERA

Family PHLAEOTHRIPIDAE Uzel, 1895

Subfamily PHLAEOTHRIPINAE Karny, 1921

Tribe HOPLOTHRIPINI Priesner, 1927

Gynaikothrips monsterae, new species.

Female holotype: color chestnut brown including all femora and first two segments of antennae, with head, first antennal segment, terminal four or five segments of abdomen and basal half of tube blackish brown; antennal segments three to eight, all tibiae except extreme bases and tarsi clear yellow; wings almost clear, washed with brown just a little especially along the margins of the fore pair; spines on head and prothorax dark brown, long angle spines on terminal segments of abdomen clear yellow, those at tip of tube dark brown.

Total body length 2.59 mm.; head length 0.294 mm., width 0.235 mm.; prothorax length 0.147 mm., width 0.367 mm.; pterothorax width 0.485 mm.; tube length 0.235 mm., width at base 0.102 mm. Antennal segments length (width): II, 50 (38); III, 93 (30); IV, 83 (33); V, 80 (30); VI, 76 (26); VII, 53 (23); VIII, 46; total 530 microns. Length of spines: postoculars 73, (second inner pair half as long), on anterior margin of prothorax 43, on anterior angles 50, midlaterals 83, outer on posterior angles 106, inner 116, on ninth abdominal segment outer and inner of equal length 283, at tip of tube 183 microns.

Male allotype colored as in female but of a more uniform and lighter brown, with only basal half of tube blackish brown. Total body length 2.17 mm., head length 0.264 mm., width 0.220 mm.; tube length 0.220 mm., width at base 0.075 mm. Antennal segments length (width): III, 80 (26); IV, 70 (30); V, 73 (26); VI, 66 (24); VII, 53 (23); VIII, 40; total 455 microns.

G. monsterae belongs in that group of the genus which has all tibiae and tarsi clear yellow; it is distinctive in that all antennal segments beyond the second are clear yellow.

The head is approximately 1.25 longer than wide with moderately large eyes which occupy about two-fifths of the head's length; cheeks straight and parallel, somewhat roughened; postocular spines placed 46 microns back from eyes and with blunt tips like the prominent thoracic spines; a second pair of postocular spines placed inward and slightly anterior and about half as long as the postoculars. Transverse striae on back of head distinct.

Anterior margin of prothorax from anterior angles to the center drawn back to form a wide obtuse angle; striae on pronotum irregular at the sides but with median two-thirds nearly clear to semi-reticulate; all normal spines developed with midlaterals and those on posterior angles longest; fore legs slender and unarmed; fore wings clear except for a brownish marginal ring; fore pair with 7-10 double fringe hairs. Striae on metanotum more or less broken, on metanotum developed into elongate reticulation. Spines on ninth abdominal segment as long as tube. Tube 0.8 as long as head.

Male allotype very similar to female with head 1.2 longer than wide, tube 0.83 as long as head; spines on posterior angles of ninth abdominal segment reduced to pointed spurs 63 microns in length.

Type material: female holotype, male allotype and 11 female paratypes taken on *Monstera deliciosa* Nov. 24, 1928 (3693).

Type locality: Koitaki, New Guinea.

G. monsterae may be compared with *G. interlocatus* Karny but separated by the entirely clear yellow distal antennal segments. *G. interlocatus* also has a longer head, 1.37-1.48 times longer than wide and a shorter tube, 0.68 as long as head. *G. mirabilis* Schmutz has antennal segments three to eight clear yellow but here the margins of the femora are yellowish brown.

Gynaikothrips citritibia, new species.

Female holotype: color dark chestnut brown including antennal segments 1, 2, 7, and 8, and all femora; head and basal half of tube darker; antennal segments 3-6, all tibiae and tarsi clear yellow; wings almost clear in basal fourth, brownish in distal three-fourths; fore wings with a darkened median line in third sixth which continues from middle of wing to near tip as a broadened, darkened, cloudy area with a lighter streak between this and posterior margin; darkened line in hind wing begins at end of basal third and diffuses before last third into

a darkened area bordering posterior margin; prominent head and body spines clear yellow to very light brownish yellow.

Total body length 2.17 mm.; head length 0.235 mm., width 0.230 mm.; prothorax length 0.133 mm., width without coxae 0.320 mm.; pterothorax width 0.411 mm.; tube length 0.191 mm., width at base 0.088 mm. Antennal segments length (width): II, 46 (30); III, 70 (32); IV, 70 (36); V, 66 (30); VI, 63 (30); VII, 53 (23); VIII, 33; total 430 microns. Length of spines, postoculars 103, on anterior margin and angles 50, midlaterals 83, pair on posterior angles 103, on ninth abdominal segment 200, at tip of tube 190 microns.

Head only very slightly longer than wide, with almost straight, parallel cheeks, a single pair of long postoculars placed well back from eyes; transverse striate markings on dorsum distinct; antennae 1.87 longer than head, segment three with one outer sense cone. All normal spines on prothorax developed, midlaterals and those on posterior angles longest, with blunt tips; transverse markings more or less blotched with clear areas between; markings on metanotum transversely reticulate; lines on metanotum placed very closely together and very elongate-reticulate. Legs normal, fore legs slender and unarmed; tube 0.8 as long as head.

Male allotype colored as in female; total body length 1.82 mm., head length 0.235 mm., width 0.191 mm.; tube length 0.176 mm., width at base 0.073 mm. The head is 1.23 longer than wide and the tube is 0.75 as long as head.

Type material: female holotype, male allotype, 14 female and five male paratypes taken in the curled leaves of an unnamed vine, April 11, 1929 (3707).

Type locality: Rabaul, New Britain.

This new species has the same general coloring as *G. pallipes* Karny, from Java, but Karny's species has a much longer head, being 1.3-1.4 longer than wide.

Gynaikothrips praelongitubus, new species.

Female holotype: color chestnut brown including first two segments of antennae; antennal segments three to eight and all legs clear yellow, fore wings clear in basal third, washed with brown in distal two-thirds, with a median darker line in middle third, hind wings with median line extending to near tip.

Total body length 2.06 mm.; head length 0.226 mm.; width 0.170 mm.; prothorax length 0.143 mm., width 0.250 mm.; tube length 0.266 mm., width at base 0.066 mm. Antennal segments length (width): II, 46 (30); III, 60 (26); IV, 60 (28); V, 63 (26); VI, 60 (26); VII, 50 (23); VIII, 30; total 406 microns. Length of spines: postoculars, two pairs of equal length, 100, on anterior margin of prothorax 40, anterior angles 23, midlaterals 46, on posterior angles 70, on ninth abdominal segment outer, pointed 200, inner with blunt tips 133, at tip of tube 133 microns.

Head 1.3 longer than wide with oblong shaped eyes which are somewhat longer on dorsal than on ventral side and occupy about two-fifths the length of head, head produced angularly in front of eyes with antennae arising on upper surface; cheeks slightly constricted behind eyes, then swollen and again constricted neck-like before posterior margin with a few short, transparent spines; reticulate behind ocelli and between eyes but back of head marked with short,

transverse, angular or peaked lines which are darker and heavier in the middle; postocular spines with dilated tips, placed directly back of center of eyes and approximately two-fifths of the distance to posterior margin; a second pair of postoculars as long as the first but placed back of inside eye margins and much closer to the eyes. Antennae normal, segment three with one, outer sense cone. Prothorax with all normal spines developed, with roundly dilated tips; pronotum marked with transverse, wavy, broken lines; fore legs slender, without armature; fore wings without double fringe hairs (right wing of holotype with one); tube long and slender, 1.18 longer than head.

Male allotype: colored as in female but with thorax and especially the abdomen lighter. Total body length 2.0 mm., head length 0.205 mm., width 0.150 mm.; tube length 0.235 mm., width at base 0.058 mm. Fore wings also without double fringe hairs.

Type material: female holotype, male allotype one male and six female paratypes taken on *Ficus* sp., Nov. 27, 1928 (3694).

Type locality: Koitaki, New Guinea.

This species is a true *Gynaikothrips* and may be compared with *G. uzeli* Zimmermann but *G. uzeli* has shaded terminal antennal segments and darkened middle and hind tibiae which are yellow only at the ends; the head of *G. uzeli* is also relatively longer and with parallel sides and the tube relatively shorter. *G. praelongitubus* may also be compared with *G. flavitibia* Moulton, from India, which has the tube longer than the head; but the femora are colored like the body while in *G. praelongitubus* the femora are yellow.

Liotetothrips guineaensis, new species.

Female holotype: color dark brown with head, abdominal segments becoming blackish brown beyond the fifth and with tube black but lighter in distal third; first antennal segment like head, two also blackish brown in basal half but yellowish distally, three and four clear yellow, five and six gradually becoming darker with seven and eight brown; all femora blackish brown with fore pair yellowish at distal ends, fore tibiae and all tarsi yellow, middle and hind tibiae like femora but yellowish at tips; fore wings brown in basal sixth, clear in second sixth, slightly washed with brown beyond with broadened darkened median line; hind wing clear with similar median line in distal two-thirds; prominent spines blackish brown.

Total body length (abdomen distended) 2.8 mm.; head length 0.308 mm., width at eyes 0.235 mm.; prothorax length 0.176 mm., width not including coxae 0.338 mm.; pterothorax width 0.441 mm.; tube length 0.280 mm., width at base 0.102 mm. Antennal segments length (width): II, 60 (33); III, 93 (33); IV, 93 (36); V, 83 (30); VI, 76 (30); VII, 60 (25); VIII, 36; total 543 microns. Length of spines: postoculars 73, on anterior margin of prothorax 33, anterior angles 46, midlaterals 66, on posterior angles outer 110-123, inner 103-120, on ninth abdominal segment 259, at tip of tube 176 microns.

Male allotype: total body length 2.38 mm.; head length 0.279 mm., width at eyes 0.220 mm.; tube length 0.279 mm., width at base 0.088 mm.; spines on pos-

terior angles of ninth abdominal segment reduced to spurs, 50, inner pair 266 microns.

Head (female) 1.3 longer than greatest width at eyes, with cheeks converging gradually to the restricted neck, cheeks with a few short transparent spines; eyes large, ovate, somewhat longer dorsally than on the ventral side; postocular spines placed fairly well back and directly behind eyes. Third and fourth antennal segments longest, clavate, three with one, the outer sense cone. Head and thorax with distinct striate-reticulate markings. Prothorax with all normal spines, those on posterior angles longest, all with blunt tips. Fore legs slender, unarmed; fore wings with 13-14 double fringe hairs.

The male is colored as in the female, it is somewhat smaller but may be readily distinguished as to sex by the shortened, spurlike spines on the posterior angles of ninth abdominal segment.

Type material: female holotype, male allotype, five female and two male paratypes taken from within curled leaves, Dec. 8, 1928 (3698).

Type locality: Koitaki, New Guinea.

L. guineaensis may be compared with *Gynaikothrips tristis* Karny, known in Java, but the head is shaped differently. In *G. tristis* the cheeks are almost parallel while in *L. guineaensis* the sides of the head are noticeably constricted to a broad, neck-like base; in *G. tristis* the tube is about 0.66 as long as head and the fore wings have 10-11 double fringe hairs while in *L. guineaensis* the tube is about 0.9 as long as head and the fore wings have 13-14 double fringe hairs.

This species is placed in the genus *Liotetothrips* rather than in *Gynaikothrips* because of the large eyes which, however, are rounded behind and not flattened as in *L. rotundus* Moulton (*L. cinnamoni* Priesner). The head is longer than in *L. rotundus*; there are three basal wing spines while in *L. rotundus* there are only two with a vestigial third.

Liothrips praelongus, new species.

Female holotype: color blackish brown including all femora except fore pair which are brownish yellow at distal ends; fore tibia and all tarsi clear yellow, middle tibia light brown, yellow in distal one-fourth, hind tibia blackish brown, shading to yellow at distal end; first antennal segment and base of second blackish brown, median and distal portion of two light brown, three to five, basal two-thirds of six, basal third of seven clear yellow, distal third of six, two-thirds of seven and eight light brown; wings light brown, darkened at base and median dark line extending to near tips in both pairs of wings; prominent body spines clear yellow, only those at tip of tube dark brown.

Total body length 3.5 mm.; head length 0.382 mm., width 0.205 mm., (1.9 longer than wide); tube length 0.441 mm., width at base 0.088 mm., (1.15 longer than head). Antennal segments length (width): I, 33 (43); II, 56 (33); III, 110 (30); IV, 113 (33); V, 113 (33); VI, 103 (30); VII, 76 (26); VIII,

50; total 676 microns. Length of spines: postoculars 50, on anterior margin of prothorax 40, anterior angles 46, midlateral 70, outer on posterior angles 123, inner 70, on ninth abdominal segment 330, at tip of tube 266 microns.

Head almost twice longer than wide with cheeks straight and parallel, forehead swollen as in *Leptothrips* but not overhanging basal segments of antennae; dorsum marked with short, broken, transverse lines; postoculars placed far back almost midway between eyes and posterior margin of head, with blunt tips; a second, smaller pair of spines placed closer to median line and approximately half way between eyes and postoculars. Eyes large, oval; ocelli placed far forward with anterior one directed forward. Prothorax with dorsal line in median third, other markings indistinct; midlateral spines and those on posterior angles longest, with blunt tips. Reticulation on mesa and meta fine but distinct. Abdomen long and slender, gradually reduced beyond second segment; tube unusually long and slender, 1.15 longer than head and five times longer than width at base. All legs slender, tarsi unarmed; fore wings with twelve double fringe hairs.

Antenna long and slender, intermediate segments more than three times longer than greatest width; third segment with one, the outer sense cone long and slender; mouth cone long and pointed, reaching posterior margin of prosternum.

Male allotype: colored as in female but lighter. Total body length 2.73 mm.; head length 0.338 mm., width 0.176 mm. (1.9 longer than wide); prothorax length 0.150 mm., width, not including coxae, 0.294 mm.; pterothorax width 0.440 mm.; tube length 0.352 mm., width at base 0.073 mm. (longer than head and a little less than five times longer than basal width). Legs slender, tarsi unarmed; fore wings with ten double fringe hairs.

Type material: female holotype, male allotype, four female and five male paratypes taken on *Ficus* sp., Dec. 7, 1928 (3695).

Type locality: Koitaki, New Guinea.

This species approaches *L. thomasseti* Bagnall in general form and relative lengths of head, tube, and intermediate antennal segments but is readily separated in that this latter species is black including all segments of antennae. H. H. Karny has set up the subgenus *Ethirothrips* for *thomasseti, nigricornis,* and *intrepidus,* three of Bagnall's species but all of these have black antennae. This new species belongs in this group but is clearly separated by the yellow antennae, fore tibiae and tarsi.

Mallothrips (?) **flavipes,** new species.

Male holotype: color deep chestnut brown including first two antennal segments and all legs except fore tibiae which are yellow but clouded brown at the base and all tarsi which are yellow; antennal segments three to seven mostly yellow but each clouded with brown in outer half which color becomes darker toward the end, segment eight brown; prominent spines clear yellow, only those at end of tube brown; wings washed with brown, median streak fading before the end.

Total body length 3.0 mm.; head length 0.323 mm., width across cheeks 0.228 mm.; prothorax length 0.308 mm., width not including coxae 0.426 mm.; pterothorax width 0.558 mm.; tube length 0.338 mm., width at base 0.095 mm.; fore femur length 0.367 mm., width 0.191 mm. Antennal segments length (width): III, 103 (31); IV, 103 (32); V, 103 (30); VI, 86 (30); VII, 63 (26); VIII, 40; total 602 microns. Length of spines: postoculars 23, on anterior angles of prothorax 46, on posterior angles, outer 83, inner 40; on ninth abdominal segment, inner 294, outer spurs 66, at tip of tube 220 microns.

Female allotype: colored as in male; total body length same as male; head length 0.352 mm., width 0.264 mm.; prothorax length 0.264 mm., width 0.455 mm.; pterothorax width 0.588 mm.; tube length 0.352 mm., width at base 0.191 mm. Spines on posterior angles of prothorax 86, on ninth abdominal segment outer 260, inner 260 microns.

The head is 1.4 longer than wide in the male and 1.33 in the female, flattened in front, cheeks almost straight and parallel, only slightly arched; back of head sculptured with broken, transverse striations; postocular spines far back from eyes, approximately one third the distance to posterior margin, very small, blunt, almost invisible; eyes large, oval in dorsal outline but on ventral side about one-third shorter, with posterior margin straight across. Antennal segments three, four and five of about equal size and each more than three times longer than greatest width, segment three with one sense cone; fore legs more massive in the male than in the female, fore tibiae with a lobe on the inside at tip, the distal end of which lies underneath the tarsal claw, this lobe is represented in the female only by a slight swelling; fore wings with 11-12 double fringe hairs; sides of abdominal segments two to six strongly but fine reticulate and with many microsetae or microspines; spines on posterior angles of segments prominent, blunt. Tube longer than head and about 3.5 times longer than basal width.

Type material: male holotype, female allotype, one male and one female paratype taken in 1929 by Wagner (3879).

Type locality: Finsch Haven (Finschhafen), New Guinea.

This species is placed in the genus *Mallothrips* Ayyar, with some hesitancy. *M. flavipes* is larger than the genotype, has a relatively longer prothorax and a much longer tube; also the fore tibiae are as broad at base as elsewhere. *M. indica* Ayyer, the genotype, is described as having the fore tibiae narrowed at base, prothorax much shorter than the head and tube also shorter than head. The development of a lobe on the inner end of fore tarsus is found only in the male in *M. flavipes,* this is represented only by a slight swelling in the female.

Austrothrips flavitibia, new species.

Female holotype: color chestnut brown including all femora, with abdominal segments becoming gradually darker to the blackish brown ninth and tenth segments, tube black; all tibiae and tarsi yellow; first antennal segment like the head, two also brown at base but clear yellow in median outer half, three, four and basal half of five and six clear yellow, with distal portion of five slightly shaded, distal half of six brown, seven lighter at extreme base otherwise like eight deep brown; all prominent spines light brownish yellow; wings darkened a little at bases otherwise almost clear in basal half, distal half light brown.

Total body length 2.24 mm.; head length 0.205 mm., width 0.205 mm.; prothorax length 0.184 mm., width including coxae 0.396 mm.; pterothorax width 0.470 mm.; tube length 0.220 mm., width at base 0.088 mm. Antennal segments length (width): II, 50 (33); III, 63 (32); IV, 63 (33); V, 60 (30); VI, 60 (26); VII, 53 (23); VIII, 36; total 430 microns. Length of spines: postoculars 73, on anterior margin of prothorax 26, on anterior angles 33, mid-laterals 36, on posterior angles outer 70, inner 40, on ninth abdominal segment inner 130, outer 116, at tip of tube 150 microns.

Head as wide as long, flattened in front, eyes large occupying more than one third of the head's length, cheeks straight and parallel, roughened; back of head, pronotum and mesa- and meta-notum distinctly reticulate; postoculars long, placed rather closely behind middle of eyes, with expanded tips; mouth cone short, rounded at tip; antennae twice longer than head, segments three to seven pediculate, three elongate-conical, four and five clavate, seven with parallel sides except at base, eight conical; segment three with one outer sense cone which is long and slender reaching almost to middle of following segment four which has three similar long and one short sense cone. Prothorax transverse, with a short, incomplete median dorsal thickening; all prominent spines developed, with dilated tips. Pterothorax heavy and strong. Fore femora massive, fore tarsus with a strong curved tooth. Front margin of fore wing almost straight in basal third, then bowed in the middle, the sides are parallel however and the wings are not narrowed in the middle; fore pair with 7-9 double fringe hairs. Abdominal tergites smooth in the middle, reticulate at the sides; only the posterior pair of S-shaped spines strongly developed, other prominent spines with dilated tips including two pairs on ninth segment. Tube 1.07 longer than head.

Male allotype: colored as in female; fore legs more massive, fore tarsus armed with a strong tooth in addition to the hook-shaped claw; outer pair of spines on ninth abdominal segment about half as long as inner pair; tube longer than head.

Total body length 2.17 mm.; head length 0.205 mm., width 0.191 mm.; tube length 0.220 mm., width at base 0.102 mm.

Type material: female holotype, male allotype, 16 female and five male paratypes taken from galls on a creeper, Dec. 28, 1929 (3703).

Type locality: Koitaki, New Guinea.

This new species may be separated from *A. cochinchinensis* Karny, found in Siam and Indo-China, by the longer intermediate antennal segments and the darker color of segments five, six, and seven; in *A. cochinchinensis* three to seven are clear yellow in color and much shorter and more rounded in shape.

Tribe HAPLOTHRIPINI Priesner

Genus **TETRAGONOTHRIPS**[7] new genus

Head longer than wide, 1.68 longer in the genotype, flattened in front, cheeks very slightly arched and broadly constricted before posterior margin which is

[7] Tetragonos (square) refers to squared upper surface of pronotum.

distinctly thickened; cheeks roughened with numerous small warts bearing short spines; eyes moderate, ovate, occupying about one-fifth the length of head; anterior ocellus directed forward but not at all overhanging, posterior ocelli bordering anterior, inner margins of eyes; postoculars vestigial. Antennae 8-segmented, three clavate, four pediculate-ovate, five to seven like four, only smaller, eight connate, clearly separated from seven. Mouth cone drawn out as in *Dolichothrips.*

Prothorax almost as long as head, anterior margin concave, dorsal surface of pronotum almost square, with posterior angles rounded; median dorsal thickening T-shaped, the lower, posterior part terminating abruptly at about three-fourths the length of pronotum; sides of pronotum outside the squared area abruptly declivious and more strongly sculptured with wavy lines; all spines extremely small, those on posterior angles not exceeding 13 microns, with blunt tips. Fore femora slender, roughened and with spine-bearing warts like the cheeks; each fore tarsus with a small tooth very similar to *Karnyothrips.* Wings narrowed in the middle, fore pair with double fringes, basal wing spines almost vestigial. Mesa- and meta-notum distinctly sculptured. Abdomen gradually reduced after second segment, side and angular spines very short and stout, becoming only moderately longer on segments seven to nine; tube 0.84 as long as head, with straight sides, only slightly reduced near tip, terminal hairs approximately half as long as tube; inner pair of S-shaped wing-retaining spines thickened and strong.

This genus belongs in the Haplothripinae; the narrowed wings and drawn-out mouth cone place it near *Dolichothrips* and *Neoheegeria* but the genus is distinctive because of the roughened head and body surface, the small spine-bearing warts, the reduced spines, and the markings on pronotum.

Genotype: *T. murmekiai,* new species.

Tetragonothrips murmekiai[8], new species.

Color blackish brown including all femora, middle and hind tibiae; fore tibiae light brown, blackish on outer margins, all legs lighter at the joints, tarsi yellowish brown; first antennal segment and basal portion of two blackish brown like the head, median and distal portion of the two brownish yellow, three and four light brownish yellow, five and six with a shade deeper brown, seven and eight brown; wings light brown, fore wings dark brown at extreme base with a blackened line immediately anterior to vestigial basal wing spines, medium cloudy line extending to near middle of wing where it terminates in a rather clearly defined darkened area occupying median third in the narrowed portion of the wing, with lighter, almost clear spots in front of and behind darkened area between the wing margins.

Total body length 2.1 mm.; head length 0.26 mm., width at eyes 0.154 mm., at neck 0.132 mm.; prothorax length 0.153 not including broad collar of connecting tissue with head, width not including coxae 0.266 mm.; pterothorax width 0.352 mm.; tube length 0.220 mm., width at base 0.065 mm. Antennal segments length (width): III, 56 (26); IV, 53 (30); V, 43 (26); VI, 36 (25); VII, 36 (23); VIII, 20; total 310 microns; spines on head and thorax vestigial,

[8]Murmekia (wart).

very short also on first abdominal segments, those on ninth the inner pair with blunt tips 46, the outer pointed 93, at tip of tube 133 microns.

Head 1.68 longer than wide, flattened in front, eyes moderately large occupying about one-fifth the head's length, not protruding, cheeks straight, narrowing gradually to a slightly constricted neck, with the posterior margin heavily thickened; back of head with light-colored transverse reticulation, cheeks roughened by this sculpturing and with small tubercles bearing short, strong spines; anterior ocellus directed forward but not at all overhanging, posterior ocelli bordering anterior, inner margins of eyes. Antennae with eight segments, three clavate, four to seven pediculate-ovate, eight conical; segment three with one outer and a smaller inner sense cone, both are small and inconspicuous.

Pronotum 0.6 as long as head, anterior margin concave, almost square, a dorsal, flattened area which is divided in the middle by a T-shaped median thickening, the upper portion of the T spreading out just behind and almost parallel to the anterior margin, the lower portion, the T-base, ending abruptly at about one-fourth the length of pronotum from the posterior margin; the sculpturing on either side of the median thickening arranged more or less in whorls; the area below the base of the T and in front of posterior margin is sculptured with white-lined transverse reticulation; on either side of the squared dorsal area, the sides are sharply declivious and heavily sculptured; all thoracic spines are vestigial but with blunt tips. The mesanotum is transversely striate and has a clearly defined median V-shaped suture beginning at the posterior margin and terminating at about one-fourth the distance before the anterior margin. The metanotum has white-lined reticulation over middle portion. All legs slender, their surface roughened with sculpturing like the head and with small tubercles bearing short, transparent spines; fore tarsi unarmed. Wings narrowed in the middle, fore pair with 9-10 double fringe hairs. Abdomen widest at second segment, gradually narrowed to eighth, tube 0.84 as long as head. Spines on posterior angles of segments two to five short and blunt, and only a little longer on segments six to eight; posterior pair of S-shaped wing-retaining spines on segments three to seven especially thickened and strong. Terminal hairs not over half the length of tube.

Type material: female holotype and two female paratypes taken in flowers of an unknown tree, Nov. 15, 1928 (3692).

Type locality: Koitaki, New Guinea.

Euoplothrips armatus, new species.

Female holotype: dark chestnut brown, with fore femora shaded yellowish brown at base of tooth and distal end, tooth clear yellow, fore tibiae clear yellow with only a line of brown on outer margin, all tarsi yellow; middle and hind tibiae dark brown like the femora but yellowish brown at either end; first antennal segment blackish brown like the head, second of like color at base and along inner margin to end, otherwise yellowish brown in center shading to clear yellow on outer margin and tip; three and four clear yellow with four dusky in outer third; five and six clear yellow in basal third and quarter respectively otherwise brown like seven and eight; all wings washed with brown, each with median streak which fades before end; prominent thoracic spines, wing retaining spines and those at tip of tube brown, basal wing spines and those at posterior angles of abdominal segments clear yellow.

Total body length 3.7 mm.; head length 0.396 mm., width across eyes 0.259

mm.; prothorax length 0.352 mm., width near posterior margin 0.455 mm.; pterothorax width 0.573 mm.; tube length 0.279 mm., width at base 0.095 mm.; length of fore femora 0.50 mm., width near base 0.205 mm, length of tooth 0.102 mm.; tooth on tibia 0.036 mm., tarsal tooth 0.076 mm. Antennal segments length (width): I, 53 (53); II, 73 (40); III, 110 (50); IV, 116 (50); V, 100 (38); VI, 83 (30); VII, 66 (26); VIII, 40; total 602 microns. Length of spines; postoculars 76, on anterior angles of prothorax 50, midlaterals 73, on posterior angles outer 100, inner 73; on ninth abdominal segment 50-56, at tip of tube 50; basal wing spines 56, 73, and 76 microns.

Head 1.53 longer than width across eyes, slightly produced in front of and with a small constriction immediately behind eyes; cheeks narrowed gradually from eyes to base, roughened with several spine-bearing warts, top of head smooth; postoculars placed close behind eyes and about as long as the width of a single eye, with blunt tips; antennae 1.5 longer than head, segments three and four largest and respectively 2.2 and 2.3 longer than greatest width, three with 1-2 and four with 2-2 sense cones; mouth cone short and stumpy reaching not to exceed one-fourth over prosternum.

Prothorax approximately 0.9 as long as head and 1.3 wider than long; dorsal surface almost smooth, with incomplete median thickening; spines on anterior angles placed well in from margins, anterior marginal spines vestigial, outer of pair on posterior angles longest, all with dilated tips; anterior part of mesanotum reticulate, posterior part smooth with a median suture arising at posterior margin and extending forward only for a short distance where it broadens out Y-shaped; metanotum longitudinally reticulate for the entire width at anterior margin but this sculptured area gradually narrows to a point at posterior margin. Fore legs massive, fore femora longer than head; median tooth of fore tibia half as long as one on femora (this median tooth on left tibia of holotype is double but single in paratypes); tooth at end of tibia on the inside is almost as prominent as median tooth; tarsal tooth approximately as long and prominent as one on femora. Fore wings with sixteen double fringe hairs. Tube 0.7 as long as head.

Type material: female holotype and three female paratypes taken in curled leaves of an unknown hostplant, Dec. 8, 1928 (3698).

Type locality: Koitaki, New Guinea.

This new species would seem to be most closely related to *E. uncinatus* Bagnall which is described as having the third antennal segment yellowish white in basal half and the pale areas of four and five ringed by a brown band, also segment seven is nearly as long as six; fore wings have ten double fringe hairs. In *E. armatus* the third antennal segment is clear yellow and the pale areas of four and five are not ringed with a brown band; fore wings have 16 double fringe hairs.

Euoplothrips bagnalli Hood.

One male specimen taken Nov. 27, 1928 at Koitaki, New Guinea (3694).

Euoplothrips uncinatus Bagnall (?).

Two male specimens taken in 1929 at Finschhafen, New Guinea by L. Wagner (3879).

Neoheegeria indica Hood.

Numerous specimens taken on flowers of an unknown tree Nov. 15, 1928, at Koitaki, New Guinea (3692).

Neoheegeria citripes Bagnall.

Numerous specimens taken on an unknown hostplant Dec. 7, 1928, at Koitaki, New Guinea (3696).

Haplothrips melanoceratus Bagnall.

Two specimens taken on an unknown hostplant Feb. 2, 1929 at Port Moresby, New Guinea (3706).

Haplothrips certus Priesner.

Four specimens taken on *Cyperus* blossoms July 29, 1928 in Upper Fly River, New Guinea (3685).

Haplothrips subtilissimus Haliday.

Numerous specimens taken on sedge leaves at Koitaki, Dec. 23, 1928 (3702).

Mesothrips citritibiae, new species.

Female holotype: predominating color lemon brown; head lighter around the ocelli and between eyes, darker behind, blackened at the sides; thorax also darkened at the sides; abdomen yellowish brown with sides darkened, tube dark brown in basal half; antennal segments one and two dark brown, with two lighter at tip, three to five and basal two-thirds of six clear lemon yellow, distal third of six shaded, seven and eight brown; fore femora darkened in basal two-thirds and shading to clear yellow at ends; middle and hind femora blackish brown but lighter to yellowish at both ends; all tibiae and tarsi clear yellow; wings clouded over entire surface with scales of fore pair brown, hind wings only with median line in second and third sixths; prominent spines clear yellow except those at tip of tube which are dark brown.

Total body length 2.0 mm.; head length 0.235 mm., width 0.161 mm.; prothorax length 0.161 mm., width without coxae 0.26 mm.; pterothorax width 0.28 mm.; tube length 0.161 mm., width at base 0.065 mm. Length of spines: postoculars 76, on anterior margins of prothorax vestigial, at anterior angles 56, midlaterals 70, on posterior angles of prothorax outer 93, inner 100; basal wing spines 50, 56 and 100; on ninth abdominal segment 150, at tip of tube 166 microns. Antennal segments length (width): III, 66 (30); IV, 70 (30); V, 53 (23); VI, 46 (22); VII, 40 (20); VIII, 36; total 360 microns.

Head 1.4 longer than wide, with large, ovate eyes which occupy the anterior third of head, cheeks almost parallel for two-thirds the distance behind eyes, broadly constricted in basal third; roughened, with several small, moder-

ately stout spines; postoculars approximately as long as eyes, with dilated tips; mouth cone short, broadly rounded. Third antennal segment with two sense cones. Prothorax normal, median dorsal thickening incomplete and very small; spines on anterior margin vestigial, others very long, with dilated tips; fore femora enlarged, fore tarsus with a stout tooth; wings slightly constricted in the middle, fore wings with six double fringe hairs, all basal wing spines with dilated tips, the third about twice longer than the others. Spines at posterior angles of abdominal segments with dilated tips except the lower pair on segments seven and eight and both pairs on nine. Tube 0.68 as long as head, with straight sides, approximately 2.5 times longer than width at base.

Type material: female holotype taken on leaves of *Ficus* sp. Nov. 27, 1928 (3694).

Type locality: Koitaki, New Guinea.

This species is colored almost as in *M. melinocnemis* Karny but in *M. citritibiae* antennal segments seven and eight are brown. The spines are pointed in the first species but have dilated tips in *M. citritibiae*. It resembles *M. longisetis* Priesner but here the legs are brown.

Podothrips monsterae, new species.

Female holotype: dark chestnut brown with tips of fore femora, all tibiae and tarsi, third antennal segment, and basal third of four, five, and six clear yellow distal two-thirds of four, five, and six shaded grayish brown, seven and eight brown; wings clear, fore pair only slightly washed with grayish brown.

Total body length (abdomen distended) 1.82 mm.; head length 0.205 mm., width 0.147 mm.; prothorax length 0.117 mm., width not including coxae 0.220 mm.; pterothorax width 0.260 mm.; tube length 0.130 mm., width at base 0.056 mm. Antennal segments length (width): I, 26 (26); II, 40 (26); III, 53 (30); IV, 56 (30); V, 46 (24); VI, 40 (20); VII, 36 (17); VIII, 26; total 330 microns. Length of spines, postoculars 66, on anterior margin of prothorax vestigial, on anterior angles 36, midlaterals 46, on posterior angles outer 70, inner 73, on ninth abdominal segment 100, at tip of tube 110 microns.

Head 1.37 longer than wide, dorsal surface without markings; eyes large but not protruding, cheeks almost straight and parallel to basal third where they are constricted and again slightly broadened at extreme base; postocular spines long, placed well back from eyes, and like other prominent thoracic spines with dilated tips. Ocelli placed far forward; mouth cone short and rounded. Antennae normal, segment three with one inner and two outer sense cones, four with four sense cones. Prothorax without markings except median dorsal line which is developed only in middle third; spines on posterior angles 0.6 the median length of pronotum; fore femora enlarged each with a small swelling on the inside at base and a series of small tubercles on inside of basal half; tooth at end of tibia on the inside rounded and shaped like half an egg, with tarsal tooth arising near end of segment and with the claw shaped much as in *Karnyothrips,* the tarsal tooth however is broadened at base and bears a strong spine which projects past the end of the tooth. Mesa- and meta-notal plates with course, semi-reticulate markings; fore wings with six or seven double fringe hairs. Tube 0.63 as long as head.

Male allotype: colored as in the female. Total body length 1.68 mm.; fore legs as in female but with stronger tarsal tooth and outer pair of spines on tenth abdominal segment reduced to spurs.

Type material: female holotype, male allotype and one female paratype taken on leaves of *Monstera deliciosa,* Nov. 24, 1928 (3693).

Type locality: Koitaki, New Guinea.

P. monsterae is very similar to *P. varicornis* Bagnall known from South Africa but may be separated by its clear yellow middle and hind tibiae and the much longer spines on head and thorax. In *P. varicornis* these are short and dark colored while in *P. monsterae* they are long and clear yellow in color. In *P. lucassemi* Kruger (synonym is *Kentronothrips hawaiiensis* Moulton) all tibiae are yellow as in *P. monsterae* but also antennal segments three to seven are clear yellow while in *P. monsterae* only the third antennal segment is clear yellow, the fourth, fifth and sixth being darkened with gray-brown in their outer halves.

Hapliothrips citricornis, new species.

Female holotype: color almost identical with *H. globiceps* Bagnall, brown, tips of fore femora, all tibiae and tarsi, antennal segments from tip of two to seven clear yellow, eight darkened around the edges; wings clear.

Total body length 1.85 mm.; head length 0.191 mm., width across cheeks 0.161 mm.; prothorax length 0.150 mm., width 0.216 mm.; prothorax width 0.236 mm.; tube length 0.110 mm., width at base 0.060 mm. Antennal segments length (width): I, 26 (26); II, 40 (26); III, 46 (20); IV, 50 (23); V, 44 (23); VI, 40 (20); VII, 40 (19); VIII, 26; total 320 microns. Length of spines: postoculars 36, on anterior angles of prothorax very small 10, midlaterals 23, on posterior angles outer 26, inner 33, on ninth abdominal segment 100, at tip of tube 133 microns.

Head slightly longer than wide and broadly rounded; eyes large occupying 0.45 of the head's length, noticeably longer in dorsal aspect (length 0.086 mm.) than on ventral side (0.070 mm.); surface of head smooth, postocular spines placed close behind eyes, curved, pointed; antennae 1.7 times longer than head, segment three noticeably slender, apparently without sense cones, four to six oblong ovate, sides of seven flattened; mouth cone short, reaching only one-third over prosternum, broadly rounded. Surface of pronotum smooth, with small and incomplete median thickening; anterior marginal spines vestigial, those on anterior angles very small, the outer pair on posterior angles with dilated tips, the inner pair longer and with pointed tips. Fore legs especially femora somewhat enlarged, fore tarsus armed with a small tooth at the end on the inside much as in *Karnyothrips.*

Wings narrowed in the middle, fringes sparse, fore pair with 0, 1 or 2 double fringe hairs; first two basal wing spines with dilated tips, the third pointed. Both pairs of spines on posterior angles of abdominal segments with dilated tips but on the ninth they are pointed, those at tip somewhat longer than

the tube. Tube 0.58 as long as head and approximately twice longer than its basal width.

Male allotype colored as in female; total body length 1.6 mm. Spines on anterior angles of prothorax 20 microns; spines on angles of ninth abdominal segment reduced to spurs.

Type material: female holotype, male allotype, nine female and six male paratypes taken on *Saccharum spontaneum,* Nov. 9, 1928 at Koitaki, New Guinea (3689) and April 11, 1929 (3708) at Rabaul, New Britain.

Type locality: Koitaki, New Guinea.

H. citricornis is placed in the genus *Hapliothrips* Bagnall with some hesitancy. The head is not so rounded as in the genotype, *H. globiceps* Bagnall. The third antennal segment is suggestive of *Haplothrips subtilissimus* Haliday as expressed by Bagnall and yet it is distinct; above the pedicle the inside is rather abruptly enlarged, more so than on the outside, the sides are almost straight and the segment is noticeably narrower than segment four. In this species the tarsal tooth approaches *Karnyothrips* Watson.

It may be compared with *Haplothrips flavitibia* Williams, one of the members of this genus with all yellow tibiae, but *H. citricornis* is separated by its much shorter prothorax and tube, also by the clear yellow seventh antennal segment, in *H. flavitibia* the seventh is smoky brown. *H. citricornis* is almost identical in color with *H. globiceps* Bagnall but separated by the shorter pronotal spines, those on posterior angles of *H. globiceps* being 55 and on *H. citricornis* 26 microns.

Bagnalliella flavipes, new species.

Female holotype: color: head, pterothorax and terminal abdominal segments dark brown, tube blackish brown in the middle, prothorax brownish yellow, first three abdominal segments clear yellow, four to eight gradually shaded from light to dark brown but each with a transverse yellow band covering approximately the anterior third of segment; first antennal segment and basal two-thirds of two dark brown, distal third of two and three to six clear yellow; seven clear yellow at base otherwise brown, eight brown; fore legs yellow except outer margins of femora which are darkened with brown; middle and hind femora and tibia mostly brown, darkened especially on anterior or outer margins, yellowish at the joints; tarsi yellow; wings entirely clear; spines clear yellow except those at tip of tube which are blackish brown.

Total body length 2.0 mm.; head length 0.28 mm., width across cheeks 0.235 mm.; prothorax length 0.191 mm., width not including coxae 0.279 mm.; pterothorax width 0.308 mm.; tube length 0.161 mm., width at base 0.073. Antennal segments length (width): I, 30 (40); II, 50 (33); III, 63 (30); IV, 53 (30); V, 53 (30); VI, 46 (24); VII, 46 (20); VIII, 49; total 380 microns.

Length of spines, postoculars 66, vestigial on anterior margins of prothorax, on anterior angles 16, midlaterals 16, outer on posterior angles 53, inner 50, outer on ninth abdominal segment 100, inner 133, at tip of tube 166 microns.

Head 1.2 longer than greatest width across cheeks which are broadly rounded and narrowed gradually both in front over eyes and behind; postocular spines pointed; antennal segments two to seven pediculate, two 1.5, three 2 +, four and five 1.76 longer than wide; eyes elongate, ovate, ocelli placed far forward but widely separated; mouth cone short and rounded. Prothorax not much wider than head, pair of spines on posterior angles alone prominent, others small or vestigial; fore legs somewhat thickened, each fore tarsus armed with a sharp tooth; pterothorax almost rectangular in shape; fore wings with 6-7 double fringe hairs; tube 0.6 as long as head and more than twice longer than basal width.

Type material: female holotype and three female paratypes taken Dec. 22, 1928 (3700).

Type locality: Koitaki, New Guinea.

This species may be separated by its longer eyes, longer intermediate antennal segments, more constricted base of the second segment and the more slender tube, as well as in color, from the genotype *B. yuccae* Hinds.