

Thysanopterologica Indica—II

By

T. N. ANANTHAKRISHNAN

(Department of Zoology, Lyola College, Madras-34, South India)

Fifteen species of Tubuliferan Thysanoptera are discussed in this series, of which nine are new to science. The genera *Alloiothrips*, *Azaleothrips*, *Stigmothrips*, *Ramachandraiella* are described as new and the species *Haplothrips nigricornis* Priesner, *Teuchothrips longus* (Schmutz) are new records to the Indian mainland. Variations occurring in such species as *Chiraplothrips priesneri* Ananthakrishnan, *Diaphorothrips spinosus* Ananthakrishnan, *Ela-phothrips proces* var. *dallatorrensis* Schmutz, *Gynaikothrips moultoni* Ramk. and *Karnyothrips nigriflavus* Ramk. are discussed. *Dolichothrips* (*Dolicholepta*) *fulvus*, *D. (Dolichothrips) montanus*, and *Teuchothrips priesneri* are described as new species.

Grateful thanks are due to the U.S.P.L. 480 assistance, under whose tenure the present work was done.

Genus *Alloiothrips* nov.

Haplothripine genus with head little longer than wide and more than twice as long as pronotum; eyes $\frac{1}{3}$ head-length, much as in *Hoplothrips*; postoculars very short. Mouth cone short, broadly pointed; maxillary stylets oculad, rather close, as in most *Phlaeothripini*; maxillary bridge wanting. Antennae comparatively short, sense cones normal. Prothorax very short, about 0—46 length of head; prothoracic setae short, only epimerals more strongly developed. Forelegs weak, female with a small tarsal tooth, males with a more distinct curved tooth. Wings short, much narrowed, with a central fold about middle; double fringes present; basal wing bristles very short, arranged in a broad triangle. Tube $\frac{2}{3}$ head length; bristles on IX shorter than tube.

Typus generis, *Alloiothrips nigrisetis* gen. et sp. nov.

Macropterous female:

Colour brownish yellow, with dense cloudy patches all over, even extending into antennal segments 1 and 2 and legs; some females with abdominal segment III and part of IV bereft of the cloudy pigment. Antennal segments 1 and 2 yellow with cloudy patches, 3—6 yellow, apex of 7 and 8 brown; forewings cloudy, hindwings pale, apex of mouth cone and all body bristles dark; tube yellow, apex a little brown.

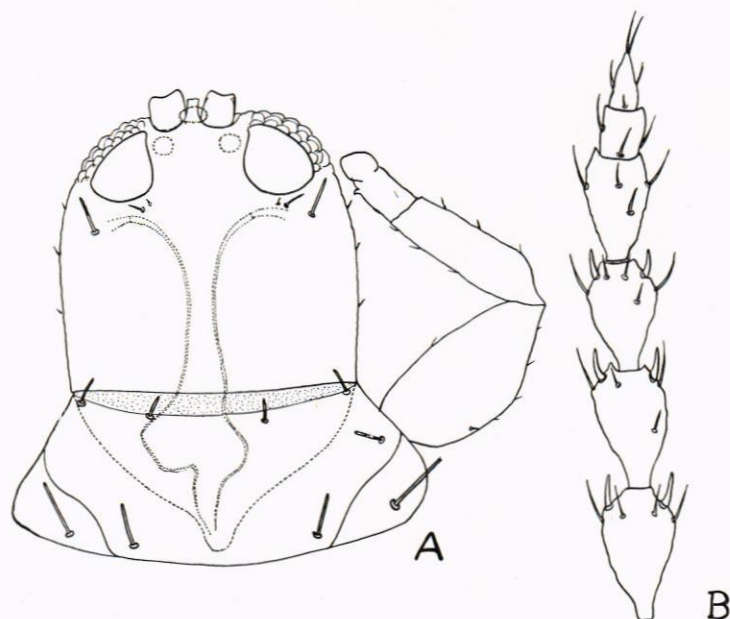


Fig. 1. *Allothrips nigrisetis* gen. et sp. nov. ♀: A, head and prothorax; B, antennal segments 3—8.

Head 210—238 long, 168—182 wide across eyes, 196—224 across cheeks and 182—196 at base. Eyes 70 long, 56 wide occupying a third of the head length. Ocelli distinct, median ocellus 16 wide placed 26 away from paired ocelli 19 wide and 48 apart. *Postoculars* very short, 29—38 long, placed 22 from cheeks. Antennal segments, length (width) 32 (32); 45 (29); 54—67 (32—35); 58—64 (35); 51—54 (29—35); 51—54 (26—29); 19—26 (19); 22—26 (10), sense cones short, on 3⁰⁺¹ on 4¹⁺¹. Mouth cone broadly pointed, 196 wide at base and 42 at apex.

Prothorax very short, 0.46 times head length, 98—112 long, 238 wide across anterior margin, 336—350 across posterior. Prothoracic bristles short, only epimerals strongly developed; anteroangulars and anteromarginals 22—29 long; midlaterals 19—22; postangulars 32—43 and epimerals 58—64 long. Forefemora 64—70 wide, foretarsus with a very small tooth. Pterothorax 252—294 long, 378—402 wide at middle. Forewings 644—700 long, constricted at middle, 56 wide at base, 42 at middle, with 4—7 double fringes. Basal wing bristles very short, arranged in triangle, 29—35, 22—29 and 26—32 long respectively; 1 and 2, 29—32 apart and 2—3, 26—29 apart.

Abdomen broad at base, 154—168 wide across IX and 280 across VIII. Bristles on IX shorter than tube, inner 70—77 and outer 70—80 long. Tube 140 long, 70 wide at base and 42 at apex; anal setae shorter than tube, 98—134 long. Total body length: 1.428—1.736 mm.

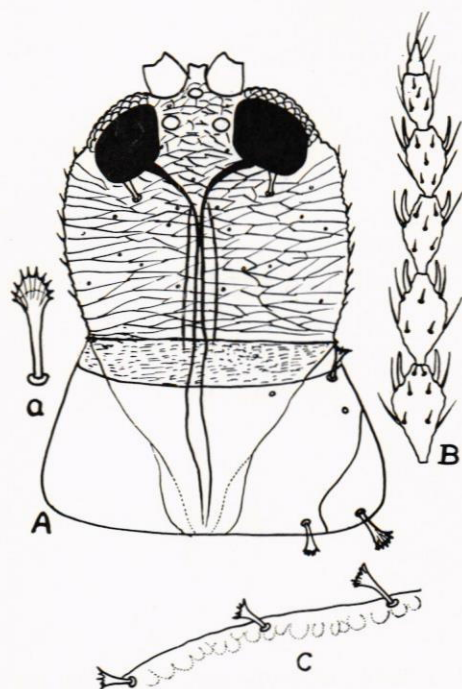


Fig. 2. *Azaleothrips amabilis* gen. et sp. nov. ♀: A, head and prothorax; a, prothoracic bristle enlarged; B, antenna; C, basal wing bristles.

Macropterous male:

Colour as in the females.

Head 196—210 long, 168—182 wide across eyes, 196—210 across cheeks and 182—196 at base. Eyes 56 long and 49—56 wide; postoculars 29 long; antennal segments, length (width) 32 (32); 45—48 (29); 54—61 (32); 58 (35); 54 (29); 48—54 (26); 22—26 (16); 22 (10).

Prothorax 98 long, 210—224 across anterior margin and 308—336 across posterior; anteroangulars 26; anteromarginals 22; midlaterals 19—22; post-angulars 32 and epimerals 43—54 long. Forefemora not enlarged, 70 wide, foretarsus with a stronger, curved tooth. Pterothorax 224—252 long, 336—350 wide; forewings 560—602 long, with 4—6 double fringes; basal wing bristles 22—36, 26—32 and 22 long respectively.

Abdomen, 112 wide across IX and 182—196 across VIII. Tube, 112—126 long, 56 wide at base and 42 at apex.

Total body length: 1.338—1.512 mm.

Material: 39 females and 10 males on leaves of *Carissa* sp., Salem, 19-7-1963. Holotype and allotype in the author's collection.

Genus *Azaleothrips* nov.

Head reticulate, about as long as wide across cheeks, with eyes directed forwards; cheeks widened, warty, with 7—10 small spines. Postoculars very short, fimbriate. Mouthcone pointed, reaching a little beyond base of proster-

num; maxillary stylets ocular, meeting at middle (phlaeothripine). Antenna 8 segmented; segments as in *Hoplandrothrips*; sense cones normal. Pronotum shorter than head, 0.6 times as long, prothoracic bristles very short, fimbriate. Forelegs of females not enlarged, foretarsus with a weak tooth; males with well developed femur (normal—oedymorous), foretarsal tooth strong. Wings not constricted at middle, but comparatively narrow, with double fringes. Basal wing bristles very short, arranged almost in a straightline, placed wide apart. Tube shorter than head.

Type of the genus, *Azaleothrips amabilis* gen. et sp. n.

This genus was collected in the company of *Hoplandrothrips indicus* (R. & M.). The forwardly directed eyes, the widened cheeks, the very short fimbriate bristles — the postoculars and prothoracic bristles are very characteristic. The reticulate nature of the head, the nature of the bristles, the banded legs are features characteristic of the *Stictothripini*.

Macropterous female:

Colour: Brown, all tibiae banded-brown at middle and yellow on either side; forefemora yellow. Abdomen yellowish brown, VIII and IX paler. Antennal segment 3 pale yellow, rest brown; base and apex of 4 and extreme base of 5, also pale yellow; plenty of red pigment on head and thorax. Wings and all bristles pale.

Head 182—240 long, 140—168 wide across head, 196—240 across cheeks and 182—196 at base; eyes directed forwards, small, 56—84 long and 42—56 wide; cheeks warty with 7—9 spines, 6—10 long; ocelli distinct, median ocellus from paired ocelli 16 apart, paired ocelli 19 apart and 13 wide; postoculars very short, fimbriate 19 long, placed 53 from cheeks. Antennal segments, length (width): 32 (32); 51 (32); 67—70 (32); 64 (32); 58 (29); 48—51 (26); 35—38 (22); 22 (13). Sense cones moderately long; mouth cone pointed, 168 long, reaching a little beyond base of prosternum, 160 wide at base and 32 at apex.

Prothorax 112—140 long, about 0.6 times head length, 182—224 wide across anterior margin and 280—336 across posterior; anteroangulars 16—22, anteromarginals 16—22, midlaterals 19, postangulars 19—26 and epimerals 22—35 long, all fimbriate. Forefemur 70—84 wide, foretarsus with a small tooth.

Pterothorax 224—252 long, 280—294 wide. Forewings 560—700 long, with 5—8 double fringes; basal wing bristles in a straight line, very short, 16, 10—13 and 26—32 long respectively, all fimbriate.

Abdomen 112—140 wide across IX, 196—210 across VIII, 280—308 across middle; inner and outer bristles of IX knobbed, 64—67 and 86—96 long respectively. Tube 126—154 long, anal setae as long as tube, 132—162 long.

Total body length, 1.484—1.876 mm.

Material: 4 females and 1 male, beating dry twigs, college compound, Madras, 30-12-1963. Types in the author's collections.

Chiraplothrips priesneri Ananthakrishnan

Ananthakrishnan 1961 J. Bombay Nat. Hist. Soc., 58 (2): 426—428.

The above species was based on a single male and a female, taken on the grass *Chloris barbata*, Madras. Subsequent collections revealed that this is

a very commonly occurring species on grass, and the additional data on the available range of variations, is based on 120 females and 12 males.

Macropterous females:

Total body length, 1.628—2.100; Head length, 168—182, 140—168 wide across eyes and 154—182 across cheeks. Eyes 70—96 long, 42—49 wide; postoculars 22—29 long, very short, pointed; antennal segments, length (width): 29—32 (35); 48 (30—32); 48—53 (29—32); 45—48 (32); 43—46 (32); 43 (22—26); 38 (19); 32 13—16).

Prothorax 168—196 long, 210—238 wide across anterior margin and 322—350 across posterior; forefemora 84—98 wide. Pterothorax 336—350 long, 294—350 wide; forewings 840—1050 long, with 7—9 double fringes; basal wing bristles, 19—32, 22—32 and 19—12 long respectively. Tube, 112—126 long, 70 wide at base and 35 at tip.

Macropterous males:

Total body length: 1.372—1.64 mm; Head 140—154 long, 126 wide across eyes and 140—154 at base; postoculars 16—19 long; antennal segments, length (width): 26 (28); 38—43 (26—32); 35—43 (26—32); 38—48 (32); 38—45 (26—32); 35—43 (26): 32—38 (19—22); 26—32 (19—16).

Prothorax, 126 long, 182—196 wide at anterior margin and 294—310 across posterior; anteroangulars 16—19; epimerals 45—48; postangulars 26—29; forefemora, 84—98 wide; forewings 630—700 long, with 4—7 double fringes. Tube 84—98 long, 42 wide at base and 24 at apex.

Material: 120 females and 12 males, Madras.

***Diaphorothrips spinosus* Ananthakrishnan**

Ananthakrishnan 1949 Zool. Anz., Bd. 162, Heft 9/10: 321—322.

The description of the above species was confined to a large sized female and a smaller female (erroneously described as male). With the collection of more females from dry twigs of *Sesbania* and *Nerium*, more information is available of the range of variations exhibited by the females of this species.

Total body length: 3.780—5.680.

Head, 392—490 long, 308—350 wide across eyes, 336—392 across cheeks and 350 at base. Postoculars 176—280 long and postocellars 126—140 long. Antennal segments 3—8 length; 140—168, 140—168; 126—154; 98—126; 84—88; 70—84. Mouthcone 350 long, 350 wide at base and 210 at apex.

Prothorax, 238—350 long, 364—476 wide across anterior margin 560—770 wide across posterior margin. Anteroangulars 51, anteromarginals 51, postangulars 160—168, epimerals 132—192 long; forefemur 140—238 wide; foretibial tooth in miniature females, practically vestigial to 42 long (and 10 wide); foretarsal tooth 38—98 long. Forewings with 23—37 double fringes, basal wing bristles 48—68; 76—106 and 102—128 long. Abdomen, 670—868 wide at middle, 504—616 at VIII and 280—334 across IX. Tube, 564—742 long, 154—196 wide at base, 112—154 across middle and 70—84 at apex; anal setae, 280—336 long.

Material: — 8 ♀♀ Madras, on dry twigs of *Sesbania*, 3-4-1963; 4 ♂♂ Conjeevaram inside twigs of *Nerium*, 25-5-63.

Dolichothrips (Dolichothrips) montanus* sp. nov.Macropterous female:*

Colour, brown with a little scattered red pigment. Antennal segments 3—6 yellow; 1 and 2, distal third of 7 and segment 8, brown. Forefemora mid and hind femora and tibiae brown; foretibia yellowish brown; foretarsi yellow; wings clear; all bristles brown.

Head 280 long, 210 wide across eyes and cheeks, being 1.25 as long as wide. Eyes large, 98 long, 56 wide; median ocellus overhanging vertex, 32 wide; posterior ocelli smaller, 19 wide, 38 apart. Postoculars 80—90 long, blunt. Antennal segments, length (width): 42 (38); 64 (35); 90—93 (38); 90 (38); 67 (32); 64 (26); 54 (22); 32 (10). Mouth cone typically *Dolichothrips*-like, 224—238 long, 196 wide at base and 42 at apex.

Prothorax 280 long, 266 wide across anterior margin and 490 across posterior; anteroangulars 43—54; anteromarginals 43—51; midlaterals 59—80; postangulars 86—96 and epimerals 96—115 long. Forefemur 140—182 wide; foretarsal tooth strong, 28 long, 19—26 wide. Prothorax 504 long and 532 wide. Forewings 1064—1092 long, with 12—14 double fringes; basal wing bristles, 90—99, 90—96 and 115—128 long.

Abdomen, 308 wide across VIII and 224 across IX. Bristles on IX longer than tube; outer, 238—252, inner 224—238 long. Tube shorter, 196—210 long, 98 wide at base and 42 at apex; anal setae shorter than tube, 98 long.

Total body length: 2.940—3.178 mm.

Material: 6 females on Lantana, Coonoor, 5000', 8-6-63. Types in the author's collection.

This species comes close to *D. assimilis* Priesner from which it differs, in the longer head and the number of double fringes on the forewings; *D. longicollis* Karny, has also a longer head and a shorter forefemur, but has only 6—8 double fringes.

Dolichothrips (Dolicholepta) fulvus* sp. nov.Macropterous female:*

Colour: brown; all legs bright yellow, occasionally with a greyish tinge; antennal segments, 1, 2 and 8 brown, as also extreme apex of 7, rest yellow. Thorax and abdomen with red pigment. Wings clear; bristles dark; bristles 1 and 2 of wing base dark, 3rd yellow.

Head 266—308 long, 154—168 across eyes, 182 across cheeks; being 1.7 times as long as wide; eyes large, 126 long, 70 wide; median ocellus 19 μ wide, placed 19 apart from paired ocelli 19 wide. Postoculars very short, 35—43 long, placed 32 from cheeks. Antennal segments 2—8 length (width): 51 (32); 77—83 (32); 74—77 (32); 64 (29); 64 (29); 57 (26); 26 (13). Mouth cone 210 long.

Prothorax 196—224 long, 196—224 wide across anterior margin and 308—354 across posterior; anteroangulars 32—43; anteromarginals 32—43; midlaterals 32—43; postangulars 48—67; epimerals 54—70 long. Forefemora 84 wide; foretarsi unarmed. Pterothorax 336—420 long, 336—392 wide. Forewings 770—840 long, with 5—7 double fringes. Basal wing bristles 48—64, 57—64 and 76—112 long respectively.

Abdomen 384 wide at base, 378 across middle, 238 across VIII and 154—168 across IX. Bristles on IX as long as or shorter than tube, nerves longer; outer 112—140 long; inner 98—126 long. Tube 126—154 long, 84 wide at base and 56 at apex. Anal setae very short, 56 long.

Total body length: 2.240—2.730 mm.

Macropterous male:

Colour as in female.

Head 280 long, 168 wide across eyes; postoculars 32 long. Antennal segments 2—8: 48 (29); 77 (26); 77 (29); 67 (26); 64 (22); 48 (19); 26 (10).

Prothorax 182 long, 182 wide across anterior margin and 280 across posterior. Anteroangulars 32; anteromarginals 32; midlaterals 32; postangulars 43—48 and epimerals 51—58. Forefemur 56—84 wide, foretarsus unarmed. Pterothorax, 336 long and 308 wide. Forewings 770 long, with 6 double fringes; basal wing bristles, 35—45; 35—54; 58—64 long.

Abdomen 280 wide at base, 224 across middle, 154 across VIII and 112 across IX; Tube 140 long, 70 wide at base and 42 at apex; anal setae 56 long.

Total body length: 2.002—2.310 mm.

Material: 25 females and 17 males, Kona forest, near Tirupathi, (Andhra) 1000', 15-10-1963.

From *D. gracilipes* R. & M., the new species differs in the uniform yellow nature of the legs, and in the short postangulars and postoculars.

***Elaphrothrips procer* var. *dallatorrensis* Schmutz**

Elaphrothrips dallatorrensis, Schmutz.

Elaphrothrips Procer var. *dallatorrensis*, Priesner, 1935, Konowia. XIV (L): 62.

The *dallatorrensis* variety of *E. procer* as subsequently designated by Priesner (1935) has hitherto been known only through material collected from Ceylon by Schmutz, whose description of the species is far from satisfactory. This is one of the commonest forms of *Elaphrothrips*, found in numbers within dry twigs of *Sesbania grandiflora* and the range of significant measurements of both sexes, alone provided below, is based on the study of a good series.

Macropterous female:

Head 630—742 long, 294—322 wide across eyes, 252—266 across cheeks and 294—322 at base; anteocular projection, 42—70 long. Seta on anteocular projection 237—281 long; postoculars 210—288 long; cheeks with several spines, that below eyes, well developed, 54—70 long. Antennal segments, 3, 4 and 5, 224—252, 210—224 and 168 long respectively; seta on outer margin of apex of antennal segment, 3, very feeble.

Prothorax 280—350 long, 378—420 wide at anterior margin and 700—770 across posterior margin. Prothoracic setae; anteroangulars and anteromarginals short, 43 long; midlaterals 80—90; postangulars 160—172 and epimerals 166—192 long respectively. Forefemur 168—224 wide, foretarsal tooth weak. Pterothorax 770—840 long and wide. Forewings with 35—42 double fringes, basal wing bristles 118—138, 118—138 and 234—294 long respectively.

Outer setae on IX 560—770, inner 560—630. Tube 602—700 long, anal setae 308 long.

Total body length, 5.250—7.140 mm.

Macropterous male:

Head 630—742 long, including anteocular projection, (the latter 42—70 long); 280—322 wide across eyes, 238—252 across cheeks and 280—308 at base: seta on anteocular projection, 126—196 long, eyes 154—196 long, 98—112 wide; median ocellus, 22—29 wide, placed 96—112 from paired ocelli 26—32 wide and 51—61 apart; postoculars 154—186 long; largest cheek seta 52—112 long; postocellars 48—74 long; antennals 3, 45—196—280, 182—238 and 168—210 long respectively; seta on outer margin of 3 very well developed, 56—98 long.

Prothorax 308—350 long, 350—420 wide across anterior margin, 560—770 across posterior; anteroangulars 51—64, anteromarginals 51—64; mid-laterals 96—109, postangulars 80—96, epimerals 128—160 long. Pterothorax 672—840 long or wide. Forefemur in weak males and oedymorous males, 156—364 wide, foretarsal tooth strongly developed in oedymorous forms, 42—84 long and 14—28 wide at base. Forewings 1.960—2.310 mm. long, with 30—47 double fringes (35—37 being normal); basal wing bristles long and well developed; 77—128 77—112 and 179—256 long respectively.

Abdomen 280 wide across VIII and 238—280 across IX; bristles on IX, inner, 350—490, outer 490—560 long respectively. Tube 448—560 long, 140—154 wide at base, 112 at middle and 84 at apex. Total body length, 5.180—7.420 mm.

Material: 35 females and 32 males, within dry twigs of *Sesbania grandiflora*, Madras, 5-4-63; 10 females and 8 males, beating wild dry twigs, Salem, 19-7-1963.

Gynaikothrips moultoni Ramk.

1928 Ramakrishna, Pusa Ent. Mem. Dept. Agr. Indi., X: 303—304.

1940 Ramk. & Marg., Catalogue of Indian Insects, 25, Thysanoptera: 46.

This species is known only through two males collected by the auctor from a wild shrub, Marudumalai, Coimbatore. The females are being described for the first time and in view of the large number of individuals of both sexes collected, the range of variation is given below.

Macropterous female:

General colour, as described for the male in the protolog; body with dark brown. Antennal segment 8, yellow—yellowish brown.

Head 294—322 long, 238—252 wide across eyes, 252 across cheeks, eyes large, 112 long and 84 wide; postoculars 90—96 long, blunt; median ocellus overhanging vertex, 35 wide, paired ocelli 28 wide. Antennal segments, length (width): 38 (43); 64—70 (38); 96—102 (35); 92—96 (45); 83—87 (35); 80—87 (35); 61—64 (29); 29—32 (16).

Prothorax 154—182 long, shorter than head, 294—308 wide across anterior margin and 448—462 across posterior. Prothoracic chaetotaxy; anteroangulars 45—58; anteromarginals 42—48; midlaterals 68—74; postangulars 80—

86 and epimerals 96—128 long, all blunt tipped. Forefemora 84—112 wide, foretarsus unarmed.

Pterothorax 462—490 long, 524—538 wide; forewings 1.050—1.140 mm. long, 98—112 wide at middle, with 10—13 accessory fringes; basal wing bristles arranged in a broad triangle, 90—96, 90—96 and 80—90 long respectively.

Abdomen 210—238 wide across IX and 334—350 across VIII and as wide as pterothorax at base. Bristles on IX subequal, 252 long. Tube 252—280 long, 70—98 wide at base, 56—84 at middle and 42—56 at apex. Total body length: 2.772—3.290 mm.

Macropterous male:

General description as given by Ramakrishna. Head 294—322 long, 198—322 long, 198—224 wide across eyes; postoculars 77—86 long (In the original description, the postoculars are erroneously mentioned as "short and less than half the breadth of the eye"). Antennal segments, length (width): 36—38 (43); 58—64 (38); 81—86 (35); 86—90 (43); 84—87 (35); 80—84 (35); 61—64 (32); 29—32 (16).

Prothorax, 126—140 long; prothoracic chaetotaxy: anteroangulars 43—48; anteromarginals 32—48; midlaterals 64—74; postangulars 64—74 and epimerals 89—96 long; pterothorax 484—490 long, 496 wide. Forewings, with 11—13 double fringes. Tube 238—266 long. Total body length: 2.250—2.590 mm.

Material: 45 females and 14 males in tubular galls of *Ficus* sp., Salem, 18-7-1963.

***Haplothrips nigricornis* (Bagnall)**

Anthothrips nigricornis, Bagnall, 1910, Ann. S. African Mus. V: 425.

Haplothrips nigricornis, Faure, 1955, Jour. Ent. Soc. S. Africa. 18 (2): 210.

This species is being recorded for the first time from the Oriental region and is based on 16 females and 4 males, collected on *Portulaca*, 22-5-63 (Madras) and grass 5-8-63, Madras. Oedymorous and gynaeoid males are evident even among the four males collected. Faure (1955) treats this species in an exhaustive manner.

***Karnyothrips nigriflavus* Ramakrishna**

Karnyothrips nigriflavus, Ramakrishna, 1934, Rec. Ind. Mus., XXXVI (4): 496—97.

Watsoniella nigriflava, Hood, 1949, Rev. Ent., 20 (1—3): 30—32.

Karnyothrips nigriflavus, Ananthakrishnan. 1963, Opuscula Entomologia, Lund (in press).

This interesting species originally described from India has also been subsequently described by Hood, based on 11 females, from Brazil, from the same host. A fresh series of nearly sixty individuals collected by the author on bamboo from Kerala, reveals a remarkable degree of variation particularly in the colouration and the number of double fringes in the forewings. Eightyfive percent of the material exhibits the same pattern of colouration, viz. head and prothorax, tube and antennals 1, 7 and 8 dark brown, the

rest lemon yellow. The Brazilian specimens as reported by Hood have head, prothorax, mesothorax, last two abdominal segments, apex of antennal segment 6, 7 and 8 dark grey brown. Eight females show distinct gradation, from the typical colouration mentioned above, to that of the Brazilian form. Three individuals possess dark metathorax, as also abdominal segment VIII, $\frac{2}{3}$ of the forefemora and apex of antennal segments 5, most of 6 and 7 and 8 brown. At either end of the "more yellow — more brown" individuals, a single female with only head and antennal 7 and 8 and tube brown (with even prothorax without brown) and a single oedymereous male, with long uniform dark-grey brown, except mid hindlegs and facilitiae and antennal segment 3, could be recognised.

As regards the number of double fringes, which is usually regarded as a good character for recognition of species, there is profound variation. Ramakrishna mentions 5 double fringes, while Hood gives the range as 4—6. Examination of all females and males collected, reveals the range to be 0—4, 3—4 being normal. Two females and 2 males had no double fringes, while 2 females had 2 on one wing and three on the other, one female had one on each wing.

Comparison of the postocular and prothoracic bristles in the Indian & Brazilian females of *K. nigriflavus*

	Indian		Brazilian (as given by Hood)	
	Female	Male	Female	Male
<i>Females</i>				
Postoculars	32—38	29	39	30
Anteroangulars	19—26	22	25	19
Anteromarginals	19—26			
Postangulars	29—32	29	39	32
Epimerals	38—54	38	53	44

Oedymereous male:

Colour, uniform brown, except mid and hindlegs, foretibia and apex of forefemora, antennal 5 at apex, 6 suffused brown, 7 and 8 dark brown. Total body length: 1.806 mm.

Comparison of measurements of a normal bicolourous male, a dark oedymereous male and a Brazilian male (as given by Hood)

	Normal male	Oedymereous male	Brazilian male
Total body length	1.428—1.996	1.806	1.22—1.45
Postoculars	22—29	51	30
Anteroangulars	16—22	26	19
Postangulars	29	35	32
Epimerals	38	51	44
Double fringes	2—3	3	Not given
Forefemora width	56	112	"
Antennals 3: 4: 5 (length)	48: 53: 43	61: 64: 51	37: 42: 40
Tube length	98—112	140	93

Material: 58 females and 9 males Chalakudi, 5-12-63, Perintalmanna grass, 5-11-63.

Praepodothrips nigrocephalus sp. nov.*Macropterous female:*

Bicolourous; head, tube, antennal segments 1, basal third of 2, and 8 brown (apices of 2, 3 and 4 pale yellow); rest of the body including legs yellow; thorax and abdomen with scattered red pigment; bristles pale, tube setae brown. Some females have abdominal segment IX at apex and tube brown.

Head 252—280 long, 196—210 wide across eyes, 224—238 across cheeks and 182—196 at base; cheeks convex. Eyes 70—84 long. Antennal segments, length (width): 32 (38); 51—54 (35); 54—58 (32); 48—51 (32); 48—57 (32); 45—48 (26); 43—48 (22); 38—43 (16). Mouthcone 112 long, broadly rounded, 112 wide at base and 98 at apex; maxillary stylets at middle, more oral, do not meet.

Prothorax 168 long, 210—238 wide across anterior margin, 308—336 across posterior; anteroangulars 16—29, anteromarginals 16—29, midlaterals 26—35, postangulars 43—54 and epimerals 54—64 long, pointed. Forefemur 70—84 wide, foretarsus with a very small tooth.

Pterothorax 350—392 long, 294—308 wide; forewings 840—980 long; *double fringes absent*; basal wing bristles 19—22, 16—32 and 22—32 long respectively.

Abdomen 308 wide at base, 266—280 across VIII and 154—182 across IX. Inner and outer bristles of IX 112 and 96 long. Tube 140—168 long, 70 wide at base and 42 at apex; anal setae 126—154 long.

Total body length: 2.100—2.548 mm.

Macropterous male:

Colour as in the female.

Head 252 long, 196 wide across eyes, 210 across cheeks and 182 at base. Eyes 84 long, 56 wide; postoculars 64 long. Antennal segments, length (width): 32 (38); 48 (32); 54—58 (32); 48 (32); 48—51 (29); 48 (26); 38 (16).

Prothorax 210—224 wide across anterior margin, 322—336 across posterior; anteroangulars 22—29; anteromarginals 22—29, midlaterals 35, postangulars 51 and epimerals 58 long. Forefemur 98 wide, foretarsus with a strong tooth. Forewings 784 long, without double fringes; basal wing bristles 19, 45 and 16 long respectively.

Abdomen 266 wide at base, 210 at VIII, 126—140 across IX. Tube 140—154 long; anal setae 140 long.

Material: 18 females, 3 males on grass beatings, Kodaikanal Hills, 3000', 9-12-63.

Of the three species of *Praepodothrips* Knom — *indicus* Priesner and Schmutz, *Priesneri* Ananthakrishnan and *cymbapogonii* Ananthakrishnan, *P. nigrocephalus* approaches *P. indicus*, but is distinctly different, in the colouration of the head and in the total absence of double fringes on the wings.

Genus *Ramachandraiella* nov.

Head very little longer than wide, with 3 pairs of well developed anterior bristles; eyes small, $\frac{1}{5}$ head length; ocelli distinct in macropterous females;

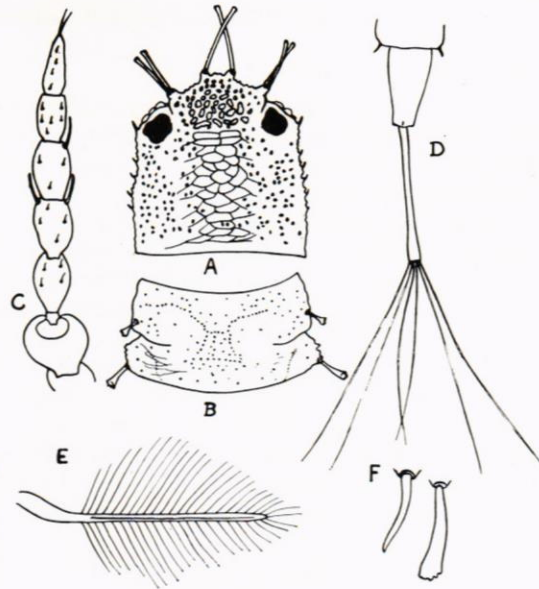


Fig. 3. *Ramachandraiella minuta* gen. et sp. nov. ♀: A, head; B, prothorax; C, antenna; D, segment IX and tube; E, forewing; F, wing retaining seta and the adjacent seta on abdominal segment IV.

mouth cone short, broadly rounded, stylets oculad. Antenna 7 segmented. Females with wings (macropterous); wings narrow, fringes long, not closely set; no double fringes and basal wing bristles; males apterous. Tube very long, narrow at base and middle, wider at apex; anal setae long, 6 in number.

Typus generis *Ramachandraiella minuta* gen. et sp. nov.

This is an exciting record of an Urothripid genus, which is winged and possessing ocelli. Ten genera are so far on record and none from the Oriental region. Stannard (1952) combines these genera under *Amphibolothrips* Buffa, because "none of them exhibited features of singular distinction". All of them are bicolourous, brown and pale yellow, hind coxae farther apart from each other than are the middle pair from each other, warty body with long tube bearing long anal setae. All the genera so far known are apterous and lack ocelli, and the present genus is therefore of significance. All the same, in the presence of the 7 segmented antenna *Ramachandraiella* approaches *Urothrips* Bagnall, *Baenothrips* Crawford, *Bradythrips* Hood and Williams and *Conocephalothrips*; in the presence of 6 long anal setae, it approaches *Octurothrips* Priesner, *Stephanothrips* Trybom, *Trachythrips* Hood and *Urothrips* Bagnall. *Trachythrips*, *Octurothrips*, *Conocephalothrips*, and *Urothrips* on the other hand, do not possess cephalic bristles; *Stephanothrips* Trybom has three pairs, as also *Baenothrips* and *Verrucothrips*. But in the number of antennal segments, we find that *Urothrips* has seven; *Trachythrips* has 5-6, *Stephanothrips* has 4-5. *Ramachandraiella* while resembling the latter genus, has six long analsetae, compared to only four of *Verrucothrips* and the females are winged.

Ramachandraiella minuta gen. et sp. nov.*Macropterous female:*

Colour; head and prothorax brown; pterothorax, abdomen and legs yellow, suffused with brown; antennal segments 1 and 2 yellow, little suffused brown; 3—6 yellow; 7 brown; sides of head, thorax and abdomen with scattered red pigment.

Head 182—196 long, 126 wide across eyes and 168 across cheeks; anterior cephalic bristles: median pair 78—82, lateral pairs 67—70 long. Eyes small, 38 long and as wide. Ocelli far forwards, reduced, 13 wide median to paired 32 away, and paired ocelli 58 apart. Antennal segments, length (width) 26 (29); 32 (32); 48 (26); 38 (26); 35 (22); 35 (19); 48 (16). Mouthcone short, broadly rounded, 56—64 long, stylets oculad.

Prothorax 112 long, 182 wide at anterior margin and 224 across posterior; epimerals 32 long, fimbriate. Pterothorax 280 long, 224—248 wide across merothorax and 308—322 across metathorax; forefemora 56 wide, foretarsus unarmed. Forewings 700—770 long, narrow, 26 wide, with an undulate median longitudinal streak; fringes long; no double fringes and basal wing bristles.

Abdomen 252 wide at base, 154 at VIII. Segment IX 210 long and 112 wide. Tube 350—378 long, 28 wide at apex; and 14 at base; anal setae 588—910 long.

Total body length, 1.750—2.002 mm.

Apterous Male:

Colour as in the female.

Head 140 long, 126 wide across eyes and 154 across cheeks. Eyes small, 32 long and as wide; anterior head setae: lateral 51 long, median 64 long. Antennal segments, length (width): 26 (29); 26 (32); 38 (22); 32 (26); 32 (22); 29 (19); 42 (13).

Prothorax 98 long, 168 wide across anterior margin and 210 across posterior; epimerals 32 long. Pterothorax 168 long, 182 wide across merothorax and 210 across metathorax. Forefemur 42 wide. Abdomen 182 wide at base, 168 at middle, 112 across VIII and 84 across IX. Tube 280 long; anal setae 488 long.

Material: 9 macropterous females; 2 brachypterous females and 1 apterous male, on wild grass, 3000' Kodiakanal Hills, 9-12-1963.

Genus *Stigmothrips* nov.

Haplothripine genus with head longer than wide and distinctly longer than prothorax. Eyes large, wider than interocular space; postoculars shorter than eyes, placed in a level with inner eye margin. Mouthcone short, broadly rounded; maxillary stylets oculad, touching the eyes, not meeting at middle. Antenna 8-segmented, with long, slender segments; sense cones moderately long. Prothorax shorter than head; prothoracic bristles moderately long, dilated at apex. Praepectus absent. Forefemora normal, not enlarged in both sexes; foretarsi unarmed in both sexes. Wings Haplothripine, com-

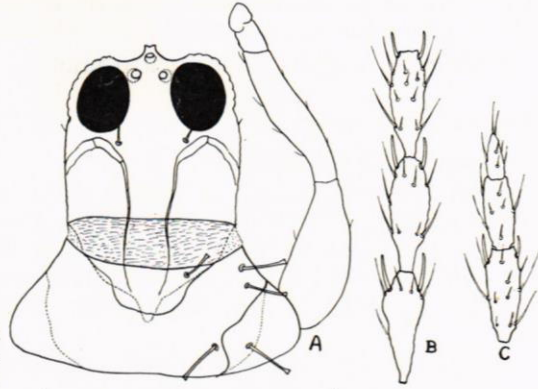


Fig. 4. *Stigmothrips limpidus* gen. et sp. nov. ♀: A, head; B, antennal segments 3—5; C, antennal segments 6—8.

paratively narrow; double fringe present; basal wing bristles in a line. Tube shorter than head, normal; anal setae much shorter than tube.

Typus generis, *Stigmothrips limpidus* gen. et sp. n.

In the general form and appearance, *Stigmothrips* approaches *Xylaplothrips*, but clearly differs from it in the narrow, elongate antennal segments, the large eyes and head longer than wide and much longer than prothorax.

Stigmothrips limpidus gen. et sp. nov.

Macropterous female:

Colour, yellowish brown; head brown; pterothorax yellow brown. Abdominal segments III, IV, anterior margin of V, VII except at middle, IX and X brown, rest yellow; base of antennal segment pale, 3 pale yellow, extreme base of 4—6 pale, rest dark brown. Prothorax yellow, bordered all round with crimson red pigment. Pterothorax fully studded with red pigment, as also abdominal segments II, III, VI, a little of VII and VIII, laterad. Wings clouded; interocular region surrounding ocelli with red pigment.

Head 196 long, 156 wide across eyes and 168 across cheeks; eyes large 84 long, 70 wide; interocular region narrow, 56 wide; median ocellus 13 wide, placed 19 for paired ocelli also 13 wide and 19 apart; postoculars very short, 38—48 long, placed 58 for cheeks, dilate. Mouthcone broadly rounded reaching beyond middle of prosternum. Antennal segments, length (width): 35 (32); 48 (29); 70—73 (29); 73 (29); 70 (22); 61 (19); 48 (16); 29 (13). Sense cones thin, 29—32 long.

Prothorax 140 long, 196 wide across anterior margin and 280 across posterior; anteroangulars 43; anteromarginals 38; midlaterals 43—45; postangulars 48; epimerals 54—60 long, dilate. Forefemur 70 wide; foretarsi unarmed.

Pterothorax 294 long, 294 wide. Forewing 686—700 long; narrow, with 2—4 double fringes; basal wing bristles 45, 48 and 80 long, respectively.

Abdomen 308 wide at base, 280 at middle, 210 across VIII and 154 across IX; inner middle and outer bristles of IX, 80—64 and 80 long respectively.

Tube 126 long, 56, 42 and 28 wide respectively across base; middle and apex; anal setae shorter than tube, 84 long.

Total body length: 1.890—1.910 mm.

Macropterous male:

Colour as in the female.

Head 182—196 long, 154—168 wide across eyes, 168—184 across cheeks; eyes 84 long and 58 wide; postoculars 35—38 long, placed 51 from cheeks; interocular space 51 wide. Antennal segments length (width): 29 (32); 48 (26—29); 70—74 (26—29); 70—71 (22—26); 67—70 (22—26); 54—58 (19), 43—45 (16—19); 29 (13). Mouthcone 80 long, 144 wide at base and 64 at apex.

Prothorax 112—126 long, 168—196 wide at anterior margin, 252—280 across posterior; anteroangulars 35—43; anteromarginals 38, midlaterals 32—43; postangulars 43 and epimerals 48—51 long, dilate. Forefemur 56 wide, foretarsus unarmed.

Pterothorax, 252—280 long, 280—322 wide; forewings 580 long, with 3—4 double fringes; basal wing bristles, 38, 43 and 64 long respectively.

Abdomen 224 wide at base, 182 at middle, 126 across VIII, 84 across IX. Tube, 98 long, 42, 30 and 28 wide respectively at base, middle and apex.

Total body length: 1.412—1.540 mm.

Material: 3 females, 2 males on bamboo spindles, Calicut, 4.11.63.

Stigmothrips bambusae sp. nov.

Macropterous female:

Colour yellow; antennal segments 3, 5, 6 pale, 1, 2 and 7 and 8 dark brown; extreme base and apex of 3 pale. Tube dark brown; wings pale. Only one female has uniform yellow by-colour, except tube, all others have cheeks below eyes brownish and pterothorax suffused brown.

Head 196—210 long, 140—168 wide across eyes, 168—252 across cheeks; eyes large, 84 long, 56 wide, interocular space 56 wide. Ocelli placed in a level with anterior third of eyes; median ocellus 13 wide, placed 21 from paired ocelli, 13 wide and 29 apart. Postoculars very short, 48 long, placed 51 from cheeks, dilate; antennal segments, length (width): 35 (35—38); 48—51 (29—32); 64—74 (29); 64—66 (29); 58—64 (29); 54—58 (26); 48—51 (19); 26—32 (13); sense cones thin, fine, 2 on 3 and 4. Mouthcone, short, broadly rounded, 94 long, 154 wide at base and 56 at apex. Stylets oculad do not meet.

Prothorax 126—140 long, 182—196 wide across anterior margin and 266—280 across posterior; anteroangulars 32—38; anteromarginals 38—48; midlaterals 45—48; postangulars 48—58 and epimerals 58—64 long, dilate. Forefemur not enlarged, 56—70 wide, foretarsus unarmed.

Pterothorax 298—308 long; wings narrow, constricted at middle, 770—840 long, 64 wide at base and 48 at middle; *without double fringes*; basal wing bristles, 38—48, 45—48 and 80—90 long respectively.

Abdomen 252—280 wide at base, 238—252 at middle, 210 across VIII and

168—182 across IX; inner and outer bristles of IX, 80 and 90 respectively. Tube 126—140 long, shorter than head; anal setae weak; 84 long.

Total body length: 2.016—2.072 mm (retracted, 1.596 mm).

Macropterous male:

Colour as in the female, but with a little red pigment patches on sides of abdominal segments 3 and 4.

Head 182—196 long, 140 wide across eyes and 154—168 across cheeks. Eyes 70 long, 42 wide; postoculars 48 long. Antennal segments, length (width): 29 (29); 45 (26); 64 (26); 64 (26); 58 (26); 54 (22); 43 (19); 26 (10).

Prothorax 98 long, 168 wide across anterior margin and 238 at posterior; anteroangulars 38, anteromarginal 38, midlaterals 48, postangulars 45 and epimerals 58 long. Forefemur 56 wide, not enlarged, foretarsi unarmed.

Pterothorax 224 long, 238 wide. Forewings 602—700 long, without double fringes; basal wing bristles, 38, 43 and 61—67 long respectively.

Abdomen 182 wide at base, 168 across middle, 126 across VIII and 98 at IX; Tube 112—126 long; anal setae 70 long.

Total body length: 1.330—1.540.

Material: 9 females and 4 males, on bamboo spindles, Calicut 4-11-63, along with *S. limpidus*.

S. bambuse differs from *S. limpidus* in the general colouration of the body, in the absence of double fringes on the forewings and slightly shorter antennal segments.

***Teuchothrips longus* (Schmutz)**

Mesothrips longus, Schmutz, 1913, Sitz. Akad. Wiss. Wien, CXXII (1):1054.

This species is recorded for the first time from the Indian mainland and the several individuals collected from the leaf rolls of *Pavetha* sp. exhibit the following variations. The species is redescribed below.

Macropterous female:

Colour: dark brown; antennal segments 1, 2 and 8 concolourous with head; segment 7 suffused yellowish brown; or more yellowish, or apical half brownish and basal half yellow; foretibia along margins brown, yellowish at middle and apex; extreme tips of mid and hind tibiae and all tarsi yellow.

Head 238—252 long, 196—210 wide across eyes, 210—224 across cheeks. Eyes 84 long, 56 wide; postoculars dilated at apex, 64—70 long. Antennal segments, length (width): 38 (38); 61—64 (43); 67—74 (38); 67—74 (43); 67—74 (38); 51 (38); 58 (32); 35—38 (13—16). Sense cones 3 (0+1); 4, 5, 6 (1+1).

Prothorax, 168—196 long, 266—280 wide across anterior margin and 392—448 across posterior. Anteroangulars 32—48; anteromarginals 26—38; postangulars 64—80 and epimerals 70—93 long, all delate at apex. Forefemur 98—112 wide, foretarsal tooth moderately developed.

Pterothorax 364—420 long, 420—462 wide; forewings 784—840 long, 70—84 wide at middle, with 5—8 double fringes; basal wing bristles in a broad triangle, 43—48, 43—48 and 48—64 long. Abdomen 420—462 wide

at base, 420 across middle, 336—350 across VIII and 224—238 across IX. Bristles on IX weak, 140 long. Tube 210—224 long, 84—96 wide at base, 56—70 at middle and 42—56 at apex.

Total body length: 2.310—2.660 mm.

Macropterous male:

Colour as in the female.

Head 210—224 long, 168—182 wide across eyes, 182—196 across cheeks; postoculars 58—70 long. Antennal segments, length (width): 38 (38); 48 (38); 64—70 (32); 64—70 (38); 64 (37); 58—64 (32); 54—58 (26); 38 (13).

Prothorax, 182 long, 252—266 wide at anterior margin and 378—406 at posterior. Anteroangulars 32; anteromarginals 29; postangulars 61—64 and epimerals 58—70 long. Forefemur 84—126 wide, foretarsal tooth stronger than in female.

Pterothorax, 336—350 long, 392—420 wide; forewings 630—742 long, 70 wide at middle; basal wing bristles, 32—43, 32—43 and 32—46 long respectively; 7 double fringes.

Abdomen, 392—410 wide at base, 344 across middle, 238—252 across VIII, 154—182 across IX. Tube 182—196 long, 70—84 wide at base, 56 at middle and 42 at apex.

Total body length: 1.848—2.114 mm.

Material: 50 females, 24 males in leaf rolls of *Pavetha* sp., Perintalmanna, 5-11-63 and Omalur, Salem, 22-3-64, 16 males and 18 females.

***Teuchothrips priesneri* sp. nov.**

Macropterous female:

Colour, dark brown; foretibia and tarsi paler, Antennal segments 1 and 2 brown, with little yellow suffused; 3—5 and basal $\frac{2}{3}$ of 6 yellow; apical $\frac{1}{3}$ of 6, 7 and 8 brown (in some individuals the extreme apex of 5 also brown).

Head 252—266 long, 224—238 wide across eyes, 252—266 across cheeks. Eyes 98 long, 70 wide; postoculars 106—112 long, pointed; median ocellus 22 wide, placed 32 from paired ocelli 32 wide and 43 apart. Antennal segments, length (width): 64 (48—51); 74—77 (43—45); 90—105 (43—45); 90—105 (45—48); 77—88 (43—45); 67—73 (32); 38—43 (16); Maxillary stylets more orad, do not meet at middle.

Prothorax 280—336 long, 356—378 wide across anterior margin and 630—658 across posterior. Anteroangulars 43—51; anteromarginals 43—48; mid-laterals 70—80; postangulars 160—166 and epimerals 131—160 long, all pointed. Forefemur 140—168 wide, foretarsal tooth small, 700—742 wide; forewings 1.330—1.400 long, 140—154 wide at middle, with 26—29 double fringes; basal wing bristles, 64—70, 74—80 and 74—80 long respectively.

Abdomen as wide at pterothorax at base, 490 across VIII and 280 across IX; bristles on IX — inner 168—192, outer 224—238 long, pointed. Tube 294—322 long, 112 wide at base, 84 at middle and 56 at apex; anal setae weak, 140 long.

Total body length: 3.444—3.808 mm.

Macropterous male:

Colour as in the female.

Head 252—266 long, 224—238 wide across eyes and 238—252 across cheeks. Eyes 98 long, 70 wide; postoculars 96—112 long; median ocellus 26 wide, placed 22 away from paired ocelli, 32 wide and 38 apart. Antennal segments, length (width): 48—56 (48); 67—74 (38—43); 90—102 (38—45); 88—96 (31—43); 88—96 (38—43); 88—96 (38—43); 80—88 (35); 64—86 (32); 38 (13). Maxillary stylets retracted orad.

Prothorax 280—336 long, 336—350 wide across anterior margin and 560—658 across posterior. Anteroangulars 43—48; anteromarginals 43—48; mid-laterals 92—116; postangulars 128—160; epimerals 134—160; forefemur 140—224 wide; foretibia short in Oedymerous males, the ratio of length of foretibia to forefemora being 196:420. In normal males, it is 182:308. The Oedymerous males also possess a small scale-like prominence at the apex of the inner angle of the foretibia, lacking in the normal males and in females.

Pterothorax 530—560 long, 630—700 wide. Forewings 1.330—1.400 mm long, 140—154 wide at middle and width 27—29; double fringes; basal wing bristles, 48, 64 and 70 long.

Abdomen 336 wide across VIII and 196—224 across IX; Tube 294—336 long, and as wide at base as in the female.

Total body length: 3.570—3.710 mm.

Material: 34 females and 30 males on leaf galls at Madras, 14-4-1963.

This species is provisionally placed in the genus *Teuchothrips*, and in the general body colouration and the long, pointed body setae, this species comes close to *T. pithecolobii* Hood. In the more robust body, the larger number of accessory fringes on the forewings, the almost subequal anteromarginals and anteroangulars (in *T. pithecolobii*, the anteroangulars are very short and anteromarginals are longer), the present species differs from *T. pithecolobii*.