

THYSANOPTERA FROM SIAM AND INDO-CHINA.

COLLECTED BY MR. W. DOCTERS VAN LEEUWEN.

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In the following paper are considered the Thysanoptera, collected by Mr. W. DOCTERS V. LEEUWEN in the year 1920, both gall-forming species, and flower-thrips. It seemed to be useful to treat the Siamese Thysanoptera and those from Annam and Cochin-China together, because forms, hitherto only known from one of these countries, may be found in the others in the future; it is not to be expected, that the Thysanopterous fauna of these countries should be very different.

From the territory here treated, only two species of Thysanoptera were hitherto recorded, so far as is known to the author, namely *Dinothrips sumatrensis* BAGNALL (from Tonkin) and "*Panarothrips grancilis*" BAGNALL (from Siam). All other species enumerated below are new for these countries and 17 of these must be considered as new species. Our knowledge of the Thysanoptera of Further India is thus greatly increased by the collections of Mr. DOCTERS V. LEEUWEN, and I am very much indebted to him for entrusting this very interesting material to me for study.

SUBORDER TEREBRANTIA HALID.

Family Thripidae UZEL.

Sub-family Sericothripinae KARNY.

1. *Scirtothrips angusticornis* n.sp. (Fig. 1.).

Female.—General colour brownish black. Fore femora yellowish brown; middle femora a little darker, with distinctly pale knees; hind femora black, but distinctly pale at base and knee. All tibiae and tarsi yellow. Antennae yellow, with the two first joints lightest, the third and fourth shaded with grey at apex, fifth in the

distal half and the following nearly wholly grey-brown. Fore wings dark, with a clear cross band near the base, reaching from the end of scale to the end of first-third of their length.

Head very short, one-half broader than long, with large, blackish eyes, occupying nearly the whole length of head. Mouth-cone in the lateral view pointed; maxillary palpi slender, distinctly more than half as long as the mouth-cone, with two long joints equal in length and a third shorter one at base. Labial palpi as long as the apical joint of the maxillary ones, with a very short annular segment at base and long, slender segment at apex.

Antennae very long and slender, nearly 5 times as long as the dorsal surface of head. First joint only a little wider than long, second cup-shaped, as broad as the first, nearly twice as long as wide. Third segment fusiform, with the distal constricted part sub-cylindrical, at the insertion of bristles as wide as the preceding joints, nearly three times as long as wide. Fourth antennal segment of a similar form to the third, equally long but a little narrower. The two following joints still narrower, about cylindrical, but the fifth narrowed basally, the sixth apically; the sixth shorter than 3 and 4, the fifth still shorter, but nevertheless three times as long

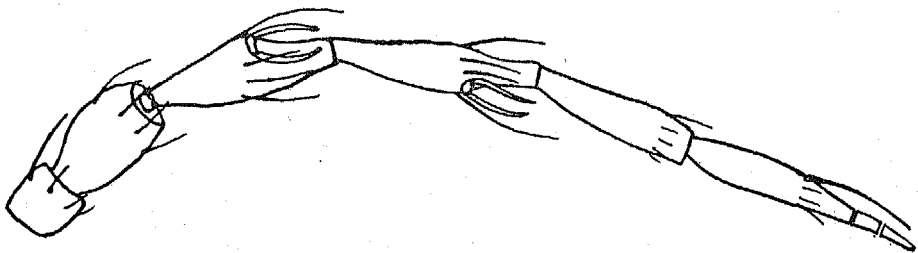


Fig. 1. Antenna of *Scirtothrips angusticornis* n. sp.

as wide. Style slender, a little shorter than half of the preceding segments; its apical joint longer than the basal.

First antennal segment with a long bristle at its inner surface; second with a shorter one near base and with a crown of stronger bristles near apex. Third joint with long, strong setae behind the middle, and close behind these at the anterior margin with a fork-shaped arrangement of sense-cones, reaching about to the

apex of the joint. Fourth segment with the bristles and sense-cones as in the preceding joint, but the latter inserted at the posterior margin. Segment 5 and 6 with a crown of weaker bristles, only one at the anterior margin longer and stronger.

Prothorax one and a half times as long as the head, with a stout spine at each hind angle, and a few shorter and weaker bristles scattered over the surface. Disc striate with distinct, transverse wrinkles. Fore and middle femora stout; tibiae constricted at base, and set with a few bristles at apex; neither tibiae nor tarsi with a tooth. Hind legs longer and slenderer, with very long, bristle-bearing tarsi.

Pterothorax a little wider than long; the sides of meso- and metathorax arched. Wings reaching about to the end of abdomen; fore pair distinctly colored, with long fringe and very weak bristles, of which there are 4 on the fore margin of the scale, a continuous series of about 30 on the anterior vein, and only two on the posterior vein (in the distal half).

Abdomen very broad, subglobular in the basal half, and conically pointed in the distal part. All segments at their hind angles set with long bristles; those of the apical segments especially long and stout.

Measurements:—Total length of antennae 0'34 mm. I. joint 0'02 mm. long, 0'025 mm. wide; II. joint 0'045 mm. long, 0'025 mm. wide; III. joint 0'07 mm. long, 0'025 mm. wide; IV. joint 0'07 mm. long, 0'02 mm. wide; V. joint 0'05 mm. long, 0'015 mm. wide; VI. joint 0'06 mm. long, 0'015 mm. wide; VII. joint 0'01 mm. long, 0'005 mm. wide; VIII. joint 0'015 mm. long, 0'005 mm. wide. Head 0'07 mm. long, 0'11 mm. wide. Prothorax 0'10 mm. long, 0'17 mm. wide. Fore femora 0'15 mm. long, 0'04 mm. wide; fore tibiae (including tarsi) 0'22 mm. long, 0'03 mm. wide. Pterothorax 0'20 mm. long, 0'25 mm. wide. Middle femora 0'14 mm. long, 0'04 mm. wide; middle tibiae (including tarsi) 0'22 mm. long, 0'03 mm. wide. Hind femora 0'18 mm. long, 0'035 mm. wide; hind tibiae (including tarsi) 0'30 mm. long, 0'03 mm. wide. Length of wings (without fringe) 0'65 mm. Abdomen 0'55 mm. long, 0'26 mm. wide. Total length 0'9 mm.

I have in the material before me only one (female) specimen of this very remarkable species, collected by Mr. DOCTERS v. LEEUWEN in flowers of *Desmodium* spec. (No. 46) together with a *Taeniothrips longistylus*, at Bang Saphan Yai (Southern Siam), dated 12. X. 1920.

I place this aberrant form with some doubt in the genus *Scirtothrips* SHULL. It differs from all species of this genus at once by the extraordinarily long and slender antennae and by the dark colour of body; diverging from *Sericothrips* by the presence of posterolateral prothoracic bristles, from the Thripinae by the posterior vein of fore wings nearly abortive, set only with two weak bristles. Perhaps it should form a new genus.

Subfamily Thripinae KARNY.

2. *Frankliniella vicina* n.sp.

Female.—Head and thorax light yellowish brown, abdomen dark, blackish brown. Legs pale, yellow. The two first antennal joints of the same colour as head, the following pale yellowish-grey, nearly clear, but a little darker-grey at apex; sixth segment and style dark. brownish-grey. Wings clear.

Head twice as broad as long; eyes black, more than half as long as head. Dorsal surface with a pair of short, stout postocellar bristles. Front below the insertion of antennae with a pair of long, downwards directed bristles. Mouth-cone short and blunt. Maxillary palpi inserted near its base, reaching to its tip; their two basal segments nearly equal in length, the first widest, the third longest and narrowest. Labial palpi a little longer than the apical joint of the maxillary ones, with a very short annular segment at base, and a long, slender one at apex.

Antennæ stout, nearly three times as long as the dorsal surface of head. First joint very small, a little wider than long, nearly parallel-sided. Second segment cup-shaped, twice as wide as the first, and distinctly longer than broad. Third joint broadly fusiform, a little shorter and narrower than the preceding one. Fourth segment of a similar shape, but distinctly slenderer, narrower and longer than the third. Fifth joint short, narrowed at base, transversely truncate at apex. Sixth segment longer than each of the preceding ones, fusiform, widest near the base, somewhat broadly united with

the fifth, gradually tapering to apex. Style short; its two joints equal in length, a little longer than broad.

Second, third and fourth antennal segments with a crown of long, stout spines near apex; the usual sense-cones of 3 and 4 short and stout.

Prothorax a little longer than head, distinctly wider than long. All bristles very long and stout; the anterolateral pair about half as long as the prothorax, the anteromarginal ones a little shorter. Each hind angle with two bristles, equal in length, and distinctly longer than the anterolateral ones; posteromarginal pair half as long as the posterolateral ones. Fore legs very stout, their femora about twice as long as broad; tibiae a little narrower, with some stout spines at the end. Tarsi distinctly two-jointed, without teeth.

Pterothorax scarcely broader than long, with two very long bristles near the insertion of fore wings. Middle and hind legs long and stout; their femora and tibiae thickened in the distal part; the latter ones with a row of strong bristles at the outer, and a similar row of shorter and stouter ones at the inner margin; a long, thick, black spine at apex. Tarsi slender, distinctly articulated, with a few bristles near the middle.

Fore wings reaching about to the base of eighth abdominal segment, clear, with moderately long fringe and strong bristles; those of the fore margin only a little shorter than the breadth of the wing, those of the veins distinctly shorter. About 20 bristles on the costa and on the anterior vein, 12 on the posterior vein, and 4 on the scale.

Abdomen about as wide as pterothorax, three times as long as broad, tapering to the tip. All segments with moderately long bristles at their hind angles; those of the ninth and tenth segment very long and stout, longer than the segments themselves. Ovipositor distinctly curved downwards, with strongly serrate margins, overreaching a little the tip of the last abdominal segment.

Measurements of female:—Total length of antennae 0.22 mm. I. joint 0.01 mm. long, 0.015 mm. wide; II. joint 0.04 mm. long, 0.03 mm. wide, III. joint 0.035 mm. long, 0.025 mm. wide; IV. joint 0.04 mm. long, 0.02 m.m. wide; V. joint 0.03 mm. long

0.015 mm. wide; VI. joint 0.05 mm. long, 0.015 mm. wide; VII. joint 0.007 mm. long, 0.005 mm. wide; VIII. joint 0.007 mm. long, 0.003 mm. wide. Head 0.08 mm. long, 0.16 mm. wide. Prothorax 0.11 mm. long, 0.18 mm. wide. Fore femora 0.10 mm. long, 0.05 mm. wide; fore tibiae (including tarsi) 0.11 mm. long, 0.035 mm. wide. Pterothorax 0.20 mm. long, 0.18 mm. wide. Middle femora 0.11 mm. long, 0.045 mm. wide; middle tibiae (including tarsi) 0.13 mm. long, 0.035 mm. wide. Hind femora 0.15 mm. long, 0.045 mm. wide; hind tibiae (including tarsi) 0.19 mm. long, 0.035 mm. wide. Length of wings (without fringe) 0.65 mm. Abdomen 0.65 mm. long, 0.20 mm. wide. Total length 1.0-1.1 mm.

Male.—Distinctly smaller than female. Head and thorax of the same colour, but abdomen paler, light greyish-yellow. Third antennal segment comparatively longer than in female. Bristles of the last abdominal segment still longer; no tooth-like spines. Testes orange-yellow, situated in the seventh and eighth abdominal segments. Penis sharply conical, slender, over reaching the tip of abdomen.

Measurements of male.—Total length of antennae 0.21 mm. I. joint 0.01 mm. long, 0.015 mm. wide; II. joint 0.03 mm. long, 0.025 mm. wide; III. joint 0.04 mm. long, 0.02 mm. wide; IV. joint 0.045 mm. long, 0.02 mm. wide; V. joint 0.03 mm. long, 0.015 mm. wide; VI. joint 0.045 mm. long, 0.015 mm. wide; VII. joint 0.005 mm. long, 0.005 mm. wide; VIII. joint 0.005 mm. long, 0.003 mm. wide. Head 0.07 mm. long, 0.13 mm. wide. Prothorax 0.10 mm. long, 0.16 mm. wide. Fore femora 0.10 mm. long, 0.05 mm. wide; fore tibiae (including tarsi) 0.11 mm. long, 0.035 mm. wide. Pterothorax 0.20 mm. long, 0.18 mm. wide. Middle femora 0.09 mm. long, 0.04 mm. wide; middle tibiae (including tarsi) 0.14 mm. long, 0.035 mm. wide. Hind femora 0.14 mm. long, 0.045 mm. wide; hind tibiae (including tarsi) 0.15 mm. long, 0.035 mm. wide. Length of wings (without fringe) 0.55 mm. Abdomen 0.45 mm. long, 0.16 mm. wide. Total length 0.8 mm.

This species was collected by Mr. DOCTERS v. LEEUWEN at Mour Man, in flowers of *Celosia argentea* L. (No. 76), dated 26. X. 1920 (together with *Hoplothrips soror*).

It comes in my determination table (Zool. Ann. 1912, pp. 334-336) nearest to *Fr. breviceps* BANGNALL (England), in WATSON's key to the American species (Florida Buggist, June 1919, p. 3), to *Fr. runneri* MORGAN. But *breviceps* has the thorax dark, and *runneri* differs by the coloration of antennae and wings. The Australian *Fr. trybomi* KARNY has also differently colored antennae, and the body a little paler. *Fr. nigriventris* UZEL (Central Europe), finally, has wings distinctly shorter, either entirely rudimentary, or not overreaching the sixth abdominal segment.

3. *Frankliniella persetosus* n.sp.

Female.—General colour uniformly dark brown; legs a little paler. Antennae of the same colour as body, only the third segment most a very little paler. Fore wings shaded with greyish.

Head hardly broader than long, with straight parallel cheeks. Eyes black, occupying a little more than the half of length of head. Behind them on each side a stout postocular bristle, and a similar pair behind the posterior ocelli. Anterior ocellus directed forwards between the insertion of antennae. Front with some short hairs, and with two pairs of stout, downwardly directed bristles, one below the insertion of antennae, the other close to the base of mouth-cone. The latter short and blunt, maillary palpi shorter than in the preceding species, their joints of the same shape as there. Labial palpi as in *vicina*.

Antennae twice as long as head, stout. First joint very small, a little wider than long. Second segment cup-shaped, broader than the first, distinctly longer than wide. Third joint of a similar shape to the preceding, but a little narrower. Fourth segment fusiform, as wide as the third, but longer. Fifth joint as long and broad as the third, narrowed at base, transversely truncated at apex. Sixth segment as long as the fourth, fusiform, widest near the base, somewhat broadly united with the fifth, gradually tapering to apex. Style shorter than the half of the sixth joint, but longer than in the preceding species; its basal segment as long as wide, the apical one longer and narrower.

Segments 1—5 with a crown of stout bristles before the apex. Sixth segment with a few bristles near the middle; style only with a

few weak hairs. Sense-cones of the third and fourth joint stout and short, but distinctly overreaching the end of their segments, of the usual shape.

Prothorax as in the preceding species. Fore legs a little longer and distinctly slenderer; tarsi and spines of tibiae as in *vicina*.

Pterothorax hardly longer than wide, with straight sides converging backwards. Sutures of mesosternum formed as an inverted T, these of metasternum Y-shaped. Hind coxae somewhat larger than the middle ones, closer to one another. Middle and hind legs practically as in the preceding species.

Fore wings reaching to the sixth abdominal segment, somewhat shaded with grey, with moderately long fringe and extraordinarily long and stout bristles. 16 on the fore margin, nearly as long as the breadth of the wing; 14 on the anterior vein, only a little shorter; 11 on the posterior vein, nearly as long as those of the costa. Scale with 5 bristles. Hind wings greyish, a little paler than the anterior pair; their vein darker only in the basal part.

Abdomen long and slender, only a little wider than the pterothorax, three and a half times as long as broad, gradually tapering to the tip, bluntly conical at apex. All segments with a strong bristle at each hind angle and with a few smaller ones along the posterior margin. The two last abdominal segments with very stout and long setae, longer than the segments themselves. Ovipositor shaped as in *vicina*, but hardly reaching to the tip of abdomen; its base at the fore margin of the eighth abdominal segment.

Measurements:—Total length of antennae 0'22 mm. I. joint 0'15 mm. long, 0'02 mm. wide; II. joint 0'035 mm. long, 0'025 mm. wide; III. joint 0'035 mm. long, 0'02 mm. wide; IV. joint 0'04 mm. long, 0'02 mm. wide; V. joint 0'035 mm. long, 0'02 mm. wide; VI. joint 0'04 mm. long, 0'02 mm. wide; VII. joint 0'01 mm. long, 0'01 mm. wide; VIII. joint 0'015 mm. long, 0'005 mm. wide; Head 0'11 mm. long, 0'12 mm. wide; Prothorax 0'13 mm. long, 0'17 mm. wide. Fore femora 0'12 mm. long 0'04 mm. wide; fore tibiae (including tarsi) 0'13 mm. long, 0'035 mm. wide. Pterothorax 0'23 mm. long, 0'22 mm. wide. Middle femora 0'10 mm. long, 0'035 mm. wide; middle tibiae (including tarsi) 0'13 mm. long, 0'03 mm. wide. Hind femora 0'12 mm. long, 0'03 wide; hind

tibiae (including tarai) 0'19 mm. long, 0'025 mm. wide, Length of wings (without fringe) 0'65 mm. Abdomen 0'8 mm. long, 0'24 mm. wide. Total length 1'2 — 1'4 mm.

Two females from Susrasthra Dani (Southern Siam) collected by MR. DOCTORS V. LEEUWEN in flowers of *Ipomoea* spec. (No. 44), together with *Thrips japonicus*, dated 1 X 1920.

This species is closely allied with *Fr. nervosa* UZEL (Europe and North America), but diverging from it and also from *insularis* FRANKLIN, by the uniformly colored antennae. The Australian *Fr. trybomi* KARNY is distinctly paler, and has the head constricted backwards, and the fore wings clearer. *Fr. persetosia* is at once distinguished from the preceding species by the dark head and thorax.

4. **Taeniothrips longistylus** *n.sp.* (Fig. 2).

Female.—General colour dark brown. Fore legs and all tarsi greyish-yellow; fore femora at the outer margin darker, brown; fore tibiae shaded with grey. Antennae uniformly dark grey brown, but the third joint paler, yellowish grey. Fore wings dark grey-brown at extreme base and the scale, then in the first third broadly clear, transparent, further greybrown, with a clear cross-band in the distal part; apex dark.

Head one and a half times as wide as long; cheeks nearly straight, slightly granulated, subparallel. Eyes black, occupying a little more than half of the length of head, with some very short hairs between the facets. Ocelli large, with red pigment-cups, arranged in a rectangular triangle, the anterior one placed near the middle of eyes, directed forwards; the posterior ones a little before the hind border of eyes, directed upwards. Dorsal surface of head with a pair of long, stout postocellar bristles, and a very short, weak, forwardly directed hair behind the eyes on the cheeks. Occiput with a very fine, transverse striation.

Antennae a little more than twice as long as the head, slender. First joint broad, cylindrical, one and a half time as wide as long. Second segment cup-shaped, twice as long as the first, and a little narrower than it. Third joint broadly fusiform, as wide as the second, and as long as the two preceding ones together.

Fourth segment of the same size as the third, a little more constricted apically. Fifth joint very small, distinctly narrower than the

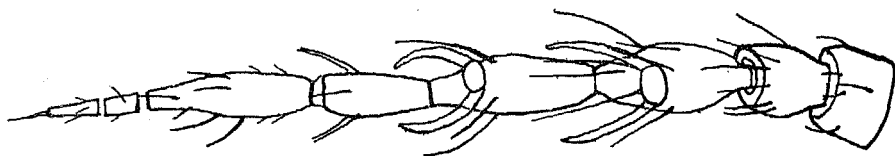


Fig. 2. Antenna of *Taeniothrips longistylus* n. sp.

preceding ones, three times as long as wide, but only a very little longer than the second, nearly fusiform, but transversely truncate at apex. Sixth segment slender, fusiform widest before the middle, nearly as long as the third, but distinctly narrower. Style long and slender, nearly half as long as the preceding joint; its apical segment longer and more slender than its first.

First joint with a crown of short, weak bristles near the end. Second segment with a similar arrangement of longer and stouter setae. Third joint with strong bristles in the distal half, and with the usual fork-shaped pair of sense-cones, reaching to the end of first third of the following segment. This with a crown of long, stout bristles behind the middle, and with the sense-cones a little shorter and more curved than those of the preceding joint. Fifth segment with some bristles in the distal part. Sixth joint with a transverse row of bristles near the middle, before them only some very short hairs, behind them a few short bristles. Style with weak, short hairs and two longer and stouter ones at apex.

Front with two pairs of downwardly directed bristles, one below the insertion of antennae, the other before the base. Mouth-cone bluntly conical, reaching to the middle of prosternum. Maxillary palpi three-jointed, about three-fourths as long as the whole mouth-cone; the first joint widest and longest, nearly as long as the two others together; these about equal in length, the third still narrower than the second. Labial palpi very slender, distinctly narrower and somewhat longer than the last maxillary-palpal joint.

Prothorax transverse, ovate, a little longer than head, and distinctly wider than long. At each anterior angle a small, forwardly

directed bristle; at each posterior angle two long and stout bristles, equal in length, and about half as long as the prothorax. Fore coxae ovate. Fore legs stout; their femora thickened; tibiae with some hairs along the outer margin, and with a few stout setae at the end, especially on the inner side. Tarsus slender, two-jointed, with a few hairs, but without tooth.

Pterothorax distinctly wider than prothorax, somewhat longer than broad; sides of meso-and metathorax arched, somewhat converging behind. Suture of mesosternum as in *Frankliniella persetosae*, that of metasternum X-shaped. Middle and hind coxae subglobular, rounded; the latter distinctly larger and much closer to one another than the former. Middle and hind legs long and stout; chaetotaxy as in the fore legs, but the apical spines of all tibiae still stronger.

Wings reaching to the seventh abdominal segment, fore pair with distinct cross-bands. Fringe long, bristles long and stout. Costa with about 25 bristles; anterior vein with 14 from base to the apical third; the apical clear cross-band without bristles on the anterior vein, then two in the dark apical part. Posterior vein with about 14 bristles, equidistant throughout its whole length, 4 of them in the apical clear cross-band. Scale with 4 long bristles along the fore margin, one at the surface near the base, and with a thick transparent processus (sensæ-cone?) at the apex. Hind wings narrower than the fore pair, with a dark longitudinal vein throughout the whole length.

Abdomen broader than the pterothorax, three times as long as wide, gradually tapering to apex, which is bluntly conical. All segments with a long, stout bristle at the hind angle, and another before this at the middle of each side; further with a half dozen smaller bristles along the posterior margin. Setae of the last two segments very long and stout, distinctly longer than the segments themselves. Ovipositor as in *Frankliniella persetosae*.

Measurements of female:—Total length of antennae 0'31 mm.

I. joint 0'02 mm. long, 0'03 mm. wide; II. joint 0'04 mm. long, 0,025 mm. wide; III. joint 0,06 mm. long, 0'025 mm. wide; IV. joint 0'06 mm. long, 0'025 mm. wide; V. joint 0'045 mm. long, 0,015 mm. wide; VI. joint 0'055 mm. long, 0'02 mm. wide; VII. joint 0'015 mm. long, 0'01 mm. wide; VIII. joint 0'02 mm. long, 0'005 mm. wide.

Head 0'11 mm. long, 0'16 mm. wide. Prothorax 0'13 mm. long, 0'20 mm. wide. Fore femora 0'12 mm. long, 0'06 mm. wide; fore tibiae (including tarsi) 0'22 mm. long, 0'04 mm. wide. Pterothorax 0'32 mm. long, 0'27 mm. wide. Middle femora 0'12 mm. long, 0'05 mm. wide; middle tibiae (including tarsi) 0'20 mm. long, 0'045 mm. wide. Hind femora 0'18 mm. long, 0'05 mm. wide; hind tibiae (including tarsi) 0'31 mm. long, 0'04 mm. wide. Length of wings (without fringe) 0'9 mm. Abdomen 1'0 mm. long, 0'35 mm. wide. Total length 1'4-1'7 mm.

Male.—Smaller than female, but of the same colour. Antennae comparatively longer, the third joint paler and also the basal part of the fourth greyish-yellow. Fore femora longer and more thickened than in the other sex, entirely dark brown. Abdomen small, distinctly narrower than the pterothorax. Penis short; its basal part subglobular, then tapering to apex, which is curved. Before the base of penis there are two pairs of thick, black, short spines on the ninth segment.

Measurements of male.—Total length of antennae 0'31 mm. I. joint 0'02 mm. long, 0'03 mm. wide; II. joint 0'04 mm. long, 0'025 mm. wide; III. joint 0'06 mm. long, 0'02 mm. wide; IV. joint 0'06 mm. long, 0'02 mm. wide; V. joint 0'04 mm. long, 0'015 mm. wide; VI. joint 0'055 mm. long, 0'015 mm. wide; VII. joint 0'015 mm. long, 0'01 mm. wide; VIII. joint 0'02 mm. long, 0'005 mm. wide. Head 0'14 mm. long, 0'16 mm. wide. Prothorax 0'14 mm. long, 0'19 mm. wide. Fore femora 0'15 mm. long, 0'09 mm. wide; fore tibiae (including tarsi) 0'16 mm. long, 0'05 mm. wide. Pterothorax 0'25 mm. long, 0'24 mm. wide. Middle femora 0'15 mm. long, 0'055 mm. wide; middle tibiae (including tarsi) 0'18 mm. long, 0'04 mm. wide. Hind femora 0'18 mm. long, 0'045 mm. wide; hind tibiae (including tarsi) 0'24 mm. long, 0'035 mm. wide. Length of wings (without fringe) 0'7 mm. Abdomen 0'50 mm. long, 0'18 mm. wide. Total length 1'0-1'1 mm.

This species seems to be common in different flowers. Mr. DOCTERS v. LEEUWEN collected it in flowers of the following plants: *Desmodium* spec. (no. 46; Bang Saphan Yai, Southern Siam; 12 X. 1920; together with *Scirtothrips angusticornis*). *Canavallia ensiformis* (L.) DC. (No. 53; Bangkok, Siam; 9. X. 1920; together

with *Physothrips vitticornis*). *Clitorea* spec. (No. 56; native forest near Saigon; 19 X. 1920). *Vigna* spec. (No. 61; Saigon; 20. X. 1920). *Canavallia ensiformis* (L.) DC. (No. 73; Ca-Nai 26. X. 1920; together with *Physothrips vitticornis* and *Thrips japonicus*). *Crotalaria saltiana* ANDR. (No. 75; Malam; 26. X. 1920).

This new species, by the chaetotaxy of body and the cross-banded fore wings comes near to *Taeniothrips* s. str., and agrees here in chaetotaxy of fore wings only with *T. distalis* KARNY from Japan. But this latter has the antennae entirely dark and their middle joints longer and more slender than *longistylus*.

5. *Physothrips vitticornis* n.sp. (Fig. 3).

Female.—General colour dark brown, with rich, reddish hypodermal pigmentation, with gives to newly developed specimens a bright red colour. Fore tibiae a little paler than the femora, yellowish at the end; all tarsi yellowish. The first two antennal joints as dark as the body, the third pale, yellowish, the fourth somewhat darker, yellowish grey. The following segments greyish brown, but a little paler than body. Therefore the whole antennae grey-brown, with a paler cross-band, formed by the yellowish third and fourth joints. Fore wings dark, grey, at most with a little, indistinct clearer patch near base (as in *Ph. fumosus* TRYBOM).

Head a little wider than long, with the cheeks arched and somewhat converging posteriorly. Eyes, ocelli, chaetotaxy of head, and sculpture of occiput as in *Taeniothrips longistylus*. Mouth-cone conical, tapering to apex, pointed, overreaching distinctly the midst of prosternum. Palpi as in the former species.

Antennae twice as long as head, moderately stout. First joint short, twice as wide as long. Second segment cup-shaped, a little narrower than the preceding one, and a little more than twice as long. Next two joints broadly fusiform, equal in length, and longer and narrower than second; the third a little broader than the fourth. Fifth segment more slender, somewhat shorter than the preceding one, fusiform, but transversely truncated at apex. Sixth segment fusiform, but widest before its middle, longer than each of the preceding joints, as wide as the fourth. Style nearly half as long as the sixth segment, its apical joint a little longer and narrower than the basal.

Segments 1-5 with a crown of strong bristles behind the middle. Sixth a little before the middle. Style with only a few hairs. Sense-cones well developed; those of the third and fourth joint reaching to the insertion of bristles at the following segment. Sixth joint on its ventral surface with a distinct sense-cone, reaching nearly to the end of the basal style-joint.

Prothorax transverse, ovate, as long as the head is wide, and considerably wider than long. Fore margin without setae, each posterior angle with two long, stout bristles, the outer a little longer than the inner one. Fore legs stout, their femora not considerably thickened; tibiae and tarsi as in *Taeniothrips longistylus*.

Pterothorax wider than prothorax, nearly as wide as long, with considerably arched sides of meso- and metathorax, distinctly constricted at the hind margin of each of these two segments. Between the insertion of fore wings a pair of long bristles directed backwards. Sutures of the sterna as in *Taeniothrips longistylus*, also the form and chaetotaxy of middle and hind legs.

Wings reaching to the middle or hind margin of seventh abdominal segment. Fore pair with long fringe and long, strong bristles. On the costa about 25; in the basal half of fore vein 9, in the distal part usually 4, but sometimes 3 or 5; one of the specimens examined has on the right fore wing 4 after a distinct, median interval, but on the left fore wing a continuous line of 15 bristles throughout the whole length of anterior vein, without an interval in the middle, and therefore about 7 bristles in the distal half! Posterior vein with 12—14 setae; scale with 5 along the fore margin, and one on the surface near base. Hind wings very little shaded with greyish, especially at apex, but with a distinct dark median vein throughout the whole length.

Abdomen somewhat broader than the pterothorax, nearly three times as long as wide, tapering to apex, which is distinctly conical, more pointed than usual in this genus. Chaetotaxy and ovipositor as in *Taeniothrips longistylus*.

Measurements:—Total length of antennae 0'25 mm. I joint 0'015 mm. long, 0'03 mm. wide; II. joint 0'035 mm. long, 0'25 mm. wide; III. joint 0'045 mm. long, 0'022 mm. wide; IV. joint 0'045 mm. long, 0'02 mm. wide; V joint 0'04 mm. long, 0'015 mm. wide; VI.

joint 0'05 mm. long, 0'02 mm. wide; VII. joint 0'008 mm. long, 0'006 mm. wide; VIII. joint 0'012 mm. long, 0'004 mm. wide. Head 0'12 mm. long, 0'14 mm. wide. Prothorax 0'14 mm. long, 0'18 mm. wide. Fore femora 0'11 mm. long, 0'05 mm. wide; fore tibiae (including tarsi) 0'13 mm. long, 0'04 mm. wide. Pterothorax 0'23 mm. long, 0'21 mm. wide. Middle femora 0'09 mm. long, 0'04 mm. wide; middle tibiae (including tarsi) 0'12 mm. long, 0'03 mm. wide. Hind femora 0'11 mm. long, 0'04 mm. wide; hind tibiae 0'18 mm. long, 0'03 mm. wide. Length of wings (without fringe) 0'65 mm. Abdomen 0'7 mm. long, 0'25 mm. wide. Total length 1'2 — 1'4 mm.

Collected by MR. DOCTORS v, LEEUWEN in flowers of the following plants: *Melastoma malabathricum* L. (No. 39; Bang Klam, Southern Siam; 30 IX 1920; together with *Thrips japonicus*). *Canavallia ensiformis* (L.) DC. No. 53: Bangkok, Siam; 9 X 1920; together with *Taeniothrips longistylus*. No. 73; Ca-Na, Indo-china; 26 X 1920; together with *Taeniothrips longistylus* and *Thrips japonicus*). *Desmodium umbellatum* DC. (No. 80; Saigon, Indo-china; 29 X 1920).

This new species seems to come nearest to the American *Ph. ehrhornii*, but has a different coloration of antennae. From the African *fumosus* it may be distinguished at once by its much smaller size, the coloration of antennae and the smaller number of bristles on the distal part of fore vein. By its pointed abdominal apex, *Ph. vitticornis* calls to mind somewhat the Javanese *Bregmatothrips theifloris*, but differs from it by the longer style, the longer sense-cones, the paler fourth antennal segment, and the diverse length of maxillary-palpal joints. It is perhaps not impossible, that in the future *vitticornis* and *theifloris*, by a study of more material from several different localities and food-plants, may be proved to be local or biological races of one and the same species. I have thus far not had sufficient

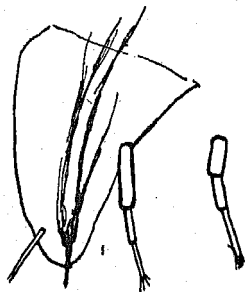


Fig. 3. Mouth cone of *Physothrips vitticornis*; a maxillary palpus of *Bregmatothrips theifloris*.

to describe *vitticornis*, as a different species, especially too, because *theifloris* has the abdominal apex still more pointed and comes therefore near *Bregmathothrips*, whilst *vitticornis* by this character may rather be placed near *Physothrips*.

6. *Isoneurothrips parvispinus* n.sp.

Female.—General colour dark brown, head and throat a little more yellowish, abdomen darker shaded with grey. Legs yellow. The two first antennal joints of the same colour as head, the third pale yellowish; the others wanting in the unical type specimen. Fore wings clear, hyaline in the basal third, further greyish to apex.

Head one and a half times as wide as long; cheeks arched, with some very small hairs and a somewhat stronger postocular bristle. Eyes large, black, with fine hairs between the facets, occupying somewhat more than half of the length of head. Ocelli large, with red pigment-cup, arranged nearly in a line transverse through the middle of eyes in an obtuse-angular triangle, nearly touching one another, Mouth-cone somewhat pointed, distinctly overreaching the middle of prosternum. Palpi very small, especially the labial ones, short and very thin. Maxillary palpi three-jointed, with short segments.

Prothorax ovate, a little longer than head, one and a half times as wide as long, with broadly rounded sides; with very small anterolateral bristles, and two larger posterolateral ones on each hind angle.

Pterothorax as wide as long, with strongly arched sides of meso- and metathorax, distinctly constricted at the hind margin of each of these two segments. Sutures of mesosternum of the form of an inverted T, with a shorter transverse line before the hind suture. Those of metasternum semi-circular, convex, backwards with a short straight median line going backwards and two oblique ones on each side, directed towards the hind coxae.

Middle and hind coxae rounded, the former distinctly smaller and about twice as widely separated from each other as the hind ones. Legs moderately long and stout, along their whole length set with short hairs; besides these a row of stout bristles along the inner

margin of tibiae, and especially long and stout, spine-like bristles at the end.

Wings reaching about to the ninth abdominal segment, fore pair with two continuous lines of bristles along the veins, 16 on anterior vein, 12 on posterior vein, and about 22 on costa. The bristles of hind vein nearly as long as the wing is broad in the distal half, those of fore vein a little shorter, those of costa somewhat longer.

Abdomen as wide as pterothorax, not quite three times as long as wide. Segments 2-8 on each hind angle with two long, stout, pointed bristles, about as long as the segments themselves. Ninth segment longer than each of the others, with the tenth together conical. Bristles of ninth segment very long and stout, laterally directed, as long as the segment or a little longer, three on each side; besides them two pairs of shorter, stout bristles behind one another on dorsal surface. Last segment on each side with two strong bristles, as long as those of the preceding segment; and a pair of shorter, weaker ones on ventral surface close to the ovipositor. This reaching from the base of 8th segment to apex of the last

Measurements of female.—Antennae? Head 0.09 mm. long, 0.13 mm. wide. Prothorax 0.10 mm. long, 0.15 mm. wide. Pterothorax 0.20 mm. long, 0.20 mm. wide. Middle femora 0.11 mm. long, 0.035 mm. wide; middle tibiae (including tarsi) 0.13 mm. long, 0.03 mm. wide. Hind femora 0.13 mm. long, 0.04 mm. wide; hind tibiae (including tarsi) 0.16 mm. long, 0.035 mm. wide. Length of wings (without fringe) 0.55 mm. Abdomen 0.55 mm. long, 0.20 mm. wide. Total length 0.9-1.0 mm.

Male.—General colour lemon-yellow, pterothorax somewhat tinged with brownish. Legs pale yellow. Antennae pale yellow at base, gradually shaded with grey towards the apex. Their middle joints about fusiform, widest behind the middle; 3 and 4 equal in length, 2 a little shorter, 5 still shorter, 6 longer than any of the others. Style very short, one-jointed. Wings clear, hyaline throughout their whole length; the last bristles of fore vein somewhat more distant from the preceding than the others from each other. Abdomen a little narrower than pterothorax, chaetotaxy as in the

female. No teeth-like spines on ninth segment. Penis not over-reaching the end of abdomen. Testicles bright orange yellow.

Measurements of male:—Total length of antennae 0'18 mm. I. joint 0'01 mm. long, 0'02 mm. wide; II. joint 0'03 mm. long, 0'02 mm. wide; III. joint 0'035 mm. long, 0'02 mm. wide; IV. joint 0'035 mm. long, 0'015 mm. wide; V. joint 0'025 mm. long, 0'015 mm. wide; VI. joint 0'045 mm. long, 0'02 mm. wide; VII. joint 0'005 mm. long, 0'005 mm. wide. Head 0'09 mm. long, 0'13 mm. wide. Prothorax 0'10 mm. long, 0'16 mm. wide. Fore femora 0'10 mm. long, 0'04 mm. wide; fore tibiae (including tarsi) 0'14 mm. long, 0'03 mm. wide. Pterothorax 0'18 mm. long, 0'20 wide. Middle femora 0'09 mm. long, 0'035 mm. wide; middle tibiae (including tarsi) 0'14 mm. long, 0'03 mm. wide. Hind femora 0'14 mm. long, 0'035 mm. wide; hind tibiae (including tarsi) 0'18 mm. long, 0'03 mm. wide. Length of wings (without fringe) 0'54 mm. Abdomen 0'50 mm. long, 0'17 mm. wide. Total length 0'9—1'0 mm.

One male and one female, collected by Mr. DOCTERS V. LEEUWEN in flowers of *Trichosanthes tricuspidata* LOUR (No. 52) at Bangkok (Siam), dated 9. X. 1920.

This new species approaches by the chaetotaxy of fore wings *Isoneurothrips*, and by the short, wide head to *multispinus* BAGNALL (from Hawaii). But the end of middle and hind tibiae is not extended in two pin-like processes, as figured by BAGNALL for *multispinus* (Plate xvii, fig. 20), but only with strong, spinelike, articulately inserted bristles. Further the bristles of *parvispinus*, especially on head and prothorax, are distinctly shorter and weaker than in *multispinus*.

7. *Thrips japonicus* BAGNALL.

1914. BAGNALL, Ann. Mag. Nat. Hist., (8) XIII, p. 288.

In place in this species with some doubt a number of females, collected by Mr. DOCTERS V. LEEUWEN in flowers of the following plants: *Melastoma malabathricum* L. (No. 39; Bang Klam, Southern Siam; 30. IX. 1920; together with *Physothrips vitticornis*). *Helicteres isora* L. (No. 40; Nong Chin, Southern Siam; 30. IX. 1920). *Ipomaea* spec. (No. 44; Surasthra Dani, Southern Siam; 1. X. 1920; together with *Frankliniella persetosae*). *Canavallia*.

ensiformis (L.) DC. (No. 73; Ca-Na, Indo-china; 26. X. 1920; together with *Teniothrips longistylus* and *Physothrips vitticornis*).

The material before me agrees tolerably with BAGNALL's description; but the size is somewhat smaller, total length about 1.0 mm. The last abdominal segment has a distinct longitudinal suture throughout its whole length, as also stated by BAGNALL for the Japanese specimens.

The specimens before me agree also with UZEL's short description of his *var. pullus* of *Thrips tabaci*, but here the third antennal joint is the palest of all, in *pullus* the first. Specimens from onions from Java, which I would rather refer to *tabaci pullus*, have the whole body uniformly dark and the fore wings nearly clear.

A comparison with the other Indian species shows, that my *japonicus* is identical with none of them. *Thrips oryzae* (originally described by WILLIAMS from British India, but occurring also on rice in Java) has the body uniformly dark, the antennæ shorter and stouter, and the ninth abdominal segment much longer (very characteristic for *oryzae*!). But the colour and chaetotaxy of fore wings is the same in both species.

Thrips florum is also very similar, but somewhat larger and uniformly dark. "*Thrips magnipes*" and "*rhodamniæ*" (SCHMUTZ) are contracted specimens of *florum*, and therefore the abdomen seems darker, because its segments are somewhat telescoped.

Thrips parvus has but two bristles on distal half of fore vein, is uniformly coloured and somewhat smaller than the specimens before me.

The Japanese *albipes* BAGNALL, finally, seems to be very similar to the species from Further India, but has the head a little longer, and the eighth abdominal segment with a fine comb-like fringe on hind margin, entirely wanting in the material before me.

Subfamily Aptinothripinae KARNY.

8. *Anaphothrips floralis* n.sp.

Female. Male.—General colour lemon yellow, pterothorax somewhat darker, brownish yellow. First antennal joint paler than head, nearly clear, second and third of the same colour as head; the following ones increasingly greyish, sixth and style dark grey. Fore

wings somewhat shaded with greyish, also the hind wings at base and along the median vein. Testicles bright orange red.

Head one and a half times as wide as long, with slightly arched sides. Eyes large, black, occupying more than half of the length of head. Ocelli large, with red pigment-cups, arranged in a rectangular triangle, the anterior one placed behind the fore margin of eyes, the posterior ones near their middle. No conspicuous bristles.

Antennae stout, about twice as long as head. First segment very small, about as long as wide. Second cup-shaped, broadly rounded, distinctly wider than the other joints, about as long as wide. Following segments broadly clavate; sixth fusiform, but widest near the base, the longest of all the joints, without a transverse suture. Style short, with the first joint nearly as long as the second. Bristles and sense-cones inconspicuous.

Mouth-cone conical, distinctly overreaching middle of prosternum. Maxillary palpi about half as long as the mouth-cone, with three joints subequal in length, the basal one the widest, the apical one the narrowest. Labial palpi very thin, but a little more than half as long as the maxillary ones, with an annular basal joint, and a long, narrow apical one.

Prothorax a little longer than head, one and a half times as wide as long, broadly rounded, without bristles. Pterothorax as long as wide, with arched sides of meso- and metathorax, distinctly constricted at the hind margin of each of these two segments. Sutures of mesosternum in the form of an inverted T, those of metasternum short, consisting of a transverse line, from which on each side goes a short longitudinal suture towards the hind coxae, with an obtuse angle just before reaching them.

Hind coxae twice as large as the middle ones, the distance between them only one-fourth of that between the middle coxae. All legs somewhat stout, without conspicuous bristles, except a few at the end of tibiae. Tarsi not toothed.

Wings reaching about to the eighth abdominal segment; fore pair with moderately long fringe, and very short, weak bristles; three of them on the distal half of anterior vein.

Abdomen a little broader than pterothorax, with very short, nearly abortive bristles; only those of the two last segments somewhat longer and stouter, about as long as the segments themselves. Ovipositor reaching from distal part of the seventh segment to the end of abdomen. Ninth tergite of male, near the middle, with a transverse line of three long bristles on each side, and between them, near the middle, a pair of short, dark, stout spines. Penis short, acute at apex, hardly overreaching the end of last segment.

Measurements of female.—Head 0'08 mm. long 0'12 mm. wide. Prothorax 0'10 mm. long, 0'15 mm. wide. Fore femora 0'08 mm. long, 0'04 mm. wide, fore tibiae (including tarsi) 0'14 mm. long, 0'03 mm. wide. Pterothorax 0'20 mm. long and wide. Middle femora 0'10 mm. long, 0'03 mm. wide; middle tibiae (including tarsi) 0'15 mm. long, 0'025 mm. wide. Hind femora 0'12 mm. long, 0'03 mm. wide; hind tibiae (including tarsi) 0'16 mm. long, 0'025 mm. wide. Length of wings (without fringe) 0'6 mm. Abdomen 0'70 mm. long, 0'24 mm. wide. Total length 1'1 mm.

Measurement of male.—Total length of antennae 0'18 mm. I. joint 0'015 mm. long, 0'015 mm. wide; II. joint 0'025 mm. long, 0'025 mm. wide; III. joint 0'03 mm. long, 0'015 mm. wide; IV. joint 0'03 mm. long, 0'02 mm. wide; V. joint 0'025 mm. long, 0'015 mm. wide; VI. joint 0'035 mm. long 0'015 mm. wide; VII. joint 0'007 mm. long, 0'006 mm. wide; VIII. joint 0'008 mm. long, 0'005 mm. wide. Length of head 0'08 mm., of prothorax 0'10 mm. Fore femora 0'08 mm. long, 0'03 mm. wide; fore tibiae (including tarsi) 0'1 mm. long, 0'025 mm. wide. Length of pterothorax 0'18 mm. Middle femora 0'08 mm. long, 0'03 mm. wide; middle tibiae (including tarsi) 0'1 mm. long, 0'025 mm. wide. Hind femora 0'10 mm. long, 0'025 mm. wide; hind tibiae (including tarsi) 0'1 mm. long, 0'02 mm. wide. Length of wings (without fringe) 0'40 mm., of abdomen 0'45 mm. Total length 0'8 mm.

One female and one male, collected by MR. DOCTERS v. LEEUWEN in flowers of *Clitorea ternatea* L. (No. 81, at Saigon, Indo-china, dated 30 X 1920).

It approaches, in my key, (*Zeitschr. wiss. Ins.-Biol.*, X, p. 355 358, 1914) close to the African *loennbergi*, but differs from

it at once by the entire lack of prothoracic bristles. Cannot be confused with any of the other hitherto known species.

SUBORDER TUBULIFERA HALIDAY.

Family Phloeothripidae UZEL.

Subfamily Haplothripinae KARNY.

9. *Haplothrips soror* SCHMUTZ.

1913. SCHMUTZ, Sitzber. Akad. Wiss. Wien., Math.-nat. Kl., 122, I, p. 1033, 1039.

1921. PRIESNER, Treubia, II, 1, p. 6.

Two specimens collected by Mr. DOCTERS v. LEEUWEN in flowers of *Celosia argentea* L. (No. 76), at Mour Man, Indo-china, dated 26. X. 1920, together with *Frankliniella vicina*.

The species was hitherto recorded only from Ceylon.

10. *Haplothrips inquilinus* PRIESNER.

1921. PRIESNER, Treubia, II, 1, p. 4, 6.

1921. KARNY, Treubia, II, 1, p. 79, 80.

1922. KARNY, Beitr. mal. Thys. VII.-Treubia, III, 1.

Some specimens in the galls of *Austrothrips cochinchinensis* on ? *Hymenodictyon parviflorum* OLIVER (No. 43; Ban Klong Tahu, Southern Siam; 1. X. 1920), and in those of *Gynaikothrips leeuweni* on *Pavetta indica* L. (No. 63; native forest near Saigon, Cap. St. Jacques; 21. X. 1920), collected by Mr. DOCTERS v. LEEUWEN.

The species was hitherto recorded from Java and Celebes (Saleier).

11. *Neoheegeria mandax* KARNY.

1910. DOCTERS v. LEEUWEN-REIJNVAAN, Marcellia, IX, p. 58 (without name).

1911. DOCTERS v. LEEUWEN-REIJNVAAN, Marcellia, X, p. 93 (without name).

1912. KARNY, Marcellia XI, p. 122.

1913. KARNY & DOCTERS v. LEEUWEN-REIJNVAAN, Bull. Jard. Bot. Buitenzorg, (2) X, p. 10, 36, 38, 64.

1914. DOCTERS v. LEEUWEN-REIJNVAAN, Bull. Jard. Bot. Buitenzorg, (2), XV, p. 40, 41.

1919. UICHANCO, Philipp. Journ. Sci., XIV, 5, p. 548; Plate XIV, fig. 2.

Several specimens from Krompha (Annam, \pm 50 m; 23. X. 1920), collected by Mr. DOCTERS v. LEEUWEN in leaf-galls on *Mallotus philippensis* M. A. (No. 66; together with *Eothrips laticauda*), and one from a rolled leaf on ? *Salacia* (No. 70). In the latter the mouth-cone is typically shaped, but in the specimens from *Mallotus* it is somewhat shorter and more blunt than in the Javanese type specimens from *Mallotus*.

The species was hitherto recorded from Java and the Philippine Islands.

Subfamily Trichothripinae KARNY.

12. *Austrothrips cochinchinensis* n.sp. (Fig. 4).

Female. Male. General colour blackish brown, all tibiae and tarsi somewhat paler, yellowish brown. First antennal segment as dark as head, second gradually paler towards the apex. The following joints yellow, only the last a little shaded with brownish. Wings clear, hyaline.

Head one and one-fifth times as wide as long, widest across the eyes; cheeks straight, slightly converging backwards, finely gradulated, without spines. Eyes small, black, occupying one-third of the length of head, with rounded hind margin. Ocelli large, with dark pigment-cups, nearly touching one another, arranged in a rectangular triangle, the anterior one behind the fore margin of eyes, posterior ones near their middle. Postocular bristles inserted a little behind the middle of head, as far distant from cheeks as from hind margin of eyes, hyaline, at apex distinctly dilated and clavate, reaching forwards about to the middle of eyes. Dorsal surface of head with a fine, transverse striation.

Antennae long and stout, twice as long as head, or a little more. First joints cylindrical, wider than long, at base nearly touching the fore margin of eyes; between them the fore head a little produced. Second joint cup-shaped, somewhat longer than wide, as wide as the first. The following segments nearly globular, but

distinctly constricted at base, as wide as the preceding ones, and only a very little longer than wide. Seventh joint fusiform, twice as long as wide; eighth also fusiform, as long as the seventh, but distinctly narrower.

All joints before the apex with a crown of very short, weak bristles. The terminal longitudinal row of bristles beginning a little before the middle of eighth antennal joint (cf. *Liothrips priscus*, Treubia, II, 1, p. 44) and reaching to its end.

Sense area of second antennal segment circular, placed behind the middle. Sense-cones hyaline, but long and stout, at least twice

as long as the bristles, reaching nearly to the middle of the following joint; but on the third segment the sense-cone of anterior margin a little shorter, on fifth and sixth the posterior one very short, less than half as long as that of the anterior margin.

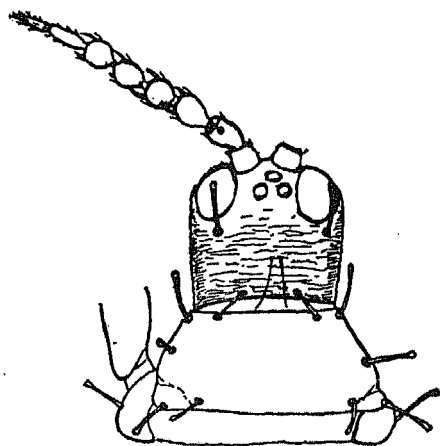


Fig. 4. Head and prothorax of *Austrothrips cochinchinensis*.

Mouth-cone broadly rounded, reaching a little beyond the middle of prosternum. Palpi short, with an annular basal and a longer, cylindrical apical joint. Labial palpi still shorter than the maxillary ones.

Prothorax about as long as head, strongly widened posteriorly, with obtuse hind angles. Without a longitudinal furrow. All bristles considerably dilated at apex, clavate. The anterolateral ones about as long as the postocular setae, half as long as the prothorax. Anteromarginal bristles a little shorter than those of the fore angles, and a little closer to them than to the median line. Mediolateral ones as far distant from the anterolateral ones as from the posterolateral ones, about as the anteromarginal ones. Posterolateral bristles a little longer than those of the fore angles, curved backwards. Posteromarginal setae about twice as far distant from median line as from the hind angles, short. Prosternum punctured, only on each side of mouth-cone with a small, transversely directed, smooth plate.

Fore coxae ovate having on the outer edge a long, clavate, forwardly directed bristle about equal in length to the posterolateral bristles. Fore legs short and stout; femora in both sexes a little broadened. Fore tarsus with only a very small, hardly distinguishable tooth and this only in male.

Pterothorax a little wider than prothorax, distinctly shorter than wide, with obtuse, somewhat protruding fore angles, sides of mesothorax nearly parallel, and those of metathorax arched, distinctly converging backwards. Disc of mesonotum with a fine, rhomboidal, transverse reticulation. Just before the transverse hind suture of mesosternum a short, parallel, transverse line, crossed by a longitudinal median suture, reaching forwards about to the middle of mesosternum metasternum with only two short, oblique lines, forming a right angle, but neither reaching to the tip of this angle, nor to the hind coxae.

Middle and hind coxae rounded, distinctly longer than wide; the former ones smaller and nearly twice as far distant from one another as the hind ones. Middle and hind legs moderately long and stout, with a few short hairs, but without stronger bristles. Tarsi not toothed.

Wings reaching about to the fifth abdominal segment, with long, but not dense fringe, clear, hyaline, not constricted near the middle. Fore pair with three distinctly clavate bristles at base, near the fore margin, nearly equal in length, and not as long as the wing is broad; the second a little closer to the first than to the third. Hind margin without duplicated cilia.

Abdomen scarcely as wide as the pterothorax, about three times as long as wide. First tergite with a rounded, finely reticulated plate in the middle, and a smaller one on each side; space between them finely punctured. All following segments with two stout, strongly clavate bristles near each hind angle, gradually increasing in length from base to apex; the outer one on second segment scarcely more than half as long as the segment, on seventh about as long as it; the inner ones a little shorter. Eighth segment with only one such bristle near each hind angle, a little shorter than the outer one of the preceding segment. Ninth segment with three clavate

bristles on each side, about half as long as the tube. The hind pairs of wing-retaining spines well developed, distinctly S-shaped, on segments 3—6 about two-thirds as long as the distance between their tips; on segments 2 and 7 distinctly shorter. Fore pairs nearly abortive. Tube stout, about as long as head, at base two-fifths as wide as long and twice as wide as at apex. Terminal bristles hair-like, not clavate, about half as long as the tube itself.

Measurements of female:—Total length of antennae 0'30 mm. I. joint 0'02 mm. long, 0'03 mm. wide; II. joint 0'04 mm. long, 0'03 mm. wide; III. joint 0'04 mm. long, 0'03 mm. wide; IV. joint 0'04 mm. long, 0'03 mm. wide; V. joint 0'04 mm. long, 0'03 mm. wide; VI. joint 0'04 mm. long, 0'03 mm. wide; VII. joint 0'04 mm. long, 0'02 mm. wide; VIII. joint 0'04 mm. long, 0'01 mm. wide. Head 0'15 mm. long, 0'18 mm. wide. Prothorax 0'15 mm. long, 0'31 mm. wide (across fore coxae). Fore femora 0'16 mm. long, 0'05 mm. wide; fore tibiae (including tarsi) 0'17 mm. long, 0'03 mm. wide. Pterothorax 0'26 mm. long, 0'33 mm. wide. Middle femora 0'09 mm. long, 0'05 mm. wide; middle tibiae (including tarsi) 0'12 mm. long, 0'03 mm. wide. Hind femora 0'15 mm. long, 0'05 mm. wide; hind tibiae (including tarsi) 0'16 mm. long, 0'035 mm. wide. Length of wings (without fringe) 0'6 mm. Abdomen (including tube) 1'05 mm. long, 0'32 mm. wide. Length of tube 0'15 mm. width at base 0'06 mm. at apex 0'03 mm. Total length 1'2—1'6 mm.

Measurements of male:—Total length of antennae 0'29 mm. I. joint 0'02 mm. long, 0'03 mm. wide; II. joint 0'04 mm. long, 0'03 mm. wide; III. joint 0'035 mm. long, 0'03 mm. wide; IV. joint 0'035 mm. long, 0'03 mm. wide; V. joint 0'04 mm. long, 0'03 mm. wide; VI. joint 0'04 mm. long, 0'025 mm. wide; VII. joint 0'04 mm. long, 0'02 mm. wide; VIII. joint 0'04 mm. long, 0'01 mm. wide. Head 0'12 mm. long, 0'15 mm. wide. Prothorax 0'14 mm. long, 0'30 mm. wide (across fore coxae). Fore femora 0'15 mm. long, 0'07 mm. wide; fore tibiae (including tarsi) 0'15 mm. long, 0'04 mm. wide. Pterothorax 0'25 mm. long, 0'32 mm. wide. Middle femora 0'10 mm. long, 0'04 mm. wide; middle tibiae (including tarsi) 0'11 mm. long, 0'03 mm. wide. Hind femora 0'13 mm. long, 0'05 mm. wide; hind tibiae (including tarsi) 0'22 mm. long, 0'035 mm. wide. Length of wings (without fringe) 0'55 mm. Abdomen

(including tube) 0'85 mm long, 0'28 mm wide. Length of tube 0'14 mm, width at base 0'06 mm, at apex 0'03 mm. Total length 1'3-1'5 mm.

Both sexes collected by Mr. DOCTERS v. LEEUWEN in leaf galls on ?*Hymenodictyon parviflorum* OLIVER (No. 43; Ban Klang Tahu, Southern Siam; 1. X. 1920; together with *Haplothrips inquilinus*.—No. 60; native forest Tri Han near Saigon; \pm 100 m; 19. X. 1920).

This species in its whole appearance and the form of last antennal segment resembles *Eothrips atavus*, but may be distinguished from it and the other *Eothrips* species at once by its somewhat wider head. By this characteristic and by the lack of duplicated cilia of fore wings it approaches the genus *Austrothrips* (see my key to the wide-headed Trichothripinae, Beitr. mal. Thys. VI; Treubia III, 1; 1922). From the only hitherto known *Austrothrips*-species, the South American *A. verae*, *cochinchinensis* may be distinguished by its distinctly shorter and stouter antennae, somewhat similar to those of *Vuilletia*; but the other general characters agree better with *Austrothrips* than with the North African *Vuilletia*.

13. *Eothrips laticeps* n. sp. (Fig. 5.)

Female. Male.—Blackish brown; end of fore femora, fore tibiae, and of middle and hind tibiae, and all tarsi yellowish brown. Antennae brownish yellow, first joint darker brown, second shaded with brown towards the base, seventh a very little darker than the preceding ones, eighth distinctly shaded with grey. Fore and hind wings brown on their whole surface, hind pair a little darker along their median vein.

Head as long as wide, with straight, parallel sides. Eyes small, black, occupying one third of the length of head, with somewhat rounded hind margin. Ocelli moderately large, with well developed pigment-cups, arranged in a rectangular triangle. The anterior one forwardly directed, placed on a line going through the fore margins of eyes; the posterior ones a little before the midst of the eyes. Postocular bristles inserted close to the hind margin of

eyes, forwardly directed, somewhat shorter than the eyes, stout, blunt at apex, but not clavate. Dorsal surface of head with a fine, transverse reticulation.

Antennae about twice as long as head, touching at base the fore margin of eyes; between them the fore head somewhat produced. First antennal joint wider than long, widest at the base. Second joint cup-shaped, a little narrower and about twice as long as the first. The three following joints broadly clavate, the fourth as wide as the second, 3 and 5 little narrower; 3 the longest of all the joints, 4 and 5 a little shorter, about as long as the second. Sixth joint nearly cylindrical, but gradually narrowed in basal half, and constricted at apex. Seventh segment fusiform, but widest near the base, transversally truncate at apex, shorter and narrower than the preceding joints. Eighth segment pin-like, bluntly conical, broadly jointed with the seventh, only a little longer than the first, and distinctly narrower than the preceding joints.

Segments 2 — 5 with a crown of bristles before the end, about half as long as the segments, on the second still shorter. Sixth joint in its distal half set with such bristles, 7 and 8 throughout the whole length. Median line of bristles reaching from the first third of 7 to apex of 8.

Sense area of second segment circular, placed behind its middle. Sense-cones of the following segments stout, a little curved, blunt at apex, about twice as long as the distance of their insertion from the end of their joint. Those on the anterior margin a little shorter than the posterior ones. On the fourth joint a little shorter than on 5 and 6; on 3 still shorter, the anterior abortive. Seventh joint on dorsal surface with a similar sense-cone, reaching about to the middle of eighth segment, but abortive or entirely wanting in some specimens.

Amongst the males before me, there is one male with one antenna normally developed, the other anomalous, seven-jointed.

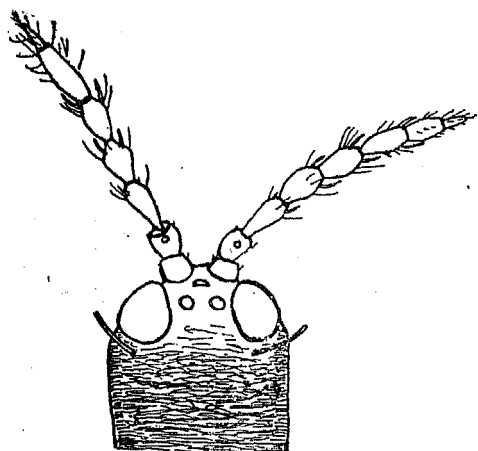


Fig. 5. Head of an *Eothrips laticeps* with the one antenna anomalous.

Segments 1 - 4 normal, 5 a little shorter than usually, sixth very long, fusiform, truncate at apex. Seventh shaped like the eighth of normal antenna, but a little narrower and more pointed. Sixth joint without sense-cone; median bristle line confined to the seventh.

Mouth-cone broadly rounded, reaching hardly beyond the middle of prosternum, Maxillary palpi

stout, about half as long as the mouth-cone; their basal joint as long as wide, the apical one about four times as long as wide, with long bristles at the end. Labial palpi short, as wide as the maxillary ones, and only about twice as long as wide.

Prothorax about as long as head, and nearly twice as wide (across fore coxae) as long, strongly widened backwards. Posterolateral bristles stout, about half as long as the prothorax, blunt at apex. Posteromarginal bristles more than twice as far distant from the middle line than from those of the hind angles, scarcely half as as these. Anterolateral bristles still shorter, blunt, only a very little overreaching the fore margin of prothorax. Anteromarginal ones still weaker, reduced to short hairs, about three times as far distant from each other as from the fore angles. Mediolateral bristles entirely abortive, not conspicuous. Prosternum with a small triangular, laterally directed plate on each side of the mouth-cone, a larger rhomboidal one near each fore angle, a pair of irregularly pentagonal ones before the hind margin, and behind them a very small ovate median plate. All plates smooth, strongly chitinated, the space between them with a well expressed, dotted sculpture.

Fore coxae ovate, with a blunt forwardly-curved bristle on the outer hind angle, somewhat shorter and weaker than the posterolateral ones of prothorax. Fore femora distinctly shorter than

head, moderately enlarged, not quite half as wide as long. Tibiae stout, tarsi, not toothed.

Pterothorax wider than prothorax, somewhat shorter than wide, with blunt fore angles, sides of mesothorax nearly parallel, those of metathorax arched, somewhat converging backwards. Sutures of mesosternum composed by a small, transverse, obtuse triangle, the hind margin of which formed by the hind sutures of mesosternum from each side of the triangle a very short oblique line runs laterally forward, and from its tip a similar median line not quite to the midst of mesosternum. Suture lines of metasternum similar to those of the preceding species, but a little shorter and their angle more blunt.

Middle coxae smaller than the hind ones, and about twice as far distant from each other. Middle and hind legs stout femora at base with a long, hair-like bristle on the inner margin, tibiae with a similar one at the end of outer margin. Tarsi without teeth.

Wings reaching to the seventh abdominal segment, broad, not constricted at the middle. Fore pair near the base with 4 stout, blunt bristles; three of them along the abortive longitudinal vein, the third of which a little longer than the others and a little more distant from the second than this from the first, close to the second bristle behind the vein still another similar bristle. All these bristles about half as long as the wing is broad, except the last, distal, longer bristle on vein. Hind margin before the apex with 5-8 duplicated fringe hairs.

Abdomen a very little wider than pterothorax, three times as long as wide. The median plate of first tergite large, trapezoidal, but with double S-shaped sides; the lateral pair smaller, triangular; space between them punctured. The following segments near each hind angle with two blunt, stout bristles, the inner one of which is about as long as the segments themselves, the outer one on 2-6 distinctly shorter, on 7 and 8 longer. Bristles of ninth segment long, sharply pointed, only a little shorter than the tube. Hind pair of wing-retaining spines stout, distinctly S-shaped, on segment 4 and 5 nearly as long as the distance between their tips, on 3 and 6 shorter and weaker, on 2 still shorter, on 7 nearly abortive. Fore pair hair-like, at most half as long as the spines of hind pair. Tube

a little shorter than head, stout, at base nearly half as wide as long and twice as wide as at apex. Terminal bristles hair-like, the longer ones about two-thirds of the length of tube, the shorter ones only one-third as long as the others.

Measurements of female.—Total length of antennae 0'38 mm. I. joint 0'03 mm. long, 0'04 mm. wide; II. joint 0'05 mm. long, 0'035 mm. wide; III. joint 0'065 mm. long, 0'03 mm. wide; IV. joint 0'06 mm. long, 0'035 mm. wide; V. joint 0'05 mm. long, 0'03 mm. wide VI. joint 0'05 mm. long, 0'03 mm. wide; VII. joint 0'045 mm. long, 0'025 mm. wide; VIII. joint 0'035 mm. long, 0'015 mm. wide. Head 0'19 mm. long, 0'19 mm. wide. Prothorax 0'20 mm. long, 0'36 mm. wide (across fore coxae). Fore femora 0'17 mm. long, 0'08 mm. wide; fore tibiae (including tarsi) 0'16 mm. long, 0'03 mm. wide. Pterothorax 0'36 mm. long, 0'41 mm. wide. Middle femora 0'13 mm. long, 0'06 mm. wide; middle tibiae (including tarsi) 0'2 mm. long, 0'04 mm. wide. Hind femora 0'22 mm. long, 0'07 mm. wide; hind tibiae (including tarsi) 0'30 mm. long, 0'05 mm. wide. Length of wings (without fringe) 0'85 mm. Abdomen (including tube) 1'3 mm. long, 0'42 mm. wide. Length of tube 0'16 mm. width at base 0'07 mm., at apex 0'04 mm. Total length 1'9-2'4 mm.

Measurements of male.—Total length of antennae 0'34 mm. I. joint 0'02 mm. long, 0'04 mm. wide; II. joint 0'05 mm. long, 0'03 mm. wide; III. joint 0'06 mm. long, 0'03 mm. wide; IV. joint 0'05 mm. long, 0'03 mm. wide; V. joint 0'05 mm. long, 0'025 mm. wide; VI. joint 0'045 mm. long, 0'03 mm. wide; VII. joint 0'04 mm. long, 0'025 mm. wide; VIII. joint 0'025 mm. long, 0'02 mm. wide. Head 0'18 mm. long, 0'17 mm. wide. Prothorax 0'16 mm. long, 0'32 mm. wide (across fore coxae). Fore femora 0'16 mm. long, 0'07 mm. wide; fore tibiae (including tarsi) 0'13 mm. long, 0'04 mm. wide. Pterothorax 0'30 mm. long, 0'34 mm. wide. Middle femora 0'13 mm. long, 0'05 mm. wide; middle tibiae (including tarsi) 0'14 mm. long, 0'04 mm. wide. Hind femora 0'18 mm. long, 0'05 mm. wide; hind tibiae (including tarsi) 0'24 mm. long, 0'04 mm. wide. Length of wings (without fringe) 0'7 mm. Abdomen (including tube) 1'15 mm. long, 0'37 mm. wide. Length of tube 0'16 mm. width at base 0'07 mm. at apex 0'04 mm. Total length 1'6-1'8 mm.

Collected by Mr. DOCTERS v. LEEUWEN in leaf-galls on *Aporosa* (No. 57; native forest near Tri Han, Saigon; \pm 100 m; 19 X 1920; together with *Mesothrips vitripennis*.—No. 69; Krompha. Annam; 23 X 1920).

This new species comes in my key (Zeitschr. wiss. Ins.—Biol., XI, p. 146–147; 1915) close to *laticauda*, but differs from it by the shorter and wider head, and by the fore wings uniformly brownish on their whole surface. The shape of head resembles somewhat the wide-headed Trichothripinae, especially *Austrothrips*, but from it *laticeps* may be distinguished at once by the presence of double cilia on fore wings and by their brown colour.

14. *Eothrips laticauda* (KARNY).

1910. DOCTERS v. LEEUWEN-REIJNVAAN, Marcellia, IX, p. 58 (without name),

1911. DOCTERS v. LEEUWEN-REIJNVAAN, Marcellia, X, p. 93 (without name).

1912. KARNY; Marcellia, XI, p. 124 (*Dolerothrips*).

1913. KARNY and DOCTERS v. LEEUWEN-REIJNVAAN, Bull. Jard. Bot. Buitenzorg, (2) X, p. 38, 89 (*Dolerothrips*).

1915. KARNY and DOCTERS v. LEEUWEN-REIJNVAAN, Zeitschr. wiss. Ins.—Biol., XI, p. 146 (*Dolerothrips*).

1915. HOOD, Entomologist, p. 107.

One specimen in leaf-galls on *Mallotus philippensis* M. A. (No. 66; Krompha, Annam; \pm 50 m; 23 X 1920; together with *Neoheegeria mendax*; leg. DOCTERS v. LEEUWEN).

This species was hitherto recorded only from Java.

15. *Eothrips schouteniae* n.sp.

Black. Fore tibiae and all tarsi yellowish brown. Antennae pale yellow; first segment and base of second blackish; sixth somewhat shaded with brownish; seventh and eighth joint dark, brownish black. Wings clear, hyaline, only a very little greyish along the margins and the median vein.

Head scarcely longer than wide, a little longer than prothorax. Eyes small, occupying not quite one-third of the length of head.

Postocular bristles inserted behind the hind margin of eyes, hyaline, somewhat dilated at apex, about as long as the eyes. Mouth-cone similarly shaped as in *laticeps*, but the maxillary palpi a little more slender.

Antennae twice as long as head, with a distinct narrow space between their base and the fore margin of eyes; fore head between them scarcely produced. First joint shortly cylindrical, a little wider than long. Second segment cup-shaped, a little wider than the first, and a little longer than wide. The following segments clavate, about twice as long as wide, Sixth a little narrower and shorter, nearly cylindrical, but somewhat tapering to apex and still more towards the base. Seventh joint still shorter and narrower, fusiform, but widest near the base, transversely truncate at apex. Eighth segment small, conical.

All bristles weak and short, only a little overreaching the ends of their segments. Median apical line reaching from the midst of seventh segment to the end of eighth. Sense area of second joint indistinct. Sense cones hyaline, sharply pointed at apex, nearly half as long as their segments, but those on the third considerably shorter.

Prothorax half as long as wide across fore coxae, strongly widened backwards. All bristles stout and a little dilated at apex. The posterolateral ones about half as long as the prothorax, posteromarginal bristles closely approximated to them, somewhat more than half as long as those. Anterolateral and mediolateral setae equal in length, about half as long as the posteromarginal ones or one third of the length of posterolateral bristles. The mediolateral ones as far from the latter as from the anterolateral setae.

Fore coxae ovate, rounded, with an outwards-directed bristle about as long as the posteromarginal ones of prothorax, but distinctly weaker. Fore legs moderately stout, their femora nearly as long as head; tarsi without tooth.

Pterothorax about as wide as prothorax across fore coxae, nearly as long as wide, with rounded fore angles, sides of mesothorax nearly parallel, those of metathorax slightly arched, somewhat converging posteriorly. Middle coxae twice as widely separated from each other as the hind ones. Middle and hind legs long and mo-

derately stout, with a long hair before the end of tibiae on the outer margin. Tarsi not toothed.

Wings reaching about to the middle of abdomen, nearly clear, not constricted at the middle; about 10 duplicated cilia on the hind margin of fore wings before the apex.

Abdomen somewhat wider than pterothorax, nearly three times as long as wide. Bristles somewhat dilated at apex; their number and length as in *laticeps*. Those of ninth segment but a very little dilated at apex, distinctly shorter than tube. This short and stout, about three-fifths as long as head, at base about half as wide as long and nearly twice as wide as at apex. Terminal bristles sharply pointed, hair-like, the longer ones about as long as the tube itself, the shorter ones only one third the length of the others.

Measurements:—Total length of antennae 0'40 mm. I. joint 0'025 mm. long, 0'03 mm. wide; II. joint 0'04 mm. long, 0'035 mm. wide; III. joint 0'065 mm. long, 0'025 mm. wide; IV. joint 0'06 mm. long, 0'035 mm. wide; V. joint 0'065 mm. long, 0'03 mm. wide; VI. joint 0'06 mm. long, 0'03 mm wide; VII. joint 0'055 mm. long, 0'025 mm wide; VIII. joint 0'03 mm long, 0'01 mm. wide. Head 0'20 mm long, 0'18 mm. wide. Prothorax 0'15 mm. long, 0'33 mm. wide (across fore coxae). Fore femora 0'19 mm. long 0'07 mm. wide; fore tibiae (including tarsi) 0'25 mm. long, 0'04 mm. wide. Pterothorax 0'29 mm. long, 0.32 mm. wide. Middle femora 0'16 mm. long, 0'06 mm. wide; middle tibiae (including tarsi) 0'25 mm. long, 0.04 mm. wide. Hind femora 0'18 mm. long, 0'06 mm. wide; hind tibiae (including tarsi) 0'25 mm. long, 0'04 mm wide. Length of wings (without fringe) $\frac{3}{4}$ mm. Abdomen (including tube) 1'10 mm. long, 0'38 mm. wide. Length of tube 0'13 mm., width at base 0'07 mm. at apex 0.04 mm. Total length 1'9 - 2'0 mm.

Two specimens collected by DR. DOCTORS v. LEEUWEN in leaf galls on *Schoutenia ovata* Korth. (No. 67) at Krompha, Annam, together with one *Eothrips annulicornis* dated 23. X. 1920.

This new species, in the coloration and shape of antennal joints, comes between *E. coarctatus* and *laticauda*, but distinctly diverging from both, from the former especially by the great number of double fringe hairs, from the latter by the nearly clear wings.

16. *Eothrips annulicornis* (KARNY).

1910. DOCTERS v. LEEUWEN-REIJNVAAN, Marcellia, IX, p. 186 (without name).
 1913. KARNY AND DOCTERS v. LEEUWEN-REIJNVAAN, Bull. Jard. Bot. Buitenzorg (2) X, p. 31, 34, 87 (*Dolerothrips*).
 1914. DOCTERS v. LEEUWEN-REIJNVAAN, Bull. Jard. Bot. Buitenzorg (2) XV, p. 39 (*Dolerothrips*).
 1915. KARNY AND DOCTERS v. LEEUWEN-REIJNVAAN, Zeitschr. wiss. Ins.-Biol., XI, p. 146 (*Dolerothrips*).
 1915. HOOD, Entomologist, p. 107.

One specimen together with the preceding species, and one in leaf galls on *Loranthus pentandrus* L. (No. 79; Saigon; 29. X. 1920; together with *Eothrips crassicornis*), collected by Mr. DOCTERS v. LEEUWEN.

This species was hitherto known only from Java.

17. *Eothrips crassicornis* (KARNY).

1910. DOCTERS v. LEEUWEN-REIJNVAAN, Marcellia, IX, p. 186 (without name).
 1912. KARNY, Marcellia, XI, p. 126 (*Dolerothrips*).
 1913. KARNY AND DOCTERS v. LEEUWEN-REIJNVAAN, Bull. Jard. Bot. Buitenzorg (2) X, p. 31, 34, 84 (*Dolerothrips*).
 1915. KARNY AND DOCTERS v. LEEUWEN-REIJNVAAN, Zeitschr. wiss. Ins.-Biol., XI, p. 147 (*Dolerothrips*).
 1915. HOOD, Entomologist, p. 107.

One specimen together with one of the preceding species, collected by Mr. DOCTERS v. LEEUWEN in leaf galls on *Loranthus pentandrus* L. (Saigon).

Further distribution: Java.

18. *Eothrips hyalopterus* n.sp. (Fig. 6).

Female. Male.—Black, fore tibiae and all tarsi yellowish brown. First antennal joint blackish brown, second brown, paler towards the apex, the following ones yellow, the eighth somewhat shaded with brown. Wings clear, hyaline, but brown at extreme base.

Head a very little longer than wide, with granulated, nearly straight and parallel sides. Eyes large, with rounded hind margins, occupying nearly half of the length of head. Posterior ocelli placed before the middle of inner margin of eyes, the anterior one directed forwards. Postocular bristles inserted close behind the middle of head, sharply pointed, about half as long as the eyes. Behind them a short, spine-like bristle on each cheek, not quite half as long as the postocular ones. Mouth-cone broadly rounded, reaching hardly beyond the midst of prosternum.

Antennae twice as long as head, with a distinct narrow space between their insertion and the fore margin of eyes, fore head between them very little produced. First joint considerably shorter than wide at base. Second segment cup-shaped, nearly as wide as the first, somewhat longer than wide. The following joint about one and a half times as long as wide, broadly clavate, nearly equal in length and width. Sixth joint distinctly narrower than the preceding ones, subcylindrical, truncate at apex, constricted towards the base. Seventh joint fusiform, longer and narrower than any of the preceding segments, about three times as long as wide, transversely truncate at apex. Eighth joint the narrowest of all, a little shorter than the middle segments, conical, but somewhat constricted at base.

All bristles short and weak. Sense area of the second segment close behind its middle. Sense cones hyaline, shorter than half the length of their joints, those of posterior margin a little longer.

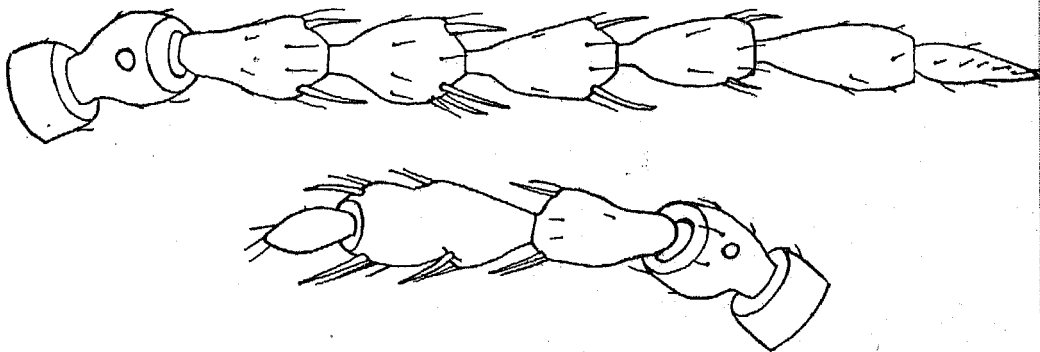


Fig. 6. *Eothrips hyalopterus*. Normal and anomalous antenna (of the same specimen).
 than the anterior ones. Sense cones of sixth segment shorter than the others, the posterior still shorter than the anterior one. Seventh segment with no conspicuous sense cone.

There is amongst the material before me one female with an anomalous antenna of very remarkable shape. The three basal joints shaped as usual, the fourth very long, apparently representing two joints entirely grown together, distinctly constricted at middle, with a sense cone before this constriction and another on each side before the end. This curiously shaped joint is followed by only one very small, fusiform apical segment.

Prothorax somewhat shorter than head, twice as wide (across fore coxae) as long. Bristles weak and short, sharply pointed. The posterolateral ones not quite half as long as prothorax, posteromarginal setae scarcely half as long as the former ones. Anterolateral bristles still shorter and weaker, directed forwards, mediolateral ones still shorter, hair-like, inserted in the midst between those of fore and hind angles. Anteromarginal setae not conspicuous. Fore femora about as long as head, in both sexes a little more than half as wide as long. Tarsi (except the apical claw) without teeth.

Pterothorax a little wider than prothorax across fore coxae, nearly as long as wide, with protruding fore angles, sides of meso- and metathorax arched and converging backwards. Sutures of mesosternum form a small rectangular triangle, defined backwards by the hind margin of mesosternum, with the right angle directed forwards and going off from it a short median line. Sutures of metasternum consisting of two oblique lines, forming a right angle with each other, but neither reaching to the hind coxae, nor to the tip of the angle. Hind coxae somewhat more approximated than the middle ones. Middle and hind legs moderately long and stout. Tarsi not toothed.

Wings clear, hyaline, at extreme base brown, not constricted at the middle, reaching to the sixth abdominal segment. Bristles at base of fore pair very weak and short, hind margin with 15-20 duplicated cilia.

Abdomen somewhat wider than pterothorax, about three times as long as wide. All bristles short and weak, pointed at apex. Those of segments 7-9 somewhat longer, nearly as long as the ninth segment. Sides of eighth segment in basal half nearly parallel, then abruptly strongly converging from middle to apex. Tube a little

shorter than head, with strongly converging sides; its width at base about two-fifths of its length, and nearly three times its width at apex. Terminal bristles very short and weak, not quite one-third as long as the tube itself.

Measurements.—Total length of antennae 0.37 mm. I. joint 0.02 mm. long, 0.35 mm. wide; II. joint 0.04 mm. long, 0.03 mm. wide; III. joint 0.05 mm. long, 0.03 mm. wide; IV. joint 0.055 mm. long, 0.035 mm. wide; V. joint 0.05 mm. long, 0.03 mm. wide; VI. joint 0.055 mm. long, 0.025 mm. wide; VII. joint 0.06 mm. long, 0.20 mm. wide; VIII. joint 0.045 mm. long, 0.015 mm. wide. Head 0.20 mm. long, 0.18 mm. wide. Prothorax 0.16 mm. long, 0.31 mm. wide (across fore coxae). Fore femora 0.20 mm. long, 0.11 mm. wide; fore tibiae (including tarsi) 0.17 mm. long, 0.05 mm. wide. Pterothorax 0.30 mm. long, 0.33 mm. wide. Middle femora 0.15 mm. long, 0.05 mm. wide; middle tibiae (including tarsi) 0.20 mm. long, 0.05 mm. wide. Hind femora 0.21 mm. long, 0.07 mm. wide; hind tibiae (including tarsi) 0.28 mm. long, 0.05 mm. wide. Length of wings (without fringe) 1.0 mm. Abdomen (including tube) 1.25 mm. long, 0.38 mm. wide. Length of tube 0.18 mm., width at base 0.07 mm., at apex 0.025 mm. Total length (female, male) 1.7—2.2 mm.

This species was collected by Mr. DOCTERS v. LEEUWEN in a leaf gall on ?? *Hymenodictyon parviflorum* OLIVER (No. 74) at Vinh Huo (Indochina), dated 26. X. 1920.

Differs from all similar species (*taurus*, *nervisequus seticornis* and *decipiens*) by its very weak bristles, the clear, hyaline wings, and the great number of double fringe-hairs.

19. *Chelaeothrips annamensis* KARNY.

1922. KARNY, Beitr. mal. Thys., VIII.—Treubia, III, 1.

I have already described this very remarkable new genus in the paper mentioned above. Collected by Mr. DOCTERS V. LEEUWEN in a leaf gall on an undetermined plant (No. 68) at Krompha, Annam, dated 23. X. 1920.

Subfamily Cryptothripinae KARNY.**20. *Androthrips melastomae* ZIMMERMANN.**

1900. ZIMMERMANN, Bull. Inst. Bot. Buitenzong, VII, p. 17
(*Mesothrips*).

1922. KARNY, Beitr. mal. Thys., VIII.—Treubia, III, 1. (with list of literature).

I have suggested in Treubia I, 4. p. 281, that the so-called "*Androthrips melastomae*" from different food plants may represent probably different species. And the more material of *Androthrips* I receive, the more I find this supposition confirmed. But because *Androthrips* is generally rather rare, I have not yet obtained sufficient material to define these species satisfactorily. ZIMMERMANN has described the species from *Ohavica densa* and *Melastoma polyanthum*, stating that the tibiae were yellow. In the Further Indian material before me, there is one specimen from *Melastoma malabathricum* L. (No. 42) having the middle and hind tibiae brown, collected by Mr. DOCTERS V. LEEUWEN at Klong Chang, Siam, dated 1. X. 1920 (together with *Mesothrips jordani* and *Gynaikothrips chavicae*); further two specimens from *Ficus benjamina* L. (No. 48;) Bangkok; 3. X. 1920; leg. DOCTERS v. LEEUWEN together with *Gynaikothripsuzeli* and *G. sp.*—No. 78; Saigon; 28. X. 1920; leg. DOCTERS v. LEEUWEN together with *Gynaikothripsuzeli*, *Mesothrips jordani* and *Leptothrips constrictus*). These two specimens from *Ficus* have all tibiae yellow and the antennal joints considerably narrower than the specimen from *Melastoma*. I hope to get in time more material, and to be able to decide these questions exactly.

Androthrips melastomae was hitherto known from Java and Celebes (Saleier).

21. *Corythothrips trochiceps* KARNY.

1920. KARNY, Beitr. mal. Thys., VIII.—Treubia, III, 1.

Representing a new genus already described in the above mentioned publication. Collected by Mr. DOCTERS v. LEEUWEN in leaf galls on *Dipterocarpus alatus* ROXB. (No. 49; 7. X. 1920.—No. 54; 9. X. 1920) at Bangkok, Siam, together with *Gynaikothrips siamensis*.

22. *Leptothrips constrictus* KARNY.

1912. KARNY, Marcellia, XI, p. 150.

1922. KARNY, Beitr. mal. Thys., VII.—Treubia, III, 1. (with list of literature).

In leaf galls on *Ficus retusa* L. (No. 51; Bangkok; 9. X. 1920; together with *Gynaikothripsuzeli*) and *F. benjamina* L. (No. 78; Saigon; 28. X. 1920; together with *Mesothrips jordani*, *Gynaikothripsuzeli* and *Androthrips melastomae*), collected by Mr. DOCTERS v. LEEUWEN.

It is not impossible, that *constrictus* may be proved at a future time to be only a micromerous form of *Mesothrips jordani*, likely the *f. debilis* of *M. pyctes* or the smaller form of *Haplothrips braccatus* ♂ and *Thaumatothrips froggatti*.

Further distribution: Java, Celebes.

23. *Gynaikothrips fuscipes* n.sp.

Female. Male.—Black. Fore tibiae dark brown at base, gradually paler towards the apex. All tarsi yellowish brown. First antennal joint and base of second black; second segment gradually paler towards the apex. The following joints pale lemon yellow, sixth greyish before the apex, seventh in the distal half. Eighth joint entirely brownish grey. Wings (except extreme base) clear, hyaline.

Head one and one-fifth times as long as wide; cheeks nearly straight, distinctly converging from eyes to hind margin, finely granulated and set with a few short hairs. Eyes moderately large, occupying about one-third of the length of head. Posterior ocelli placed close to the inner margin of eyes before their middle, anterior one directed forwards. Postocular bristles inserted close behind the hind margin of eyes, blunt, very slightly dilated at extreme apex, not quite half as long as eyes. Mouth cone reaching a little across the middle of prosternum, with short palpi. The maxillary ones not quite half as long as mouth cone, with an annular basal and a narrow, cylindrical apical joint.

Antennae nearly twice as long as head, inserted close to the fore margin of eyes; fore head between them scarcely produced.

First joint wider than long; second one cup-shaped, as wide as the first, and about one and a half times as long as wide. The following joints clavate, the third narrower than the preceding one, about three times as long as wide. Segment 4 a little shorter and wider than 3. Joints 5-8 still shorter than the fourth, equal in length, gradually diminishing in width; 7 and 8 fusiform, the latter distinctly constricted at base, not broadly jointed with the preceding one. All bristles weak and short; the longitudinal apical line with 3 bristles before the apex of seventh joint, then interrupted at base of eighth and beginning again a little before the middle of apical joint. Sense cones inconspicuous, hardly longer than the bristles, about one-fourth of the length of their joints.

Prothorax shorter than head, distinctly widened backwards, across fore coxae about twice as wide as long. Posterolateral bristles curved backwards, blunt at apex, nearly half as long as prothorax. Posteromarginal setae straight, inserted not far from the hind angles, about two-thirds as long as the posterolateral ones, at apex shaped as the postocular bristles. Mediolateral and anterolateral ones of the same shape, but scarcely half as long as those of the hind angles. Anterolateral bristles inserted somewhat far behind the fore angles; anteromarginal ones still shorter and weaker, inserted before and a little inwards from the anterolateral setae.

Fore coxae rounded, with a bristle of about the same shape and length as the mediolateral ones. Femora shorter than head, about three times as long as wide. Tarsi not toothed.

Pterothorax a little wider than the prothorax across fore coxae, about as long as wide, with rounded fore angles, and nearly straight sides somewhat converging backwards. Sutures of meso- and metasternum as in *Eothrips hyalopterus*. Hind coxae larger and considerably more approximated to one another than the middle ones. Middle and hind legs moderately stout, with a long hair on the outer margin before the end of tibiae. Tarsi without teeth.

Wings reaching about to the sixth or seventh abdominal segment, not constricted at the middle, brown at extreme base, further on entirely clear, hyaline. Fore pair along the abortive basal vein with three bristles, about half as long as the wing is wide, and a very little dilated at apex. Bristle 1 inserted on the vein, 2 and 3

behind the vein, second closer to the first than to the third. Hind margin with about 20 double fringe-hairs.

Abdomen a little narrower than pterothorax, about four times as long as wide. Bristles hyaline, blunt at apex, nearly as long as the segments themselves. Those of the ninth segment sharply pointed, nearly as long as the tube. This distinctly shorter than head, about three times as long as wide at base, with straight, backwards converging sides; at apex about half as wide as at base. Terminal bristles hair-like, sharply pointed, the longer ones a little shorter than the tube itself, the shorter scarcely half as long as the others.

Measurements of female:—Total length of antennae 0'48 mm. I. joint 0'025 mm. long, 0'035 mm. wide; II. joint 0'05 mm. long, 0'035 mm. wide; III. joint 0'08 mm. long, 0'025 mm. wide; IV. joint 0'07 mm. long, 0'035 mm. wide; V. joint 0'065 mm. long, 0'035 mm. wide; VI. joint 0'065 mm. long, 0'025 mm. wide; VII. joint 0'065 mm. long, 0'02 mm. wide; VIII. joint 0'065 mm. long 0'01 mm. wide. Head 0'25 mm. long, 0'20 mm. wide. Prothorax 0'18 mm. long, 0'25 mm. wide (across fore coxae.) Fore femora 0'22 mm. long, 0'07 mm. wide; fore tibiae (including tarsi) 0'24 mm. long, 0'04 mm. wide. Pterothorax 0'35 mm. long, 0'37 mm. wide. Middle femora 0'15 mm. long, 0'05 mm. wide; middle tibiae (including tarsi) 0'17 mm. long, 0'04 mm. wide. Hind femora 0'21 mm. long, 0'05 mm. wide; hind tibiae (including tarsi) 0'26 mm. long, 0'04 mm. wide. Length of wings (without fringe) 0'95 mm. Abdomen (including tube) 1'4 mm. long, 0'36 mm. wide. Length of tube 0'22 mm. width at base 0'08 mm. at apex 0'04 mm. Total length 2'1–2'3 mm.

Measurements of male:—Total length of antennae 0'39 mm. I. joint 0'015 mm. long, 0'025 mm. wide; II. joint 0'04 mm. long, 0'025 mm. wide; III. joint 0'06 mm. long, 0'02 mm. wide; IV. joint 0'06 mm. long; 0'03 mm. wide; V. joint 0'055 mm. long, 0'025 mm. wide; VI. joint 0'055 mm. long, 0'02 mm. wide; VII. joint 0'055 mm. long, 0'015 mm. wide; VIII. joint 0'055 mm. long, 0'01 mm. wide. Head 0'21 mm. long, 0'17 mm. wide. Prothorax 0'13 mm. long, 0'25 mm. wide (across fore coxae.) Fore femora 0'17 mm. long, 0'06 mm. wide; fore tibiae (including tarsi) 0'18 mm. long, 0'035

mm. wide. Pterothorax 0'30 mm. long, 0'28 mm. wide. Middle femora 0'14 mm. long, 0'04 mm. wide; middle tibiae (including tarsi) 0'15 mm. long, 0'04 mm. wide. Hind femora 0'19 mm. long, 0'04 mm. wide; hind tibiae (including tarsi) 0'20 mm. long, 0'035 mm. wide. Length of wings (without fringe) 0'8 mm. Abdomen (including tube) 0'9 mm. long, 0'23 mm. wide. Length of tube 0'15 mm. width at base 0'05 mm. at apex 0'03 mm. Total length 1'5-1.7 mm.

Collected by Mr. DOCTERS v. LEEUWEN between the hairs of petioles on *Dipterocarpus* sp. (No. 62) at Saigon, Cape St. Jacques, dated 21. X. 1920.

This species forms with *G. longicornis* and the African *G. ebneri* a peculiar group, characterized by the short head and the relatively long antennae, which is somewhat intermediate between *Gynaikothrips* and *Eothrips* but may rather be placed to the former genus. *G. fuscipes* differs from *longicornis* by its dark middle and hind tibiae, from *ebneri* by the clear wings furnished with duplicated cilia. Of the other *Gynaikothrips*-species it reminds one somewhat of *adusticornis* and *claripennis*, but may be distinguished from them at once by the very characteristic shape of the last antennal joint and by the shorter head.

24. *Gynaikothrips daetymon* KARNY.

1922. KARNY, Beitr. mal. Thys., VIII.-Treubia III, 1.

In the leaf galls of *Leeuwenia aculeatrix* on *Eugenia* sp. (No. 77), collected by Mr. DOCTERS v. LEEUWEN at Saigon, Cochinchina, dated 28. X. 1920.

25. *Gynaikothrips siamensis* KARNY.

1922. KARNY, Beitr. mal. Thys., VIII.-Threubia, III, 1.

In leaf galls on *Dipterocarpus alatus* ROXB. (No. 49; 7. X. 1920.-No. 54; 9. X. 1920), collected by Mr. DOCTERS v. LEEUWEN at Bangkok, Siam, together with *Coryphotrips trochiceps*.

26. **Gynaikothrips primitivus** *n.sp.* (Fig. 7).

Female.-Male.- General colour as in *G. fuscipes*, but the second antennal segment a very little paler at apex; joints 3-5 lemon yellow, somewhat shaded with grey before the apex; sixth segment dark blackish brown in the apical half, 7 and 8 entirely blackish. Wings brown at extreme base, further on their whole surface shaded with greyish, especially along the margins.

Head one and a half times as long as wide, somewhat constricted at the hind margin of eyes, cheeks finely granulated and set with a few short hairs, very little arched, converging backwards. Eyes large, occupying one-third of the length of head. Postocular bristles stout, straight, sharply pointed at apex, inserted close behind the hind margin of eyes, reaching forward not to the middle of eyes. Mouth cone broadly rounded, reaching hardly to the middle of prosternum.

Antennae one and two-thirds times as long as head, inserted very near the fore margin of head; between them the fore head scarcely produced. First joint nearly cylindrical, widest at base, somewhat wider than long. Second joint cup-shaped, as wide as the first, somewhat longer than wide. The following segments clavate, about

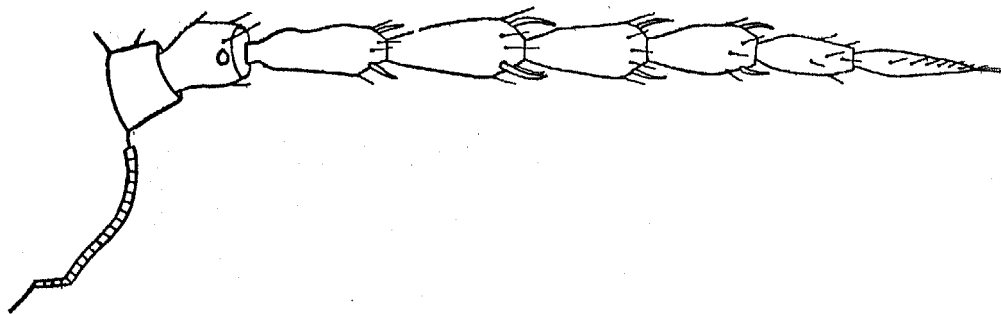


Fig. 7. Antenna of *Gynaikothrips primitivus*.

two and a half times as long as wide, a little narrower than 2, sixth a little shorter and narrow than the preceding ones. Seventh and eighth joint fusiform, the former some what shorter and narrower than 6; the eighth narrower and a little longer than 7, distinctly constricted at base, not broadly united with the preceding joint.

First segment on the inner side before the end with a short, stout bristle. The following segments with a crown of short bristles before the end. Sense area of second joint placed close before the apical margin. All sense cones short, hyaline, somewhat curved. Seventh segment in distal half with some short, weak bristles, eighth with a median longitudinal line of such beginning before the middle of this segment and reaching to its tip.

Prothorax two-thirds as long as head, strongly widened posteriorly, across fore coxae not quite twice as wide as long. Bristles stout, sharply pointed; the posterolateral and posteromarginal ones about half as long as prothorax, mediolateral ones a little shorter. Anterolateral and anteromarginal bristles not visible. Fore coxae rounded, with a stout, pointed bristle, about half as long as the posterolateral ones. Fore femora distinctly shorter than head, somewhat dilated, twice as long as wide. Fore tarsi without tooth.

Pterothorax a little wider than prothorax across fore coxae, scarcely longer than wide, with rounded fore angles, sides of meso- and metathorax very slightly arched, nearly parallel. Sutures of meso- and metasternum much as in *Eothrips hyalopterus*, but the mesosternal triangle more acute, and the metasternal angle divided by a backwardly directed, median line. Middle coxae smaller than the hind ones, and nearly twice as widely separated from each other. Middle and hind legs moderately long and stout; tarsi not toothed.

Wings reaching about to the seventh abdominal segment, not constricted at the middle, somewhat infumate. Fore pair with three sharply pointed bristles at base near the fore margin, the second of them a little farther from the third than from the first, equal in length, about half as long as the wings is broad. Hind margin before apex with about 16 duplicated cilia.

Abdomen about as wide as pterothorax, more than three times as long as wide. All bristles dark, very long and stout, sharply pointed at apex. Even the first segment with a stout, laterally or forwards directed bristle. Those of segments 2.—4 not quite as long as this, those of 5.—8. longer than their segments themselves. Bristles of ninth segment as long as the tube or a little longer. Tube short and stout, about two-thirds of the length of head, with straight, distinctly converging sides, at base not quite half

as wide as long and a little more than twice as wide as at apex. The longer terminal bristles stout at base, hair-like in distal half, nearly as long as the tube; the shorter ones hair-like, not quite one-third of the length of the others.

Measurements:—Total length of antennae 0.51 mm. I. joint 0.03 mm. long, 0.04 mm. wide; II. joint 0.05 mm. long, 0.04 mm. wide; III. joint 0.085 mm. long, 0.035 mm. wide; IV. joint 0.08 mm. long, 0.035 mm. wide; V. joint 0.075 mm. long, 0.035 mm. wide; VI. joint 0.07 mm. long, 0.03 mm. wide; VII. joint 0.06 mm. long, 0.025 mm. wide; VIII. joint 0.065 mm. long, 0.015 mm. wide. Head 0.30 mm. long, 0.21 mm. wide. Prothorax 0.20 mm. long, 0.36 mm. wide (across fore coxae). Fore femora 0.24 mm. long, 0.12 mm. wide; fore tibiae (including tarsi) 0.23 mm. long, 0.06 mm. wide. Pterothorax 0.41 mm. long, 0.39 mm. wide. Middle femora 0.19 mm. long, 0.08 mm. wide; middle tibiae (including tarsi) 0.23 mm. long, 0.05 mm. wide. Hind femora 0.24 mm. long, 0.08 mm. wide; hind tibiae (including tarsi) 0.25 mm. long, 0.06 mm. wide. Length of wings (without fringe) 1.15 mm. Abdomen (including tube) 1.3 mm. long, 0.4 mm. wide. Length of tube 0.21 mm. width at base 0.09 mm. at apex 0.04 mm. Total length 2.0—2.7 mm.

Mr. DOCTERS v. LEEUWEN collected this interesting species at Dalat, Annam (\pm 1500 m; 23. X. 1920) in leaf-gall on ?? *Symplocos* (No. 71), together with *Gynaikothrips adusticornis*.

The length and fusiform shape of the last antennal joint is a very remarkable and primitive character of *primitivus*, which separates it at once from all similar species (*adusticornis*, *lividicornis*, *simillimus* and *leeuwenii*), and suggests *G. fuscipes*; but the latter has the head considerably shorter than *primitivus*.

27. *Gynaikothrips leeuwenii* KARNY.

1914. DOCTERS v. LEEUWEN-REIJNVAAN, Bull. Jard. Bot. Buitenzorg (2) XV, p. 46 (without name).

1914. KARNY AND DOCTERS v. LEEUWEN-REIJNVAAN, Zeitschr. wiss. Ins.—Biol., X, p. 206 (without name).

1916. DOCTERS v. LEEUWEN-REIJNVAAN, Bull. Jard. Bot. Buitenzorg (2) XXI, p. 37 (without name).

1922. KARNY, Beitr. mal. Thys., VII.—Treubia, III, 1.

Collected by Mr. DOCTERS v. LEEUWEN in leaf galls on *Pavetta indica* L. (No. 63), in native forest near Saigon, Cape St. Jacques, dated 21. X. 1920, together with *Haplothrips inquilinus*. One of the specimens before me has a small, curved foretarsal tooth, but otherwise not differing from the others.

Further distribution: Java and Celebes (Saleier).

28. *Gynaikothrips chavicae* ZIMMERMANN.

- 1900. ZIMMERMANN, Bull. Inst. Bot. Buitenzorg, VII, p. 14
(*Mesothrips*).
- 1909. DOCTERS v. LEEUWEN, Mededeel. Alg. Proefstat.
Salatiga (2) 25, p. 1-6 (without name).
- 1909. DOCTERS v. LEEUWEN-REIJNVAAN, Marcellia, VIII,
p. 108 (*Mesothrips*), 113.
- 1910. DOCTERS v. LEEUWEN-REIJNVAAN, Marcellia, IX, p.
54 (without name).
- 1911. KARNY, Centralbl. Bakter., II. Abt., xxx, p. 559-562.
- 1912. KARNY, Marcellia, XI, p. 131.
- 1913. KARNY AND DOCTERS v. LEEUWEN-REIJNVAAN,
Bull. Jard. Bot. Buitenzorg, (2) X, p. 11, 17, 24, 108, 109.
- 1914. DOCTERS v. LEEUWEN-REIJNVAAN, Bull. Jard. Bot.
Buitenzorg, (2) XV, p. 35, 47, 48.
- 1914-1916. KARNY AND DOCTERS v. LEEUWEN-REIJNVAAN,
Zeitschr. wiss. Ins.-Biol., X, p. 205, 206, 290; XI, p.
325; XII, p. 18. -
- 1916. DOCTERS v. LEEUWEN-REIJNVAAN, Bull. Jard. Bot.
Buitenzorg, (2) XXI, p. 17.
- 1919. DAMMERMAN, Landbouwdierkunde, p. 154.
- 1919. UICHANCO, Philipp. Journ. Sci., XIV, 5, p. 548; Pl.
XV, fig. 7.

Some specimens collected by Mr. DOCTERS v. LEEUWEN in leaf galls on *Melastoma malabathricum* L. (No. 42) at Klong Chang, Siam, together with many *Mesothrips jordani* and one *Androthrips melastomae*, dated 1. X. 1920.

Further distribution: Java, Sumatra, Philippine Islands, Celebes.

29. **Gynaikothrips maximus** *n.sp.*

Female.—General colour as in *G. primitivus*, but the third antennal joint not shaded with grey, 4-6 a little less than in that species. Wings greyish, especially at base, and darker along the median longitudinal line.

Head nearly one and one-third times as long as wide, cheeks very finely granulated and set with a few very short hairs, converging backwards and somewhat constricted before the hind margin. Eyes large, occupying about one third of the length of head. Postocular bristles inserted in the middle of sides of head, sharply pointed, somewhat shorter than the eyes, not quite reaching to their middle. Mouth-cone broadly rounded, reaching about to the middle of prosternum.

Antennae one and five-sixths times as long as head; fore head between them hardly wider than the space between their outer margin and the eyes. First joint truncate conical, a little more than half as long as wide at base. Second joint nearly cylindrical, constricted at base, distinctly narrower than the preceding one and nearly twice as long as wide. The following ones clavate, about as wide as the second and one and a half times as long, two and a half times as long as wide. Seventh joint fusiform, truncate at apex, distinctly narrower than the preceding ones, nearly three times as long as wide. Eighth segment conical, broadly jointed with seventh, a little more than half as long and wide as this.

First joint with a short bristle on inner margin. Segments 2-5 with a crown of very short, hair-like bristles just before their middle and a second of longer and stouter ones before apex. Sixth joint in distal half, and seventh and eighth nearly throughout their whole length, set with bristles,

Sense area of second joint circular, very small, placed close before the apical margin. Sense cones slender, sharply pointed, somewhat curved, on segment 3 and 4 about as long as the bristles of apical crown, not quite half as long as their segments. Sense cones of fifth joint reaching to the middle of sixth, sense cone of the latter considerably over reaching the middle of seventh segment.

Prothorax three-fourths as long as head, strongly widened backwards, across fore coxae twice as wide as long. Posterolateral and postesomarginal bristles stout and sharply pointed, about half as long as prothorax. Mediolateral setae inserted in the middle of prothoracic sides, stout, sharply pointed and angularly curved at apex, about half as long as those of hind angles. Anterolateral bristles short and stout, not longer than the mediolateral ones, somewhat blunt at apex. Coxal bristle straight and stout, half as long as the posterolateral ones, rather pointed at apex. Fore legs moderately long and slender, their femora somewhat shorter than the head, and nearly three times as long as wide. Tarsi not toothed.

Pterothorax somewhat wider than prothorax across fore coxae, a little longer than wide, with rounded fore angles, and arched sides of meso- and metathorax. Sutures of mesosternum as in *Eothrips laticeps*, those of metasternum as in *E. hyalopterus*. Middle and hind legs long, set with short hairs along both margins and with some longer, stouter bristles before the end of tibiae. Tarsi without teeth.

Wings not constricted in the middle, infumate, especially along the median line, reaching about to the base of seventh abdominal segment. Fore pair at base near the fore margin with three long, stout, sharply pointed, equidistant bristles, about as long as the wing is broad. Hind margin before the apex with 18 double fringe-hairs.

Abdomen a little wider than pterothorax, four and a half times as long as wide. All bristles dark, stout, sharply pointed at apex, on segments 2-4 a little shorter than the segments themselves, on 5-8 somewhat longer, on ninth shorter than the tube. Wing-retaining spines well developed, distinctly S-shaped, the posterior ones on the fourth segment fully as long as the distance between their tips, on the sixth already distinctly shorter. Tube stout, as long as the head, three times as long as wide at base; at apex half as wide as at base. Terminal bristles as in *G. primitivus*.

Measurements of female :—Total length of antennae 0.55 mm. I. joint 0.03 mm. long, 0.05 mm. wide; II. joint 0.06 mm. long, 0.035 mm. wide; III. joint 0.095 mm. long, 0.035 mm. wide; IV. joint 0.10 mm. long, 0.04 mm. wide; V. joint 0.09 mm. long, 0.04 mm.

wide; VI. joint 0'08 mm. long, 0'035 mm. wide; VII. joint 0'065 mm. long, 0'025 mm. wide; VIII joint 0'035 mm. long, 0'15 mm. wide. Head 0'30 mm. long, 0'24 mm. wide. Prothorax 0'22 mm. long, 0'45 mm. wide (across fore coxae). Fore femora 0'28 mm. long, 0'10 mm. wide; fore tibiae (including tarsi) 0'30 mm. long 0'06 mm. wide. Pterothorax 0'50 mm. long, 0'48 mm. wide. Middle femora 0'27 mm. long 0'07 mm. wide; middle tibiae (including tarsi) 0'29 mm. long, 0'05 mm. wide. Hind femora 0'32 mm. long, 0'09 mm. wide; hind tibiae (including tarsi) 0'38 mm. long 0'06 mm. wide. Length of wings (without fringe) 1'35 mm. Abdomen (including tube) 2'3 mm. long, 0'52 mm. wide. Length of tube 0'30 mm., width at base 0'10 mm., at apex 0'05 mm. Total length 2'7-3'6 mm.

In leaf galls on an undetermined plant (No. 72) collected by Mr. DOCTERS v. LEEUWEN at Dalat Lang Bien, Indochina, \pm 1500 m. dated 25. X. 1920.

This new species comes nearest to *G. tristis*, *convolvens* and *cognatus*, but differs from these at once by its distinctly larger size, from *tristis* moreover by the darker end of antennae, the longer and more slender tube and the greater number of duplicated cilia, from *convolvens* by the stouter antennal joints and the different length and shape of sense cones, from *cognatus* by the wings not uniformly infumate, but darker along the median line.

30. *Gynaikothripis rectigenis* n.sp.

Female:—General colour brownish black, fore tibiae and all tarsi brownish yellow. First antennal joint as dark as body, second also as dark at base, but gradually paler towards the apex. The following joints uniformly pale lemon yellow, sixth a little darker towards the apex, seventh shaded with grey, eighth a little darker, brownish grey. Wings coloured as in the preceding species.

Head nearly one and a half times as wide; cheeks straight, nearly parallel, finely granulated and set with some very short hairs. Eyes large, black, occupying somewhat more than one-third of the length of head, with rounded hind margin. Ocelli arranged in a rectangular triangle; the anterior one between the insertion of antennae directed forwards, the posterior ones touching the inner-margin of eyes distinctly before its middle. Postocular bristles short

and stout, a little dilated at apex, not reaching to the hind margin of eyes; the distance between their insertion and the margin of eyes distinctly more than half the length of eyes.

Antennae about one and a half times as long as head, inserted close to the fore margin of eyes. First joint nearly cylindrical, distinctly wider than long. Second segment cup-shaped, as wide as the first and somewhat longer than wide. The following joints a little narrower, somewhat more than twice as long as wide, about equal in length and width, only the fourth one a little longer and wider than the others. Third joint distinctly clavate, 4-6 more rounded, nearly fusiform, but widest behind the middle. Seventh joint fusiform, widest before its middle, distinctly narrower than the preceding ones, and twice as long as wide. Eighth segment conical, broadly jointed with the seventh, about half as wide as this, and nearly three times as long as wide.

Chaetotaxy of antennae as in the preceding species; the median, apical bristle line reaching from middle of seventh to apex of eighth joint. Sense area of second segment transversely ovate, placed close behind its middle. Sense cones similar to the preceding species, those on fifth and sixth joint more slender, but not distinctly longer than on 3 and 4; sense cones of fifth segment not reaching to the middle of sixth, those of the latter exactly to middle of seventh.

Front before the base of mouth cone with a pair of short bristles. Labrum triangular, sharply pointed, reaching nearly to the hind margin of prosternum, and distinctly overreaching the rounded labium. Maxillary palpi long and slender, about half as long as mouth cone, with a short basal and a cylindrical apical joint, about six times as long as wide. Labial palpi scarcely half as long as the maxillary ones, reaching from the end of labium to tip of labrum.

Prothorax about two-thirds as long as head, across fore coxae nearly twice as wide as long. All bristles dark, stout, somewhat dilated at apex. The posterolateral ones nearly half as long as prothorax; posteromarginal bristles of the same length, from the middle line twice as far distant as from the outer setae. Anteromarginal bristles half as long as those, inserted in the midst between

the median line and the fore angles. Anterolateral bristles still shorter, somewhat removed backwards from the fore margin. Mediolateral setae a little longer than the anteromarginal ones, twice as far distant from the hind as from the fore angles.

Prosternum with a distinct, dotted sculpture, except on the following smooth, strongly chitinized plates: one narrow rhomboidal, longitudinally placed plate near each fore angle, one very small triangular plate on each side of mouth cone, a pair of larger, irregularly trapezoidal plates before the hind margin and a small, transversely ovate plate behind them in the middle line. Fore coxae broadly rounded, their bristle stout, a little dilated at apex, but not quite half as long as the posterolateral ones. Fore femora hardly as long as prothorax, full half as wide as long, along the outer margin set with some short hairs. Fore tibiae long and stout, tarsi not toothed.

Pterothorax distinctly wider than prothorax across fore coxae, as long as wide, with rounded fore angles, and somewhat arched sides. Sutures of meso- and metasternum, and the middle and hind legs as in the preceding species.

Wings reaching to the seventh abdominal segment, not constricted at the middle, coloured as in *G. maximus*; fore pair with three equidistant bristles along the abortive basal vein, a little dilated at apex, and more than half as long as the wing is wide. Hind margin with 10-12 duplicated fringe-hairs.

Abdomen nearly as wide as pterothorax, not quite four times as long as wide. Bristles stout, dilated at apex, those of the first segment reaching nearly to the midst of second. Segments 2-6 with the bristles more than half as long as the segments themselves. The outer setae of segment 7 and 8 blunt, not distinctly dilated at apex, about as long as their segments. Bristles of ninth segment sharply pointed, a little shorter than tube. The posterior wing retaining spines well developed, distinctly S-shaped; on segments 4 and 5 fully as long as the distance between their tips, on 3 somewhat shorter, on 2 still shorter, about half as long as this distance. Tube about three-fourths as long as head, with straight, backwards converging sides, at base not quite half as wide as long, and a little more than twice as wide as at apex. Terminal bristles hair-like, the

longer ones about half as long as the tube, the shorter ones half as long as the others.

Measurements of female :—Total length of antennae 0'45 mm. I. joint 0'03 mm. long, 0'04 mm. wide ; II. joint 0'05 mm. long, 0'04 mm. wide ; III. joint 0'07 mm. long, 0'03 mm. wide ; IV. joint 0'075 mm. long, 0'035 mm. wide ; V. joint 0'07 mm. long, 0'03 mm. wide ; VI. joint 0'07 mm. long, 0'03 mm. wide ; VII. joint 0'05 mm. long, 0'025 mm. wide ; VIII. joint 0'035 mm. long, 0'013 mm. wide. Head 0'29 mm. long, 0'20 mm. wide. Prothorax 0'20 mm. long, 0'38 mm. wide (across fore coxae). Fore femora 0'19 mm. long, 0'10 mm. wide ; fore tibiae (including tarsi) 0'23 mm. long, 0'05 mm. wide. Pterothorax 0'43 mm. long and wide. Middle femora 0'20 mm. long, 0'06 mm. wide ; middle tibiae (including tarsi) 0'29 mm. long, 0'04 mm. wide. Hind femora 0'25 mm. long, 0'07 mm. wide ; hind tibiae (including tarsi) 0'32 mm. long, 0'04 mm. wide. Length of wings (without fringe) 1'05 mm. Abdomen (including tube) 1'5 mm. long, 0'41 mm. wide. Length of tube 0'22 mm., width at base 0'09 mm., at apex 0'04 mm. Total length 2'0-2'4 mm.

Three specimens collected by Mr. DOCTERS v. LEEUWEN in leaf galls on *Vernonia elaeagnifolia* D. C. (No. 45) at Tachoi, Southern Siam, dated 1. X. 1920.

This species comes nearest to *G. longiceps*, but has the sides of head more parallel and the antennae much slenderer. The shape of head suggests somewhat the Ceylonese *G. watsoni*, but this has a different coloration of antennae.

31. *Gynaikothrips longiceps* KARNY.

1914-1916. KARNY AND DOCTERS v. LEEUWEN-REIJNVAAN, Zeitschr. wiss. Ins.-Biol., X. p. 207 ; XI. p. 325 ; XII. p. 19.

1914. DOCTERS v. LEEUWEN-REIJNVAAN, Bull. Jard. Bot. Buitenzerg (2) XV. p. 48.

I refer to this species, with some doubt, one specimen from *Ficus*, which should perhaps rather represent a separate new species in the vicinity of *longiceps* and *convolvens*. I am not able to decide this from the single, somewhat damaged specimen.

Collected by Mr. DOCTERS v. LEEUWEN in a leaf gall on *Ficus benjamina* L. (No. 48) at Bangkok (3. X, 1923), together with *Gynaikothrips uzeli* and one *Androthrips melastomae*.

Distribution of *G. longiceps*: Java.

32. *Gynaikothrips adusticornis* KARNY.

1914-1916. KARNY AND DOCTERS v. LEEUWEN-REIJNVAAN, Zeitschr. wiss. Ins.—Biol., X, p. 206; XI, p. 325; XII, p. 21.

1914. DOCTERS v. LEEUWEN-REIJNVAAN, Bull. Jard. Bot. Buitenzorg (2) XV, p. 30.

One specimen in a leaf gall on ?? *Symplocos* (No. 71) together with *Gynaikothrips primitivus*, collected by Mr. DOCTERS v. LEEUWEN at Dalat, Annam (± 1500 m.); 23. X. 1920.

The species was hitherto only recorded from Java.

33. *Gynaikothrips lividicornis* KARNY.

1922. KARNY, Beitr. mal. Thys., VII.—Treubia, III, 1.

Collected by Mr. DOCTERS v. LEEUWEN in a leaf gall on *Rhodamnia trinervia* Bl. (No. 65) at Saigon, Cape St. Jacques, dated 25. X. 1920.

The species was originally described from Celebes (Kalao Foa and Bonerate).

34. *Gynaikothrips claripennis* KARNY.

1914-1916. KARNY AND DOCTERS v. LEEUWEN-REIJNVAAN, Zeitschr. wiss. Ins.—Biol., X, p. 203; XI, p. 325-327; XII, p. 84.

1914. DOCTERS v. LEEUWEN-REIJNVAAN, Bull. Jard. Bot. Buitenzorg (2) XV, p. 51.

Collected by Mr. DOCTERS v. LEEUWEN in leaf galls on an undetermined plant (No. 41) at Patalung, Southern Siam (30. IX. 1920.) and on ? *Salacia* (No. 59) near Saigon (native forest Tri Han; 19. X. 1920).

Further distribution: Java.

35. *Gynaikothrips uzeli* ZIMMERMANN.

1900. ZIMMERMANN, Bull. Inst. Bot. Buitenzorg, VII, p. 12
(*Mesothrips*) p. 13 (*Gynaikothrips*).

1922. KARNY, Beitr. mal. Thys., VII,—Treubia, III, 1, (with
list of synonymy and literature).

This common and widely distributed species was collected by Mr. DOCTERS v. LEEUWEN in Further India on *Ficus retusa* L. at Bangkok (9. X. 1920; No. 50, together with *Gigantothrips elegans* and *Mesothrips jordani* on old leaf galls,—No. 51, together with one *Leptothrips constrictus* in young leaf galls); and on *Ficus benjamina* L. at Bangkok (No. 48; 3. X. 1920; together with one *Gynaikothrips* sp. and one *Androthrips melastomae*) and at Saigon (No. 55; 17. X. 1920.—No. 78; 28. X. 1920, together with *Androthrips melastomae*, *Leptothrips constrictus* and *Mesothrips-jordani*.)

Further distribution: Java Algeria, Canary Islands, Cuba, Porto Rico, Florida.

36. *Mesothrips jordani* ZIMMERMANN.

1900. ZIMMERMANN, Bull. Inst. Bot. Buitenzorg, VII, p. 16.

1910. *Phloeothrips similis* BAGNALL, Trans. Nat. Hist. Soc. Nor-thumberl., N. S., III, 2, p. 12.

1911. KARNY, Centralbl. Bakteriöl., II. Abt., xxx, p. 559—562.

1912. KARNY, Marcellia, XI, p. 148.

1913. KARNY AND DOCTERS v. LEEUWEN-REIJNVAAN,
Bull. Jard. Bot. Buitenzorg, (2) X, p. 7, 8, 11, 68.

1916. KARNY AND DOCTERS v. LEEUWEN-REIJNVAAN,
Zeitschr. wiss. Ins.—Biol., XII, p. 130.

Collected by Mr. DOCTERS v. LEEUWEN in leaf galls on *Melasma malabathricum* L. (No. 42; at Klong Chang, Siam; 1. X. 1920; together with *Gynaikothrips chavicae* and one *Androthrips melastomae*), on *Ficus retusa* L. (No. 50; at Bangkok; 9. X. 1920; together with *Gigantothrips elegans* and *Gynaikothrips uzeli*), and on *Ficus benjamina* L. (No. 78; at Saigon; 28. X. 1920; together with *Leptothrips constrictus*, *Androthrips melastomae* and *Gynaikothrips uzeli*).

Was hitherto known only from Java.

37. **Mesothrips ustulatus** *n.sp.*

Female. Male.—General colour yellowish brown. Head dark brown, gradually somewhat paler backwards. Abdomen gradually darker backwards, the last segments brownish black. Legs brownish yellow, but the middle and hind tibiae considerably darker than the femora. First and second antennal segment greyish brown, the latter gradually yellowish towards the apex. The following joints brownish yellow, the fourth a very little, fifth distinctly shaded with grey in distal half, sixth segment yellowish in basal third, further greyish brown, seventh and eighth entirely dark greyish brown. Wings clear, hyaline, a very little yellowish at extreme base and indistinctly shaded with grey in distal part along the margins.

Head about one and a half times as long as wide; cheeks converging backwards and distinctly constricted at base, set with some very stout bristles. Eyes moderately large, occupying about one third of the length of head, with rounded hind margin. Ocelli very large, with distinct pigment-cups, nearly touching one another, arranged in a rectangular triangle; the posterior ones touching the inner margin of eyes about at its midst. Postocular bristles sharply pointed, about as long as the eyes, not quite twice as long as the space between their insertion and the hind margin of eyes. Dorsal surface of head smooth.

Antennæ about one and a half times as long as head, inserted very near the fore margin of eyes; fore head between them somewhat produced. First segment cylindrical, wider than long. Second segment cup-shaped, somewhat narrower than the first, not quite twice as long as wide. Third segment clavate, as wide as the first, twice as long as wide. The following segments nearly fusiform, but widest behind their middle, gradually diminishing in length and width. Seventh segment cylindrical, narrowed towards the base, half as wide as the third, more than twice as long as wide. Eighth joint cylindrical in basal half, bluntly conical at apex, two-thirds as long and wide as the preceding one.

Terminal bristles of antennal joints nearly half as long as the segments themselves; sixth joint set with bristles in the distal half,

the following ones nearly throughout their whole length. Median bristle line in the apical third of seventh segment, than interrupted at base of eighth, further reaching to apex of the latter.

Sense area of second segment small, transversely ovate, placed distinctly behind the middle. Sense cones about as long as the terminal bristles, slender, sharply pointed at apex, that of seventh segment a-little overreaching the middle of apical joint.

Mouth cone broadly rounded, not reaching to the middle of prosternum. Maxillary palpi cylindrical, about half as long as the mouth cone, with a short basal and a long, cylindrical apical joint. Labial palpi a little narrower than the maxillary ones, very short, nearly abortive.

Prothorax about as long as head (in the megalomeros form) or distinctly shorter (in the micromeros form), widened backwards, across fore coxæ about one and a half times as wide as long. All bristles sharply pointed. Those of hind angles not quite half as long as the prothorax, the posteromarginal ones distinctly longer; their insertion about twice as far distant from the middle of hind margin as from the posterolateral bristles. Mediolateral setæ only a little shorter than those of hind angles, a little close to these than to the anterolateral bristles. These very short, hair-like, hardly as long as the distance of their insertion from the fore margin of prothorax. Anteromarginal bristles not distinguishable. Prosternum indistinctly dotted, without well-defined smooth plates.

Fore coxæ longitudinally ovate, their bristles stout, sharply pointed, about half as long as the posterolateral ones. By the shape of fore legs there may be distinguished — similarly as in *M. pyctes* — two forms of this species. One has the fore femora one and a half times as long as head, and the fore tarsi armed with a sharp tooth-like process, nearly as long as the tibia is wide; in the other form the fore femora are distinctly smaller, not quite as long as head, and the fore-tarsal tooth hardly half as long as the tibial is wide.

Pterothorax a very little wider than prothorax across fore coxæ, not quite as long as wide, with rounded fore angles and somewhat arched sides converging backwards. Middle coxæ distinctly smaller than the hind ones and about twice as far distant from each other. Middle and hind legs stout; with short hairs along their

margins and some stouter bristles at the end of tibiae. Tarsi without teeth.

Wings reaching about to the seventh abdominal segment, a little constricted at their middle; fore pair at base near the fore margin with three equidistant, sharply pointed bristles, gradually increasing in length, the third about one and a half times as long as the wing is wide. Hind margin with about 10 double cilia before the apex.

Abdomen slender, somewhat narrower than pterothorax, not quite five times as long as wide. All bristles stout, sharply pointed, on segments 2-7 about as long as the segments themselves, on 8 distinctly shorter. Bristles of ninth segment nearly as long as the tube. Wing-retaining spines well developed, slender, distinctly S-shaped. The distance between the tips of posterior ones on segments 3-6 not fully one and a half times as long as the spines themselves; spines on 2 and 7 distinctly shorter. The fore pair on each segment only a little shorter, but distinctly thinner than the posterior ones. Tube about three-fourths as long as head, with straight sides converging backwards, about two and a half times as long as wide at base, at apex nearly half as wide as at base. The longer terminal bristles stout at base, hair-like at apex, about two-thirds as long as tube; the shorter ones hair-like, about one third of the length of the others.

Measurements of megalomeroous form (female, male):—

Total length of antennae 0'52 mm. I. joint 0'03 mm. long, 0'045 mm. wide; II. joint 0'06 mm. long, 0'035 mm. wide; III. joint 0'09 mm. long, 0'045 mm. wide; IV. joint 0'085 mm. long, 0'045 mm. wide; V. joint 0'08 mm. long, 0'037 mm. wide; VI. joint 0'07 mm. long, 0'03 mm. wide; VII. joint 0'06 mm. long, 0'023 mm. wide; VIII. joint 0'04 mm. long, 0'013 mm. wide. Head 0'34 mm. long, 0'21 mm. wide. Prothorax 0'34 mm. long, 0'48 mm. wide (across fore coxae.) Fore femora 0'52 mm. long, 0'22 mm. wide; fore tibiae (including tarsi) 0'28 mm. long, 0'08 mm. wide. Pterothorax 0'45 mm. long, 0'50 mm. wide. Middle femora 0'22 mm. long, 0'08 mm. wide; middle tibiae (including tarsi) 0'25 mm. long, 0'06 mm. wide. Hind femora 0'32 mm. long, 0'09 mm. wide; hind tibiae (including tarsi) 0'28 mm. long, 0'07 mm. wide. Length of wings (without fringe)

1'3. mm. Abdomen (including tube) 1'85 mm. long, 0'4 mm. wide. Length of tube 0'27 mm. width at base 0'10 mm. at apex 0'04 mm. Total length 2'4-3'1 mm.

Measurements of micromerous form (female, male) :— Total length of antennae 0'39 mm. I. joint 0.025 mm. long, 0'035 mm. wide; II. joint 0.05 mm. long, 0'03 mm. wide; III joint 0'06 mm. long, 0'035 mm. wide; IV. joint 0'06 mm. long, 0'035 mm. wide; V. joint 0'06 mm. long, 0'032 mm. wide; VI. joint 0'055 mm. long, 0'025 mm. wide; VII. joint 0'05 mm. long, 0'023 mm. wide; VIII. joint 0'035 mm. long, 0'015 mm. wide. Head 0'27 mm. long, 0'18 mm. wide. Prothorax 0'20 mm. long, 0'32 mm. wide (across fore coxae). Fore femora 0'25 mm. long, 0'12 mm. wide; fore tibiae (including tarsi) 0'18 mm. long, 0'06 mm. wide. Pterothorax 0'30 mm. long, 0'34 mm. wide. Middle femora 0'15 mm. long, 0'06 mm. wide; middle tibiae (including tarsi) 0'15 mm. long, 0'04 mm. wide. Hind femora 0'23 mm. long, 0'07 mm. wide; hind tibiae (including tarsi) 0'30 mm. long, 0'05 mm. wide. Length of wings (without fringe) 1. mm. Abdomen (including tube) 1'3 mm. long, 0'27 mm. wide. Length of tube 0'19 mm., width at base 0'07 mm., at apex 0'035 mm. Total length 2'1—2'6 mm.

This species was found by Mr. DOCTERS v. LEEUWEN in leaf galls on *Memecylon* sp. (No. 64), at Saigon, Cape St. Jacques, dated 21. X. 1920.

Mesothrips ustulatus is very similar to *jordani* in its whole appearance, but directly distinguished by its very characteristic colour, especially of antennae. Even in entirely black specimens of *jordani* the apical joints of antennae are always considerably paler than in *ustulatus*.

38. *Mesothrips vitripennis* n. s.p.

General colour dark brown. Fore tibiae and all tarsi brownish yellow.

Antennae coloured as in the preceding species. Wings clear, hyaline, pale yellow only at extreme base.

Head one and one-third times as long as wide; cheeks arched, converging backwards, constricted at base, set with a few very short spines. Eyes, ocelli and postocular bristles similar to those of the

preceding species, but the hind margin of eyes nearly truncate, and the bristles inserted close behind it. Mouth-cone rounded at apex, reaching about to the middle of prosternum. Palpi as in *ustulatus*.

Antennae about one and two-thirds times as long as head, inserted close to the fore margin of eyes, fore head between them a little produced. Shape and chaetotaxy of joints much as in *ustulatus*; but the third and fourth joint equal in length and width, and the sixth as wide as the fifth; sense cones somewhat smaller than in the preceding species.

Prothorax nearly as long as head, across fore coxae not quite twice as wide as long. All bristles stout, pointed at apex. The posterolateral ones hardly half as long as prothorax, posteromarginal setae a little shorter. Anterolateral bristles a little more than half as long as these of hind angles, mediolateral one of the same length, inserted in the middle between the antero- and posterolateral setae. Anteromarginal bristles only a little shorter and weaker than those of the fore angles, as far distant from them as from the middle line. Prosternum as in *Eothrips laticeps*.

Fore coxal bristle about two-thirds as long as the posterolateral ones, stout, sharply pointed at apex. Behind them a few very short bristles. Fore femora a little longer than head, about half as wide as long. Fore tarsus with a long, somewhat curved, sharply pointed tooth.

Pterothorax a little narrower than prothorax across fore coxae, as long as wide, with somewhat protruding fore angles and arched sides converging backwards. Sutures of meso- and metasternum similar to those of *Eothrips laticeps*, but the median, forwardly-directed suture-angle on both segments acute. Middle and hind legs as in *ustulatus*.

Wings reaching about to the sixth abdominal segment, similar to those of the preceding species, but the third basal bristle hardly as long as the wing is wide, more distant from the second than this from the first. Hind margin with 8-12 duplicated fringe-hairs.

Abdomen as in *ustulatus*, but the bristles of ninth segment and tube a little shorter. Wing-retaining spines as in the preceding species, but both pairs still more curved, especially before the apex.

Tube as in *ustulatus*, but only a little more than twice as long as wide at base.

Measurements:—Total length of antennae 0'43 mm. I joint 0'025 mm. long, 0'04 mm. wide; II. joint 0'05 mm. long, 0'035 mm. wide; III. joint 0'08 mm. long, 0'04 mm. wide; IV. joint 0'08 mm. long, 0'04 mm. wide; V. joint 0'065 mm. long, 0'03 mm. wide; VI. joint 0'055 mm. long, 0'03 mm. wide; VII. joint 0'05 mm. long, 0'025 mm. wide; VIII. joint 0'03 mm. long, 0'01 mm. wide. Head 0'26 mm. long, 0'20 mm. wide. Prothorax 0'24 mm. long 0'42 mm. wide (across fore coxae). Fore femora 0'29 mm. long, 0'14 mm. wide; fore tibiae (including tarsi) 0'30 mm. long, 0'05 mm. wide. Pterothorax 0'40 mm. long and wide. Middle femora 0'26 mm. long, 0'07 mm. wide; middle tibiae (including tarsi) 0'26 mm. long, 0'05 mm. wide. Hind femora 0'29 mm. long, 0'08 mm. wide; hind tibiae (including tarsi) 0'35 mm. long, 0'06 mm. wide. Length of wings (without fringe) 0'9 mm. Abdomen (including tube) 1'7 mm. long, 0'34 mm. wide. Length of tube 0'20 mm., width at best 0'09 mm., at apex 0'04 mm. Total length 2'1-2'7 mm.

Collected by Mr. DOCTERS v. LEEUWEN in leaf galls on ? *Aporosa* (No. 57), together with *Eothrips laticeps*, at Saigon (native forest Tri Han), ± 100 mm, dated 19. X. 1920.

Comes in my species key (Zeitschr. wiss. Ins.-Biol., XII, p. 138-131; 1916) nearest to *pyctes*, but differs by its somewhat smaller size and its clear wings. Diverging from the preceding species by the uniform colour of body, shorter head and especially the chaetotaxy of prothorax, from *australiae* HOOD by the clear wings and from *alluaudi* VUILLET (Madagascar) by the arched cheeks, the smaller number of double cilia and the much shorter tube.

Subfamily Macrothripinae KARNY.

39. *Dinothrips sumatrensis* BAGNALL.

1908. BAGNALL, Trans. Nat. Hist. Soc. Northumber 1., N. S., III, 1, p. 11,

1922. KARNY, Beitr. mal. Thys., VI Treubia, III, 1 (with list of literature).

One male of this common and widely distributed, bark-inhabiting species collected by Mr. DOCTERS v. LEEUWEN in a railway-car near Banksut, Siam (No. 47), dated 2. X. 1920.

Further distribution. Benghalis, Ceylon, Tonkin, Sebroang, Burma, Penang, Singapore, Sumatra, Mentawai, Nias, Engano, Java, Borneo, Sarawak, Philippine Islands, Buru, New Guinea.

Family Idolothripidae BAGNALL.

40. *Gigantothrips elegans* ZIMMERMANN.

- 1900. ZIMMERMANN, Bull. Inst. Bot. Buitenzorg, VII, p. 18.
- 1908. *Panurothrips gracilis* BAGNALL, Trans. Nat. Hist. Soc. Northumberland, N. S., III, 1, p. 28.
- 1910. *Panurothrips gracilis* BAGNALL, Trans. Nat. Hist. Soc. Northumberland, N. S., III, 2, p. 3.
- 1911. DOCTERS v. LEEUWEN-REIJNVAAN, Marcellia, X. p. 75 (without name).
- 1911. KARNY, Centralbl. Bakteriöl., II. Abt., XXX, p. 559-562.
- 1912. KARNY, Marcellia, XI, p. 158.
- 1913. KARNY AND DOCTERS v. LEEUWEN-REIJNVAAN, Bull. Jard. Bot. Buitenzorg, (2) K, p. 4, 8, 117.
- 1916. KARNY AND DOCTERS v. LEEUWEN-REIJNVAAN, Zeitschr. wiss. Ins.—Biol., XII, p. 189.
- 1916. BAGNALL, Ann. Mag. Nat. Hist., (8) XVII, p. 403
Gigantothrips elegans and *G. gracilis*.
- 1919. UICHANCO, Philipp. Journ. Sci., XIV, 5, p. 547; pl. XIV, fig. 3.

I have united here ZIMMERMANN's *elegans* and BAGNALL's *gracilis*. The latter was described in 1908 from three specimens from Siam, when BAGNALL was not yet acquainted with ZIMMERMANN's paper. This author said then: "Tube.....twice as long as the head". In 1910 he recorded the same species ("*gracilis*") from Java with the remark: "The head is.....more than one-half the length of the tube." Evidently BAGNALL supposed the length of tube to be not absolutely constant. But in 1916, when he also received material of ZIMMERMANN's *elegans*, he used the length of tube as specific character: "the tube.....in *gracilis* about as long as the abdominal segments 7-8" (should be 9) "together, and in *elegans* about 0.75 the length of these segments." But this character is somewhat variable, and in the material before me there are specimens with a tube one and a half times as long as head, others with

it twice as long, and all possible intermediate forms between these. The comparison of tube length with the length of the preceding segments, as used by BAGNALL, is further not useful, because then the relative length is dependent not only on the length of tube, but also on the more or less contracted state of abdomen. BAGNALL further makes *gracilis* larger than *elegans*. This is not really so: BAGNALL (1908) gave for *gracilis* the length 5.2–6.0 mm.; for *elegans*, ZIMMERMANN gives 5.5–5.6 mm. It was not to be expected that two so slightly diverging forms, in the same galls on the same plant ("Waringin tree") and from the same localities (Java), should belong to two different species.

Collected by Mr. DOCTERS v. LEEUWEN on old leaf galls on *Ficus retusa* L. (No. 50) at Bangkok (9. X. 1920), together with *Gynaikothrips uzeli* and one *Mesothrips jordani*.

Hitherto known from Java, Philippine Islands and Siam.

Family Hystricothripidae KARNY.

41. *Leeuwenia aculeatrix* KARNY.

1922. KARNY, Beitr. mal. Thys., VIII.—Treubia, III, 1.

In leaf galls on *Eugenia* sp. (No. 77), collected by Mr. DOCTERS v. LEEUWEN at Saigon (28. X. 1920), together with *Gynaikothrips daetymon*. The extraordinary long spines along the whole tube distinguish it easily from the other *Leeuwenia*'s.

