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Thysanoptera Fauna of North Eastern India

S. Sen
N. K. Pramanik
C. K. Sengupta

Zoological Survey of India

RECORDS
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**THYSANOPTERA FAUNA OF
NORTH-EASTERN INDIA**

S. SEN, N. K. PRAMANIK

AND

C. K. SEN GUPTA

Zoological Survey of India, Calcutta



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INTRODUCTION

Our knowledge of Thysanoptera fauna of North-Eastern India is extremely meagre. Keeping this in view a project was undertaken to study the Thysanoptera fauna of North-Eastern India and so far Muraleedharan (1982); Muraleedharan & Sen (1978, 1981a, 1981b), Sen (1976, 1977); Sen & Muraleedharan (1977) have described 22 new species including 2 new genera and also recorded 17 species of Tubulifera for the first time from the area; besides Sen (1978) described the male of *Monilothrips kempi* Moulton from India.

The present monograph is the outcome of the studies made on the extensive collections made by different parties of the Zoological Survey of India from the States of *Arunachal*; *Assam*; *Meghalaya*; *Manipur*; *Mizoram*; *Sikkim*; *Tripura*; Darjeeling Dt., Jalpaiguri Dt. & Coochbehar Dt. of *West Bengal* and also incorporated the species recorded by earlier workers. The collection ranges from foothills of Jalpaiguri & Darjeeling Dt. of West Bengal upto the elevation of 3200 m. (Twang) of Arunachal Pradesh.

Key to the families, genera & species; synonymy and exact record of localities of relatively known species and description of the species described from the area have been provided.

All measurements are in microns unless otherwise mentioned.

HISTORICAL REVIEW AND PRESENT STATUS OF THYSANOPTERA FAUNA OF N. E. INDIA.

The first record of thrips from the area dates back to 1913 when Bagnall described *Lefroyothrips lefroyi* (Bagnall) [= *Physothrips lefroyi* Bagnall] subsequently between the years 1913 & 1934, Bagnall (1913, 1918, 1921, 1926, 1932, 1933 & 1934) and Moulton (1929, 1933), added another 6 new species viz. *Thrips andrewsi* Bagnall; *Thrips coloratus* Schmutz [= *Thrips melanurus* Bagnall]; *Monilothrips kempi* Moulton; *Haplothrips tenuipennis* Bagnall; *Dinothrips jugalandis*

Moulton and *Elaphrothrips spiniceps* Bagnall [= *Elaphrothrips gravelyi* Bagnall] from Darjeeling Dt., West Bengal. In the recent past Ananthakrishnan (1969, 1971a, 1971b, 1972 & 1973) and Ananthakrishnan & Jagadish (1970a, 1970b) described 10 species of Tubulifera—*Ablemothrips maxillatus* Ananth. ; *Liothrips himalayanus* Ananth. & Jagadish ; *Liothrips morulus* Ananth. & Jagadish ; *Neoheegeria montana* Ananth. & Jagadish ; *Ocythrips rarus* Ananth. ; *Sophiothrips nigrus* Ananth. ; *Stigmothrips infirmus* Ananth. ; *Elaphrothrips curvipes* Priesner [= *Elaphrothrips secus* Ananth.]; *Ethirothrips longisetis* (Ananth. & Jagadish) [= *Diceratothrips* (D.) *longisetis* A. & J.]; *Oidnathrips megacephalus* (Ananth.) [= *Polyphemothrips megacephalus* Ananth.] and Ananthakrishnan (1973) recorded *Allothrips pillichellus bicolor* Ananth. from Darjeeling Dt., West Bengal. Mound (1976) described *Dichromothrips indicus* from Darjeeling Dt., West Bengal. Dev (1964) studied the biology of *Scirtothrips dorsalis* Hood occurring on tea in Assam.

At the time of undertaking the project only 19 species were known to occur in Darjeeling Dt., West Bengal and as a result of the present studies 105 species pertaining to 65 genera have been recorded from different States of North-Eastern India and the familywise break up of the species being Aeolothripidae (1 sp.), Thripidae (28 spp.) & Phlaeothripidae (76 spp.).

A distributional analysis of the species treated here shows that 32 species are endemic ; 7 species originally described from the area have been reported from elsewhere later on and 46 species have been recorded for the first time from the area. Five genera—*Monilothrips* Moulton, *Ablemothrips* Ananthakrishnan, *Neodixothrips* Sen & Muraleedharan, *Ocythrips* Ananthakrishnan & *Pegothrips* Sen & Muraleedharan have been described from the area and recorded the Nearctic genus *Tylothrips* Hood for the first time from India. Three species—*Monilothrips kempi* Moulton, *Pegothrips meghalaya* Sen & Muraleedharan & *Elaphrothrips insignis* Ananthakrishnan are restricted to Himalayas only, distributed both in Eastern & Western Himalayas. *Ctenothrips niger* Kudo and *Meiothrips nepalensis* Kudo & Ananth. are recorded for the first time from India.

KEY TO THE FAMILIES AND SUBFAMILIES OF THYSANOPTERA FROM NORTH-EASTERN INDIA

1. Abdominal segment X tubular. Female without saw like, ovipositor.

Forewings without longitudinal veins and setae.

Suborder Tubulifera

Family Phlaeothripidae

...Maxillary stylets uniformly thin, never broadened; narrower than labial palps.

...Subfamily Phlaeothripinae

Maxillary stylets thickened; band like; broadened at apex, broader than labial palps.

...Subfamily Idolothripinae

Abdominal segment X rarely tubular. Female always with saw like ovipositor. Forewings with veins and cross veins and setae on veins 2

2. Ovipositor curved upwards. Forewings broad and rounded at apex; fore margin without the fringe of long hairs. Antennae 9-segmented; 3 & 4 with elongated sensory areas.

...Family Aeolothripidae

Ovipositor curved downwards. Wings more or less pointed at apex; fore margin with the fringe of hairs. Antennae 6-9 segmented; 3 & 4 with simple or forked sense cones

...Family Thripidae

...Dorsum of body not polygonally reticulate, atmost with transverse striae. Terminal antennal segments not long and thin.

.. Subfamily Thripinae

..Dorsum of body deeply reticulate with polygonal areas. Terminal antennal segments long and thin, needle-like.

.. Subfamily Panchaetothripinae

SYSTEMATIC ACCOUNT

Order THYSANOPTERA

Suborder TEREBRANTIA

Family AEOLOTHRIPIIDAE

Genus 1 *Aeolothrips* Haliday

1836. *Aeolothrips* Haliday, *Ent. Mag.* 3 : 451.

1. *Aeolothrips collaris* Priesner

1919. *Aeolothrips fasciatus collaris* Priesner, *Sitz. Ber. math. naturwiss Kl. Akad. Wiss. Wien.*, (1) 128 (2-3) : 119.

1948. *Aeolothrips collaris* Priesner, *Bull. Soc. Fouad. Ier Ent.*, 32 : 323-324.

1980. *Aeolothrips collaris* : Ananthakrishnan & Sen, *Handbk. Ser 1, Zool. surv. India* : 50 & 126.

1984. *Aeolothrips collaris*: Zur Strassen, *Senckenbergiana biol.* 65 (1-2): 78.

Specimen studied: Tripura: 5 ♀♀ Chailenyta, 19.12.1973, coll. Dr. V. C. Agarwal (Z. S. I. Reg. Nos. 214-16/H₁₂ & 394-95/H₁₂)

Distribution: India: Widely distributed in India.

Elsewhere: ALBANIA, YOGOSLOVIA & EGYPT

Remarks: The species is recorded here for the first time from N. E. India.

KEY TO THE GENERA OF THE FAMILY THIRIPIDAE FROM NORTH-EASTERN INDIA

1. Dorsum of body not polygonally reticulate, atmost with transverse striae. Antennae 7 or 8 segmented, rarely 9-segmented; terminal segments not long and thin.

(Subfamily Thripinae) .. 2

Dorsum of body deeply reticulate with polygonal areas. Terminal antennal segments long and thin, needle like.

(Subfamily Panchaetothripinae) .. 16
2. Abdomen with dense rows of microtrichia.

(Tribe Sericothripini) .. 3

Abdomen without dense rows of microtrichia .. 4
3. Prothoracic setae short. Spinula present only on mesosternum. Antennae 8-segmented, style 2 segmented. Wings with two longitudinal veins, lower veins with only few scattered setae. Males sometimes with a sickle-like lateral appendage on abdominal segment IX

...*Scirtothrips* Shull

Pronotum with two strong setae at each posterior angle. Spinula present on meso- and meta sternum. Lower vein of forewings with numerous setae

...*Ajothrips* Bhalti
4. Body flattened. Forewings with only 5-6 lower vein setae. Abdominal terga I-V along posterior margin with triangular pointed teeth. Tergum IX of male with stout spines

(Tribe Chirothripini) .. *Sciothrips* Bhatti

Body seldom flattened ..5
5. Prothorax without any major setae, only with 2 conspicuous setae at hind angle. Antenna 8-segmented. Wings not very broad, setae on veins weak. Abdominal tergum IX of female without a pair of well developed mediodorsal setae and males often with one or two pairs of stout thorn like setae on abdominal segment IX.

(Subtribe Anaphothripina) ...*Anaphothrips* Uzel

Prothorax with major setae and with one or two conspicuous setae at hind angles and usually with 2-6 pairs of posteromarginal setae

(Subtribe Thripina) ...6

6. Antenna always 8-segmented, style 2-segmented ...7
 Antenna 7-segmented, very rarely 8-segmented due to a secondary split in the style .. 14

7. Maxillary palpi 2 segmented. Head with a short process. Antennal segments 3 and 4 with simple sense cones. Foretibiae at inner apex with long trifid spur. Femur divided. Wings slender, strongly curved and sparsely set with setae (costa 8-11, upper vein with 6-7 and lower vein with 4-5 setae). Posterior margin of abdominal segments with a comb of microtrichia, complete on posterior terga. Males with multiple gland areas on abdominal sterna.

.. *Organothrips* Hood

Maxillary palp 3-segmented .. 8

8. Forewings with a regular series of setae in both veins .. 9

Forewings without a regular series of setae ...10

9. Abdominal segment X tube-like and longitudinally split through its entire length Metascutum, abdominal tergites and sternites strongly hexagonally reticulate. Head constricted behind eyes, cheeks bulged. Males with subapical glandular area one on each abdominal sterna III-VIII. Terminal setae on abdominal tergite X long and stout and sternites without accessory setae

.. *Ctenothrips* Franklin

Abdominal segment X not tube-like. Metascutum and abdomen without hexagonal reticulations. Pronotum with 4 strong setae on each side—an anteroangular, anteromarginal and two postangulars ; anteromarginals shorter than anteroangulars

.. *Frankliniella* Schmutz

10. Pronotum always with 6 long setae on each side. Forewings with 2 brown spots, sometimes taking the form of bands.

...*Scolothrips* Hinds

Pronotum mostly with 2 long setae at posterior angles (rarely anterior marginal conspicuous) ...11

11. Lower vein of forewings with a regular series of setae ...12
 Lower vein with only 4 setae at most and setae on veins particularly on lower vein very well developed. Sense cones on antennal segments 3 and 4 very long. Spinula present on mesosternum only.

.. *Euphysothrips* Bagnall

12. Intermediate antennal segments (generally 3 and 4) elongate bottle-like ; sense cones on 3 and 4 long and mostly a broad 'U' ; segment 5 broad at apex, 6 broadest near base and broadly joined to 5
 ...*Dichromothrips* Priesner
 Antenna normal ; sense cones on 3 and 4 moderately long ...13
13. Postoculars in two rows. Males with 6 setae on abdominal tergum IX.
 .. *Lefroyothrips* Priesner
 Postoculars in a single row. Head not constricted behind eyes, parallel sided ; cheeks delicately narrowed posteriorly. Antenna showing sexual dimorphism.
 ...*Megalurothrips* Karny
14. Spinula on meso- and metasternum absent or weakly developed on mesosternum only. Maxillary palpi 2- segmented. Antennal segment 2 with middorsal seta.
 ...*Stenchaetothrips* Bagnall
 Spinula on mesosternum distinct, absent on metasternum ...15
15. Posterior margin of abdominal tergite I-VIII with teeth or scallops. Head small.
 ...*Microcephalothrips* Crawford
 Atmost tergite VIII with a comb. Forelegs unarmed. Abdominal tergites without posterior marginal flange ; sternites with or without glandular areas in males ; accessory setae on sternites of both sexes may or may not be present.
 ...*Thrips* Haliday
16. Body without polygonal reticulations, but with strong wrinkles
 ...*Rhipiphorotherips* Morgan
 Body with distinct polygonal reticulations ...17
17. Antenna 7-segmented, style 1-segmented ; four terminal segments forming a conical unit. Forewings with callosities. Body short and stout
 ...*Retithrips* Marchal
 Antenna 8-segmented, style 2-segmented ...18
18. Wings without veins or setae, but with microtrichia
 ...*Phibalothrips* Hood
 Wings with or without conspicuous veins but with short and well developed setae ...19
19. Abdominal segment X long and tubiform and setae on segment IX & X long and exceptionally stout. Forewings with long and dark setae
 .. *Panchaetothrips* Bagnall
 Abdominal segment X normal .. 20

20. Head with a conspicuous reticular collar-like band at posterior margin. Antennal style 2 very long, nearly thrice as long as 1. Abdominal tergite IX of male with 2 pairs of stout, black, thorn-like setae

...*Monilothrips* Moulton

Head without a collar-like band at posterior margin .. 21

21. Head near base with a tooth-like projection. Forewings wider with 2 pale cross bands, apex pale, costal setae prominent, both the veins with an almost continuous row of setae

...*Hercinothrips* Bagnall

Head without a tooth-like projection at base 22

22. Vertex of head with an arched ridge; cheeks shorter than eyes. Forewings with 2 pale cross bands, apex brown upper vein with a gap between setae. Abdominal tergite II-VII with prominent scalloped areas

...*Helionothrips* Bagnall

Vertex without ridge. Head with anastomosing striations. Forewings without cross bands; both the veins with a continuous row of setae. Abdominal tergite VIII with a complete comb of microtrichia

...*Selenothrips* Karny

Family THRIPIDAE

Subfamily THRIPINAE

Genus 2. *Ajothrips* Bhatti

1967. *Ajothrips* Bhatti, *Bull. Ent.*, 8(1) : 58.

2. *Ajothrips gara* Bhatti

1967. *Ajothrips gara* Bhatti, *Bull. Ent.*, 8(1) : 61-63.

1980. *Ajothrips gara*: Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser. 1* : 56 & 130.

Specimen studied : West Bengal, 4 ♀ ♀, 3 ♂ ♂ (Z.S.I. Reg. Nos. 1620-26/H₁₇) Maharani Tea Estate, Tung, Darjeeling Dt., 29.8.1979, coll. Shri S. S. Saha.

Distribution : Howrah (West Bengal)

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 3. *Anaphothrips* Uzel

1895. *Anaphothrips* Uzel, *Monogr. Ord. Thysanoptera* : 142

3. *Anaphothrips sudanensis* Trybom

1911. *Anaphothrips sudanensis* Trybom, *Results Swedish Zool. Exped. Egypt*, pt. 4 : 1-4.

1912. *Euthrips flavicinctus* Karny, *Marcellia*, 11 : 115-117.

1968. *Anaphothrips sudanensis* : Mound, *Bull. Br. Mus. nat. Hist. (Ent.) Suppl.*, 11 : 21.

1978. *Anaphothrips sudanensis* : Bhatti, *Oriental Ins.*, 12(1) : 3-4.

1978. *Anaphothrips sudanensis* : Bhatti, *Senckenbergiana biol.*, 59(1-2) : 88.

1980. *Anaphothrips sudanensis* : Ananthkrishnan & Sen, *Zool. Surv. India, Handbk. Ser.*, 1 : 59 & 132.

1984. *Anaphothrips sudanensis* : Zur Strassen, *Senckenbergiana biol.*, 65(1-2) : 79.

Specimen studied : Sikkim, 1 ♀ (Z. S. I. Reg. No. 914/H₁₇) Tadong, 25.8.1977, coll. Dr. T. D. Soota & K. N. Singh.

Distribution : INDIA : Widely distributed

Elsewhere : SUDAN ; MOROCCO ; EGYPT ; SOMALIA ; CENTRAL ASIA ; TAIWAN ; SRILANKA, JAVA ; SUMATRA ; AUSTRALIA ; PUERTO RICO ; TRINIDAD , CUBA ; SOUTH AFRICA ; BANGLADESH.

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 4. *Ctenothrips* Franklin

1907. *Ctenothrips* Franklin, *Ent. News*, 18 : 247.

4. *Ctenothrips niger* Kudo

1977. *Ctenothrips niger* Kudo, *Kontyu*, 45(1) : 1-4.

Female (Macropterous & Brachypterous) : General body colour blackish brown ; forewings dark brown with a pale band near by fork ; all setae dark brown.

Head about as long as wide ; cheeks strongly constricted behind eyes then bulged at postocular setae level again concave at middle ;

surface reticulate with irregular transverse lines. Eyes large, about half of head length. Postoculars very well developed, i & ii as long as interocellars and iv very long. Mouthcone long, almost reaching the base of prosternum. Antennae 8-segmented; segment 3 longest; segments 3 & 4 with forked sense cones.

Prothorax about as long as head and wider than head. Anterior margin with 2 pairs of setae, inner much longer than outer; postero-angulars 2 pairs; posterior margin with 2 pairs of setae; surface setae well developed. Meso- and metanotum hexagonally reticulate; median pair of mesonotal setae placed much above the posterior margin and median pair of metanotal setae placed along anterior margin. Spinula present only on mesosternum. Forewings slender narrowed towards apex and pointed; both the veins with a regular series of setae.

Abdominal tergites and sternites sculptured with hexagonal reticulations, weak on segments VIII-X. Segment X tube like, completely divided longitudinally. Tergite VIII with a regular comb.

Specimen studied : West Bengal, 6 ♀ ♀ (Z.S.I. Reg. Nos. 1244-49/H₁₇) Tongu, Darjeeling Dt., 15.5.1975, coll. Dr. J. K. Jonathan.

Remarks : This species is recorded for the first time from India, hitherto known only from Nepal.

Genus 5. *Dichromothrips* Priesner

1932. *Dichromothrips* Priesner, *Stylops*, 1 : 110.
 1949. *Dichromothrips* : Priesner, *Bull. Soc. Fouad. Ier. Ent.*, 33 : 54.
 1938. *Taeniothrips* (*Eugenothrips*) Hood, *Proc. biol. Soc. Wash.*, 51 : 11.
 1976. *Dichromothrips* : Mound, *Biol. J. Linn. Soc.*, 8(3) : 246-248.

5. *Dichromothrips indicus* Mound

1976. *Dichromothrips indicus* Mound, *Biol. J. Linn. Soc.*, 8(3) : 255-256.
 1980. *Dichromothrips indicus* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser.* 1 : 67.

Male (Macropterous) : General body colour mainly yellow; head brown; base of antennal segments 2-4 yellow, 3 feebly shaded medially; meso- and metathorax pale brown; all legs yellow; abdominal segment II and median area of III-IV pale brown, IX brownish yellow; median area and apex of forewings dark, subapical area colourless.

Head 145 long, 165 wide. Ocellar setae III arising just inside ocellar triangle and close at base. Antennal segments 3-8 : 80, 97, 55, 75, 13 & 16 long respectively.

Prothorax 142 long, 220 wide, pronotal sculpture weak with a few lines medially near anterior margin. Posteroangular one pair 70 long. Metanotum reticulate medially with about three transverse lines of sculpture near anterior margin; median setae 35 long, arising at anterior margin. Forewings 1.1 mm. long with 1 median and 2 distal setae in the upper vein.

Abdominal tergites II sculptured medially and laterally; tergites III-VIII with no lines of sculptures extending mesad of submedian setae. Lateral setae of tergite IX thorn like, 65 long; posteroangular setae slender, 60-67 long and median setae small 16 long. Sternites III-VII with a pair of round glandular areas and joined medially on VI.

Total body length : 1.6 mm.

Distribution : Kalimpong, Darjeeling Dt. (West Bengal).

Genus 6. *Frankliniella* Karny

1910. *Frankliniella* Karny, *Mitt. Nat. Ver. Univ. Wien*, 8(2) : 46.

1948. *Frankliniella* : Moulton, *Revue Ent.*, 19 : 55-114.

6. *Frankliniella intonsa* (Trybom)

1895. *Thrips intonsa* Trybom, *Ert. Tidskr.*, 16(3) : 188.

1912. *Frankliniella intonsa* : Karny, *Zool. Anz.*, 4(4) : 334.

1980. *Frankliniella intonsa* : Anantha'krishnan & Sen, *Handbk. Ser.*, 1, *Zool. surv. India* : 69 & 138.

1984. *Frankliniella intonsa* : zur Strassen, *Scnckenbergiana biol.*, 65(1-2) : 82-83.

Specimen studied : **West Bengal** : 7 ♀ ♀, 2 ♂ ♂. Coochbehar, 20.10.82, coll. C. K. Sen Gupta (Z. S. I. Reg. Nos. 1706-10/H₁₇ & 1754-57/H₁₇)

Distribution : **INDIA** : Bihar.

Elsewhere : **BANGLADESH**; **JAPAN**; **KOREA**; **W. EUROPE**.

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 7. **Lefroyothrips** Priesner

1938. *Lefroyothrips* Priesner, *Treubia*, 16(4) : 499.

7. **Lefroyothrips lefroyi** (Bagnall)

1913. *Physothrips lefroyi* Bagnall, *Ann. Mag. nat. Hist.*, (8)12 : 292.

1928. *Taeniothrips (Physothrips) lefroyi* : Ramakrishna, *Mem. Dept. Agri. India, Ent. Ser.*, 10(7) : 258.

1929. *Taeniothrips lefroyi* : Moulton, *Rec. Indian Mus.*, 31(2) : 95.

1963. *Taeniothrips (Lefroyothrips) lefroyi* : Ananthakrishnan, *Treubia*, 26(2) : 85, 112.

1968. *Taeniothrips lefroyi* : Mound, *Bull. Br. Mus. nat. Hist. (Ent.) Suppl.*, 11 : 54.

1969. *Amblythrips lefroyi* : Bhatti, *Oriental Ins.*, 3(4) : 374.

1974. *Ceratothrips lefroyi* : Jacot-Guillarmod, *Ann. Cape. Prov. Mus. (nat. Hist.)*, 7(3) : 735.

1978. *Lefroyothrips lefroyi* : Bhatti, *Oriental Ins.*, 12(2) : 194.

Specimen studied : West Bengal, 9 ♀ ♀ (Z. S. I. Reg. Nos. 1294-99/H₁₇ & 1321-23/H₁₇) Darjeeling, 9.1.1976, *coll.* Dr. G. K. Srivastava. 7 ♀ ♀ (Z. S. I. Reg. Nos. 1375-78/H₁₇ & 1627-29/H₁₇) Darjeeling, 2.11.1979, *coll.* Shri S. S. Saha.

Distribution : INDIA : Darjeeling (W. B.) & Dehra Dun (U. P.).

Elsewhere : CHINA ; FORMOSA ; SUMATRA ; JAVA.

Genus 8. **Megalurothrips** Bagnall

1915. *Megalurothrips* Bagnall, *Ann. Mag. nat. Hist.*, (8)15 : 589.

1962. *Taeniothrips (Pongamiothrips)* Ananthakrishnan, *Proc. R. ent. Soc. Lond.* (B) 31(7-8) : 90.

1969. *Megalurothrips* : Bhatti, *Oriental Ins.* 3(3) : 240.

KEY TO THE SPECIES OF MEGALUROTHRIPS
FROM NORTH-EASTERN INDIA.

1. Abdominal sternites of male medially with 70-80 lanceolate setae. Comb on abdominal tergite VIII interrupted. Body uniformly yellowish to orange brown ; basal fourth and near apex of forewings paler making the appearance of wing banded. Forewings with 23-26 costal, 15-16 (13-14+2) upper vein and 13-14 lower vein setae.

.. *peculiaris* (Bagnall, 1918)

Abdominal sternites of male without lanceolate setae Comb on abdominal tergite VIII complete. Body uniformly light to dark brown including antennae, segment 3 yellowish to light brown. Forewings brown with a clear distal area and with 23-26 costal, 12-21 (10-19+2) upper vein and 13-14 lower vein setae.

distalis (Karny, 1913)

8. *Megalurothrips distalis* (Karny)

1913. *Taeniothrips distalis* Karny, *Arch. Naturgesch* (A) 79(2) : 122-124
 1926. *Taeniothrips distalis* : Karny, *Mem. Dept. Agri. Ent Ser* , 9(6) : 196.
 1967. *Taeniothrips distalis* : Ananthakrishnan & Jagadish, *Opusc. ent.* 32(1-2) : 159-161.
 1969. *Megalurothrips distalis* : Bhatti, *Oriental Ins.*, 3(3) : 241.
 1980. *Megalurothrips distalis* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser* , 1 : 70 & 139.
 1984. *Megalurothrips distalis* : zur Strassen, *Senckenbergiana biol* , 65(1-2) : 83-84.

Specimen studied : Meghalaya, Shillong, 1 ♀ (Z.S.I. Reg. No. 1963/H₁₇), 21.4.79, coll. Dr. J. K. Jonathan. 2 ♀ ♀ (Z. S. I. Reg. Nos. 1970-71/H₁₇), 5.11.1967 & 23.11.1967, coll. Dr. R.K. Varshney. Arunachal Pradesh, 3 ♀ ♀, (Z. S. I. Reg. Nos. 1870-72/H₁₇) Miao, Namdapha, Tirap Dt., 5.12.1982, coll. Dr. S. Biswas. West Bengal, Darjeeling Dt., 1 ♀ (Z. S. I. Reg. No. 330/H₁₂), 10.3.1974, coll. Dr. H. K. Bhowmik, 4 ♀ ♀ (Z. S. I. Reg. Nos. 1630-33/H₁₇), coll. Shri A. R. Bhaumik ; 2 ♀ ♀ (Z. S. I. Reg. Nos. 1386-87/H₁₇) 5.6.1980, coll. Shri R. N. Tiwary ; 2 ♀ ♀ (Z. S. I. Reg. Nos. 1254-55/H₁₇) 24-25.5.1974, coll. Dr. J. K. Jonathan, 2 ♀ ♀ (Z. S. I. Reg. Nos. 1300-01/H₁₇) Hashimara Jalpaiguri Dt., 2.12.1974, coll. Dr. T. Sen Gupta ; 4 ♀ ♀ (Z. S. I. Reg. Nos. 1607/H₁₇ ; 1663-64/H₁₇, 1519/H₁₇) Coochbehar, 3.10.1981 & 30.11.1981, coll. Shri C. K. Sen Gupta.

Distribution : INDIA ; Widely distributed.

Elsewhere : Very widely distributed from Japan to Australia on one hand and to South Asia on the other hand.

Remarks : This species is recorded for the first time from North-Eastern India.

9. *Megalurothrips peculiaris* (Bagnall)

1918. *Physothrips peculiaris* Bagnall, *Ann. Mag. nat. Hist.*, (9)1 : 206-207.
 1928. *Taeniothrips pingala* Ramakrishna, *Mcm. Dept. Agri. India Ent. Ser.*
 10(7) : 260-261.
 1933. *Taeniothrips peculiaris* : Steinweden, *Trans. Am. ent. Soc.* 59 : 273.
 1962. *Taeniothrips (Pongamiothrips) peculiaris* : Ananthakrishnan, *Proc. R. ent.*
Soc. Lond., (B) 31(7-8) : 90-91.
 1968. *Taeniothrips peculiaris* : Mound, *Bull. Br. Mus. nat. Hist. (Ent.) Suppl.*,
 11 : 59-60.
 1969. *Megalurothrips peculiaris* : Bhatti, *Oriental Ins.*, 3(3) : 242.
 1980. *Megalurothrips peculiaris* : Ananthakrishnan & Sen, *Zool. surv. India,*
Handbk. Ser. 1 : 70 & 139.

Specimen studied : **Meghalaya**, 2 ♀ ♀, 5 ♂ ♂ (Z. S. I. Reg. Nos. 1972-75/H₁₇) & 2033-35/H₁₇) Shillong, 1.10.1967, coll. Dr. R. K. Varshney. **Manipur**, 5 ♂ ♂ (Z. S. I. Reg. Nos. 1379-83/H₁₇) Moreh, 11.3.1979, coll. Dr. N. Muraleedharan.

Distribution : **India** : U. P. ; Bihar & Tamil Nadu.

Elsewhere : PHILLIPINE IS.

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 9. *Megaphysothrips* Ramakrishna & Margabandhu

1939. *Megaphysothrips* Ramk. & Marg., *Rec. Indian Mus.*, 41(1) : 25.

10. *Megaphysothrips subramanii* Ramakrishna & Margabandhu

1939. *Megaphysothrips subramanii* Ramk. & Marg., *Rec. Indian Mus* , 41(1) : 25.
 1959. *Euphysothrips (Megaphysothrips) subramanii* : Ananthakrishnan, *Zool. Anz.*,
 162(9-10) : 317.
 1966. *Megaphysothrips subramanii* : Ananthakrishnan & Jagadish, *Indian J. Ent.*,
 28(2) : 255.
 1974. *Megaphysothrips subramanii* : Jacot-Guillarmod, *Ann. Cape Prov. Mus.*
(nat. Hist.), 7(3) : 863.

Specimen studied : **West Bengal**, 3 ♀ ♀, 3 ♂ ♂ (Z. S. I. Reg. Nos. 1751-53/H₁₇ ; 1946-47/H₁₇ & 1955/H₁) Tapurhat, Coochbehar Dt., 25.10.1982, coll. Shri C. K. Sen

Gupta. 5 ♀ ♀, 1 ♂ (Z. S. I. Reg. Nos. 1995-2000/H₁₇) Saradadevi, Coochbehar Dt. 31.12.1983, coll. C. K. Sen Gupta.

Distribution : Karnataka & Tamil Nadu.

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 10. *Microcephalothrips* Bagnall

1926. *Microcephalothrips* Bagnall, *Ann. Mag. nat. Hist.*, (9)18 : 113.

1926. *Stylothrips* Karny, *Mem. Dept. Agri. Ent. Ser.*, 9(6) : 205.

1949. *Microcephalothrips* : Priesner, *Bull. Soc. Fouad. Ent.*, 33 : 149.

11. *Microcephalothrips abdominalis* (Crawford)

1910. *Thrips abdominalis* Crawford, *Pomona College J. Ent.*, 2(1) : 157.

1926. *Microcephalothrips abdominalis* : Bagnall, *Ann. Mag. nat. Hist.*, (9)18 : 113.

1926. *Stylothrips brevivalpis* Karny, *Mem. Dept. Agri. India Ent. Ser.*, 9(6) : 206.

1945. *Microcephalothrips brevivalpis* : Shumsher, *Indian J. Ent.*, 7 : 168.

1963. *Microcephalothrips abdominalis* : Ananthkrishnan, *Treubia*, 26(2) : 105.

1968. *Microcephalothrips abdominalis* : Mound, *Bull. Br. Mus. nat. Hist. (Ent.) Suppl.* 11 : 43.

1980. *Microcephalothrips abdominalis* : Ananthkrishnan & Sen, *Zool. Surv. India Handbk. Ser. 1* : 71 & 139.

1984. *Microcephalothrips abdominalis* : zur Strassen, *Senckenbergiana biol.*, 65(1-2) : 84.

Specimen studied : **Arunachal Pradesh** ; 4 ♀ ♀ (Z. S. I. Reg. Nos. 1956-59/H₁₇) Deban, Namdapha, Tirap Dt., 13.12.1982, coll. Dr. S. Biswas. 5 ♀ ♀ (Z.S.I. Reg. Nos. 1873-77/H₁₇) Miao, Namdapha, Tirap Dt., 7.12.1982, coll. Dr. S. Biswas.

Distribution : **INDIA** : Widely distributed.

Elsewhere : Widely distributed in the tropics and subtropics on Compositae flowers.

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 11. **Organothrips** Hood

1940. *Organothrips* Hood, *Proc. Hawaii ent. Soc.*, 10(3) : 423.

12. **Organothrips indicus** Bhatti

1974. *Organothrips indicus* Bhatti, *Oriental Ins*, 8(2) : 151.

1980. *Organothrips indicus* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser.*, 1 : 72 & 139.

1984. *Organothrips indicus* : zur Strassen, *Senckenbergiana biol.*, 65(1-2) : 84.

Specimen studied : West Bengal ; 1 ♀ (Z. S. I. Reg. No. 2091/H₁₇)
Coochbehar, 15.5.1984, coll. C. K. Sen Gupta.

Distribution : INDIA : Delhi.

Elsewhere : BANGLADESH.

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 12. **Sciothrips** Bhatti

1942. *Ramakrishnathrips* Shumsher, *Indian J. Ent.*, 4(2) : 116.

1969. *Sciothrips* Bhatti, *Oriental Ins.*, 3(4) : 379.

13. **Sciothrips cardamomi** (Ramakrishna)

1935. *Taeniothrips cardamomi* Ramakrishna, *Bull. ent. Res.*, 26(3) : 357.

1942. *Ramakrishnathrips cardamomi* : Shumsher, *Indian J. Ent.*, 4(2) : 116.

1945. *Neocorynothrips (Ramakrishnathrips) cardamomi* : Shumsher, *Indian J. Ent.*, 7 : 154.

1969. *Sciothrips cardamomi* : Bhatti, *Oriental Ins.*, 3(4) : 379.

1980. *Sciothrips cardamomi* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser.* 1 : 58 & 131.

1984. *Sciothrips cardamomi* : zur Strassen, *Senckenbergiana biol.*, 65(1-2) : 86.

Specimen studied : Arunachal Pradesh, 2 ♀ ♀, 1 ♂, (Z. S. I. Reg. Nos. 1554-1556/H₁₇) Zero, Namdapha, 9.4.1981, coll. Dr. S. Biswas.

Distribution : INDIA : Tamil Nadu.

Elsewhere : BANGLADESH.

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 13. *Scirtothrips* Shull

1909. *Scirtothrips* Shull, *Ent. News*, 20(5) : 222.

14. *Scirtothrips dorsalis* Hood

1919. *Scirtothrips dorsalis* Hood, *Insect. Inscit. menstr.*, 7 : 90-91.

1919. *Heliothrips minutissimus* Bagnall, *Ann. Mag. nat. Hist.*, (9) 4 : 260.

1964. *Scirtothrips dorsalis* : Dev, *Indian J. Ent.*, 26 : 84-94.

1968. *Scirtothrips dorsalis* : Mound, *Bull. ent. Res* 57 : 533-538.

1980. *Scirtothrips dorsalis* : Ananthakrishnan & Sen, *Zool. Surv. India, Handbk. Ser. 1* : 57 & 130.

1981. *Scirtothrips dorsalis* : Mound & Palmer, *Bull. ent. Res.*, 71 : 475-476.

1984. *Scirtothrips dorsalis* : zur Strassen, *Senckenbergiana biol.*, 65(1-2) : 86-87.

Specimen studied : West Bengal ; 3 ♀ ♀ (Z. S. I. Reg. Nos. 1325/H₁₇ ; 1514/H₁₇ & 1758/H₁₇) Coochbehar, 10.10.1980 ; 3.10.1981 & 20.10.1982, coll. C. K. Sen Gupta.

Distribution : INDIA : Assam ; Tamil Nadu ; Kerala ; Karnataka ; Delhi.

Elsewhere : PAKISTAN ; BANGLADESH ; SRI LANKA ; THAILAND ; WEST MALAYASIA ; JAVA ; NEW GUINEA ; SOLOMON IS ; JAPAN ; AUSTRALIA.

Remarks : This species is a serious pest of Chillies.

Genus 14. *Scolothrips* Hinds

1902. *Scolothrips* Hinds, *Proc. U. S. Nat. Mus.*, 26 : 157.

15. *Scolothrips asura* Ramakrishna & Margabandhu

1931. *Scolothrips asura* Ramakrishna & Margabandhu, *J. Bombay nat. Hist. Soc.*, 34(4) : 1035.

1945. *Scolothrips asura* : Shumsher, *Indian J. Ent.*, 7 : 163.

1950. *Scolothrips azura* : Priesner, *Bull. Soc. Fouad Ent.*, 34 : 56.

1980. *Scolothrips asura* : Ananthakrishnan & Sen, *Zool. Surv. India, Handbk. Ser.*, 1 : 72 & 140.

1984. *Scolothrips asura* : zur Strassen, *Senckenbergiana biol.*, 65(1-2) : 87.

Specimen studied : West Bengal, 1 ♀ (Z. S. I. Reg. No. 1719/H₁₇) Mekligunj, Coochbehar Dt., 16.10.1982, coll. C. K. Sen Gupta.

Distribution : INDIA : Tamil Nadu.

Elsewhere : BANGLADESH.

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 15. *Stenchaetothrips* Bagnall

1926. *Stenchaetothrips* Bagnall, *Ann. Mag. nat. Hist.*, (9) 18 : 107.

1957. *Chloethrips* Priesner, *Zool. Anz.*, 159(7 & 8) : 162.

1980. *Stenchaetothrips* : Bhatti & Mound, *Bull. Ent.*, 21(1-2) : 13-14.

16. *Stenchaetothrips biformis* (Bagnall)

1913. *Bagnallia biformis* Bagnall, *J. econ. Biol.*, 8(4) : 237-238.

1916. *Thrips (Bagnallia) oryzae* Williams, *Bull. ent. Res.*, 6 : 353-355.

1922. *Thrips oryzae* : Karny, *J. Siam Soc.*, 16(2) : 109.

1925. *Thrips holorphnus* Karny, *Bull. van het Deli Proef. Medan-Sumatra*, 23 : 15-17.

1925. *Thrips biformis* : Priesner, *Konowia*, 4(3-4) : 149.

1957. *Baliothrips biformis* : Priesner, *Zool. Anz.*, 159(7-8) : 162.

1957. *Chloethrips oryzae* : Priesner, *Zool. Anz.*, 159(7-8) : 162.

1967. *Chloethrips holorphnus* : Ananthakrishnan & Jagadish, *Zool. Anz.*, 178(5-6) : 375-378.

1975. *Chloethrips blandus* zur Strassen, *Senckenbergiana biol.*, 56(1-3) : 78-80.

1980. *Baliothrips biformis* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser.*, 1 : 64 & 135.

1980. *Stenchaetothrips biformis* : Bhatti & Mound, *Bull. Ent.* 21(1-2) : 14-15.

1982. *Stenchaetothrips biformis* : Bhatti, *Oriental Ins.*, 16(4) : 397-401.

Specimen studied : Sikkim, 6 ♀ ♀ (Z. S. I. Reg. Nos. 917-922/H₁₇)
Tadong, 5.9.1977, coll. Dr. T. D. Soota & K. N. Singh.

Distribution : INDIA : Tamil Nadu ; West Bengal ; Orissa ; H. P. ; U. P. ; Delhi ; Chandigarh ; M. P.

Elsewhere : BANGLADESH ; NEPAL ; INDONESIA ; TAIWAN ; PHILIPPINES ; JAPAN ; ENGLAND ; RUMANIA.

Remarks : This species is recorded for the first time from North-Eastern India. *S. biformis* is a serious pest of rice specially the seedlings growing in shallow water or in humid surroundings in the South-East Asian Countries.

Genus 16. **Thrips** Linnaeus1758. *Thrips* Linnaeus, *Systema Naturae*, Ed. 10 : 457.1980. *Thrips* : Bhatti, *Syst. Ent.*, 5 : 112-113.KEY TO THE SPECIES OF *THRIPS* FROM NORTH-EASTERN INDIA

1. Mouthcone very long and narrow, surpassing base of prosternum ;
maxillary palpi long and slender

...*beharensis* (Ramk. & Marg.), 1939

Mouthcone not surpassing base of prosternum ...2

2. Antennae 7-segmented ...3

Antennae 8-segmented ...5

3. Body Predominantly yellow .. 4

Body dark brown ; antennal segment 3 yellow, 5 & 6 yellow at base and segment 3 longer than 6. Prothoracic postangulars subequal. Forewings with 28-32 costal, 10(7+3) upper and 15-18 lower vein setae. Abdominal pleurite teeth very characteristic blunt and sternites with 8-10 pairs of accessory setae arranged in more than one row.

.. *hispidus* Ananthakrishnan & Jagadish, 1966.

4. Abdominal sterna II-VII with accessory setae. Antennal segments 4-5 basally yellow brown beyond, 6-7 brown, abdominal segment IX in posterior half and X wholly brown. Inner-pair of metanotal setae placed ahead of anterior margin. Forewings with 24-28 costal, 10(7+3) upper and 10-13 lower vein setae.

.. *coloratus* Schmutz, 1913

Abdominal sterna II-VII without accessory setae. Body uniformly yellow. Interocellar setae inserted within the ocellar triangle. Pronotum without specially developed dark and stout setae on anterior margin and sides ; surface strongly setose. Forewings with 24-28 costal (fairly long and slender at base), 10(4+3+3) upper and 11-15 lower vein setae

...*flavus* Schrank, 1776.

5. Antennal segments 4 & 5 light yellow in basal third, segment 3 yellow, head and thorax light orange ; abdomen dark ; wings dark, clear at base ; males yellow. Postocular seta I usually well developed, longer and stronger than other postocular^s. Forewings with 10-11 (7-8+3) upper and 12-13 lower vein setae. Abdominal sternites with 6-10 pairs of accessory setae

.. *hawaiiensis* (Morgan, 1913)

Antennal segment 5 dark and segment 6 shorter than 4. Postocular seta 1 not specially developed and similar to others. Forewing with 29-34 costal, 10(4+3+3) upper and 15-16 lower vein setae. Abdominal sternites with 3 to 15 accessory setae arranged in one or two irregular transverse rows

...*andrewsi* (Bagnall, 1914)

17. ***Thrips andrewsi*** (Bagnall)

1921. *Physothrips andrewsi* Bagnall, *Ann. Mag. nat. Hist.*, (9) 8 : 394-395.
1968. *Taeniothrips andrewsi* : Mound, *Bull. Br. Mus. nat. Hist. (Ent.) Suppl.*, 11 : 53.
1962. *Taeniothrips ghoshi* Bhatti, *Bull. Ent.*, 3 : 35-36.
1969. *Thrips andrewsi* : Bhatti, *Oriental Ins*, 3 (4) : 380.
1975. *Taeniothrips andrewsi* : Jacot-Guillarmod, *Ann. Cape Prov. Mus. (Nat. Hist.)*, 7 (4) : 986.
1980. *Thrips andrewsi* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser. 1* : 76 & 141.
1980. *Thrips andrewsi* : Bhatti, *Syst. Ent.*, 5 : 120-122.

Macropterous female (male) : General body colour dark brown ; antennal segments 1,5,6,7 & 8 concolourous with the body, 2 brown distally yellow, 3 pale yellow, 4 yellow proximally and brown distally, 5 brown with a colourless subbasal ring ; forefemora, all tibiae and tarsi yellow, mid femora shaded at outermargin, hind femora with dark brownish shade ; forewings greyish brown, clear at base ; body setae dark. (General body colour yellow ; antennal segments 1-3 pale yellow, 4 grey in distal third, 5-8 grey, 5 & 6 with a dark basal ring ; legs yellow ; body setae dark).

Head broader than long. Antennae 8 segmented, rarely 7 segmented. Pronotum longer than head and broader than long ; inner posteroangular setae subequal to little longer than outer, with 3 pairs of postero-marginal setae and disc without any conspicuous setae. Inner pair of metanotal setae placed at anterior margin and longer than outer and sculpture made of longitudinal lines. Forewings with 29-34 (25-28) costal 10(4+3+3) upper vein ; 15-16 (11-15) lower vein and 6 (5+1) scale setae. Abdominal sterna with accessory setae arranged in one or two irregular transverse rows. Comb on abdominal tergite VIII complete but sparse and in male without comb but in the specimens with 7-segmented antennae a few minute hairs are present at middle of posterior margin. Sterna III-VII of male with dumbbell shaped glandular area.

Distribution : **North-Eastern India** : Darjeeling (West Bengal) ; Assam.
Elsewhere in India : Punjab ; Chandigarh ; H. P. ; U. P.

18. *Thrips beharensis* (Ramk. & Marg.)

1939. *Oxyrrhinothrips beharensis* Ramakrishnan & Margabandhu, *Rec. Indian Mus*, 41 (1) : 29-30.
1942. *Thrips (Oxyrrhinothrips) beharensis* : Shumsher, *Indian J. Ent.*, 4 (2) : 130-131.
1980. *Thrips (Oxyrrhinothrips) beharensis* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser.*, 1 : 76 & 142.
1980. *Thrips beharensis* : Bhatti, *Syst. Ent.*, 5 : 127.

Specimen studied : **Sikkim** : 5 ♀ ♀ (Z. S. I. Reg. Nos. 1405-09/H₁₇)
Chungthang, 10.8.1979, coll. S. M. Ali.

Distribution : Bihar.

Remarks : This species is recorded for the first time from North-Eastern India.

19. *Thrips coloratus* Schmutz

1913. *Thrips coloratus* Schmutz, *Sitz. Akad. Wiss. Wien*, 122 (7) : 1013-1015.
1926. *Thrips melanurus* Bagnall, *Ann. Mag. nat. Hist.*, (9) 18 : 111-112.
1968. *Thrips coloratus* : Mound, *Bull. Br. Mus. nat. Hist. (Ent.) Suppl.*, 11 : 62.
1980. *Thrips coloratus* : Bhatti, *Syst. Ent.*, 5 : 130-132.

Specimen studied : **Meghalaya** : 1 ♀ (Z. S. I. Reg. No. 1982/H₁₇)
Shillong, 13.10.1967, coll. Dr. R. K. Varshney.

Distribution : **INDIA** : Darjeeling (West Bengal); Punjab; H. P.;
Maharashtra.

Elsewhere : SRI LANKA ; PAKISTAN ; THAILAND ;
LAOS ; INDONESIA ; JAPAN.

20. *Thrips flavus* Schrank

1776. *Thrips flavus* Schrank, *Beitr. zur Natur* : 31-33.
1928. *Thrips nilgiriensis* Ramakrishna, *Mem. Dept. Agri. India Ent., Ser.*, 10 (7) :
262-263.
1968. *Thrips flavus* : Gentile & Bailey, *Univ. Calif, Publ. Ent.*, 51 : 66.
1945. *Taeniothrips rhopalantennalis* Shumsher, *Indian J. Ent.*, 7 : 181-182.
1969. *Thrips flavus* : Bhatti, *Oriental Ins.*, 3 (4) : 380-381.
1980. *Thrips flavus* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser.*,
1 : 74 & 141.
1980. *Thrips flavus* : Bhatti, *Syst. Ent.*, 5 : 133-136.

Specimen studied : **Meghalaya** : 2 ♀ ♀ (Z. S. I. Reg. Nos. 1396-97/H₁₇)
Shillong, 21.4.1979, coll. Dr. J. K. Jonathan.
Sikkim : 2 ♀ ♀ (Z. S. I. Reg. Nos. 1410-11/H₁₇)
Lachung, 3.8.1979, coll. S. M. Ali; 1 ♀ (Z. S. I.
Reg. No. 1634/H₁₇) Chunthang, 10.8.1979, coll.
S. M. Ali.

Distribution : INDIA : Punjab ; H. P. ; J. & K. ; Tamil Nadu.

Elsewhere : PAKISTAN ; NEPAL ; KOREA ; JAPAN ; EUROPE ; N. AMERICA ; MALAWI ; MADEIRA.

Remarks : This species is recorded for the first time from North-Eastern India. *S. flavus* is a common species in high altitudes.

21. *Thrips hawaiiensis* (Morgan)

1913. *Euthrips hawaiiensis* Morgan, *Proc. U. S. Nat. Mus.*, 46 : 3.

1913. *Thrips florum* Schmutz, *Sitz. Akad. Wiss. Wien*, 122 (7) : 1003-1004.

1966. *Thrips hawaiiensis* : Ananthakrishnan & Jagadish, *Ent. Tidskr.* 87 (1-2) : 88.

1969. *Thrips hawaiiensis* : Bhatti, *Oriental Ins.*, 3 (3) : 381.

1980. *Thrips hawaiiensis* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser. 1* : 76 & 141.

1980. *Thrips hawaiiensis* : Bhatti, *Syst. Ent.*, 5 : 137-140.

1984. *Thrips hawaiiensis* : zur Strassen, *Senckenbergiana biol.*, 65 (1-2) : 88.

Specimen studied : Assam : 4 ♀ ♀ (Z. S. I. Reg. Nos. 339-42/H₁₂) Lalpani, 10.2.1975, coll. Dr. P. T. Cherrian. Meghalaya : 9 ♀ ♀, 1 ♂ (Z. S. I. Reg. Nos. 1977-81/H₁₇) Shillong, 14.9.1967 ; 13.10.1967 ; 23.11.1967 ; 29.11.1967, coll. Dr. R. K. Varshney. Sikkim : 2 ♀ ♀ (Z. S. I. Reg. Nos. 1412-13/H₁₇) Chungthang, 10.8.1979, coll. S. M. Ali. West Bengal : 8 ♀ ♀ (Z. S. I. Reg. Nos. 217-221/H₁₂) Darjeeling, ex. rose fl., 22.4.1973, coll. H. S. Sharma ; 2 ♀ ♀ (Z.S.I. Reg. Nos. 1252-53/H₁₇) Darjeeling, 26.5.1974. coll. Dr. J. K. Jonathan, 1 ♀ (Z. S. I. Reg. No. 782/H₁₇) Sonada, Darjeeling Dt., 24.3.1978, coll. A. R. Bhaumik

Distribution : INDIA : Widely distributed.

Elsewhere : BANGLADESH ; PAKISTAN ; SRI LANKA ; INDONESIA ; THAILAND ; LAOS ; MALAYASIA ; TAHITI ; NEW GUINEA ; NORFOLK IS. ; NIGERIA ; ANGOLA ; MOZAMBIQUE ; UGANDA ; SIERRA LEONE ; CHINA ; JAPAN.

Remarks : This species is recorded for the first time from North-Eastern India.

22. *Thrips hispidus* Ananthakrishnan & Jagadish

1966. *Thrips hispidus* Ananthakrishnan & Jagadish, *Ent. Tidskr.*, **87** (1-2) : 88-89.
 1980. *Thrips hispidus* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser.*,
1 : 75 & 141.
 1980. *Thrips hispidus* : Bhatti, *Syst. Ent.*, **5** : 141.

Specimen studied : **Meghalaya** : 3 ♀ ♀ (Z. S. I. Reg. Nos. 1988-89/H₁₇
 & 2046/H₁₇) Shillong, 14.9.1967, coll. Dr. R. K.
 Varshney.

Distribution : Tamil Nadu ; Kerala ; M.P.

Remarks : This species is recorded for the first time from North-Eastern India.

Subfamily PANCHAEOTHRIPINAE

Genus 17. *Helionothrips* Bagnall

1932. *Helionothrips* Bagnall, *Ann. Mag. nat. Hist* (10) **10** : 506.

23. *Helionothrips kadaliphilus* (Ramk. & Marg.)

1931. *Heliothrips kadaliphilus* Ramakrishna & Margabandhu, *J. Bombay nat. Hist. Soc* , **34** : 1033-1034.
 1936. *Helionothrips kadaliphilus* : Priesner, *Proc. R Ent Soc. Lond.* (B), **5**(11) : 208.
 1945. *Hercothrips kadaliphila* : Shumsher, *Indian J. Ent.*, **7** : 175.
 1957. *Caliothrips kadaliphila* : Ananthakrishnan, *Zool. Anz.*, **159** (5) : 98-100.
 1968. *Helionothrips kadaliphilus* : Bhatti, *Oriental Ins.*, **2**(1) : 35.
 1975. *Helionothrips kadaliphilus* : Wilson, *Mem. Amer. Ent. Inst.*, **23** : 130-131.

Specimen studied : **Manipur** : 1 ♀ (Z. S. I. Reg. No. 776/H₁₇) Moreh,
 11.3.1979. coll. Dr. N. Muraleedharan. **West Bengal** : 1 ♂ (Z. S. I. Reg. No. 777/H₁₇) Darjeeling,
 24.3.1978, coll. A. R. Bhaumik ; 1 ♀ (Z. S. I. Reg. No. 1250/H₁₇) Darjeeling, coll. Dr. J. K. Jonathan.

Distribution : Tamil Nadu ; Kerala ; Maharashtra.

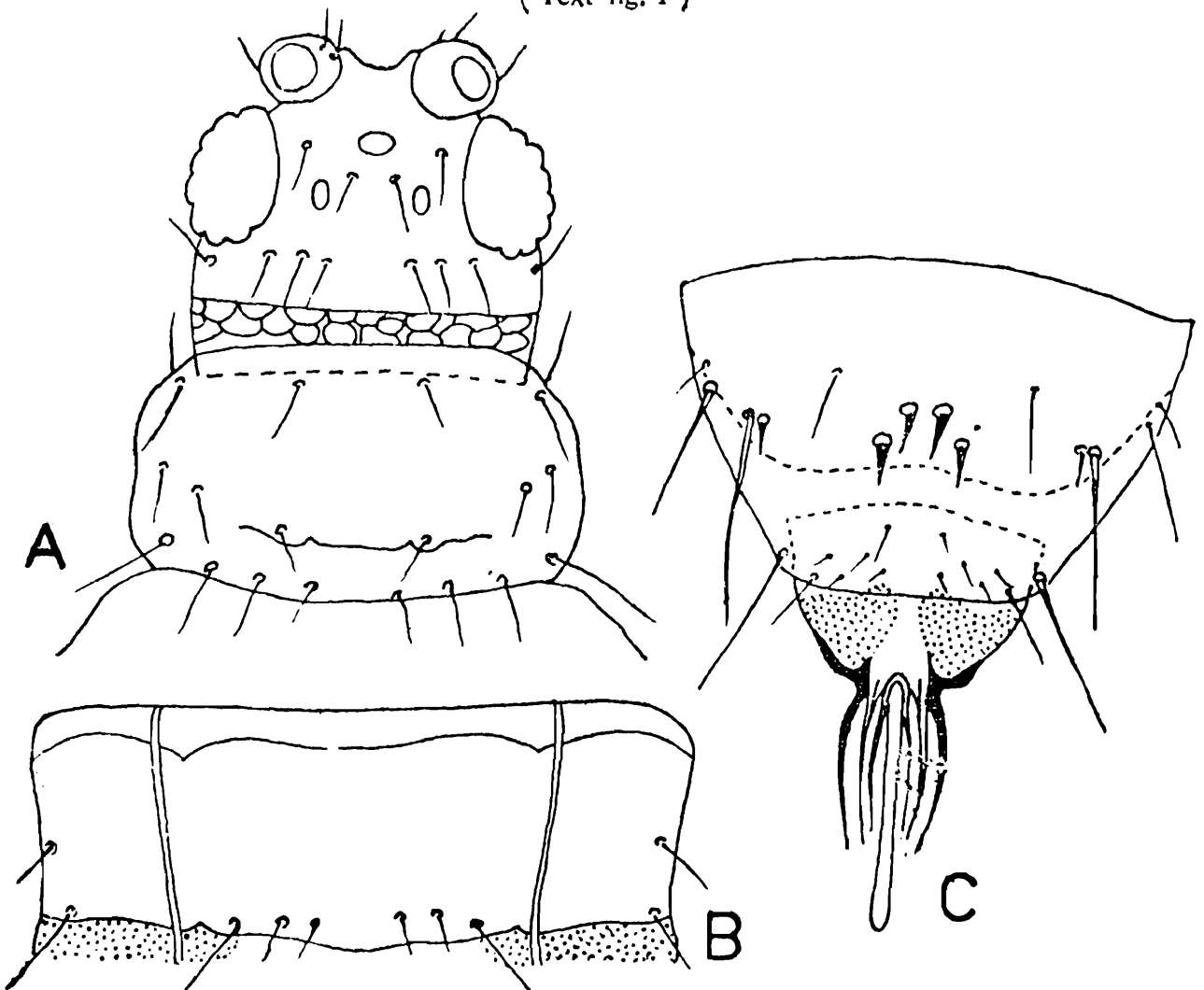
Remarks : This species is recorded for the first time from North-Eastern India. *H. kadaliphilus* is a serious pest of banana.

Genus 18. **Monilothrips** Moulton

1929. *Monilothrips* Moulton, *Rec. Indian Mus.*, 31 : 93-94.

24. **Monilothrips kempi** Moulton

(Text fig. 1)



Monilothrips kempi Moulton

A. Head and Prothorax; B. Abdominal sternum V; C. Terminal abdominal segments ♂

1929. *Monilothrips kempi* Moulton, *Rec. Indian Mus.*, 31 : 94-95.

1952. *Monilothrips kempi* : Bailey & Cott, *Bull. Calif. Dept. Agri.*, 41 (3) : 2.

1942. *Monilothrips montanus* Jacot-Guillarmod, *J. ent. Soc. Sth. Afr.*, 5 : 64.

1959. *Monilothrips kempi* : Hood & Jacot-Guillarmod, *J. ent. Soc. Sth. Afr.*, 22 (2) : 489.

1972. *Monilothrips kempi* : Bhatti, *Oriental Ins.*, 6 (1) : 72.

1975. *Monilothrips kempi* : Wilson, *Mem. Amer. ent. Inst.*, 23 : 173.

1978. *Monilothrips kempi* : Sen, *Bull. zool. Surv. India*, 1 (1) : 43-45.

1980. *Monilothrips kempi* : Ananthakrishnan & Sen, *Handbk. Ser. 1, zool. Surv. India* : 81 & 144.

Macroptrous Female (Male) : General body colour uniformly orange brown ; antennal segments 1-4 (1-3 and base of 4 & 5) whitish yellow and rest unicolourous to the body ; legs yellow with a shade

of orange brown at middle of all femora and mid & hind tibiae (legs golden yellow); wings yellowish along margin & whitish at middle. All setae dark.

Head broader than long, distinctly produced in front between bases of antennae, anterior margin of projection concave; cheeks slightly arched; posterior margin of head with a conspicuous reticulated collar-like band, with 2 antecellars and 3 postocellars behind each posterior ocellus. Eyes large, little extended ventrally. Antennae 8-segmented, segments 3 & 4 vase shaped, 5 elongate, clavate 6 short, terminal segment of style elongate; sense cones on 3 & 4 forked. Mouthcone broad; maxillary palpi 3-segmented.

Prothorax transverse with 2 pairs of anteroangulars, one directed forward and the other directed backward; 2 anteromarginals; 2 posteroangulars, outer about half as long as inner and 6 posteromarginals. Forewings with continuous row of setae in both the veins.

Abdominal tergite II with a distinct dark brown line along anterior margin and the line on tergites III-VIII placed away from the anterior margin; tergites II-VIII reticulated. Setae on tergite IX of female very long and on tergite X short. Tergite IX of male with 6 strong specialised setae disposed as follows: 4 in the middle (2 in upper row and 2 in lower row) and the other two placed laterally.

The males from Darjeeling differs from that of Lesotho and California in having 6 specialised setae on tergite IX instead of 4.

Specimen studied: **West Bengal**: Darjeeling Dt., 6 ♀ ♀, 2 ♂ ♂ (Z. S. I. Reg. Nos. 125-126/H₁₂; 403-07/H₁₂; 1251/H₁₇) Rangirum, 25.5.1974; 7.6.1975, coll. Dr. J. K. Jonathan; 2 ♀ ♀, 1 ♂ (Z. S. I. Reg. Nos. 388-90/H₁₂) Manibhanjang, 19.5.1975, coll. Dr. J. K. Jonathan; 2 ♀ ♀ (Z. S. I. Reg. Nos. 401-02/H₁₂) Lepchajagat, 4.6.1975, coll. Dr. J. K. Jonathan; 3 ♀ ♀ (Z.S.I. Reg. Nos. 398-400/H₁₂) Ghoombhanjang, 30.5.1975, coll. Dr. J. K. Jonathan.

Distribution: **INDIA**: Darjeeling (West Bengal); Mussoorie (U. P.)
Elsewhere: **LESOTHO (AFRICA)**; **CALIFORNIA (N. AMERICA)**.

Remarks: *M. kempfi* is restricted to Himalayas (eastern and western) in India.

Genus 19. **Panchaethrips** Bagnall

1912. *Panchaethrips* Bagnall, *Rec. Indian Mus.*, 7 : 258.

25. **Panchaethrips indicus** Bagnall

1912. *Panchaethrips indicus* Bagnall, *Rec. Indian Mus.*, 7 : 258-260.

1928. *Panchaethrips indicus* : Ramakrishna, *Mem. Dept. Agri. India, Ent. Ser.*, 7 (10) : 273..

1945. *Panchaethrips indicus* : Shumsher, *Indian J. Ent.*, 7 : 176.

1968. *Panchaethrips indicus* : Mound, *Bull. Br. Mus. nat. Hist. (Ent.)·Suppl.* 11 : 48.

1975. *Panchaethrips indicus* : Wilson, *Mem. Amer. Ent. Inst.*, 23 : 188-189.

1980. *Panchaethrips indicus* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser. 1* : 81 & 144.

1984. *Panchaethrips indicus* : zur Strassen, *Senckenbergiana biol.*, 65 (1-2) : 85.

Specimen studied : **Manipur** : 3 ♀ ♀, 1 ♂ (Z.S.I. Reg. Nos. 815-18/H₁₇) Moreh, 13.3.1979, *coll.* Dr. N. Muraleedharan.
Assam : 4 ♀ ♀, 4 ♂ ♂ (Z. S. I. Reg. Nos. 1715-18/H₁₇ ; 1731-34/H₁₇) Goshagaonhat, Goalpara Dt. 18.10.1982, *coll.* C. K. Sen Gupta.

Distribution : **INDIA** : Tamil Nadu ; Kerala ; Bihar.

Elsewhere : **BANGLADESH ; CHINA ; THAILAND.**

Remarks : This species is recorded for the first time from North-Eastern India. *P. indicus* is a pest of turmeric.

Genus 20. **Phibalothrips** Hood

1918. *Phibalothrips* Hood, *Mem. Queensland Mus.*, 6 : 125.

1925. *Reticulothrips* Faure, *Sth. Afr. J. nat. Hist.*, 5 : 145.

1937. *Phibalothrips* : Jacot-Guillarmod, *Publ. Univ. Pretoria, Ser. 2 Nat. Sci. No. 3* : 10.

26. **Phibalothrips peringueyi** (Faure)

1925. *Reticulothrips peringueyi* Faure, *Sth. Afr. J. nat. Hist.*, 5 : 145-150.

1931. *Reticulothrips peringueyi* : Ramakrishna & Margabandhu, *J. Bombay nat. Hist. Soc.*, 34 (4) : 1034.

1937. *Phibalothrips peringueyi* : Jacot-Guillarmod, *Publ. Univ. Pretoria, Ser. 2 Nat. Sci. No. 3* : 10.

1945. *Phibalothrips peringueyi* : Shumsher, *Indian J. Ent.*, 7 : 176.

1975. *Phibalothrips peringueyi* : Wilson, *Mem. Amer. Ent. Inst.*, 23 : 197-198.

1980. *Phibalothrips peringueyi* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser. 1* : 81 & 144.

1984. *Phibalothrips peringueyi* : zur Strassen, *Senckenbergiana biol.*, 65 (1-2) : 85.

Specimen studied : **Manipur** : 1 ♀ (Z. S. I. Reg. No. 778/H₁₇) Morch, 12.3.1979, coll. Dr. N. Muraleedharan **West Bengal** : 1 ♀ (Z. S. I. Reg. No. 1744/H₁₇) Mekliganj, Coochbehar Dt., 16.10.1982, coll. C. K. Sen Gupta.

Distribution : **INDIA** : Tamil Nadu ; Delhi ; M.P. ; West Bengal.

Elsewhere : **SOUTH AFRICA ; BANGLADESH.**

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 21. **Retithrips** Marchal

1910. *Retithrips* Marchal, *Bull. Soc. Ent. Egypte*, 2 (1) : 17.

27. **Retithrips syriacus** (Mayet)

1890. *Thrips (Heliethrips) syriacus* Mayet, *Les Insectes de la Vigne* : 451.

1930. *Retithrips syriacus* : Bodenheimer, *Monogr. zur. Agnew Ent.*, 10 : 168.

1954. *Retithrips syriacus* : Seshadri & Ananthakrishnan, *Indian J. Ent.*, 16(3) : 213.

1975. *Retithrips syriacus* : Wilson, *Mem. Amer. Ent. Inst.*, 23 : 214-218.

1980. *Retithrips syriacus* : Ananthakrishnan & Sen, *zool. Surv. India, Handbk. Ser. 1* : 81 & 145.

1984. *Retithrips syriacus* : zur Strassen, *Senckenbergiana biol.*, 65 (1-2) : 86.

Specimen studied : **West Bengal** : 3 ♀ ♀, 3 ♂ ♂ (Z. S. I. Reg. Nos. 995/H₁₇, 1037/H₁₇, 1520-23/H₁₇) Coochbehar, 7.10.1981 ; 19.10.1981, coll. C. K. Sen Gupta. 4 ♀ ♀ (Z. S. I. Reg. Nos. 1557-59/H₁₇, 1608/H₁₇) Mekligunj, Coochbehar Dt., 30.12.1981, coll. C. K. Sen Gupta. 6 ♀ ♀ (Z. S. I. Reg. Nos. 1735-40/H₁₇) Tapurhat, Coochbehar Dt., 25.10.1982, coll. C. K. Sen Gupta. 3 ♀ ♀ (Z. S. I. Reg. Nos. 2001/H₁₇ & 2014-15/H₁₇) Saradadevi, Coochbehar Dt. 31.12.1983, coll. C. K. Sen Gupta.

Distribution : **INDIA** : Widely distributed.

Elsewhere : **BANGLADESH ; SYRIA ; EGYPT ; EAST AFRICA ; SOUTH AFRICA ; BRASIL.**

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 22. Rhipiphorothrips Morgan

1913. *Rhipiphorothrips* Morgan, *Proc. U.S. nat. Mus.*, **46** (2008) : 17.

28. Rhipiphorothrips cruentatus Hood

1919. *Rhipiphorothrips cruentatus* Hood, *Insect. Inscit. menstr.*, **7** : 94-96.

1937. *Rhipiphorothrips cruentatus* : Rahman & Bharadwaj, *Indian J. agric. Sci.*, **7** : 633.

1975. *Rhipiphorothrips cruentatus* : Wilson, *Mem. Amer. Ent. Inst.*, **23** : 222-224.

1980. *Rhipiphorothrips cruentatus* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser. 1* : 81 & 145.

1984. *Rhipiphorothrips cruentatus* : zur Strassen, *Senckenbergiana biol.*, **65** (1-2) : 86.

Specimen studied : **Manipur** : 2 ♀ ♀ (Z. S. I. Reg. Nos. 819-20/H₁₇) Moreh, 13.3.1979, *coll.* Dr. N. Muraleedharan. **Assam** : 1 ♂ (Z. S. I. Reg. No. 1741/H₁₇) Goshai-gaonhat, Goalpara Dt., 18.10.1982, *coll.* C. K. Sen Gupta. **West Bengal** : 5 ♀ ♀, 3 ♂ ♂ (Z. S. I. Reg. Nos. 1038/H₁₇, 1507/H₁₇, 1711-14/H₁₇, 1742-43/H₁₇) Coochbehar, 18.10.1980, 2.10.1981, 16.10.1982, 20.10.1982, *coll.* C. K. Sen Gupta.

Distribution : **INDIA** : Tamil Nadu ; Kerala ; Karnataka ; Punjab ; M. P. ; West Bengal.

Elsewhere : **BANGLADESH, PAKISTAN ; SRI LANKA ; AFGHANISTAN.**

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 23. Selenothrips Karny

1911. *Heliethrips (Selenothrips)* Karny, *Ent. Rundschau*, **28** : 179.

1913. *Selenothrips* : Hood, *Insect. Inscit. menstr.*, **1** (12) : 150.

29. Selenothrips rubrocinctus (Giard)

1901. *Physopus rubrocinctus* Giard, *Bull. Soc. Ent. France*, **15** : 263-265.

1908. *Heliethrips rubrocinctus* : Franklin, *Proc. U.S. nat. Mus.*, **33** (1590) : 719-723.

1911. *Heliethrips (Selenothrips) rubrocinctus* : Karny *Ent. Rundschau*, **28** : 179-180.

1913. *Selenothrips rubrocinctus* : Hood, *Insect. Inscit. menstr.*, **1** (12) : 150.

1975. *Selenothrips rubrocinctus* : Wilson, *Mem. Amer. Ent. Inst.*, **23** : 230-234.

1980. *Selenothrips rubrocinctus* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser. 1* : 81 & 145.

1984. *Selenothrips rubrocinctus* : zur Strassen, *Senckenbergiana biol.*, **65** (1-2) : 87.

Specimen studied : **Manipur** : 7 ♀ ♀, 3 ♂ ♂ (Z. S. I. Reg. Nos. 779-81/H₁₇, 821-23/H₁₇, 1343-46/H₁₇) Moreh, 12.3.1979 ; 13.3.1979, coll. Dr. N. Muraleedharan. **Assam** : 4 ♀ ♀ (Z. S. I. Reg. Nos. 1720-21/H₁₇, 1745-46/H₁₇) Goshgaonhat, Goalpara Dt., 18.10.1982, coll. C. K. Sen Gupta. **West Bengal** : 38 ♀ ♀ (Z. S. I. Reg. Nos. 991-94/H₁₇, 1039-43/H₁₇, 1384-85/H₁₇, 1508-13/H₁₇, 1524-32/H₁₇), 1560/H₁₇, 1609-11/H₁₇, 1722-23/H₁₇, 1747-48/H₁₇, 2002-05/H₁₇) Cooch-behar, 10.10.1980, 15.10.1980, 19.10.1980, 2.10.1981, 7.10.1981, 30.12.1981, 20.10.1982, 25.10.1982, 31.12.1983) C. K. Sen Gupta.

Distribution : **INDIA** : Kerala ; West Bengal.

Elsewhere : PHILIPPINES ; TAIWAN ; THAILAND ; BURMA ; SRI LANKA ; HONDURUS ; MEXICO ; BANGLADESH.

Remarks : This species is recorded for the first time from North-Eastern India.

**KEY TO THE GENERA OF FAMILY PHLAEOTHIRIPIDAE
FROM NORTH EASTERN INDIA**

1. Distance between hind coxae less than that between middle coxae. Anal setae rarely very long ...2
 Distance between hind coxae greater than that between fore and mid coxae. Anal setae exceptionally long, several times longer than tube.
 (Subfamily Urothripinae) .. 3
2. Maxillary stylets slender, never broadened, narrower than labial palp.
 (Subfamily Phlaeothripinae) ...4
 Maxillary stylets broadened at apex, broader than labial palp.
 (Subfamily Idolothripinae) ...35
3. Antennae 5- segmented. Vertex of head with 4-6 prominent setae on emphasised tubercles. Fore and hind tarsi with a downwardly directed claw at tip
 ...*Stephanothrips* Trybom
 Antennae 7 segmented, 7 & 8 with a partial or complete suture. Vertex with three pairs of well developed forwardly directed setae placed on tubercles. Head, prothorax and legs strongly or weakly tuberculate, the tubercles often bearing pointed setae
 .. *Baenothrips* Crawford

4. All body setae fimbriate and short. Foretarsi armed in both sexes (weak in females and gynaecoid males). Head polygonally reticulate. Mouthcone elongate pointed ; maxillary stylets oculad, meeting at middle. Eyes directed forward
...Azaleothrips Ananthakrishnan
 Body setae pointed, knobbed or blunt ...5
5. Maxillary stylets short, confined to the mouthcone. Head wider than long. Antennal segment 3 as long as 2 ; segment 6 longest and longer than 7 & 8 together ; 7 & 8 closely joined but completely separated by suture. Major males with a ventral horn like projection between the bases of antennae. Forewings without double fringes
...Sophiothrips Hood
 Maxillary stylets well retracted into head ...6
6. Antennal segments short and thick, almost moniliform ; segments 4 & 5 globular, segment 8 constricted at base. Head constricted at base ; postoculars weak ; mouthcone short, broadly rounded. Foretarsi unarmed in both sexes. Basal wing setae (B₁ — B₃) well developed, not arranged in the same line. Tube shorter than head
...Neodixothrips Sen & Muraleedharan
 Atleast intermediate antennal segments more elongate ...7
7. Sensecones on antennal segment 3 numerous, arranged in a ring, Forefemora with a stout tooth at base on inner margin in females; males with a strong tooth at base and another at apex. Forecoxae prolonged considerably in oedymorous males
...Ecacanthothrips Bagnall
 Sensecones on antennal segment 3 atmost 2 or 3 in number ...8
8. Head with a notch behind eyes ...9
 Head without notch behind eyes ...12
9. All tibiae or fortibiae alone with a series of setae bearing tubercles. Head very slightly produced in fornt of eyes; vertex narrowly produced between antennae. Mouthcone short, broadly rounded. Anteromarginals short, other prothoracic setae well developed, blunt to expanded at tip; all setae emerging from tubercles. Posterior half of epimeron fused with pronotum. Foretarsi armed in both sexes
...Tylothrips Hood
 All tibiae without setae bearing tubercles. Head not produced. Eyes large. ...10
10. Abdomen with long thin almost flagelliform lateral setae about as long as B₁ - B₃ of segment IX. Postoculars 2 pairs, outer pair long and thin. Mouthcone elongate, rounded; maxillary stylets retracted upto postoculars, wide apart. Pronotal setae well developed, long, thin and pointed. Foretarsi unarmed in females. Forewings parallel sided without double fringes.
...Ocythrips Ananthakrishnan
 Abdomen without long flagelliform lateral setae ...11

11. Maxillary stylets well retracted and meeting at middle. Pronotal setae well developed, dilated at tip; anteroangulars and midlaterals closer. Intermediate antennal segment thin and long. Foretarsi generally unarmed in both sexes, very rarely with a small tooth in males. Posterior pair of wing retaining setae on abdominal tergite II sigmoid.
...Stigmothrips Ananthakrishnan
 Maxillary stylets not meeting at middle, maxillary bridge present but weak. Anteroangular and midlateral setae not close together. Posterior pair of wing retaining setae on tergite II straight not sigmoid
.. Dexiothrips Hartwig
12. Cheeks with a few warts mostly at base, carrying small spines or non-warty, but with 1-4 strong spines or cheeks crenulate ...13
 Cheeks without strong spines, atmost with small scattered setae or smooth ...16
13. Cheeks warty bearing a few conspicuous setae. Mouthcone pointed; maxillary stylets retracted oculad, meeting at middle. All prothoracic setae well developed; dilated at tip. Forefemora and foretibiae armed in males with two subapical femoral teeth and a basal, median and and apical tibial teeth, strongly developed in oedymorous males
...Hoplandrothrips Hood
 Cheeks not warty, atmost strongly crenulate or with 1-4 strong setae. .. 14
14. Forefemora strongly enlarged in both sexes. often much wider than head ...15
15. Mouthcone rounded; maxillary stylets mesad, wide apart. Head much broader; cheeks slightly but distinctly indented behind eyes. Eyes slightly bulged behind forming an angular projection. Postoculars longer than eyes. Foretibiae much shorter with an inner tubercle at apex; foretarst with a strong dagger-like tooth in both sexes. B₂ of abdominal segment IX of male short but exceptionally stout,
...Pegothrips Sen & Muraleedharan
 Mouthcone pointed, not very long and thin; maxillary stylets retracted mesad, broadly seperate. Forefemora of female much wider than head; foretibiae at apex with a small tubercle to a well developed bifid tooth.
.. Arrhenothrips Hood
16. Head distinctly broader than long. Mouthcone broadly rounded. Epimeral setae about twice as long as postangular setae, Foretarsus with a tooth in both sexes. B₂ of abdominal segment IX short in both sexes,
.. Crotonothrips Ananthakrishnan
 Head as broad as long or distinctly longer ...17
17. Foretarsi unarmed in both sexes ...18
 Foretarsi armed in both sexes or armed only in males ...19
18. Mouthcone elongate, pointed to narrowly rounded. Head 1.1-1.7 times as long as wide and almost twice as long as pronotum. Forefemora mostly thin. *...Liothrips Uzel*

Mouthcone not elongate, broadly rounded. Head with a slight but distinct notch behind eyes. Antennal segment 8 elongate, fusiform. Eyes angular behind exteriorly due to posterior ommatidia being enlarged

...*Thlibothrips* Priesner

19. B₁ & B₂ of abdominal segment IX always knobbed

...*Liophaeothrips* Priesner

B₁ B₂ of IX pointed and fine ...20

20. Pronotum with twisted striae. Postoculars usually one pair, occasionally two pairs, Mouthcone very broadly rounded.

...*Gynaikothrips* Karny

Pronotum without twisted striae, atmost with transverse striae ...21

21. Tube very much longer than head . 22

Tube shorter than head or about as long ...23

22. Head very little produced with a clear notch behind eyes. Cheeks wide behind eyes and with or without setae. Tube pilose. Integument strongly sculptured.

...*Leeuwenia* Karny

Cheeks without notch behind eyes. Ocellar hump produced. Integument not strongly sculptured. Tube not pilose. Setae on abdominal segment IX fine, not short and blunt.

...*Gigantothrips* Zimmerman

23. Forewing (Mesothripine) narrow from base to middle and parallel sided beyond middle .. 24

Forewing (Haplothripine) with a distinct constriction at middle ...26

24. Terminal antennal segments narrow and long, particularly segment 8 very long and narrow; segments 3 & 4 with one sense cone. Anteroangular and anteromarginal very small almost vestigial and other prothoracic and postoculars very well developed. B₂ of abdominal segment IX very short and thin in both sexes

...*Araeothrips* Ananthkrishnan

Terminal antennal segments not narrow and long. Anteroangulars and anteromarginals not very short 25

25. Head long, more than twice as long as prothorax and parallel sided. Antennal segment 7 and 8 forming a close unit. Maxillary stylets ocular, closely approximate. Foretarsi unarmed in both sexes.

...*Ablemothrips* Ananthkrishnan

Head not elongate, almost as long as prothorax. Cheeks constricted at base and slightly spinose. Forefemora usually enlarged. Wings narrow.

...*Mesothrips* Zimmerman

26. Mouthcone short and broad ...27

Mouthcone pointed .. 33

27. Forefemora, foretibiae and foretarsi variously armed ...28

Forefemora and foretibiae unarmed; foretarsi armed or unarmed ...29

28. Forefemora in females with a blunt tooth or hump at base, often crenulate or roughened distally. Foretibiae with a flat scale at apex. Tarsi armed.

...*Androthrips* Karny

Foretibiae with one or two distinct teeth. Forefemora sometimes with a hump at base.

.. *Podothrips* Hood

29. Cheeks convex and serrate. Maxillary stylets short, retracted just above mouthcone. Foretarsus armed only in males.

.. *Antillothrips* Stannard

Cheeks not convex. Maxillary stylets mostly connected by maxillary bridge. Mouthcone not very short. Foretarsi with or without teeth ...30

30. Pronotum about as long as head, Cephalic and pronotal setae usually well developed; epimerals mostly pointed or blunt. ...31

31. Antennal segment 3 almost symmetrical. Forefemora of females enlarged, reduced in gynaecoid males and more enlarged in oedymorous males. Foretarsal tooth when present directed forward ...32

Antennal segment 3 not very symmetrical. Forefemora of females usually simple, almost enlarged in males. Forewings with or without double fringes.

...*Haplothrips* Serville

32. Antennal segment 8 constricted at base, Tube setae not very long, almost as long as tube. Small forms.

...*Xylaplothrips* Priesner

Antennal segment 8 broad at base; 7 and 8 closely united. Hind femora usually enlarged. Tube setae long and fine about twice as long as tube.

Karnyothrips Watson

33. Mouthcone triangular, pointed, reaching base of prosteruum. Head as in *Haplothrips* or a little longer.

Neoheegeria Schmutz

Mouthcone distinctly biconcave. Head more elongate. Body long and slender; abdomen narrow and tapering. Foretarsi armed. .. 34

34. Abdominal terga II - VII each with more than 2 pairs of wing retaining setae. Phallus with chitinised pseudovirga.

...*Dolichothrips* Karny

Abdominal terga II - VII with 2 pairs of wing retaining setae. Phallus with membraneous pseudovirgs.

...*Membrothrips* Bhatti

35. Maxillary stylets moderately thick, a little thicker than the Phlaeothripines. Antennal segments 7 & 8 forming an unit, sometimes with an indistinct suture .. 36

Maxillary stylets thick, atleast as thick as labial palps .. 37

36. Antennal segment 3 with 3 sense cones and segment 4 with 4 sense cones

...*Holothrips* Karny

Antennal segments 3 and 4 with sense cones

...*Oidanothrips* Moulton

37. Antenna 7- segmented, segment 7 strongly constricted at base. Eyes reduced to 4-6 facets in apterous forms ; brachypterous and macropterous forms rare with larger eyes. Metanotum well developed with 1-3 pairs of major setae. Abdominal tergite each with one pair of wing retaining setae.

...*Allothrips* Hood

Antenna clearly 8- segmented ...38

38. Head not or very little produced ..39

Head distinctly produced .. 40

39. Maxillary stylets broadly separate, 'V' like. Head broad to oval without conspicuous setae. Metanotal median setae usually small. Foretarsal tooth present in male, lacking in female

...*Nesothrips* Kirkaldy

Maxillary stylets not 'V' like, somewhat close at middle. Antennal segment 3 longer than 4 ; segment 4 with 4 sense cones. Foretarsi with a tooth in both sexes. Tube shorter. Usually large dark species.

...*Ethirothrips* Karny

40. Head production short ...41

Head production of varried length, often more pronounced .. 42

41. Mesothorax of male with a distinct forked process, lacking in gynaecoid males. Cheeks strongly setose in oedymorous males, weak in gynaecoid. Oedymorous males with very well developed forefemora and with strong

setae; foretibiae with numerous denticles on inner margin and foretarsal tooth very strong. Abdominal segment VI of male without drepna.

...*Dinothrips* Bagnall

Mesothorax of males without process. Eyes large, bulged and produced ventrally. Forelegs spinose, occasionally with emphasised chitinised setae; Abdominal segment VI; of male with drepna; segments VII and VIII bearing teeth or tubercles

...*Bactrothrips* Karny

42. Antennal segment 3 very long and thin and as long as or longer than head. Forelegs thin and long; forefemora at base on outer margin prolonged, toothlike; foretarsi unarmed.

...*Meiothrips* Priesner

Antennal segment 3 not very long and not as long as head ...43

43. Forefemora of males at apex on outer margin with a sickle like seta; foretarsal tooth well developed in males; reduced or absent in females. Antennal segments 3 & 4 in oedymorous males with strongly developed setae. General setae well developed.

...*Elaphrothrips* Buffa

Forefemora of males without sickle-like seta. Head production wider in front, much shorter than head. Antennal segment 3 with clubbed apex and smooth margin. Forefemora of both sexes enlarged, excessively enlarged with a forked chitinous tooth at apex of inner margin of oedymorous males; foretibiae of males sometimes with a seta bearing tubercle at apex; foretarsal tooth variable in shape in oedymorous males.

...*Mecynothrips* Bagnall

Suborder TUBULIFERA
Family PHLAEOTHIRIPIDAE
Subfamily UROTHIRIPINAE

Genus 24. *Baenothrips* Crawford

1948. *Baenothrips* Crawford, *Proc. ent. Soc. Wash.*, **50** : 39-40.
1963. *Transithrips* Bournier, *Publ. cult. Co. Diam. Angola*, **63** : 81.
1964. *Ramachandriella* Ananthakrishnan, *Ent. Tidskr.*, **85** : 228-229.
1973. *Baenothrips*: Ananthakrishnan, *Occl. Publ.* **2**, *Ent. Res. Unit, Loyola College, Madras* : 70-71.

30. *Baenothrips asper* (Bournier)

1963. *Transithrips asper* Bournier, *Publ. cult. Co. Diam. Angola*, **63** : 81.
1966. *Transithrips asper*: Ananthakrishnan, *Bull. Ent.*, **7** : 11.
1972. *Baenothrips asper*: Mound, *Aust. J. Zool.*, **20** : 92.

1973. *Baenothrips asper* : Ananthakrishnan, *Occl. Publ.*, 2, *Ent. Res. Unit, Loyola College, Madras* : 71
 1980. *Baenothrips asper* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser.*, 1 : 82 & 145.
 1982. *Baenothrips asper* : Muraleedharan, *Rec. zool. Surv. India*, 79 : 376.

Specimen studied : **Manipur** : 1 ♀ (Z.S.I. Reg. No. 642/H₁₇) Churachandpur, 24.3.1979, *coll.* Dr. N. Muraleedharan.

Distribution : **INDIA** : Andhra Pradesh; Tamil Nadu; Kerala; Manipur.
Elsewhere : **ANGOLA** ; **TAIWAN**.

Genus 25. *Stephanothrips* Trybom

1912. *Stephanothrips* Trybom, *Arkiv. f. Zool.*, 7(33) : 42.
 1949. *Stephanothrips* : Priesner, *Bull. Soc. Fouad Ier. Ent.*, 33 : 65.

31 *Stephanothrips occidentalis* Hood & Williams

1925. *Stephanothrips occidentalis* Hood & Williams, *Psyche*, 32, : 69.
 1967. *Stephanothrips occidentalis* : Ananthakrishnan, *Ann. Soc. ent. Fr. (N.S.)*, 3(1) : 237.
 1973. *Stephanothrips occidentalis* : Ananthakrishnan, *Occl. Publ.*, 2, *Ent. Res. Unit, Loyola College, Madras* : 75.
 1980. *Stephanothrips occidentalis* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser. 1* : 83.
 1981. *Stephanothrips occidentalis* : Muraleedharan & Sen, *Rec. zool. surv. India*, 79 : 227.
 1982. *Stephanothrips occidentalis* : Muraleedharan, *Rec. zool. surv. India*, 79 : 381.

Specimen studied : **Tripura** : 11 ♀ ♀ (Z. S. I. Reg. Nos. 238-239/H₁₇, 955-963/H₁₇) Teliamura, 21.10.1977, *coll.* Dr. N. Muraleedharan. **Manipur** : 2 ♀ ♀ (Z S. I. Reg. Nos. 665-666/H₁₇) Churachandpur, 23. 3.1979, *coll.* Dr. N. Muraleedharan.

Distribution : **INDIA** : Tamil Nadu, Kerala, Andhra Pradesh; Kalimpong (West Bengal); Tripura; Manipur.

Subfamily PHLAEOTHRIPINAE

Genus 26. *Ablemothrips* Ananthakrishnan

1969. *Ablemothrips* Ananthakrishnan, *Oriental Ins.*, 3(3) : 289
 1973. *Ablemothrips* : Ananthakrishnan, *Occl. Publ.*, 2, *Ent. Res. Unit, Loyola College, Madras* : 19

32. *Ablemothrips maxillatus* Ananthakrishnan

1969. *Ablemothrips maxillatus* Ananthakrishnan, *Oriental Ins.*, 3(3) : 289-290.
 1973. *Ablemothrips maxillatus* : Ananthakrishnan, *Occl. Publ.* 2, *Ent. Res. Unit., Loyola College, Madras* : 19.

Female (Macropterous) : General body colour brown with some scattered pigment ; legs brown except base and distal thirds of tibiae and all tarsi yellow ; antennal segments brown except 3 pale to clear yellow, shaded weak to dark brown at base ; wingspale grey, darker in distal thirds. All setae hyaline and knobbed.

Head about 1.7 times as long as wide and 2.1 times longer than pronotum, 217-234 long, 140-148 wide across cheeks and 136-140 across base, cheeks with 3-4 pairs of setae. Eyes large 62 long, 31-39 wide. Postoculars short, 30-36 long. Antennal segments 1-8 length (width) : I : 23-25 (25) ; II : 38-40 (23) ; III : 55-58 (23-25) ; IV : 53-60(25) ; V : 50 (23-25) ; VI : 45-48 (20-23) ; VII : 38-43 (18-20) ; VIII : 15-18 (13) ; sense cones on 3 and 4 : 23-25 long. Mouthcone short and rounded 109 long, 125 wide at base and 47 at apex ; maxillary stylets ocular, closely approximate.

Prothorax 109 long, 160-170 wide at anterior margin, 202-233 at posterior margin. All prothoracic setae short ; anteroangulars, anteromarginals and midlaterals almost subequal, epimerals a little longer ; anteroangulars 38-40, anteromarginals 35-42, midlaterals 33-38, posteroangulars 40-42 and epimerals 45-50 long respectively. Pterothorax 281-296 long, 226-256 wide across meso- and 234-250 across metathorax. Forewings 593 long, 39-47 wide without double fringes ; basal wing setae B₁ -B₃ almost subequal, short. 35-38 ; 38 and 38-43 long respectively.

Abdomen 234-250 wide at base, 203-234 at middle, 164-172 across segment VIII. B₁ -B₃ of segment IX shorter than tube : 75-78 ; 88-94 and 75-78 long respectively. Tube 109 long ; anal setae 78 long. Total body length : 1.68-1.76 mm.

Distribution : *North-Eastern India* : Kalimpong, Darjeeling Dt. (West Bengal).

Elsewhere in India : Kollimalai, Salem Dt. (Tamil Nadu).

Genus 27. *Androthrips* Karny

1911. *Androthrips* Karny, *Zentralbl. Bacteriol. Parasitenk.*, (2) 30 (21-24) : 560.
 1940. *Androthrips* : Ramakrishna & Margabandhu, *Cat. Indian Insects*, 25 : 43.
 1949. *Androthrips* : Priesner, *Bull. Soc. Fouad ler Entom.*, 33 : 81, 91, & 119,
 1964. *Androthrips* : Ananthakrishnan, *Opusc. ent. Suppl.*, 25 : 28.
 1969. *Androthrips* : Ananthakrishnan & Jagadish, *Marcellia*, 36(1-2) : 22.
 1980. *Androthrips* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk*, 1 : 43. 84 & 173.

KEY TO THE SPECIES OF *ANDROTHRIPS* OF NORTH-EASTERN INDIA

1. All legs yellow. Body pale to dark brown. Head clearly longer than wide. Postoculars (80-90) ; prothoracic posteroangulars (78-105) & epimerals (78-109) long respectively.

.. *flavipes* Schmutz, 1915

All legs not uniformly yellow

2

2. Forefemora brown, shading to yellow in distal third ; mid & hindfemora brown; all tibiae yellow. Postoculars (83) ; prothoracic posteroangulars (93) and epimerals (104) long respectively.

.. *flavitibia* Moulton, 1932

Apex of forefemora, entire foretibiae, extreme base of hindtibiae and all tarsi yellow ; rest dark brown. Forefemora with a conspicuous row of tubercles at inner margin. Body setae very well developed, long.

...*ramachandrai* Karny, 1926

33. *Androthrips flavipes* Schmutz

1915. *Androthrips flavipes* Schmutz, *Sitz. Akad. Wiss. Wien.* **122** ; 1031.
 1926. *Androthrips flavipes* ; Karny, *Mem. Dept. Agri. India ent. Ser.*, **9** (6) : 224.
 1964. *Androthrips flavipes* : Ananthakrishnan, *Opusc. ent. Suppl.*, **25** : 28-29.
 1969. *Androthrips flavipes* : Ananthakrishnan & Jagadish, *Marcellia*, **36** (1-2) : 23-26
 1980. *Androthrips flavipes* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser.*, **1** : 84 & 147
 1981. *Androthrips flavipes* : Muraleedharan & Sen, *Rec. zool. Surv. India*, **79** : 205.

General body colour pale to dark brown, legs uniformly yellow ; antennal segments 1, 2, 7 & 8 brown, rest yellow except apex of 4 light brown. Head 1.2 times longer than wide. Postoculars 80-90 long. Prothoracic anteroangulars 64-80 ; anteromarginals 10-13 ; midlaterals 75-78 and epimerals 78-109 long respectively. Forefemora 128 wide across hump Total body length 2.08-2.56 mm. long.

Specimen studied : **Tripura** : 2 ♀ ♀ (Z.S.I. Reg. Nos. 108-109/H₁₇) Kalirbazar, 1.10.1977, coll. Dr. N. Muraleedharan.
 1 ♀ (Z.S.I. Reg. No. 110/H₁₇) Sukanmara; Belonia, 28.9.1977, coll. Dr. N. Muraleedharan.

Distribution : **INDIA** : Tamil Nadu ; Kerala ; Tripura
Elsewhere : SRI LANKA.

34. *Androthrips flavitibia* Moulton

1932. *Androthrips flavitibia* Moulton, *Indian For Rec.*, **19**(1) : 1-2.
 1964. *Androthrips flavitibia* : Ananthakrishnan, *Opusc. ent. Suppl.*, **25** : 31
 1969. *Androthrips flavitibia* : Ananthakrishnan & Jagadish, *Marcellia*, **36** (1-2) : 23-25
 1980. *Androthrips flavitibia* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk, Ser.*, **1** ; 84 & 147
 1982. *Androthrips flavitibia* : Muraleedharan, *Rec. zool. Surv. India*, **79** : 373,

General body colour dark brown except all tibiae and tarsi and antennal segments 3-6 yellow. Head about 1.3 times as long as wide. Postoculars 83 long. Prothoracic anteroangulars 60 ; anteromarginals 10-13 ; midlaterals 60 ; posteroangulars 93 and epimerals 104 long respectively. Forefemora 128 wide across hump. Total body length 1.5-2.1 mm.

Specimen Studied : Assam 1 ♀ (Z.S.I. Reg. No. 370/H₁₂) Loharband, Cachar Dt., ex. leaf gall of wild plant, 13.10.1975, coll. Dr. N. Muraleedharan. Manipur : 1 ♀ (Z.S.I. Reg. No. 632/H₁₇) Moreh, 11.3.1979, coll. Dr. N. Muraleedharan.

Distribution : Dehra Dun (U. P.) Manipur

35. *Androthrips ramachandrai* Karny

1926. *Androthrips ramachandrai* Karny, *Mem. Dept. Agri. India ent. Ser.*, 9(6) : 226.
 1940. *Androthrips ramachandrai* : Ramakrishna & Margabandhu, *Catalogue Indian Insects*, 25 : 44,
 1964. *Androthrips ramachandrai* : Ananthakrishnan, *Opusc. ent. Suppl.*, 25 : 29.
 1969. *Androthrips ramachandrai* : Ananthakrishnan & Jagadish, *Marcellia*, 36 (1-2) : 23-25,
 1980. *Androthrips ramachandrai* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser.*, 1 : 84 & 147.

General body colour dark brown ; apex of forefemora, entire fore-tibiae, extreme, base of hind tibiae, apices of mid & hind tibiae yellow ; antennal segments 1, 2, 7 & 8 brown, 3 yellow except tip grey, 4-6 yellow in proximal half and grey in distal half. Head 1.2 - 1.5 times longer than wide. Postoculars 90-108 long. Prothoracic anteroangulars 67-80 ; anteromarginals 7-8 ; midlaterals 74-96 ; posteroangulars 102-112 and epimerals 118-120 long respectively. Forefemora 160-192 wide across hump and with a row of dark tooth-like tubercles beyond the forefemoral tooth at inner margin. Basal wing setae of forewings 54-88 ; 64-99 & 102-128 long respectively. Total body length 2.08-2.64 long.

Specimen studied : Assam : 1 ♀ (Z.S.I. Reg. No. 1326/H₁₇) Loharband, Cachar Dt., 3.30.1975, coll. Dr. N. Muraleedharan. Arunachal Pradesh : 1 ♀ (Z.S.I. Reg. No. 1878/H₁₇) Gibbon's land, Tirap Dt., Namdapha, 27.12.1982, coll. Dr. S. Biswas & party.

Distribution : Courtallum (Tamil Nadu)

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 28. **Antillothrips** Stannard

1957. *Antillothrips* Stannard, *Illinois biol. Monogr.*, **25** : 35-36.
 1965. *Xenothrips* Ananthakrishnan, *Bull. Ent.*, **6** : 53.
 1976. *Antillothrips* : Pitkin, *Bull. Br. Mus. nat. Hist. (Ent.)*, **34** (4) : 231.

36. **Antillothrips nayari** (Ananthakrishnan)

1958. *Xylaplothrips nayari* Ananthakrishnan, *Proc. ent. Soc. Wash.*, **60** (6) : 278-280,
 1976, *Antillothrips nayari* : Pitkin, *Bull. Br. Mus. nat. Hist. (Ent.)*, **34**(4) : 235.
 1980. *Antillothrips nayari* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser.*
1 : 85 & 148,

Specimen studied : **West Bengal** : 1 ♀ (Z.S.I. Reg. No. 1561/H₁₇)
 Tapurhat, Coochbehar, 7.10.1981, *coll.* C. K. Sen
 Gupta.

Distribution : Kerala

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 29. **Araeothrips** Ananthakrishnan

- 1976, *Araeothrips* Ananthakrishnan, *Proc. Indian Acad. Sci.*, **83B** (5) : 202-203.

KEY TO THE SPECIES OF **ARAEOTHRIPS**

1. Forewings with double fringes. All body setae (except anterior prothoracic setae) long. All tibiae pale

...*longisetis* Ananthakrishnan, 1976

Forewings without double fringes. Body setae comparatively shorter. Fore-tibiae pale yellow, proximal half of midtibiae and two third of hindtibiae brown, rest pale yellow,

...*vamana* Muraleedharan, 1982

37. **Araeothrips longisetis** Ananthakrishnan

1976. *Araeothrips longisetis* Ananthakrishnan, *Proc. Indian Acad. Sci.* **83B** (5) : 203-204.

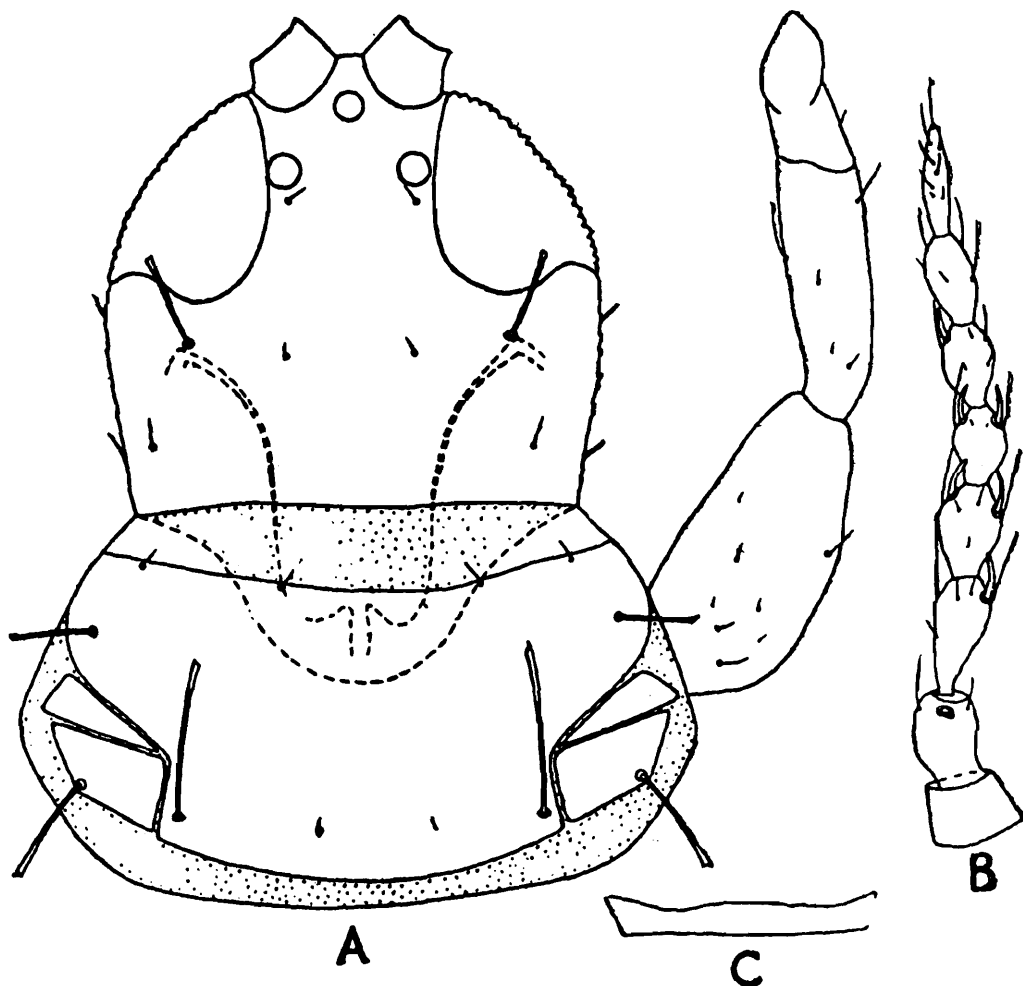
Specimen studied ; **Arunachal Pradesh** : 3 ♀ ♀ (Z.S.I. Reg. Nos. 297-298/H₁₂, 1253/H₁₇) Charduar Forest, 27.12.1965, *coll.*, Dr. S. K. Bhattacharyya

Distribution : Kanha Reserve Forest (M.P.)

Remarks : This species is recorded for the first time from North-Eastern India,

38. *Araeothrips vamana* Muraleedharan

(Text-fig. 2)



2. *Araeothrips Vamana* Muraleedharan A. Head and Prothorax.

B. Antenna. C. Mesopraesternum.

1982. *Araeothrips vamana* Muraleedharan, *Rec. zool. Surv. India*, 79 : 374-376.

General body colour brown, tube darker ; antennal segments 1 and 2 brown, 3-7 uniformly pale yellow ; all femora brown, foretibiae pale yellow, proximal half of midtibiae and two third of hindtibiae brown, rest pale yellow ; wings clear. All setae hyaline and blunt.

Female (Male) : Head distinctly broader than long, 156-160 (140) long, 176 (156) wide across eyes, 180-184 (164) across cheeks, 160-164 (152) across base ; cheeks crenulate with 2-3 short prominent setae ; surface weakly reticulate. Eyes large 72 (60) long and 52-60 (44) wide ; median ocellus 12 wide and paired ones 16 wide, placed much above the middle of the eyes. Postoculars 36(44) long, placed 16 below eyes. Antennal segments comparatively narrow segment 8 longest and extremely narrow ; antennal segments 1-8 length (width).

	I	II	III	IV
Females :-	24-28(32) ;	36-40(24) ;	44-48(24) ;	36-40(24-28) ;
Males :-	24(32) ;	36(24) ;	44(24) ;	32(24)
	V	VI	VII	VIII
Females :-	40(20) ;	36-40(20) ;	40(16) ;	48(10-12) ;
Males :-	32(20) ;	36(20) ;	32(16) ;	42(10)

Maxillary stylets thin wide apart retracted to the level of postocular setae. Mouthcone short, broadly rounded, 72-76(68) long, 164-168(152) wide at base and 72-80(60) at apex.

Prothorax shorter than head 116-124(104) long, 192-200(176) wide at anterior margin, 238-264(220) at posterior margin. Anterior prothoracic setae vestigial, anteroangulars 4(4) long, anteromarginals merely visible ; midlaterals 36-44(28) posteroangulars 60-64(56) ; epimerals 40-44(36) long respectively ; epimeral suture complete. Forefemora 120-128(104) long and 56-60(48) wide. Pterothorax 288-300(272) long, 280(240) wide across meso- and 276-280(232) across metathorax. Forewings 510-612(510) long, 44-48(48) wide and double fringes absent ; basal wing setae B₁ -B₃ ; 4 ; 16-28(16) and 16-20 (20) long respectively. Mesopraesternum complete, slightly thickened at middle.

Abdomen 260-264 (224) wide at base, 248-252 (220) at middle, 200-212 (152) across segment VIII, 116-132 (104) across segment IX. Pelta hat shaped. B₁ -B₃ of segment IX well developed, 92-120 (120) ; 80-100 (40) & 116-148(60) long respectively. Tube 148-160(132) long and anal setae 112-140(100) long. Total body length : 1,47-1,59(1.34) mm.

Specimen studied : **Manipur** *Holotype* ♀ (Z.S.I. Reg. No. 634/H₁₇) *allotype* ♂ (Z. S. I. Reg. No. 635/H₁₇) *paratypes* 2 ♀ ♀ (Z.S.I. Reg. Nos. 636-637/H₁₇) Moreh, 11.3.79 *coll.* Dr. N. Muraleedharan.

Distributson : Manipur

Genus 30. *Arrhenothrips* Hood

1919. *Arrhenothrips* Hood, *Insec. Inscit. Menstr.*, 7(4-6) : 98.

39. *Arrhenothrips longisetis* Sen

1977. *Arrhenothrips longisetis* Sen, *Entomon*, 2(1) : 93-94.

Female (Macropterous) : General body colour brown, head and apex of abdomen dark, tube blackish brown except tip ; all femora, mid and hindtibiae, mid- and hind tarsi brown. foretibiae yellow with brownish shade, foretarsi yellow ; antennal segments 1 & 8 brown, 2 brown dark in basal half and paler distally, 3-7 yellow ; wings pale grey infumate. All setae dark brown and blunt.

Head about 1.5 times longer than broad, 340-360 long, 248-252 wide across eyes, 240-244 across cheeks and 220-232 across base ; surface strongly striate. Eyes little bulged and slightly extended ventrally, 112-128 long, 68-72 wide ; all ocelli 24-28 wide. Postoculars blunt, 52-60 long. Antennal segments 3-7 pedicellate ; segments length (width) ; I : 52-64(40-44) ; II : 64-72(36-40) ; III : 112-120(40-44) ; IV : 96-104(48) ; V : 88-92(32-36) ; VI : 80(28-32) ; VII : 68-72(24-28) ; VIII : 40-44 ; (16) sense cones 32-40 long. Mouthcone pointed, 200-216 long, 212-220 wide at base, 32-40 at apex ; maxillary stylets retracted mesad, 'V' shaped.

Prothorax 360-400 long, 240-260 wide at anterior margin, 440-460 at posterior margin. All prothoracic setae slightly knobbed except posteroangulars blunt ; anteroangulars 64-76, anteromarginals 60-68, midlaterals incurved 88-100, posteroangulars incurved 148-160 and epimerals incurved 120-132 long respectively ; epimeral suture complete. Forefemora 192-208 wide, foretarsal tooth curved downwards 60 long. Pterothorax 600-640 long, 580-676 wide across meso- and 600-720 across metathorax. Metanotal setae 22-28 long. Forewings narrow, fringe cilia inserted below the costal margin 1.8-1.86 mm long, 72-92 wide with 18-26 double fringes ; basal wing setae B₁ -B₃ slightly knobbed, 80-84 ; 84-88 and 80-96 long respectively. Mesopraesternum incomplete, restricted to two lateral sclerites.

Abdomen 540-580 wide at base, 440-520 at middle, 280-300 across segment VIII and 200-220 across segment IX. Pelta apparently pyramyd shaped. B₁ -B₃ of segment IX : 360-420 ; 340-360 and 360-400 long respectively, Tube 280-320 long ; anal setae 280 long. Total body length : 3.7-4 mm.

Specimen studied : **West Bengal** : *Holotype* ♀ (Z.S.I; Reg, No. 353/H₁₂
paratypes 6 ♀ ♀ (Z. S. I. Reg. Nos. 354.359/H₁₂)
 Chunabati, Darjeeling Dt., 17.2.1974, *coll.* Dr. H.K.
 Bhowmik.

Distribution : Darjeling Dt. (West Bengal).

Genus 31. *Azaleothrips* Ananthakrishnan

1964. *Azaleothrips* Ananthakrishnan, *Entomol. Ts. Arg.*, **85**(3-4) : 220-221.
 1973. *Azaleothrips* : Ananthakrishnan, *Occl. Publ.*, **2**, (*Ent. Res. Unit, Loyola College, Madras* : 22

40. *Azaleothrips amabilis* Ananthakrishnan

1964. *Azaleothrips amabilis* Ananthakrishnan, *Entomol. Ts, Arg.*, **85**(3-4) : 221-222.
 1973. *Azaleothrips amabilis* : Ananthakrishnan, *Occl. Publ.*, **2**, *Ent. Res. Unit. Loyola College, Madras* : 23-24,
 1980. *Azaleothrips amabilis* : Ananthakrishnan & Sen, *Zool. surv. India Handbk. Ser.*
1 : 87 & 149.

Female (Male) : Head widest across the cheeks, narrowed across eyes and at base ; cheeks weakly warty with 6-7 small setae. Eyes directed forwards. Postoculars very short, fimbriate ; Prhthorax much shorter than head ; all prothoracic setae short, fimbriate epimeral suture distinct. Forefemora moderately stout, foretarsi with a small tooth. Forewings with 5-8 double frings ; basal wing setae B₁ -B₃ short and expanded. Tube shorter than head ; anal setae about as long as head.

Total body length : 1.4-1.8 (1-1.2) mm.

Specimen studied : **West Bengal** ; 1 ♂ (Z.S.I. Reg. No. 111/H₁₇), Rongtong, Kurseong, Darjelling Dt., 19.4.1969, *coll.* Dr. T. N. Ananthakrishnan. **Manipur** : 1 ♀ (Z. S. I. Reg. No. 638/H₁₇) Churachandpur, 2. 3, 1979. *coll.* Dr. N. Muraleedharan.

Distribution : Tamil Nadu ; Kerala ; Goa ; Maharashtra ; M. P. ; U, P. ; West Bengal ; Manipur,

Genus 32. *Crotonothrips* Ananthakrishnan

1967. *Crotonothrips* Ananthakrishnan, *Oriental Ins.*, **1** (1-2) : 189.
 1969. *Phaeothrips* Ananthakrishnan *Senckenbergiana biol*, **50** (3-4) : 189
 1976. *Crotonothrips* : Ananthakrishnan, *Oriental Ins.*, **10**(3) : 411.
 1978. *Crotonothrips* : Muraleedharan & Sen, *Bull. zool. Surv. India*, **1**(3) ; 257.

KEY TO THE SPECIES OF **CROTONOTHRIPS** FROM
NORTH-EASTERN INDIA

1. Foretarsi unarmed in both sexes. B₂ of abdominal segment IX not short, almost subequal to B₁ & B₃ Maxillary stylets ocular, close at middle. Forewings infumate with 6-7 double fringes

.. *cacharensis* Muraleedharan & Sen, 1978,

Foretarsi armed in both sexes 2

2. B₂ of abdominal segment IX short. Prothoracic anteromarginal setae vestigial. Maxillary stylets retracted below the level of postoculars, wide apart. Forewings infumate with 17-20 double fringes

.. *nagaensis* Muraleedharan, 1982

B₂ of abdominal segment IX not short, almost subequal to B₁ & B₃ ...3

3. Mouthcone pointed very long, almost reaching base of prosternum. Maxillary stylets ocular, meeting at middle. Forewings infumate with 9-12 double fringes.

... *longirostris* Muraleedharan & Sen, 1981

Mouthcone broad, not very long. Maxillary stylets retracted below the level of postoculars, close at middle. Forewings grey with 16-18 double fringes

.. *erraticus* Muraleedharan & Sen, 1981.

41. **Crotonothrips (Inermothrips) cacharensis** Muraleedharan & Sen

1978. *Crotonothrips (Inermothrips) cacharensis* Muraleedharan & Sen *Bull. Zool. Surv. India*, 1(3) : 257-259.

1981, *Crotonothrips cacharensis* : Muraleedharan & Sen, *Rec. zool. Surv. India*, 79 : 206.

Female (Male) : General body colour brown ; head, prothorax, abdominal segments V-IX and tube dark ; antennal segment 1 brown, extreme base yellow, 2 yellow, brown at base and along margin, 3 & 4 yellow, 7 & 8 brown ; forefemora yellow, brown at base, mid- and hindfemora brown, distal tip yellow, foretibiae yellow, mid- and hindtibiae brown, all tarsi light brown ; wings infumate. All setae dark brown and blunt.

Head broad, 180-192(176) long, 188-200(180) wide across eyes, 220-232 (208) across cheeks and 224-248(216) across base ; cheeks crenulate, slightly constricted at base ; surface strongly reticulate. Eyes 72-80 (72-76), 60(60) wide ; all ocelli 24-28 wide, median ocellus over hanging between base of the antennae. Postoculars short about half the length of eyes, 48-52(60) long. Antennal segments 3-7 pedicellate ; 7 & 8 forming a close unit ; antennal segments 1-8 length (width) :

	I	II	III	IV
<i>Female</i> :	40-44(36-40) ;	52-60(32-36) ;	60-64(28-32) ;	56-60(36)
<i>Male</i> :	32(06) ;	52(32-36) ;	60(28) ;	60(32)
	V	VI	VII	VIII
<i>Female</i> :	56-60(32) ;	52(28-32) ;	44-48(24-28) ;	20(12-16)
<i>Male</i> :	56(28) ;	52(24)	44(24) ;	28(16)

Mouthcone broad, 96-100(140) long, 140-144(180) wide at base and 92-96(104) at apex ; maxillary stylets oculad, close at middle.

Prothorax about as long as head, 160-184(160) long, 260-280(272) wide at anterior margin and 360-400(380) at posterior margin, Prothoracic chaetotaxy : anteroangulars 28-36(28), anteromarginals 20-28(16), midlaterals 36-48(40), posteroangulars 72(60), and epimerals 100-112 (96) long respectively ; epimeral suture complete. Forefemora 84-100(92) wide, foretarsi with a hump. Pterothorax 380-400(380) long, 420-460 (428) wide across meso- and 412-448(400) across metathorax. Forewings broad, 697-731(697-714) long, 76-96(72-88) wide with 6-7(6-7) double fringes : basal wing setae B₁ -B₃ : 56(56) ; 60(64) and 72(72) long respectively, Mesopraesternum complete, extremely thin at middle,

Abdomen 400-460(412) wide at base, 396-480(400) at middle, 300-340(252) across segment VIII and 166-232(160) across segment IX. Pelta roughly triangular with apex flat. B₁ -B₃ of segment IX : 120-144(144) ; 140-184(84) and 184-200(208) long respectively. Tube 180-204(180) long; anal setae 108-120(100) long.

Total body length ; 1.79-2.13 (1.9) mm.

Specimen studied ; Assam; *Holotype* ♀ (Z.S.I, Reg, No. 95/H₁₇) *allotype* ♂ (Z.S.I. Reg. No. 96/H₁₇) *paratypes* 3 ♀ ♀ (Z.S.I. Reg. Nos. 97-99/H₁₇) Loharband, Cochar Dt., 13. 10.1975, coll. Dr, N. Muraleedharan. *Paratypes* 3 ♀ ♀ (Z.S I Reg. Nos. 100-102/H₁₇) Silchar, Cachar Dt., 1.10.1975, coll. Dr. N, Muraleedharan. *Tripura* 6 ♀ ♀ , 2 ♂ ♂ (Z.S.I. Reg. Nos. 117-124/H₁₇) Suganmara, Belonia, ex. leaf gall. 29.9.1977, coll. Dr. N. Muraleedharan.

Distribution : Assam ; Tripura.

42. *Crotonothrips erraticus* Muraleedharan & Sen

1981. *Crotonothrips erraticus* Muraleedharan & Sen, *Bull. zool. surv. India*, 3(3) : 206-207

Female (Macropterous) : General body colour brown, terminal abdominal segments and tube darker ; antennal segments 1, 2, 7 & 8 brown 3-6 golden yellow with brownish shade along margin, 3 brighter ; all femora, mid- and hindtibiae brown with golden yellowish tinge, foretibiae golden yellow with brownish shade along margin, all tarsi golden yellow ; forewings grey. All setae hyaline and blunt.

Head about as long to a very little broader, 224-232 long, 224-228 wide across eyes, 236-244 across cheeks, 232-236 across base ; cheeks crenulate with 2-3 very minute setae ; surface strongly reticulate. Eyes large 104-108 long, 68-72 wide, all ocelli 32 wide, median ocellus overhanging between the base of antennae. Postoculars well developed, 88-96 long. Antennal segments 3-7 subpedicellate, 7 & 8 forming an unit ; segments 1-8 length (width) : I ; 54(38-46) ; II ; 58(36-38) ; III : 76-84(38) ; IV : 76-80(42) ; V : 72-76(32-34) ; VI : 68-72(32) ; VII : 62-64(28) ; VIII ; 38(16) : sense cones moderately thick 30-34 long, Mouthcone broad, 148-168 long, 190-208 wide at the base and 106-114 at apex ; maxillary stylets retracted below postoculars, close at middle.

Prothorax about as long as head, 220-228 long, 240-258 wide at anterior margin and 418-456 at posterior margin. Prothoracic chaetotaxy : anteroangulars 38-50, anteromarginals 24-28, midlaterals 46-52, posteroangulars 96 and epimerals 114 long respectively. Forefemora 284-304 long, 142 wide, foretarsal tooth straight, 46 long. Pterothorax 376-388 long, 524-540 wide across meso- and 518-560 across metathorax, Forewings broad, 1.05-1.15 mm. long, 106-134 wide with 16-18 double fringes ; basal wing setae well developed, 72 ; 84 and 84-88 long respectively, Mesopraesternum complete; thin at middle,

Abdomen 564-594 wide at base, 526-532 at middle; 384-396 across segment VIII and 248-252 across segment IX. Pelta roughly bell shaped. B₁-B₈ of segment IX : 152-172 ; 148-152 and 248-256 long respectively. Tube 266-278 long; anal setae 152-160 long.

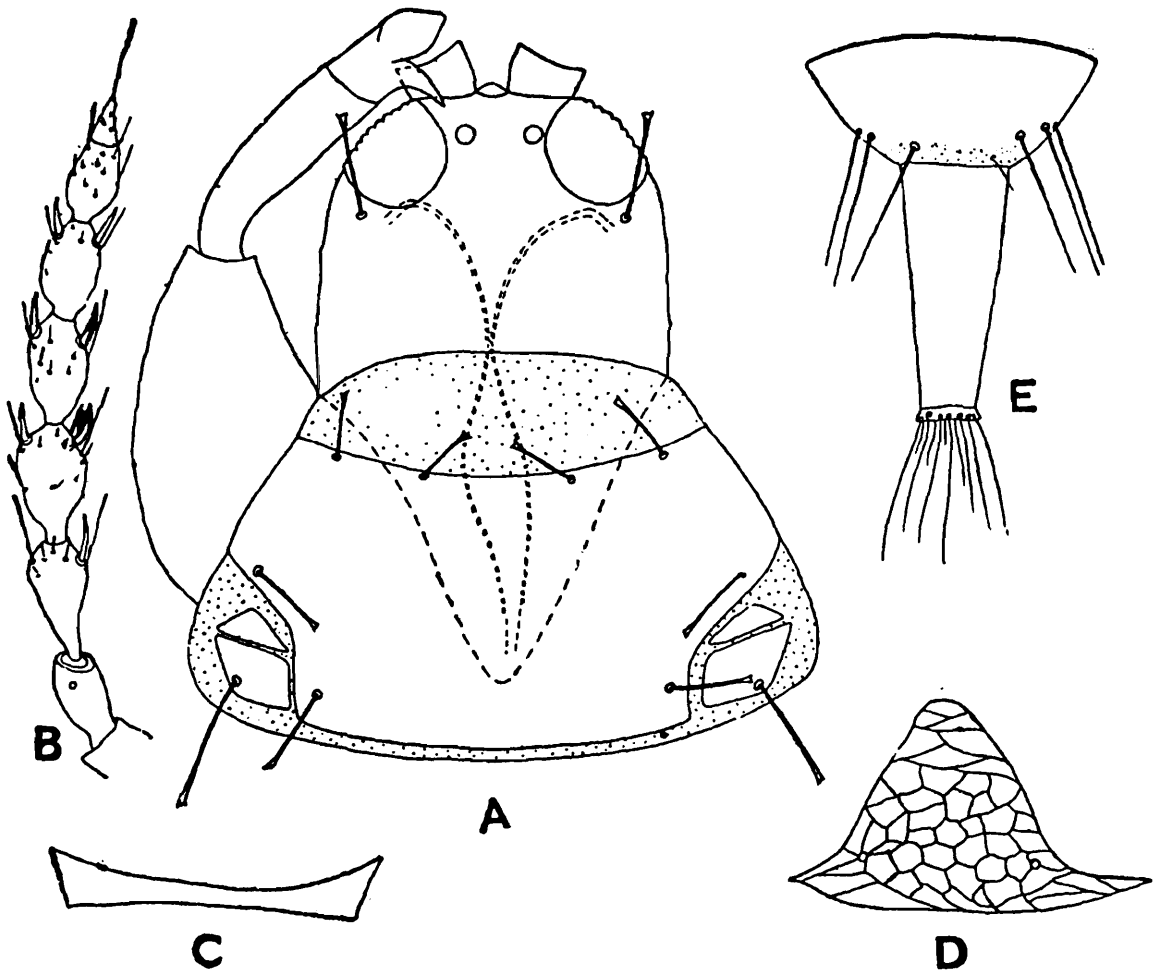
Total body length : 2.75-2.79 mm.

Specimen studied : Tripura : *Holotype* ♀ (Z. S, I. Reg. No. 251/H17) *paratype* 1 ♀ (Z.S.I. Reg. No. 252/H17) Teliamura 19.9.1977, coll. Dr. N. Muraleedharan.

Distribution : Tripura.

43. *Crotonothrips longirostris* Muraleedharan & Sen

(Text-Fig. 3)



3. *Crotonothrips Longirostris* Muralee. & Sen A. Head and Prothorax.
 B. Antenna. C. Mesopraesternum. D. Pelta.
 E. Segment IX of abdomen and tube.

1981. *Crotonothrips longirostris* Muraleedharan & Sen, *Rec, zool. surv. India*, 79 :
 207-209

Female (Male) : General body colour brown, tube and terminal abdominal segments darker ; antennal segments 1-6 golden yellow, 7 & 8 brown ; all femora golden yellow with brownish tinge at base, foretibiae golden yellow, mid- and hindtibiae golden yellow with brownish tinge ; forewings infumate. All setae brown & blunt.

Head broader than long, 192-220(176-180) long, 200-212 (192-200) wide across eyes, 240-264(216-220) wide across cheeks, 244-272(208-216) across base ; cheeks crenulate with 2-4 minute setae ; surface strongly reticulate. Eyes small, 72-76(64-72) long, 60-64(56-60) wide ; all ocelli 24

wide, median ocellus overhanging between base of antennae, paired ones placed above the middle of the eyes. Postoculars blunt. 60-72(64-68) long, very close to eyes. Antennal segments 3-7 pedicellate; areola of segment 2 at extreme apex; 7 & 8 forming a close unit; segments 1-8 length (width).

	I	II	III	IV
<i>Female</i> :	44-52(40) ;	60-64(36)	64-68(32-36) ;	60-68(36-40)
<i>Male</i> :	36-44(36-40) ;	52-56(32-36) ;	60-64(28-32) ;	64(32)
	V	VI	VII	VIII
<i>Female</i> :	60-64(32-36) ;	52-60(28-32) ;	40-48(24-28) ;	32-36(16)
<i>Male</i> ;	56-60(28-32) ;	60(28)	48-52(24-28) ;	32(16)

Mouthcone pointed, long, almost reaching the base of prosternum 208-232(180-192) long, 240-248(208) wide at base, 52-54(60) at apex. Maxillary stylets retractad up to eyes, meeting at middle.

Prothorax sculptured, 212-220(180-196) long, 320-380(240-280) wide at anterior margin, 416-424 (376-392) wide at posterior margin. Prothoracic chaetotaxy: anteroangulars 44-48(40); anteromarginals 40-48(40-48), midlaterals 48-56(40-52), posteroangulars 68-72(60-68), epimerals 80-88(64-72) long respectively. Pterothorax 340-420(336-344) long, 460-528 (420-460) wide across meso and 480-504 (412-440) wide across metathorax. Forewings broad 714-765(646-714) long, 80-112(80-108) wide with 9-12(8-11) double fringes; basal wing setae; 48-52(32-40); 60-64(44-52) & 64-68(52-50) long respectively. Foretarsi with a straight dagger-like tooth, 32-36 long. Mesopraesternum complete, thin at middle-

Abdomen weakly sculptured, 496-520(440-448) wide at base, 480-500(420-428) at middle, 356-464(300-332) across segment VIII, 200-368 (168-180) across segment IX. Pelta roughly triangular, apex flat. B₁-B₃ of segment IX; 120(128-140); 120-124(64-80); 124-132 (128-148) long respectively. Tube 200-208(176-180) long; anal setae 100-128 (96-104) long respectively,

Total body length : 1.9-2.1(1.7-1.8)mm.

Specimen studied ; Tripura : *Holotype* ♀ (Z. S. I. Reg. No. 125/H₁₇)

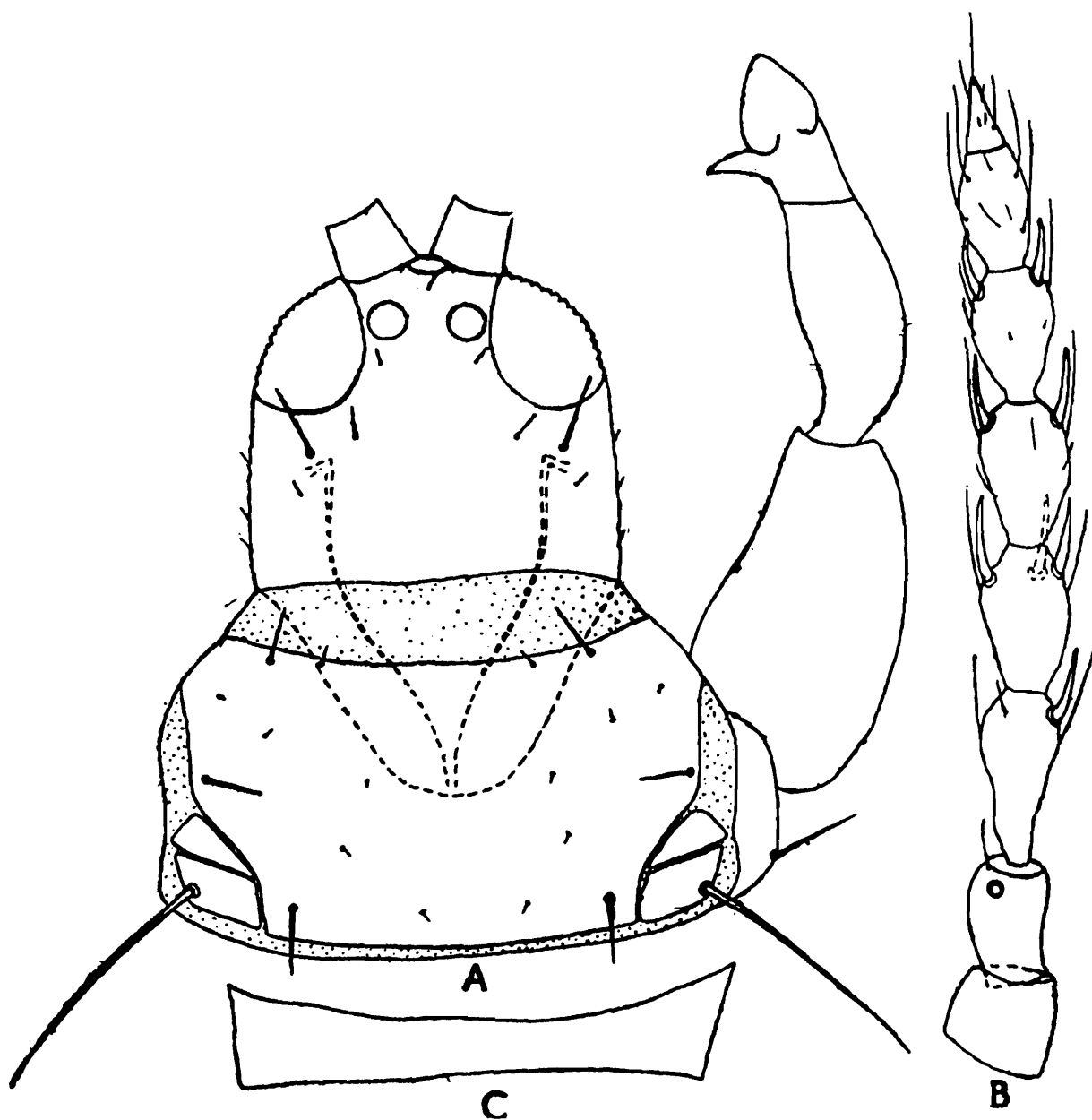
allotype ♂ (Z. S. I. Reg. No. 126/H₁₇) *paratypes* 6 ♀ ♀, 2 ♂ ♂ (Z. S. I. Reg. Nos. 127-134/H₁₇) Belonia, 28.9.1977, *coll.* Dr. N. Muraleedharan. *paratype* 1 ♀ (Z. S. I. Reg. No. 135/H₁₇) Kalibazar, ex. leaf gall, 1. 10. 1977, *coll.* Dr. N. Muraleedharan.

Distribution : Tripura.

44. *Crotonothrips nagaensis* Muraleedharan

(Text-fig. 4)

1982. *Crotonothrips nagaensis* Muraleedharan, *Rec. zool. Surv. India*, 79 : 376-378



4. *Crotonothrips nagaensis* Muraleedharan A. Head and Prothorax B. Antenna C. Mesopraesternum

Female (Macropterous) : General body colour brown, posterior ab-

dominal segments and tube darker ; antennal segments 1 & 2 brown, 3-8 golden yellow, all femora brown, foretibiae golden yellow, mid- and hindtibiae brown, all tarsi yellow; forewings infumate. All setae hyaline and pointed.

Head broader than long 184-196 long 190-200 wide across eyes, 216-220 wide across cheeks, 212-220 wide across base; cheeks smooth, without prominent cheek setae; surface strongly reticulate. Eyes, 80-88 long, 56 wide; median ocellus 20-24 wide, overhanging between base of antennae, paired ones 24-26 wide. Postoculars much shorter than eyes. 32-36 long. Antennal segments 3-7 pedicellate, 7 & 8 forming an unit; segments 1-8 length (width) : I ; 40 (40-44); II : 52 (36); III : 64-68 (36); IV ; 60-64 (40. V : 60 (36); VI : 60 (34); VII : 56 (24 28); VIII : 28-30 (14-16). Mouthcone broad, 212-220 wide at base and 100-120 at apex; maxillary stylets retracted upto the level of postoculars, wide apart.

Prothorax weakly sculptured; 180 long in median line, 244-260 wide at anterior margin and 360-368 at posterior margin. Prothoracic chaetotaxy : anteroangulars 24-32, anteromarginals vestigial, midlaterals 20-24 posteroangulars 20-32 and epimerals 148-152 long respectively; epimeral suture complete. Pterothorax 442-459 long, 510 wide across meso- and 510-527 across metathorax. Forewings broad, 935 long, 104 wide with 17-20 double fringes; basal wing setae B_1 - B_3 : 24-40; 40-60 & 52-60 long respectively. Mesopraesternum complete, narrow at middle.

Abdomen weakly sculptured, 510 wide at base, 510 at middle, 368-372 across segment VIII, 200-208 across segment IX. Pelta roughly triangular. B_1 - B_3 of segment IX : 172-200; 96-120 and 204-240 long respectively. Tube 288-296 long and anal setae 100 long. Total body length : 2.44-2.55 mm.

Specimen studied : **Manipur** : *Holotype* ♀ (Z. S. I. Reg. No. 643/ H_{17}) *paratypes* 3 ♀ ♀ (Z. S. L. Reg. Nos. 644-646/ H_{17}) Moreh, ex. leaf gall, 13.3.1979, coll. Dr. N. Muraleedharan.

Distribution : Manipur.

Genus 33. **Dexiothrips** Hartwig

1952. *Dexiothrips* Hartwig, *Ent. Mem. S. Afr.*, 2(11) : 452.

45. **Dexiothrips madrasensis** (Ananthakrishnan)

1964. *Malacothrips madrasensis* Ananthakrishnan, *Entomol. Ts. Arg.* 86 (1-2) : 109-110.

1974. *Apelaunothrips madrasensis* : Mound, *Aust. J. Zoo. Snopl. Ser.*, 27 : 18.

1979. *Dexiothrips madrasensis* : Okajima, *Syst. Ent.*, 4 : 40-41.

1982. *Apelaunothrips madrasensis* : Muraleedharan, *Rec. zool. Surv. India*, 79 : 373.

Specimen studied : **Manipur** : 1 ♀ (Z.S.I. Reg. No. 633/H₁₇) Churachandpur, 2.3.1979. *coll.* Dr. N. Muraleedharan

Distribution : **INDIA** : Tamil Nadu; Kerala; Manipur.

Elsewhere : **MALAYASIA; INDONESIA**

Genus 34. **Dolichothrips** Karny

1912. *Dolichothrips* Karny, *Zool. Anz.* 40 : 299.

46. **Dolichothrips malhavii** Ananthakrishnan

1961. *Dolichothrips malhavii* Ananthakrishnan, *Zool. Anz.* 167 (7-8) : 266-268.

1964. *Dolichothrips malhavii* : Ananthakrishnan, *Oppusc. ent. Suppl.*, 25 : 37.

1978. *Dolichothrips malhavii* : Bhatti, *Entomon*, 3 (2) : 224.

1980. *Dolichothrips malhavii* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser.*, 1 : 90 & 151.

Specimen studied : **West Bengal** : 2 ♀ ♀ (Z.S.I. Reg. Nos. 1724-625/H₁) Mekligunj. Coochbehar Dt., 16.10.1982, *coll.* C. K. Sen Gupta.

Distribution : **Bhavipur (U.P.)**

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 35. **Ecacanthothrips** Bagnall

1910. *Ecacanthothrips* Bagnall, *Ann. Soc. ent. Belg.*, 52 : 348.
 1964. *Ecacanthothrips* : Ananthakrishnan, *Oppusc. ent. Suppl.*, 25 : 37.
 1978. *Ecacanthothrips* : Palmer & Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*, 37 (5) : 156-158.

47. **Ecacanthothrips tibialis** (Ashmead)

1905. *Idolothrips tibialis* Ashmead, *Ent. News*, 16 : 20.
 1908. *Acanthothrips sanguineus* Bagnall, *Ann. Mag. nat. Hist.*, (8) 1 : 362.
 1909. *Ecacanthothrips sanguineus* : Bagnall, *Ann. Soc. ent. Belg.*, 52 : 348.
 1913. *Ecacanthothrips sanguineus* : Bagnall, *Rec. Indian. Mus.*, 8 (3) : 201.
 1928. *Ecacanthothrips sanguineus* : Ramakrishna, *Mem. Dept. Agri. India. Ent. Ser.* 10 (7) 274.
 1964. *Ecacanthothrips sanguineus* : Ananthakrishnan, *Oppusc. Ent. Suppl.*, 25 : 37-40
 1978. *Ecacanthothrips tibialis* : Palmer & Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*, 37 (5) : 161-162.
 1980. *Ecacanthothrips tibialis* : Ananthakrishnan & Sen, *Zool. surv. India. Handbk. Ser. 1* : 91 & 151.

Specimen studied : **Meghalaya** : 1 ♂ (Z. S. I. Reg. No. 413/H₁₂) Mawphlang, Shillong, ex. dead wood, 6.9.1975, coll. Dr. N. Muraleedharan, 3 ♂ ♂ (Z.S.I. Reg. Nos. 528-530/H₁₂) Songsak, 21.9.1975, coll. Dr. N. Muraleedharan. **Tripura** 2 ♀ ♀, 2 ♂ ♂ (Z.S.I. Reg. Nos. 137-140/H₁₇) Chandrapur, 7.10.1977 coll, Dr. N. Muraleedharan, 4 ♀ ♀, 2 ♂ ♂ (Z.S.I. Reg. Nos. 141-146/H₁₇) Belonia, 3.10.1977, coll. Dr. N. Muraleedharan. 3, ♀ ♀ 1 ♂ (Z.S.I. Reg. Nos. 147-150/H₁₇) Maichera, Belonia, 27.9.1977 coll. Dr. N. Muraleedharan. 2 ♀ ♀, 1 ♂ (Z.S.I. Reg. Nos. 151-153/H₁₇) Amarapur, 12.10.1977, coll. Dr. N. Muraleedharan. **Manipur** : 1 ♀ (Z S.I. Reg No. 647/H₁₇) Moreh, 12.3.1979, coll. Dr. N. Muraleedharan.

West Bengal : 3 ♀ ♀ (Z.S.I. Reg. Nos. 928-930/H₁₇) Darjeeling, 24.3.1978, *coll.* A. R. Bhowmick.

Distribution : **INDIA :** Kerala; Tamil Nadu; West Bengal.
Elsewhere : SRI LANKA; TAIWAN; CHINA; VIETNAM; PHILIPPINES; BORNEO; NEW GUINEA; JAPAN; INDONESIA; SINGAPORE; MAURITIUS; TANZANIA; AUSTRALIA

Genus 36 : Giganthothrips Zimmerman

1900. *Giganthothrips* Zimmerman, *Bull. Inst. Bot. Buitenzorg.*, 7 : 18.

48. Giganthothrips elegans Zimmerman

1900. *Gigantothrips elegans* Zimmerman, *Bull. Inst. Bot. Buitenzorg.*, 7 : 18-19.

1926. *Gigantothrips elegans* : Karny, *Mem. Dept. Agri India. Ent. Ser.*, 9 : (6) : 239.

1928. *Gigantothrips elegans* : Ramakrishna, *Mem. Dept. Agri. India. Ent. Ser.*, 10 (7) : 360.

1980. *Gigantothrips elegans* : Ananthakrishnan & Sen, *Zool. surv. India Handbk. Ser.*, 1 : 92 & 152.

Specimen studied : **Mizoram :** 4 ♀ ♀ (Z.S.I. Reg. Nos. 2093-96/H₁₇) 12 kms. W of Durlak, *ex. Ficus* sp., 28.2.1984 *coll.* Dr. S. Biswas.

Distribution : **INDIA :** Tamil Nadu; Karnataka; Orissa; Bihar;
Elsewhere : PHILIPPINES; SIAM; JAPAN; THAILAND; JAVA

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 37. Gynaikothrips Karny

1900. *Mesothrips* Zimmerman, *Bull. Inst. Bot. Buit.*, 7 : 12.

1915. *Gynaikothrips* Karny, *Zeit. F. Wiss. Ins.*, 10 : 324.

1974. *Gynaikothrips* : Ananthakrishnan & Muraleedharan, *Oriental Ins., Suppl.*, 4 : 5-7, figs. 1-7.

KEY TO THE SPECIES OF GYNAIKOTHRIPS FROM NORTH-EASTERN INDIA

1. Prothoracic setae except anteromarginals well developed, long. Postoculars two pairs, outer as long as eyes and longer than inner. Antennal segment 3 pale brown. Forewings faintly tinged yellow with 22-24 double fringes. Tube very long, 1.5 times longer than head.

...*bengalensis* Ananthakrishnan, 1973

Prothoracic setae except epimerals very much reduced. Mesopraes-

ternum well developed with a median crest....

2

2. Postocular setae one pair, shorter than eyes. All femora yellow; foretibiae with a basal brownish shade, mid- and hind tibiae brown with yellow apices; all tarsi yellow. Forewings clear with 14-15 double fringes.

affinis Muraleedharan & Sen, 1981

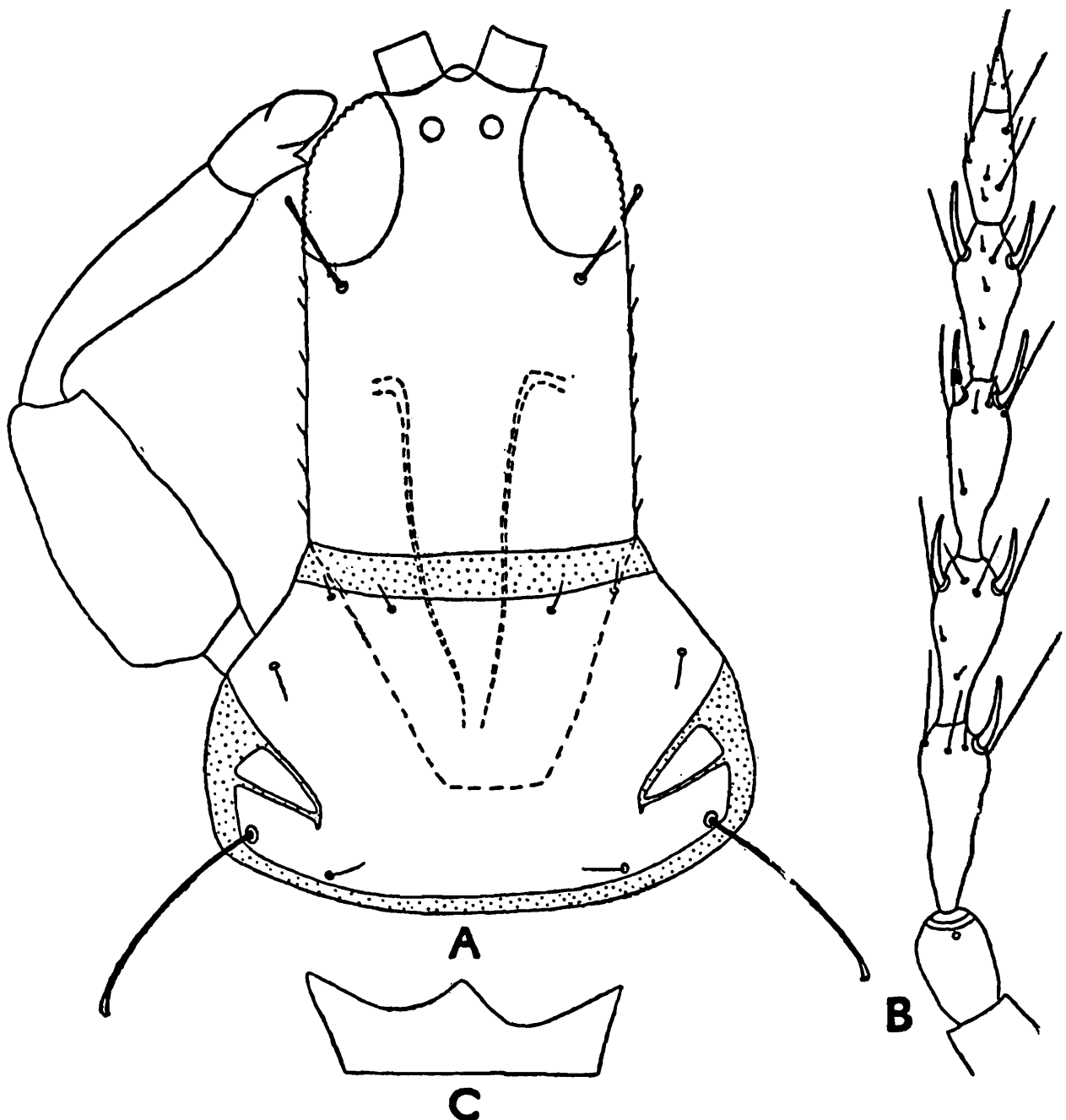
Postocular two pairs very much shorter than eyes. All legs yellow. Forewings with 18-20 double fringes.

uzeii Zimmerman, 1900

49. *Gynaikothrips affinis* Muraleedharan & Sen

(Text-fig 5)

1981. *Gynaikothrips affinis* Muraleedharan & Sen, Rec. zool. Surv. India, 79 : 209-211



5. *Gynaikothrips affinis* Muraleedharan. & Sen A. Head and Prothorax
B. Antenna C. Mesopraesternum

Female (Male) : General body colour brown; antennal segment 1 brown, 2 brown apical half yellowish, 3-8 uniformly yellow; all femora yellow, foretibiae yellow with brownish shade basally, mid-and hind tibiae brown with apices yellow, all tarsi yellow; wings clear. All body setae hyaline and blunt,

Head 280-313 (268-300) long, 216-224 (204-212) wide across eyes, 228-236 (216-220) across cheeks, 228-236 (188-204) across base; cheeks crenulate. Eyes 112-120 (104-108) long, 72-80 (64-72) wide; all ocelli 28-32 (24-28) wide. Postoculars 88-100 (56-80) long. Antennal segment 1-8 length (width).

	I	II	III	IV
<i>Female</i> :	40(44)	52-60(36);	84-104(32-36);	92-100(40)
<i>Male</i> :	28-40(40);	48-52(28-36);	88-92(28-32);	84-88(40)
	V	VI	VII	VIII
<i>Female</i> :	92-96(36) ;	84-88(32-36) ;	60-68(28) ;	40(16)
<i>Male</i> :	84-88(36) ;	80-88(32-36);	60(24-28) ;	40(16)

Mouthcone broad maxillary stylets retracted to middle of head capsule, not close at middle.

Prothorax short 184-212(176-184) long in the median line, 252 (240-248) wide at anterior margin and 348-392(360) at posterior margin. All prothoracic setae except epimerials vestigial; epimerials 132-140 (132-136) long; epemeral suture incomplete. Forewings 940-1056 (924-940) long, 96-100 (96-100) wide with 14-15 double fringes; basal wing setae B₁-B₃ : 80-84(60-64); 80-84(68-80) and 84-116(68-72) long respectively. Mesopraesternum well developed with a median crest,

Abdomen 412-462(396-412) wide at base, 346-379 (313-330) at middle, 165(132-148) across segment IX. B₁ B₃ of segment IX; 300-316 (220-252); 240-260(88) and 348-360(260) long respectively. Tube 346-

396(313-330) long, anal setae 260-320(198-268) long. Total body length 2.57-2.92 (2.31-2.60) mm.

Specimen studied ; Tripura ; *Holotype* ♀ (Z. S. I. Reg, No. 163/H₁₇), *allotype* ♂ (Z.S.I. Reg. No. 164/H₁₇), *paratypes* 3 ♀ ♀ 1 ♂ (Z. S, I. Reg. No. 164-168/H₁₇) Sarashima, Belonia, ex. leaf folds of *Ficus*, 29.9.1977, coll. Dr, N. Muraleedharan.

Distribution : Tripura.

50. *Gynaikothrips bengalensis* Ananthakrishnan

1973. *Gynaikothrips bengalensis* Ananthakrishnan, *Oriental Ins.*, 7 (4) : 543-544.

1980. *Gynaikothrips bengalensis* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser. 1* : 93, 153.

1981. *Gynaikothrips bengalensis* i Muraleedharan & Sen, *Rec. zool. Surv. India*, 79 : 211.

1984. *Gynaikothrips bengalensis* : zur Strassen & Harten, *Senckenbergiana biol.*, 65 (1-2) : 89.

General body colour black, antennal segment 1-2 brown, 3 pale brown, 4-8 yellow; wing light yellow. All setae blunt.

Head elongate about 1.6 times as long as wide. Postoculars 2 pairs the outer pair long about as long as eyes and the inner pair about half as long as eyes. Mouthcone broadly rounded; maxillary stylets mesad, 'V' shaped,

Prothorax shorter than head about 2/3rd of head length. All prothoracic setae except anteromarginals very well developed; anteroangulars & midlaterals and also posteroangulars & epimerals almost equal. Forewings with 17-24 double fringes and basal wing setae B₁-B₃ well developed.

Tube very long about 1.5 times longer than head.

Speciman studied : Tripura : 5 ♀ ♀ , 1 ♂ (Z.S.I. Reg. Nos. 169-174/H₁₇) Sarashima, Belonia, 29 9.1977, coll. Dr. N. Muraleedharan. 3 ♀ ♀

(Z.S.I. Reg. Nos. 175-177/H₁₇) Hrishyamukh, *ex.* leaf gall of *Ficus ben-jamina*, *coll.* Dr. N. Muraleedharan.

Distribution ; INDIA : Calcutta (West Bengal)

Elsewhere : BANGLADESH

51, *Gynaikothrips uzeli* Zimmerman

1900, *Gynaikothrips uzeli* Zimmerman, *Bull. Inst. Bot. Buit.*, 7 : 12.

1926. *Gynaikothrips uzeli* : Karny, *Mem. Dept. Agri. India. Ent. Ser.*, 9 (6) : 234.

1928. *Gynaikothrips uzeli* : Ramakrishna, *Mem. Dept. Agri. India, Ent. Ser.*, 10 (7) : 304.

1929. *Gynaikothrips uzeli* : Moulton, *Rec. Indian Mus.*, 31 : 100.

1974. *Gynaikothrips uzeli* : Ananthakrishnan & Muraleedharan, *Oriental Ins. Suppl.*, 4 : 7, fig. 2

Specimen studied : Assam : 8 ♀ ♀ (Z.S.I. Reg. Nos. 360-67/H₁₂)
Loharband, Cachar Dt., *ex.* leaf galls of wild
plant, 3.10.1975, *coll.* Dr. N. Muraleedharan.

Distribution : INDIA : TamilNadu; Orrissa; West Bengal. Elsewhere :
JAVA; ALGIERS; MADEIRA; CANARY
ISLE'S; CUBA; PORTORICO & FLORIDA

Remarks : This species is recorded for the first time from
North-Eastern India.

Genus 38. *Haplothrips* Amyot & Serville

1843. *Haplothrips* Amyot & Serville, *Hist. nat. Ins. Hemipteres* : 640,

1976. *Haplothrips* : Pitkin, *Bull. Br. Mus. nat. Hist. (Ent.)*, 34 (4) : 244-245.

KEY TO THE SPECIES OF *HAPLOTHRIPS* FROM NORTH-EASTERN INDIA

1. Antennal segment 3 with 0 + 1 sense cones. Antennal segment 3

brownish yellow, 4, 5, & 6 successively darker

... *ganglbaueri* Schmutz, 1913

Antennal segment 3 with 1+1 senes conse. Antennal segments
3—6 yellow

.... *tenuipennis* Bagnall, 1918

52. *Haplothrips ganglbaueri* Schmutz

1913. *Haplothrips ganglbaueri* Schmutz, *Sitz. Akad. Wiss. Wien.*, **122** : 1034.
1928. *Zygothrips andhra* Ramakrishna, *Mem. Dept. Agri. India. Ent. Ser.*, **10** :
290-291.
1933. *Haplothrips priesnerianus* Bagnall, *Ann. Mag. nat. Hist.*, (10) **6** : 327-328
1976. *Haplothrips ganglbaueri* : Pitkin, *Bull. Br. Mus. nat. Hist. (Ent.)*, **34** (4) :
249-250.
1980. *Haplothrips ganglbaueri* : Ananthakrishnan & Sen, *Zool. Surv. India, Handbk.*
Ser. 1 : 94 & 153.
1984. *Haplothrips ganglbaueri* : zur Strassen & Harten, *Senckenbergiana biol.*, **65**
(1-2) : 89-90,

Material studied : **Tripura** : 12 ♀ ♀ (Z.S.I. Reg. Nos. 303-305/H_{T2}),
345-359/H_{T2}) Udaipur, 7.11.1974, coll. Dr. M. S.
Shishodia, 5 ♀ ♀ (Z.S.I. Reg. Nos. 306-308/H_{T2},
343-344/H_{T2}) Ambassa, 18.11.1974. coll. Dr. M.
S. Shishodia. 14 ♀ ♀ (Z.S.I. Reg. Nos. 246-253/
H_{T2}, 309-311/H_{T2}) Teliamura, 14.11.1974, coll.
Dr. M.S. Shishodia. **Meghalaya** : 1 ♀ (Z.S.I. Reg.
No. 1900/H₁₇) Shillong, 19.9.1967, coll. Dr. R. K.
Varshney. **Sikkim** : 1 ♂ (Z.S.I. Reg. No. 913/H₁₇)
Tadong, 25.8.1977, coll. Dr. T. D. Soota. **West
Bengal** ; 3 ♀ ♀ (Z.S.I. Reg. Nos. 335-337/H_{T7})
Hasimara, Jalpaiguri Dt., 2.12.1974, coll. Dr. T.
Sen Gupta, 1 ♀ (Z.S.I. Reg. No. 1328/H₁₇) Dar-
jeeling, 23-5-1974, coll. Dr. J.K. Jonathan, 2 ♀ ♀

(Z.S.I. Reg. Nos. 1390-91/H₁₇) Darjeeling, 14.8.1979, coll. S. S. Saha, 7 ♀ ♀, 2 ♂ ♂ (Z. S. I. Reg. Nos. 1515-18H/₁₇, 1553-54/H₁₇, 1562/H₁₇, 1566-67/H₁₇) Coochbehar, 7.10.1981 30.12.1981 coll. C, K. Sen Gupta.

Distribution : INDIA : Widely distributed.
Elsewhere : BANGLADESH; SRI LANKA; PAKISTAN; JAVA; SOLOMON IS., PHILIPPINES.

Remarks : This species is recorded for the first time from North-Eastern India.

53. *Haplothrips tenuipennis* Bagnall

1918. *Haplothrips tenuipennis* Bagnall, *Ann. Mag. nat. Hist.* (9) 1 ; 210.
1968. *Haplothrips tenuipennis* : Mound, *Bull. Br. Mus. nat. Hist. (Ent.), Suppl.*, 11 : 118.
1976. *Haplothrips tenuipennis* : Pitkin, *Bull. Br. Mus. nat. Hist. (Ent.)*, 34 (4) : 254-255
1980. *Haplothrips tenuipennis* : Ananthakrishnan & Sen, *Zool. surv. India. Handbk. Ser. 1* : 95 & 153.
1984. *Haplothrips tenuipennis* : zur Strassen & Harten, *Senckenbergiana biol.*, 65 (1-2) : 90.

Specimen studied : West Bengal ; 3 ♀ ♀ (Z. S. I.) Reg. Nos. 458-460/ H₁₂) Rongpo, Darjeeling Dt., 17.4.1976, coll, A. R. Bhowmick. 1 ♂ (Z. S. I. Reg. No. 931/H₁₇) Darjeeling, 15.7.1279; coll. S S. Saha

Distribution : INDIA : West Bengal; Assam; M. P.; Tamil Nadu; Maharashtra; Rajasthan.
Elsewhere : BANGLADESH; JAVA

Genus 39 : **Hoplandrothrips Hood**

1912. *Hoplandrothrips* Hood, *Proc. ent. Soc. Wash*, **14** : 145.
1949. *Hoplandrothrips* : Priesner, *Bull. Soc. Fouad, Ier. Ent.*, **33** : 69, 70, 81, 89, 104 & 133.
1973. *Hoplandrothrips* : Ananthakrishnan, *Occl. Publ.*, **2**, *Ent. Res, Unit. Loyola College, Madras* : 32,

**KEY TO THE SPECIES OF HOPLANDROTHRIPS FROM
NORTH-EASTERN INDIA**

1. Body bicolourous; abdominal segments II-VI and all legs yellow; head thorax and abdominal segments VII-X brown. Postoculars and prothoracic setae well developed. Forewings with only 2-5 double fringes.

... *graminis* Ananthakrishnan, 1964

Body unicolourous, brown ... 2

2. Foretibiae pale brown, mid-and hindtibiae brown. Forewings clear with a pale brown patch in the middle basal wing setae B_8 very long and pointed, much longer than B_1 & B_3 and with 9-11 double fringes

kudo Muraleedharan, 1982

All tibiae yellow. Forewings with 8-10 double fringes

flavipes Bagnall, 1923

54. Hoplandrothrips flavipes Bagnall

- 1923, *Hoplandrothrips flavipes* Bagnall, *Ann. Mug. nat. Hist.* (9) **12** : 628-629.
1968. *Hoplandrothrips flavipes* : Mound, *Bull. Br. Mus. Nat. Hist, (Ent.) Suppl.*, **11** : 120,
1939. *Phlaeothrips indisus* : Ramanrishna & Margabandhu, *Indian J. Ent.*, **1** : 43-44.
1964. *Hoplandrothrips indicus* : Ananthakrishnan, *Entomol. Ts. Arg.*, **85** (1-2) : 101-104.
1973. *Hoplandrothrips indicus* : Ananthakrishnan, *Occl. Publ. 2 Ent. Res, Unit, Loyola College, Madras* : 33

1980. *Hoplandrothrips flavipes* : Ananthkrishnan & Sen, *Zool. surv. India. Handbk. Ser. 1* : 95 & 154.
1981. *Hoplandrothrips flavipes* : Muraleedharan & Sen, *Rec. zool. Surv. India*, **79** : 211-212.
1982. *Hoplandrothrips flavipes* : Muraleedharan, *Rec. zool. surv. India*, **79** : 378.

Specimen studied : **Meghalaya** : 2 ♀ ♀ Z. S. I. Reg. Nos. 575-576/H₁₂) Shillong, dry leaves, 12.9.1975, coll. Dr N. Muraleedharan. 2 ♀ ♀ (Z. S. I. Reg. Nos. 577-578/H₁₂) Songsak, Garo Hills, ex. dry leaves, 19.9.1975, coll. Dr. N. Muraleedharan. **Tripura** : 5 ♀ ♀ (Z.S.I. Reg. Nos. 111-112/H₁₇; 114-116/H₁₇) Amarpur, 12.10.1977, coll. Dr. N. Muraleedharan, 1 ♂ (Z.S I Reg. No. 113/H₁₇) Chandrapur, 8.10.1977, coll. Dr. N. Muraleedharan, 1 ♀ (Z.S.I. Reg. No. 1329/H₁₇) Gobindadila, 14.10.1977, coll. Dr. N. Muraleedharan. **Manipur** : 1 ♀ (Z.S.I. Reg. No. 650 H₁₇) Churachandpur, 23.3.1979, coll. Dr N. Muraleedharan.

Distribution : INDIA : Kerala; Karnataka Tamil Nadu; Tripura; Manipur.

Elsewhere : KENYA

55. *Hoplandrothrips graminis* Ananthkrishnan

1964. *Hoplandrothrips graminis* Ananthkrishnan, *Entomol. Ts. Agr.*, **85** (1-2) : 105-106.
1956. *Hoplandrothrips priesneri* Ananthkrishnan, *Proc. R. ent. Soc Lond. (B)*, **25** : 75-76.
1959. *Hoplandrothrips indicus* Ananthkrishnan, *Zool. Anz* **162** (9-10) : 320-322.
1965. *Hoplandrothrips graminis* : Ananthkrishnan, *Bull. Ent.*, **6** : 59.
1973. *Hoplandrothrips graminis* : Ananthkrishnan, *Occl. Publ.*, **2**, *Ent. Res. Unit, Loyola College, Madras* : 33.
1980. *Hoplandrothrips graminis* : Ananthkrishnan & Sen, *Zool. surv. India. Handbk. Ser. 1* : 95 & 154.

Specimen studied : **West Bengal** : 3 ♀ ♀ , 1 ♂ (Z S.I, Reg. Nos, 932-935/H₁₇) Darjeeling, 24. 3. 1978, coll. A. R, Bhowmick

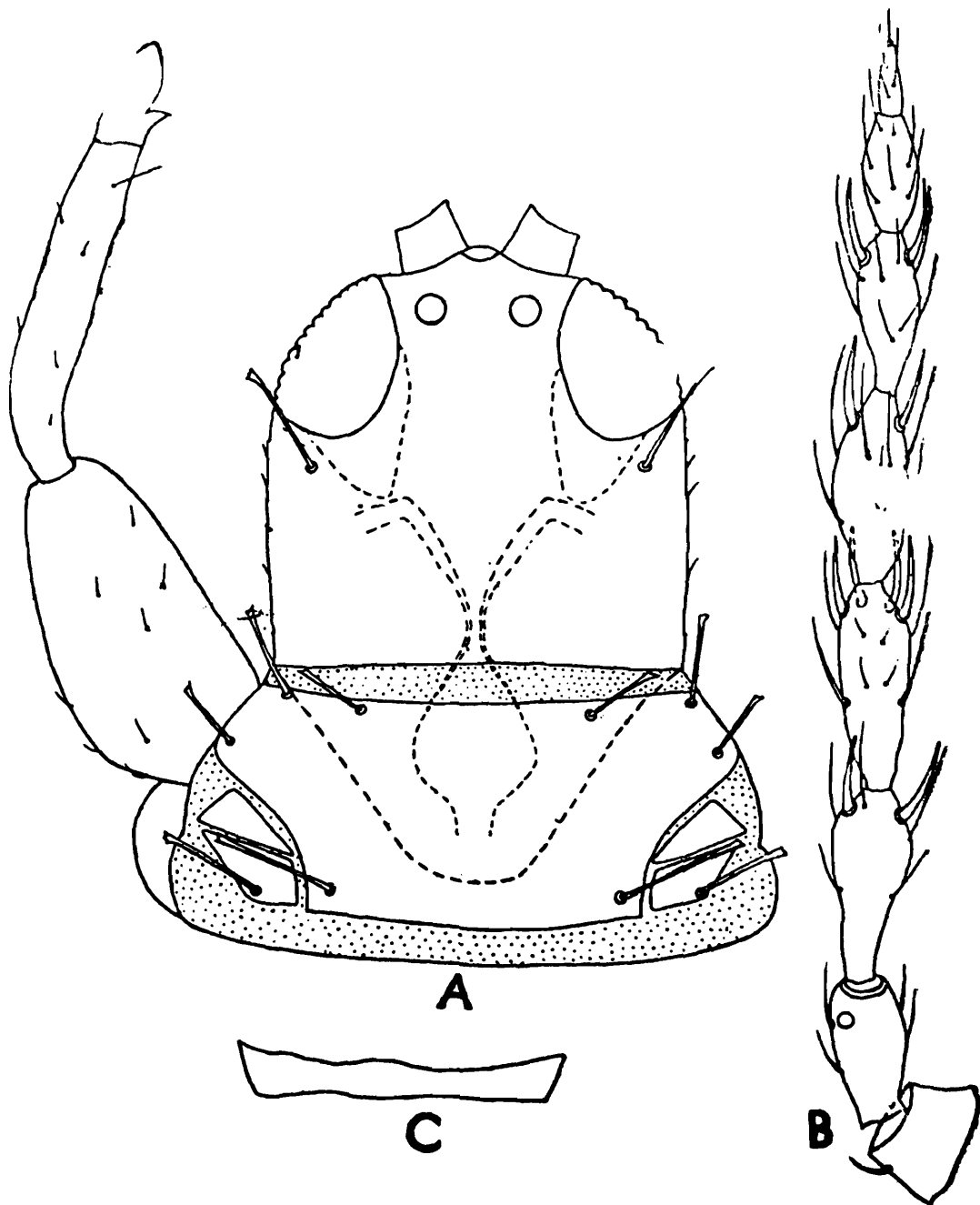
Distribution : Tamil Nadu

Remarks : This species is recorded for the first time from North-Eastern India

56. *Hoplandrothrips kudo* Muraleedharan

(Text-fig. 6)

1982. *Hoplandrothrips kudo* Muraleedharan, Rec. zool. Surv. India, 79 : 378-380.



6. *Hoplandrothrips kudo* Muraleedharan A. Head and Prothorax.
B. Antenna. C. Mesopraesternum.

Female (Male) : Body brown, tube little darker; antennal segment 1, 2, 7 & 8 brown, base and tip of segment 3 pale brown and middle portion yellow, proximal $\frac{1}{3}$ of segments 4, 5 & 6 pale yellow and rest pale brown; all femora yellow, foretibiae pale brown, mid- and hind tibiae brown, all tarsi pale yellow; forewings clear with a pale brown patch at middle. All setae hyaline and dilated at tip,

Head 200-208 (180) long, 176-200 (164) wide across eyes, 180-200 (172) across cheeks and 180-200 (160) across base; cheeks crenulate with 2-3 small setae. Eyes ventrally prolonged, 80 (72) long, 55-68 (48) wide postoculars 64-72(60) long; all ocelli 16-20 wide, median ocellus overhanging between base of antennae and paired ones placed above middle of eyes. Antennal segments 1-8 length (width).

	I	II	III	IV
<i>Female</i> :	32-36(36);	48-52(28);	68-72(28-32);	72(28)
<i>Male</i> :	32(28);	40(24)	68(28)	68(28)
	V	VI	VII	VIII
<i>Female</i> :	64-68(24);	52(20-22);	44-48(16-20);	24-28(8)
<i>Male</i> :	60(24);	48(20);	40(16);	24(8)

Mouthcone short, broadly rounded, 112-116(96) long, 176-200(152) wide at base and 60(48) at apex; maxillary stylets occluded, close at middle.

Prothorax 120-124(104) long, 196-220(172) wide at anterior margin and 276-296(224) at posterior margin. Prothoracic chaetotaxy : anteroangulars 40-44 (28) anteromarginals 28-40, midlaterals 44 (24), posteroangulars 40-60(44) and epimerals 64(60) long respectively; epimeral suture complete. Pterothorax 306-323(300) long, 323-357(276) wide across meso- and 357(276) across metathorax. Forewings 714(578) long, 52(44) wide with 9-11(9) double fringes; basal wing setae B_1 - B_2 dilated at tip and B_3 long and pointed, B_1 - B_3 : 40; 48-50 and 88-92 long respectively. Mesopraesternum complete with a median crest.

Abdomen 374-391(288) wide at base, 357-374(240) at middle 200-240 (144) across segment VIII and 112-140(81) across segment IX. B_1 - B_3 of segment IX : 104-108(72); 80-100(32) and 108-112(62) long respectively. Tube 140-152(132) and anal setae 112-120(68) long.

Total body length : 1.81-1.90 (1.51) mm.

Specimen studied : **Manipur** : *Holotype* ♀ (Z.S.I. Reg.No. 651/H_{T7})
allotype ♂ (Z.S.I. Reg. No. 652/H_{T7}) *paratypes* 4
 ♀ ♀ (Z. S. I. Reg. Nos. 653-656/H_{T7}) Chura-
 chandpur, Saikot, 23.3.1979, coll. Dr. N. Mu-
 raleedharan.

Distribution : Manipur

Genus 40. **Karnyothrips** Watson

1922. *Karnyia* Watson, *Fla. Ent.* 6 (1) : 6.

1924. *Karnyothrips* Watson, *Univ. Fla. Agri. Exp. Stn. Bull.*, 168 : 23

1976. *Karnyothrips* : Pitkin, *Bull. Br. Mus. Nat. Hist. (Ent.)*, 34 (4) : 261.

KEY TO THE SPECIES OF *KARNYOTHRIPS* FROM NORTH-EASTERN INDIA

1. Body brown. Prothoracic anteromarginals vestigial. Foretarsi unarmed. Forewings with 3-4 double fringes. B_I of abdominal tergite IX knobbed, B₂-B₃ pointed.

....*fungulus* Ananthakrishnan, 1973.

Body bicolourous

2

2. Antennal segment 3 and 4 with 1 + 1 and 1 + 1^{+I} sensecones respectively. B_I of abdominal tergite IX pointed or blunt.

... *melaleucus* (Bagnall, 1911)

Antennal segment 3 and 4 with 0 + 1 and 1 + 2^{+I} sensecones respectively. B_I of abdominal tergite IX expanded apically.

.. *mucidus* (Ananthakrishnan & Jagadish, 1971)

57. **Karnyothrips fungulus** Ananthakrishnan

1973. *Karnyothrips fungulus* Ananthakrishnan, *Occl. Publ.* 2, *Ent. Res. Unit, Loyola College, Madras* : 38

1980. *Karnyothrips fungulus* : Ananthakrishnan & Sen, *Zool. Surv. India. Handbk. Ser.*, 1 : 97 & 155.

Specimen studied : **Tripura** : 1 ♀ (Z.S.I. Reg. No. 1774/H_{T7}) Chandrapur, 7.10.1977, coll, Dr. N. Muraleedharan.

Distribution : Tamil Nadu; Andhra Pradesh; Kerala; U. P.

Remarks : This species is recorded for the first time from North-Eastern India.

58. Karnyothrips melaleucus (Bagnall)

1911. *Hindsiana melaleuca* Bagnall, *Entomologist's mon. Mag.*, **47** : 61-62.
 1927. *Karnyothrips melaleuca* : Hood, *Pan-Pacif. Ent.*, **3** : 176.
 1968. *Karnyothrips melaleucus* : Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*, *Suppl.*,
11 : 128.
 1976. *Karnyothrips melaleucus* : Pitkin, *Bull. Br. Mus. nat. Hist. (Ent.)*, **34** (4) :
 263.
 1980. *Karnyothrips melaleucus* : Ananthakrishnan & Sen, *Zool. surv. India. Handbk.*
Ser. 1 : 97 & 155.

Specimen studied : West Bengal : 1 ♀ (Z.S.I. Reg. No. 1563/H₁₇)
 Mekligunj, Coochbehar Dt., 30.12.1981, coll. C.
 K. Sen Gupta.

Distribution : INDIA : Kerala; Tamil Nadu.
Elsewhere : DENMARK

Remarks : This species is recorded for the first time from
 North-Eastern India.

59. Karnyothrips mucidus (Ananthakrishnan & Jagadish)

1971. *Xylaplothrips mucidus* Ananthakrishnan & Jagadish, *Zool. Anz.* **186** : 260-261
 1976. *Karnyothrips mucidus* : Pitkin, *Bull. Bra. Mus nat. Hist. (Ent.)*, **34** (4) : 264
 1980. *Karnyothrips mucidus* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk.*
Ser. 1 : 97 & 155.

Specimen studied : West Bengal : 2 ♀ ♀ (Z.S.I. Reg Nos. 989/H_{T7};
 1330/H₁₇) Coochbehar, 10.10.1980, 15.10.1980;
 coll. C. K. Sen Gupta,

Distribution : Kerala

Remarks : This species is recorded for the first time from
 North-Eastern India.

Genus 41. Leeuwenia Karny

- 1912 *Leeuwenia* Karny, *Marcellia*, **11** : 161.

60. Leeuwenia karnyiana Priesner

1925. *Leeuwenia karnyi* Ramakrishna, *J. Bombay nat. Hist. Soc.*, **30** : 791-792.
 1929. *Leeuwenia karnyiana* Priesner, *Treubia*, **10** (4) : 448.
 1970. *Leeuwenia ramakrishnae* : Ananthakrishnan, *Oriental. Ins.*, **4** : 51-53
 1975. *Leeuwenia karnyiana* : zur Strassen, *Senckenbergiana biol.*, **56** (1-3) : 82

Specimen studied : Assam : 1 ♀, 1 ♂ (Z.S.I. Reg. Nos. 1727/H_{T7};
 1749/H₁₇) Goshgaonhat, Goalpara Dt., 18 10

1982, coll. C. K. Sen Gupta. West Bengal :
1 ♀ (Z.S.I. Reg. Nos. 1728/H₁₇) Coochbehar,
20.10.1982, coll. C. K. Sen Gupta.

Distribution : Tamil Nadu; Karnataka.

Remarks : This species is recorded for the first time from
North-Eastern India.

Genus 42, *Liophaeothrips* Priesner

1919. *Liophaeothrips* Priesner, *Sitz. Akad. Wiss. Wien.* 128 : 138.

61. *Liophaeothrips amoenus* Ananthakrishnan

1966. *Liophaeothrips amoenus* Ananthakrishnan, *Bull. Ent.* 7 : 7-9.

1974. *Liophaeothrips amoenns* : Ananthakrishnan & Muraleedharan, *Oriental. Ins. Suppl.*, 4 : 8, fig. 10.

Specimen studied : Assam, 1 ♀ (Z.S.I. Reg. No. 384/H₁₂) Silchar,
Cachar Dt., ex. plant gall, 1.10.1975, coll. Dr.
N, Muraleedharan.

Distribution ; Maharashtra

Remarks : This species is recorded for the first time from
North-Eastern India.

Genus 43. *Liothrips* Uzel

1895. *Liothrips* Uzel, *Mon. Ord. Thys.* : 261.

KEY TO THE SPECIES OF *LIOTHRIPS* FROM NORTH-EASTERN INDIA

- | | |
|--|---|
| 1. Head more elongate, 1.5 times as long as broad | 2 |
| Head shorter | 3 |
| 2. Postoculars longer than eyes. Forewings clouded with 9-12 double fringes. Antennal segment 3 five times as long as wide, Mesopraesternum constricted at middle. Tube as long as head. | |
| <i>himalayanus</i> Ananthakrishnan & Jagadish, 1970 | |
| Postoculars shorter than eyes. Forewings transparent with a median brown streak and with 13-18 double fringes. Mesopraesternum incomplete, represented as two lateral sclerites. Tube shorter than head. | |
| <i>aberrans</i> Muraleedharan & Sen, 1978 | |
| 3. Mesopraesternum complete | 4 |

Mesopraesternum incomplete 5

4. Postoculars short, much shorter than eyes. All body setae very dark and stout. Antennal segment 3 yellow; 4 & 5 proximal half yellow, distal half grey; 6 brown except base yellow. All tibiae brown except apices of foretibiae yellow. Forewings shaded grey with median transverse longitudinal bars and with 11-20 double fringes.

... *morulus* Ananthakrishnan & Jagadish, 1970

Postoculars long, subequal to eyes. All setae light brown, blunt to little dilated at apex and normal, not very stout. Antennal segment 3-6 yellow; Foretibiae proximal half brown, distal half yellow; mid and hindtibiae dark brown. extreme apex yellow. Forewings transparent with 12 double fringes.

... *bourneri* Muraleedharan & Sen, 1981

5. Setae on abdominal segment IX longer than tube. Head 1.1 times as long as wide. Postoculars moderately long. Mouthcone pointed; maxillary stylets retracted below the postoculars and close at middle. Forewings clear with 10-11 double fringes.

... *infrequens* Muraleedharan & Sen, 1981.

Setae on abdominal segment IX shorter than tube ... 6

6. Anteromarginals vestigial and all other body setae very stout. Postoculars very long, much longer than eyes; also epimerals much longer than posteroangulars. Head very little longer than wide. Forewings infumate with 10-12 double fringes.

ananthakrishnani Sen, 1976

Anteromarginals well developed; body setae normal, not very stout. Postoculars about as long as eyes. 7

7. Antennal segment 1 & 2 brown, rest yellow. Maxillary stylets short, retracted to $\frac{1}{3}$ of head and wide apart. Forewings with 20 double fringes. Body setae blunt.

.. *clarus* Muraleedharan & Sen, 1981

Antennal segments 1 & 2 brown, 3 & 4 yellow, 5 & 6 proximal half yellow, distal half light brown, 7 & 8 light brown. Maxillary stylets occluded, close at middle. Forewings with 12-18 double fringes. Body setae pointed.

... *spectabilis* Ananthakrishnan, 1972

62. *Liothrips aberrans* Muraleedharan & Sen

1978. *Liothrips aberrans* : Muraleedharan & Sen, *Bull. zool. Surv. India*, 1 (3) : 259-261.

Female (Male) : General body colour brown; all femora, mid- and hindtibiae brown, foretibiae and all tarsi yellow; antennal segments 1 & 2 brown, 3 yellow, 4-6 yellow with distal half brownish, 7 & 8 pale brown; wings transparent with a median brown streak. All setae dark brown, very well developed and more or less pointed.

Head long, 380-392(348-360) long, 268-280(252) wide across eyes, 272-292(252) across cheeks and 240-264(212-216) across base; cheeks finely crenulate with 1-2 setae. Eyes large 120(104) long, 80-96(80) wide; all ocelli 28(24-28) wide. Postoculars 104-112 (80-88) long. Antennal segments 1-8 length (width).

	I	II	III	IV
<i>Female</i> :	40-48(56-60);	72-84(40);	160(36-40);	156-160(44-48)
<i>Male</i> :	40(48-55);	60-80(36);	135-148(32);	136-140(40-44)
	V	VI	VII	VIII
<i>Female</i> :	128(44);	100(44);	80-84(32-36);	44-52(16-20);
<i>Male</i> :	100-112(40);	80-100(36);	72-76(28-32);	40(16-20)

Mouthcone pointed, 200-220(180-200) long, 232-256(212-228) wide at base and 80-120(92-100) at apex; maxillary stylets occluded, close at middle.

Prothorax shorter than head, 200-252(212-220) long, 256-276(220-260) wide at anterior margin and 408-420(340-400) at posterior margin. Prothoracic chaetotaxy : anteroangulars 92-96(80-88), anteromarginals 84-100(80-88), midlaterals 116-180(120-140), posteroangulars 200-208 (168-172), and epimerals 180-212(164-176) long respectively; epimeral suture complete. Pterothorax 612-697(544-595) long, 629-680(527-595) wide across meso- and 595-646(510-561) across metathorax. Forewings 1.19-1.39 mm. (1.08 mm.) long, 140(112-120) wide at middle with 13-18 (14) double fringes; basal wing setae B_1 - B_8 : 148-160(120); 160-188(160) and 156-180(132) long respectively. Mesopraesternum incomplete, restricted to two triangular sclerites.

Abdomen 595-680(476-561) wide at base, 578-629(425-527) at middle, 317-425(289-340) across segment VIII and 248-260(160-196)

across segment IX. Pelta roughly triangular. B_1 - B_3 of segment IX; 190-200(148-200); 180-200(80-172) and 180-200(260) long respectively. Tube 340(320-360) long; anal setae 220-240(190-200) long. Total body length : 3.52-3.57 (3.11-3.33) mm.

Specimen studied : **West Bengal** : *Holotype* ♀ (Z.S.I.Reg. No. 1/ H_{17}) *allotype* ♂ (Z. S. I. Reg. No. 2/ H_{17}) *paratypes* 2 ♀ ♀ (Z. S. I. Reg. No. 3-4/ H_{17}) Ghoombhanjan, Darjeeling Dt., 29.4.1976, *coll.* A. R. Bhaumik. *Paratypes* 1 ♀, 1 ♂ (Z.S.I. Reg. Nos. 5-6/ H_{17}) Dow Hills; Darjeeling Dt., 30.4.1976, *coll.* A. R. Bhaumik. **Sikkim** : *Paratype* 1 ♀ (Z.S.I. Reg. No. 7/ H_{17}) Phensong, near Gangtok, 25.4.1976, *coll.* A. R. Bhaumik.

Distribution : Darjeeling Dt. (West Bengal); Sikkim.

63. *Liothrips ananthakrishnani* Sen

1976. *Liothrips ananthakrishnani* Sen, *Oriental Ins.*, 10 (3) : 373-375.

Female (Male) : General body colour uniformly dark brown; all femora, mid-and hindtibiae dark brown in the proximal third and distally yellow, foretibiae yellow with a brownish shade along outer margin, all tarsi yellow; antennal segments, 1, 2, 7 & 8 brown, 3 yellow, 4-6 yellow with a brownish shade along outer margin and apex; wings infumate with a brown longitudinal streak along middle. All setae dark brown. very stout and blunt.

Head a little longer than broad, 248-256(240-256) long, 220(224-232) wide across eyes, 236-240(224) across cheeks and 184-200(176-184) across basé; cheeks slightly convex and crenulate with 5-7 very minute setae; surface strongly reticulate, ocellar region hexagonally reticulate. Eyes 88(84-92) long, 64-72(60-64) wide. Postoculars 116-128(116-128) long. Antennal segments 1-8 length (width) :

	I	II	III	IV
<i>Female</i> :	40(48-52);	68(36);	108-120(32);	100-108(36)
<i>Male</i> ;	40-44(44-48);	60-68(32);	112-120(32-36);	112-116(36-40)

	V	VI	VII	VIII
<i>Female</i> :	80-88(36);	68-80(36);	60(28);	32-36(16)
<i>Male</i> ;	92(32-36);	68-72(32-36);	60(24-28);	36(20)

Mouthcone moderately long, reaching almost base of prosternum, 148(140) long, 168(160) wide at base and 100(100) at apex; maxillary stylets retracted ocudad, approximating at middle.

Prothorax 200-212(192-200) long, 200-220(184-190) wide at anterior margin and 328-344(320-332) at posterior margin. Prothoracic chaetotaxy : anteroangulars 48-52(48-52), anteromarginals vestigial 16-20 (16), midlaterals 112-128(112-120), posteroangulars 96-120(96-104) and epimerals 152-168(144-152) long respectively; epimeral suture complete. Pterothorax 460-480(446-460) long, 452-500(412-428) wide across meso- and 448-480(412-428) across metathorax. Forewings almost uniformly wide, 1.04 (1.02) mm. long with 10-12(10-11) double fringes; basal wing setae B_1-B_3 : 96; 120(100) and 120(100) long respectively. Mesopraesternum incomplete restricted to two lateral sclerites.

Abdomen 480(456-480) wide at base; 500(420-460) at middle 380 (312-320) across segment VIII and 252(160) across segment IX, Pelta roughly triangular, B_1-B_3 of segment IX : 140-156(156-168); 168-176 (68-72) and 180-200(240-256) long respectively. Tube 260(276-290) long and anal setae 240(240) long.

Total body length : 2.5-2.6 (2.3-2.5) mm.

Specimen studied : **Arunachal Pradesh** : *Holotype* ♀ (Z. S. I. Reg. No. 540/ H_{T_2}) *allotype* ♂ (Z. S. I. Reg. Nos. 541/ H_{1_2}) *paratypes* 1 ♀, 1 ♂ (Z. S. I. Reg. Nos. 542-543/ H_{T_2}) Tawang, ca. 3200 M., 14.12.1965, coll. Dr. S. K. Bhattacharyya.

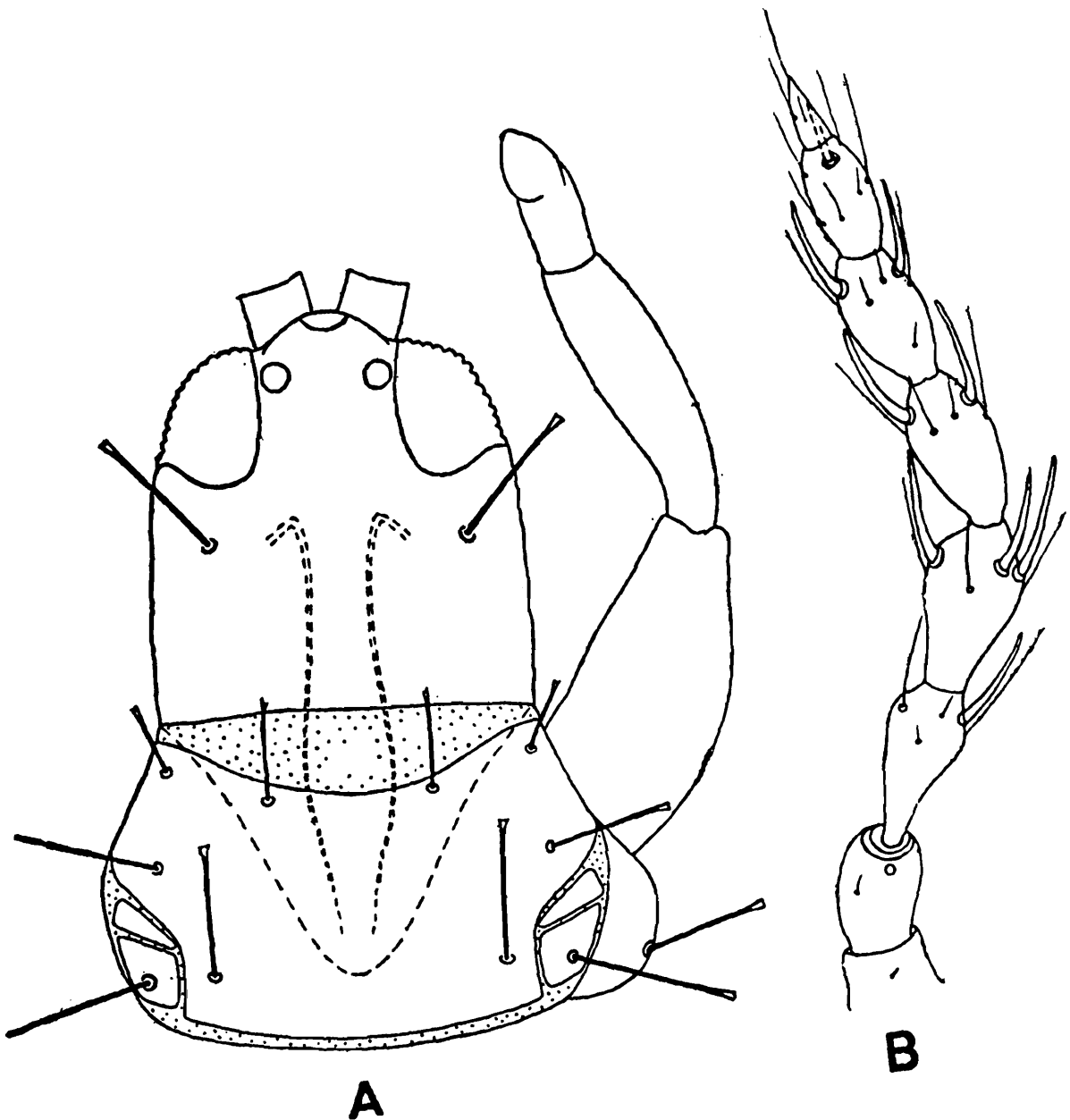
Distribution ; Arunachal Pradesh

64. *Liothrips bournieri* Muraleedharan & Sen

{ Text fig. 7 }

1981. *Liothrips loranthi* Muraleedharan & Sen, *Rec. zool. Surv. India*, 79 : 215-217.

1984. *Liothrips bournieri* : Sen. *Bull. zool. Surv. India*. 6 (1-3) : 305



Liothrips bournieri Muraleedharan & Sen A. Head and Prothorax B. Antenna

Female (Malc) : General body colour blackish brown; antennal segment 1 concolourous with head, 2 dark brown at base and margin 3-6 yellow, 7 & 8 light brown; all femora, mid-and hindtibiae dark brown extreme apex yellow, foretibiae with proximal half brown, yellow beyond, all tarsi yellow; forewings transparent, extreme base faint grey. All setae light brown, blunt to little dilated at apex.

Head very little longer than broad, 236-240(212) long, 210-214(190) wide across eyes, 228-236(208) across cheeks, 224-232(196) across base; cheeks finely crenulate; surface reticulate. Eyes 84-92(72) long, 64-68 (62) wide; all ocelli 32-34 wide, median ocellus, overhanging, paired ones placed much above the middle of eyes, almost at extremity. Postoculars 84-92(66) long. Antennal segments 3-6 subpedicellate and elongate; antennal segments 1-8 length (width).

	I	II	III	IV
<i>Female</i> :	42-46(38-42);	58(32-36);	68-72(32-36);	72-76(38-40)
<i>Male</i> :	34(36);	50(32);	62(28);	62(32-34);
	V	VI	VII	VIII
<i>Female</i> :	66(36-38);	62(36);	54(28);	32(16)
<i>Male</i> :	66(32);	58(32);	46(24);	38(16)

Mouthcone long and pointed, 138(134) long, 172(156) wide at base, 42(40) at apex; maxillary stylets occluded, close at middle.

Prothorax short and reticulate, 164(156) long, 248(216) wide at anterior margin, 350(292) at posterior margin. Prothoracic chaetotaxy : anteroangulars 38(34); anteromarginals 50(38), midlaterals 58(58), posteroangulars 88(66) and epimerals 92(76) long respectively; epimeral suture complete with an accessory seta 28 long. Pterothorax 424(308) long, 416(360) wide across meso- and 424(348) across metathorax. Mesopraesternum complete, narrow at middle. Forewings 792-808(765) long, 76-96(68-80) wide with 12(12) double fringes; basal wing setae B_1 & B_2 equal, B_1 - B_3 : 56(50); 62-76(56) & 62-76(58) long respectively.

Abdomen 418(368) wide at base, 398(304) at middle, 314(244) across segment VIII and 232(156) across segment IX. Pelta roughly bell shaped. B_1 - B_3 of segment IX : 184(152); 152(48) and 170(156) long respectively. Tube 202(168) long and anal setae 190(152) long. Total body length : 2.17-2.28 (1.9) mm.

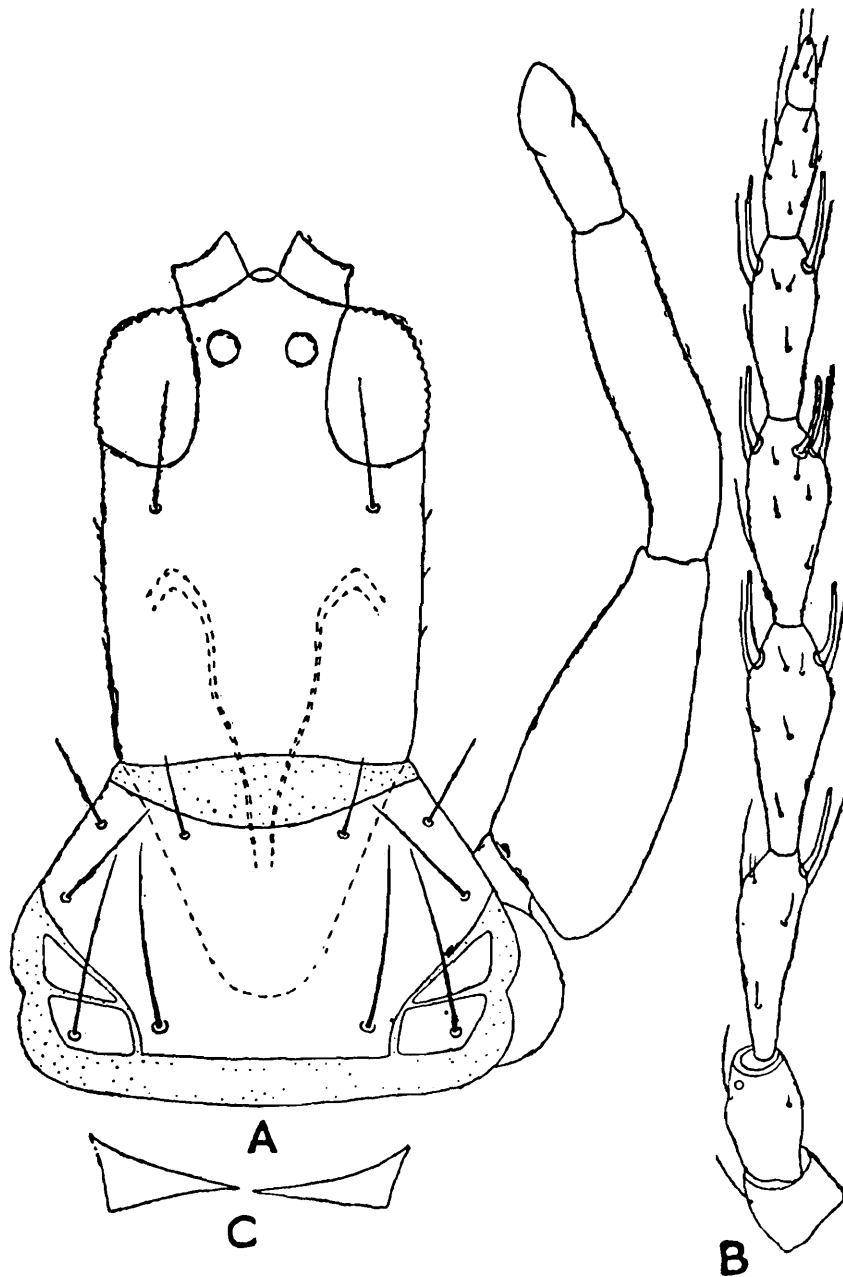
Specimen studied : Tripura : *Holotype* ♀ (Z.S.I. Reg. No. 182/H₁₇)
allotype ♂ (Z.S.I. Reg. No. 183/H₁₇) *paratypes* :
 4 ♀ ♀ (Z.S.I. Reg. Nos. 184-187/H₁₇) Sotagum,
 Hrishyamukh, ex. galls of *Loranthus* sp., 30.10.
 1977, coll. Dr. N. Muraleedharan.

Distribution : Tripura.

65. *Liothrips clarus* Muraleedharan & Sen.

(*Text-fig. 8*)

1981. *Liothrips clarus* Muraleedharan & Sen, *Rec. zool. Surv. India*, 79 : 212-214.



Liothrips clarus Muraleedharan & Sen

A. Head and Prothorax B. Antenna. C. Mesopraesternum

Female (Male) ; General body colour brown; antennal segments 1 & 2 brown, rest yellow; all femora brown, foretibiae yellow with brownish tinge, mid- and hindtibiae brown, all tarsi yellow; wings a little cloudy with a dark brown median streak. All setae brown and blunt.

Head 1.3 times as long as wide, 313(330) long, 248(220) wide across eyes, 240(212) across cheeks, 212(180) across base; cheeks crenulate with a few minute setae. Eyes 124(120) long, 84(68) wide; all ocelli 32(28) wide. Postoculars 116(92) long. Antennal segments elongate, segments 1-8 length (width) :

	I	II	III	IV
<i>Female</i> :	40(40);	64(36);	112(36);	112(44)
<i>Male</i> :	24(40);	60(32);	104(32);	108(40)
	V	VI	VII	VIII
<i>Female</i> :	104(36);	96(36);	72(28);	40(16)
<i>Male</i> :	100(32);	80(28);	68(28);	40(16)

Mouthcone roughly pointed, 156(140) long, 208(208) wide at base and 100(80) at apex; maxillary stylets retracted to $\frac{1}{3}$ of head capsule.

Prothorax short with transverse striations, 172(168) in the median line, 228(200) wide at anterior margin and 388(340) at posterior margin. Prothoracic chaetotaxy : anteroangulars 64(48); anteromarginals 52(32), midlaterals 100(80), posteroangulars 128(96) and epimerals 148(120) long respectively, Pterothorax 496(446) long- 512(412) wide at meso- and 462(396) at metathorax. Mesopraesternum incomplete. Forewings 1089(973) long, 104(96) wide with 20(14) doublefringes. B_1 - B_3 of abdominal segment IX : 300(280); 336(64) and 280(300) long respectively. Tube 300(300) long, anal setae 280(220) long.

Total body length : 3.22 (2.74) mm.

Specimen studied : Tripura : *Holotype* ♀ (Z.S.I. Reg. No. 178/H₁₇) Hrishyamukh, ex. leaf galls of *Ficus* sp., 30.9.1977, coll. Dr. N. Muraleedharan. *Allotype* ♂ (Z.S.I. Reg. No. 179/H₁₇) Sarashima, ex. leaf galls of *Ficus* sp., 29.9.1977, coll. Dr. N. Muraleedharan.

Distribution ; Tripura.

66. *Liothrips himalayanus* Ananthkrishnan & Jagadish

1970. *Liothrips himalayanus* Ananthkrishnan & Jagadish, *Oriental Ins.*, 4 (3): 259-261.

Female (Male) : General body colour brown; antennal segments 1,2, 7 & 8 brown, 3 yellow, 4-6 proximal half yellow and distal half brown; all femora, mid-and hindtibiae brown, foretibiae and all tarsi yellow; wings with a grey longitudinal band along middle. All setae hyaline and pointed.

Head 312-374(312-328) long, 210-250(218-234) wide across eyes, 210-297(203-218) across cheeks and 202-218(172-187) across base. Eyes 78-109(76) long, 62-78(54) wide. Postoculars longer than eyes, 117-130 (109-125) long. Antennal segments 1-8 length (width) :

I	II	III	IV
<i>Female</i> : 48(44);	58(32);	117-143(34-39);	104-130(39-42)
<i>Male</i> : 36(38);	58(28);	130-143(34-36);	125-130(42-45)
V	VI	VII	VIII
<i>Female</i> : 104-117(36-39);	78-92(34-39);	65-78(31-34)	44-52(16-18)
<i>Male</i> : 104-117(39-42);	78-91(34-37);	65-70(31-34)	39-42(18-20)

Mouthcone 172-187(157-172) long, 80-88(80-88) wide across apex; maxillary stylets retracted upto the level of postoculars, close at middle.

Prothorax 218-265(218-234) long, 187-203(187-203) wide at anterior margin and 312-390(312-328) at posterior margin. Prothoracic chaetotaxy : anteroangulars 65-98(62-78), anteromarginals 147-234(156-187) and epimerals 169-202(172-187) long respectively. Forewings 1.32-1.71(1.24-1.48) mm. long with 8-15(12-13) double fringes; basal wing setae B_T-B_S : 117-156(109-125); 143-187(125-156) and 167-187(125-156) long respectively. Mesopraesternum constricted at middle.

Abdomen 390-499(374-390) wide at base, 296-359(265-296) across segment VIII and 187-203(187-203) across segment IX ; Pelta roughly triangular with apex flat B_T-B_S of segment IX : 234-250(250-265); 250-312(94-109) and 167-187(250-265) long respectively. Tubæ 320-421 (374-390) long.

Total body length : 2.96-3.58(2.65-3.12)mm.

Specimen studied : West Bengal : 1 ♀ (Z.S.I Reg Nos. 185/H_{T3})

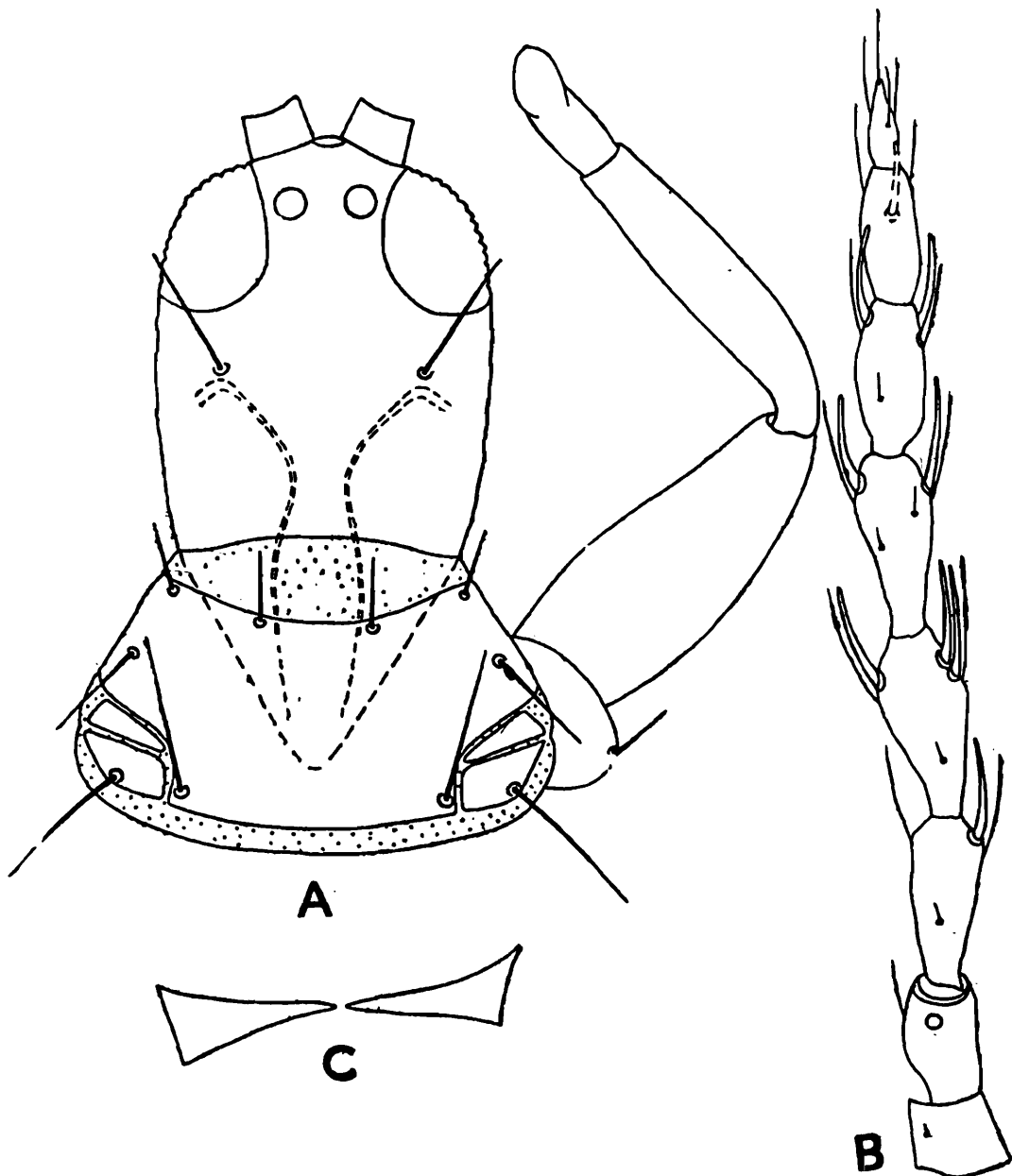
Lava, 4.6.1974., coll. Dr. J. K. Jonathan, 12 ♀ ♀ (Z. S. I, Reg. Nos, 130-137/H₁₂, 182-184/H₁₂, 1331/H₁₇) Rangirum, 25.5.1974, 7.6.1976, coll. Dr. J. K. Jonathan. 2 ♀ ♀, 1 ♂ (Z,S.I Reg. No. 2026/H₁₇) Darjeeling, 6. 4. 1978, coll. A. R. Bhaumik.

Distribution : Darjeeling Dt. (West Bengal)

67 *Liothrips infrequens* Muraleedharan & Sen

(Text-fig. 9)

1981. *Liothrips infrequens* Muraleedharan & Sen, *Rec. zool. Surv. India*, 79 : 214-215.



Liothrips infrequens Muraleedharan & Sen
A. Head and Prothorax. B, Antenna. C. Mesopraesternum,

Male (Macropterous) : General body colour brown; antennal segments 1 & 2 brown, 3, 4 & 5 yellow, 6 yellow with a brownish tinge at apex, 7 & 8 pale brown, foretibiae and all tarsi yellow, mid- and hind-tibiae brown; wings clear. All setae brown and pointed.

Head 1.1 times as long as broad, 260-280 long, 228 wide across eyes, 224-228 wide across cheeks, 196-204 across base; cheeks finely crenulate with 1-2 minute setae. Eyes 92-100 long and 80 wide: all ocelli 32 wide. Postoculars 76-80 long. Antennal segments 1-8 length (width) : I : 40(44); II : 56(28-32); III : 80-84(28-36); IV : 80-88(40); V : 76-84(28-32); VI : 68-72(28-32); VII : 56-60(24); VIII : 36-40(12); sense cones 40 long. Mouthcone pointed, 140-152 long, 200 wide at base and 60-64 at apex; maxillary stylets retracted upto the postoculars, close at middle.

Prothorax short, 124-140 long in the median line, 216-248 wide at anterior margin and 300-348 at posterior margin. Prothoracic chaetotaxy anteroangulars 40-44, anteromarginals 40-48, midlaterals 64-88, posteroangulars 80-100 and epimerals 88-96 long respectively. Pterothorax 330-396 long, 363-412 wide across meso- and 330-396 across metathorax. Mesopraesternum incomplete. Forewings 743-907 long, 68-76 wide with 10-11 double fringes; basal wing setae B_1 - B_3 : 68-84; 80-92 & 88-96 long respectively.

Abdomen 346-412 wide at base, 330-346 at middle and 165 across segment IX. B_1 - B_3 of segment IX : 248-272; 52-72 & 248 long respectively. Tube 208-248 long; anal setae 200-208 long.

Total body length : 1.68-2.33 mm.

Specimen studied : Tripura : *Holotype* ♂ (Z.S.I. Reg. No. 180/ H_{17}) *paratype* 1 ♂ (Z.S.I. Reg. No. 181/ H_{17}) Teliamura, Gamartilla, ex. leaf gall, 19.10.1977, coll. Dr. N. Muraleedharan.

Distribution : Tripura

68. *Liothrips morulus* Ananthakrishnan & Jagadish

1970. *Liothrips morulus* Ananthakrishnan & Jagadish, *Oriental Ins.*, 4 (3) : 261-262.

Female (Male) : General body colour brown; antennal segments 1, 2, 7 & 8 brown, 3 yellow, 4 & 5 proximal half yellow distal half grey, 6 brown, base yellow; legs brown except apices of foretibiae and all tarsi

yellow; wings shaded grey with median transverse longitudinal band. All setae dark and blunt.

Head 312-390(296-359) long, 218-250(203-234) wide across eyes, 203-243(203-218) across cheeks and 172-218(156-187) across base.

Eyes 94-109(94) long and 58-62(62) wide. Postoculars 68-78(55-63) long. Antennal segments 1-8 length (width) :

	I	II	III	IV
<i>Female</i> :	56(44);	60(36);	118-130(33-35);	125-145(43-45)
<i>Male</i> :	40(36);	52(32);	123-130(33-35);	113-143(38-40)
	V	VI	VII	VIII
<i>Female</i> :	105-138(38-40);	78-120(38-40)	65-90(28-30):	48-50(15-18)
<i>Male</i> :	95-115(35-38);	65-83(33-35);	60-68(25-26);	42-45(15-16)

Mouthcone 156-172(125-140) long and 78-80(74) wide at apex; maxillary stylets occluded, close at middle.

Prothorax 187-234(172-187) long, 187-234-(156-187) wide at anterior margin and 312-437(281-359) at posterior margin. Prothoracic chaetotaxy : anteroangulars 47-63(47-65), anteromarginals 60-63(45-50), midlaterals 125-156(90-109), posteroangulars 156-187(125-140) and epimerals 156-180(140-156) long respectively. Forewings 1.3-1.6 (1.1-1.6) mm. long with 11-20 (11-15) double fringes; basal wing setae B_2 - B_3 equal; B_1 - B_3 : 109-125(90-109); 140-172(113-133) and 140-172(113-133) long respectively. Mesopraesternum complete.

Abdomen 484-624 (421-499) wide at base, 436-577 (374-484) at middle, 328-406(265-312) across segment VIII and 187-265(156-172) across segment IX. Pelta pyramyd shaped. B_1 - B_3 of segment IX : 156-234(172-187); 187-312(62-86) and 156-234(187-210) long respectively. Tube 265-374(265-328) long.

Total body length : 2.6-3.9 (2.5-3.2) mm.

Specimen studied : **West Bengal** : *Paratypes* 1 ♀, 1 ♂ (Z. S. I. Reg. Nos. 46-47/H₁₇) Kurseong, Darjeeling Dt., 23. 4.1969, coll. Dr. T. N. Ananthkrishnan.

Distribution : Kurseong, Darjeeling Dt. (West Bengal).

69. *Liothrips spectabilis* Ananthakrishnan

1972. *Liothrips (Zopyrothrips) spectabilis* Ananthakrishnan, *Marcellia*, **37** (5) : 11-12.
1974. *Liothrips spectabilis* : Ananthakrishnan, & Muraleedharan, *Oriental Ins. Suppl.*, **4** : 13, fig. 47.
1980. *Liothrips spectabilis* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser. 1* : 103 & 158

Specimen studied : **Meghalaya** : 1 ♀ (Z. S. I. Reg. No, 1332/H₁₇)
Songsak, Garo Hills, 22.9.1975, *coll.* Dr. N. Muraleedharan.

Distribution : Kotagiri, Nilgiris (Tamil Nadu)

Remarks : This specis is recorded for the first time from North-Eastern India.

Genus 44. *Membrothrips* Bhatti

1978. *Membrothrips* Bhatti, *Entomon*, **3** (2) : 226-227.

70. *Membrothrips indicus* (Hood)

1919. *Neoheegeria indica* Hood, *Insec. Inscit. menstr.*, **7** (3) : 96-98.
1935. *Dolichothrips indicus* : Priesner, *Phillippne. J. Sci.*, **57** : 363.
1960. *Dolichothrips (Dolicholepta) rambhutani* Ananthakrishnan, *J. Bombay nat. Hist. Soc.*, **57** (3) : 572-573.
1978. *Membrothrips indicus* : Bhatti, *Entomon*, **3** (2) : 227.
1980. *Membrothrips indicus* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser.*, **1** : 106 & 159.

Specimen studied : **West Bengal** : 19 ♀ ♀ (Z.S.I Reg Nos. 990/H₁₇, 1668/H₁₇, 1775-77/H₁₇, 1948-53/H₁₇, 2006-2012/H₁₇, 2092/H₁₇) Coochbehar Dt., 12.10.1980, 2.10.1281, 25.10.1982, 16.10.1982, 1.1.1984. 15.5.1984; *coll.* C. K. Sen Gupta,

Distribution : Tamil Nadu

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 45. *Mesothrips* Zimmerman1907. *Mesothrips* Zimmerman, *Bull. Inst. Bot. Buit.*, 7 : 161976. *Mesothrips* : Ananthkrishnan, *Oriental Ins.*, 10 (2) : 185-191.KEY TO THE SPECIES OF *MESOTHRIPS* FROM
NORTH-EASTERN INDIA

1. Forewings uniformly clouded. Head elongate; cheeks with strong setae; mouthcone broadly rounded. Postoculars much shorter than eyes. Prothoracic anteroangulars shorter than anteromarginals. Tube as long as head and setae on abdominal segment IX shorter than tube.

... *jordani* Zimmerman, 1900

Forewings clear to faint yellow ... 2

2. Forewings clear ... 3

Forewings clear to faint yellow ... 5

3. Maxillary stylets occluded and close at middle. Antennal segment 3 and proximal half of 4-6 yellow, rest brown. Head very little longer than broad; tube shorter than head and setae on abdominal segment IX subequal to tube. Mesopraesternum incomplete, restricted to two lateral plates. Pelta pyramidal shaped.

... *acutus* Muraleedharan & Sen, 1981

Maxillary stylets short ... 4

4. Mesopraesternum complete, extremely narrowed at middle. Maxillary stylets mesad and wide apart. Head longer than broad. Antennal segments 4-5 and proximal half of 6 yellow, rest brown and intermediate segments elongate. Basal wing setae long. Pelta triangular, constricted at apex.

... *extensivus* Ananthkrishnan & Jagadish, 1969

Mesopraesternum incomplete, restricted to two lateral plates. Maxillary stylets very short, retracted just above the mouthcone and wide apart. Antennal segments 3 and proximal half of 4-6 yellow, rest brown. Postoculars long. Pelta hat shaped.

... *latus* Muraleedharan & Sen, 1981

5. Forewings clear to very faint yellow with 12 double fringes. Head 1.3-1.4 times as long as broad; maxillary stylets very short and wide apart. Antennal segments 2 at distal third and 3-6 golden yellow, rest brown. Pelta roughly triangular.

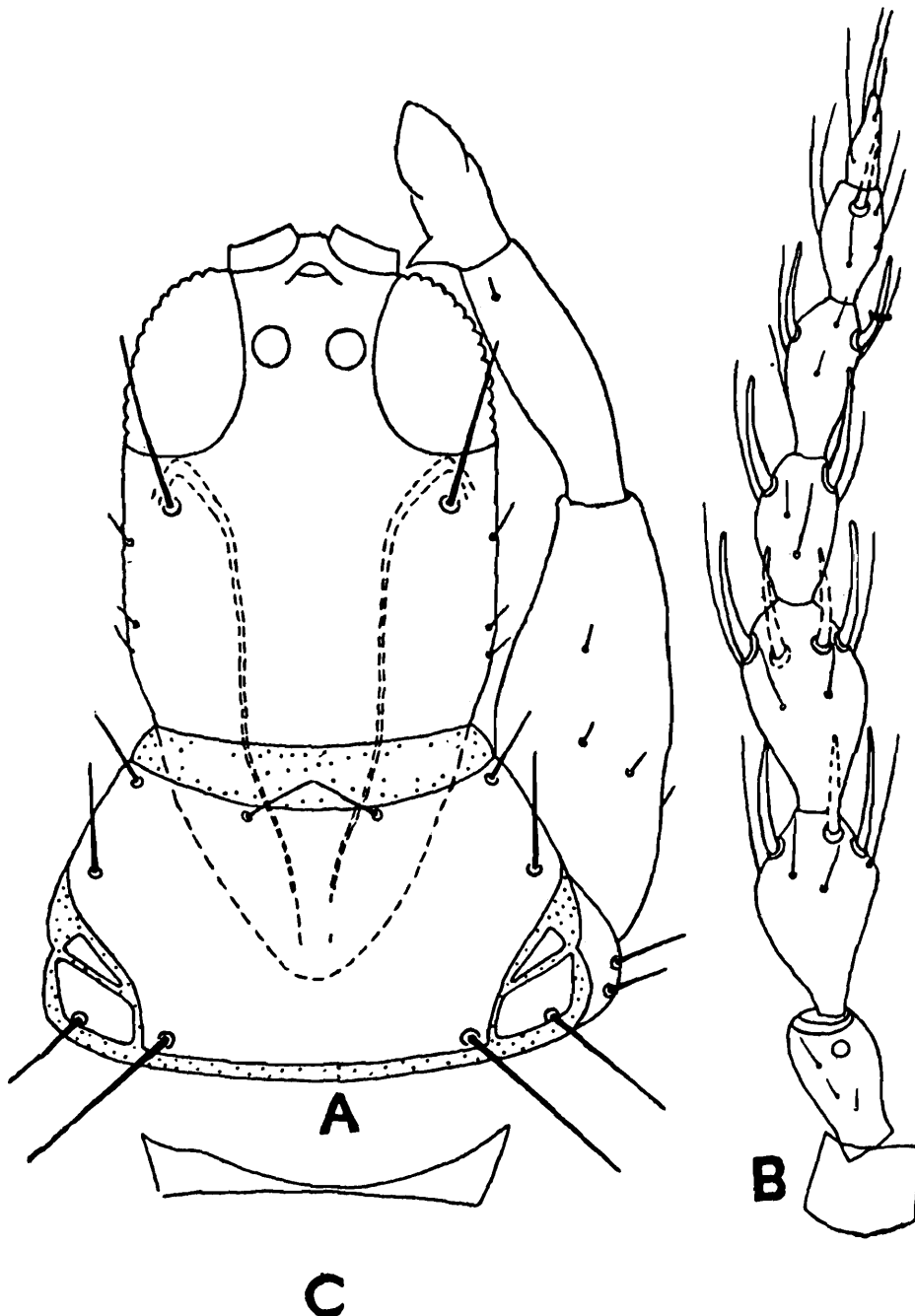
perlucidus Muraleedharan & Sen, 1981

Forewings faint yellow with 12-18 double fringes. Head comparatively short; maxillary stylets short, retracted below half the length of head. Antennal segments 3 and proximal half of 4-6 yellow, rest brown. Pelta roughly triangular with apex flat.

ambasensis Muraleedharan & Sen, 1981

71. **Mesothrips acutus** Muraleedharan & Sen

(*Text-fig. 10*)



Mesothrips acutus Muraleedharan & Sen

A. Head and Prothorax B. Antenna. C. Mesopraesternum

1981. *Mesothrips acutus* Muraleedharan & Sen, *Rec. Zool. Surv. India*, 79 : 218-220

Female (Male) : General body colour brown; basal half and margin of tube blackish brown; antennal segments 1, 2, 7 & 8 brown, 3 yellow, 4-6 proximal half yellow, brown distally; all femora brown, foretibiae yellow with brownish shade, mid- and hindtibiae brown except extreme apex yellow, all tarsi yellow; forewings clear. All setae hyaline and blunt.

Head very little longer than broad, 220-228(206) long, 180-190(176) wide across eyes, 206-214(190) across cheeks, 190-206(186) across base; cheeks finely crenulate with spines; surface strongly striate. Eyes 92-96 (80) long; all ocelli 24-28(28) wide. Postoculars 80-88(72) long. Antennal segments 3-6 pedicellate, segments 1-8 length (width).

I	II	III	IV
<i>Female</i> : 38-42(38)	48-53(30-32);	72-76(38);	72-76(38)
<i>Male</i> : 38(38-40)	46(30):	64(34);	62(34)
V	VI	VII	VIII
<i>Female</i> : 58(28);	54-56(24);	42(20);	32(16)
<i>Male</i> : 54(28);	46(24);	38(20);	32(12)

Sense cone long, 50(38-40) long. Mouthcone long, broadly pointed, 114-118 long, 164-172 wide at base, 60-68 at apex; maxillary stylets occluded, close at middle.

Prothorax shorter than head, slightly sculptured, 164-172(176) long, 212-232(190) wide at anterior margin, 312-328(308) at posterior margin. Prothoracic chaetotaxy : anteroangulars 54-58(38), anteromarginals 32-34 (28), midlaterals 60(52), posteroangulars 92-94(78) and epimerals 76-80 (64) long respectively; epimeral suture complete with 2 minute accessory setae. Forefemora 216-224(242) long, 96-98(100) wide; foretarsal tooth 16-20(20) long. Pterothorax 338-344(300) long, 384-388(404) wide across meso- and 406-410(380) across metathorax. Forewings 833-850 (760) long; 72-108(58-76) wide with 7-10(9) double fringes; basal wing setae B₁-B₃ : 68-70(52); 76-80(56) and 118-134(96) long respectively. Mesopraesternum incomplete, restricted to two lateral sclerites.

Abdomen 376-400(360) wide at base, 356-362(332) at middle, 244-248(190) across segment VIII and 156-160 (130) across segment IX. Pelta pyramyd shaped. B₁-B₃ of segment IX : 176-180(152); 152-156 (90) and 168-176(144) long respectively. Tube 176-180(160) long and anal setae 152-168 (156) long.

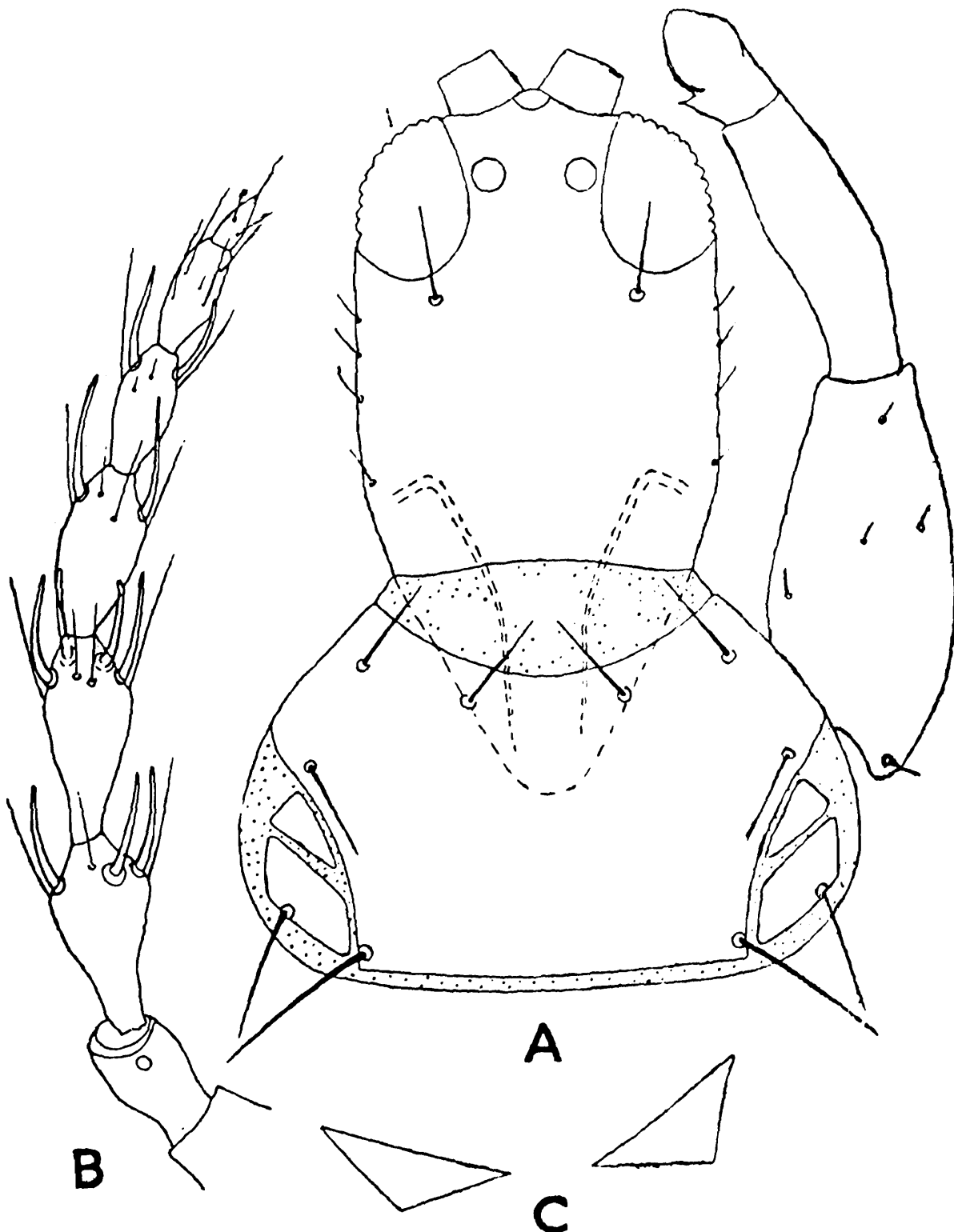
Total body length : 2.21-2.25 (2.04) mm.

Specimen studied : **Tripura** : *Holotype* ♀ (Z.S.I. Reg. No. 188/H₁₇)
allotype ♂ (Z.S.I. Reg. No. 189/H₁₇) *paratypes*

2 ♀ ♀ (Z.S.I Reg Nos. 190-191/H₁₇) Ballamukha, Belonia, 28.9.1977, coll. Dr. N. Muraleedharan. Paratypes 3 ♀ ♀ (Z.S.I. Reg. Nos. 192-194/H₁₇) Suganmara, Belonia, *ex.* leaf galls, 28.9.1977, coll. Dr. N. Muraleedharan. Paratype 1 ♀ (Z.S.I. Reg. No. 195/H/H₁₇) Kalirbazar, 1.10.1977, coll. Dr. N. Muraleedharan.

Distribution : Tripura.

72. *Mesothrips ambasensis* Muraleedharan & Sen,
(*Text fig. 11*)



Mesothrips ambasensis Muraleedharan & Sen A. Head and Prothorax. B. Antenna
C. Mesopraesternum

1981. *Mesothrips ambasensis* Muraleedharan & Sen, *Rec. zool. Surv. India*, 79 : 220-222.

Female : (*Male*) : General body colour blackish brown; antennal segments 1,2 dark brown, 3 yellow,4-6 yellow in proximal half and brown distally, 7-8 brown; all femora, mid- and hindtibiae dark brown except extreme tip lighter, foretibiae brown with yellowish shade, all tarsi light brown; forewings faint yellow. All setae brown and blunt.

Head longer than broad, 276-292(272) long, 228-236(212) wide across eyes, 236-244(220) across cheeks and 188-200(172) across base; cheeks with 6-8 moderately stout setae; surface strongly striate. Eyes large, 100-120(100) long, 68-80(68-72) wide; all ocelli 32-36 wide, median ocellus overhanging between base of antennae. Postoculars short, about half the length of eyes, 40-48(56-60) long. Antennal segments 3-6 pedicellate; segments 1-8 length (width) :

	I	II	III	IV
<i>Female</i> :	48(44-52);	60-68(40-44);	84-92(48-52);	100-104(48-52)
<i>Male</i> :	40(40-44);	60(36);	84-88(44);	92(44 48)
	V	VI	VII	VIII
<i>Female</i> :	80-84(36-40);	68-72(28-32);	56-60(24-28);	36(16)
<i>Male</i> :	76(36);	60(28);	48(24),	36(12)

Sensecones long, 48-56(44-48) long. Mouthcone broadly pointed, 112(124) long, 200-220(160) wide at base, 104(84) at apex; maxillary stylets short retracted below half the length of head capsule and wide apart.

Prothorax 280-300(208) long, 260-280(228) wide at anterior margin and 400-440(352) at posterior margin. Prothoracic chaetotaxy anteroangulars 40, anteromarginals 32-38(36), midlaterals 60-76(52), posteroangulars 120, and epimerals 80-92(68-76) long respectively. Forefemora 280-320(236) long, 140-176(112) wide, foretarsal tooth 32-44(16) long. Pterothorax 460-540(400) long, 508-560(428) wide across meso- and 516-600(436) across metathorax. Forewings 1.15-1.27 mm. (1.02 mm.) long, 60-140 wide with 12-18(12) double fringes; basal wing setae B₁-B₃ : 72-100(80); 112-120(96) and 164-180(108) long respectively.

Mesopraesternum incomplete, restricted as two lateral sclerites.

Abdomen 520-544(432) wide at base, 484-510(360) at middle, 320 (248) across segment VIII and 236-240(180) across segment IX. Pelta roughly triangular with apex flat. B_1 - B_3 of segment IX : 288-300(220); 260(112) and 280-320(280) long respectively. Tube 276-300(228) long.

Total body length : 3.14-3.43(2.25) mm.

Specimen studied : *Holotype* ♀ (Z.S.I. Reg. No. 196/ H_{17}) *allotype* ♂ (Z.S.I. Reg. No. 197/ H_{17}) *paratypes* 2 ♀ ♀ (Z.S. I. Reg. Nos. 198-199/ H_{17}) Ambasa, *ex.* leaf gall, 27.10.1977, *coll.* Dr. N. Muraleedharan.

Distribution : Tripura.

73. *Mesothrips extensivus* Ananthakrishnan & Jagadish

1969. *Mesothrips extensivus* Ananthakrishnan & Jagadish, *Marcellia*, 36(1-2) : 58-59.

1976. *Mesothrips extensivus* : Ananthakrishnan, *Oriental Ins.*, 10 (2) : 188.

1980. *Mesothrips extensivus* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser. 1* : 167 & 159.

Specimen studied : **Meghalaya** : 2 ♀ ♀ (Z.S.I. Reg. Nos. 368/ H_{12} , 1333/ H_{17}) Songsak, Garo Hills, *ex.* gall of *Mallotus* sp., 22.9.1975, *coll.* Dr. N. Muraleedharan. **Assam** : 17 ♀ ♀ (Z.S.I. Reg. Nos. 382-383/ H_{12} , 513-527/ H_{12}) Silchar, Cachar Dt., 1. 10. 1975, *coll.* Dr. N. Muraleedharan. 4 ♀ ♀ (Z. S. I. Reg. Nos. 368-372/ H_{12}) Loharband Cachar Dt., *ex.* leaf gall of wild plant, 13.10. 1975, *coll.* Dr. N. Muraleedharan. 9 ♀ ♀ (Z.S.I. Reg Nos.373-381/ H_{12}) Duarband, Cachar Dt., *ex.* leaf gall of wild plant, 4.10.1975, *coll.* Dr. N. Muraleedharan.

Distribution : Tamil Nadu; Kerala

Remarks : This species is recorded for the first time from North-Eastern India.

74. *Mesothrips jordani* Zimmerman

1900. *Mesothrips jordani* Zimmerman, *Bull. Inst. bot. Buitenz.*, 7 : 16.
 1965. *Mesothrips jordani* : Ananthakrishnan & Ramamurthi, *J. Bombay nat. Hist. Soc.*, 62 :
 1969. *Mesothrips jordani* : Ananthakrishnan & Jagadish, *Mareellia*, 36 (1-2) : 60-61.
 1973. *Mesothrips jordani* : Ananthakrishnan, *Oriental, Ins.*, 7 (4) : 544-545.
 1980. *Mesothrips jordani* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser. 1* : 108 & 159
 1981. *Mesothrips jordani* : Muraleedharan & Sen, *Rec. zool. surv. India*, 79 : 222.

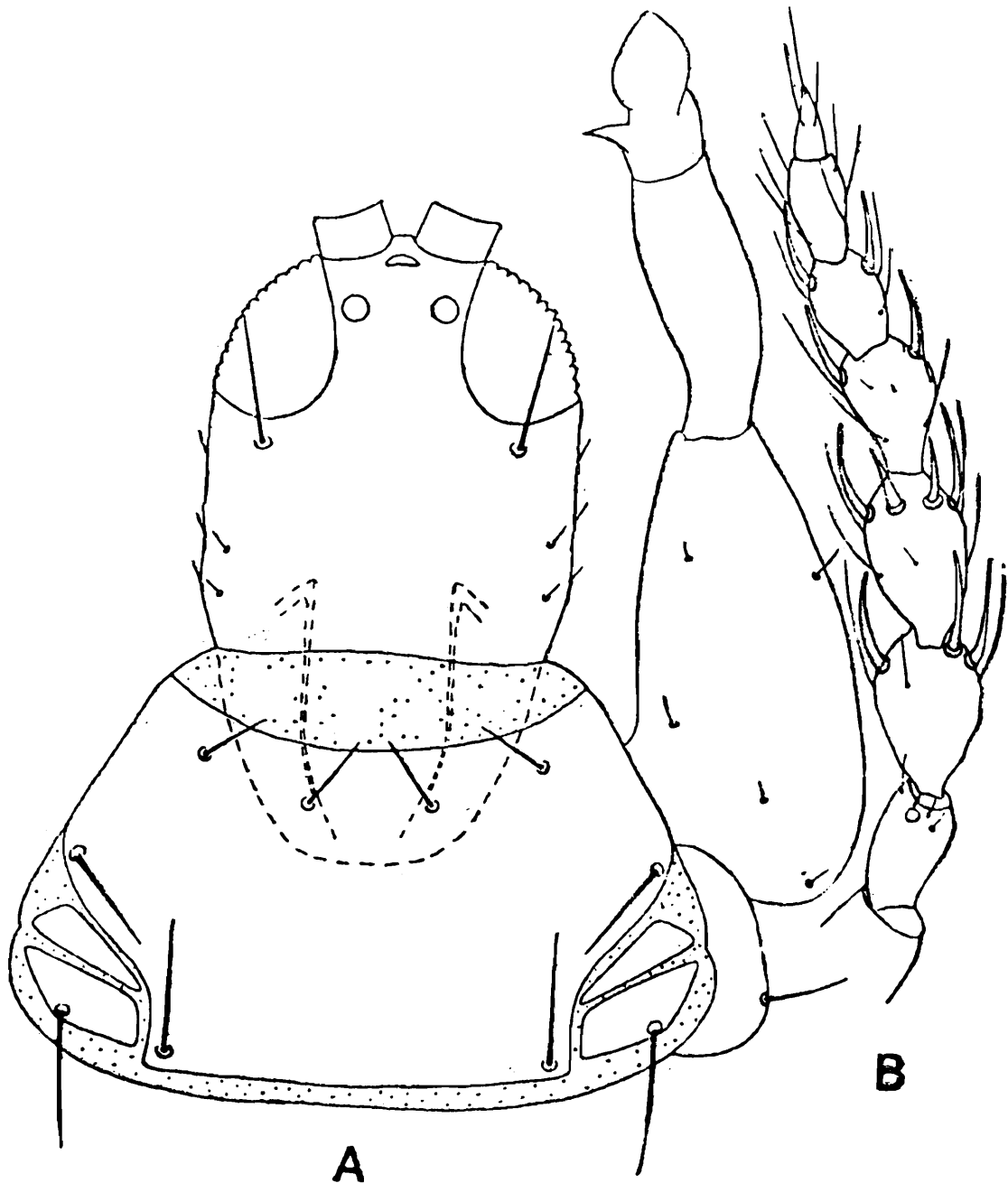
Specimen studied : Tripura : 3 ♀ ♀ (Z. S. I. Reg. Nos. 200-202/H₁₇) Sarashima, Belonia, 29.9.1977, coll. Dr. N. Muraleedharan, 4 ♀ ♀, 2 ♂ ♂ (Z.S.I. Reg. Nos. 203-208/H₁₇) Hrishyamukh, ex. leaf gall of *Ficus* sp., coll. Dr. N. Muraleedharan.

Distribution : Karnataka; Tamil Nadu; West Bengal; Tripura.

75. *Mesothrips latus* Muraleedharan & Sen

(Text-fig. 12)

1981. *Mesothrips latus* Muraleedharan & Sen, *Rec. zool. surv. India.*, 79 : 222-224.



Mesothrips latus Muraleedharan & Sen A. Head and Prothorax. B. Antenna

Female (Male): General body colour dark brown, males little darker; antennal segments 1, 2, 7 & 8 brown, 3 yellow, 4-6 yellow in proximal half, distal half brown and segments successively darker; all femora, mid- and hind-tibiae brown except at extreme tip yellow, fore-tibiae yellow with brownish shade, all tarsi yellow; forewings clear. All setae hyaline to brown and blunt.

Head 240-260(252-260) long, 224-232(200-216) wide across eyes, 240-260(216-224) across cheeks and 232-244(184-200) across base; cheeks finely crenulate with 3-4 moderately stout setae; surface strongly striate. Eyes 88-100(92-96) long, 68-76(64-68) wide; all ocelli very close, 36 wide. Postoculars long, 84-96(68-76) long. Antennal segments 1-8 length (width) ;

	I	II	III	IV
<i>Female</i> :	40(48);	56-60(40);	84-88(44-48);	80-84(48)
<i>Male</i> :	40(40-44);	56-60(32-36);	76-80(40);	76(40-44)
	V	VI	VII	VIII
<i>Female</i> ;	72-76(40);	60(32);	56-60(28);	40(12)
<i>Male</i> ;	72(32);	52-56(40-44);	48-52(24-28);	36(16)

Sense cones 36-40(32-36) long. Mouthcone short and broad, 132-140 (112-120) long, 224-232(172-188) wide at base and 120-124(100-112) at apex; maxillary stylets very short, retracted just above the mouthcone and wide apart.

Prothorax 220-240(200-216) long, 260-268(200-240) wide at anterior margin and 380-388(360-372) at posterior margin. Prothoracic chaetotaxy : anteroangulars 40-44(32-36), anteromarginals 32-36 (24-32), midlaterals 56-60(56), posteroangulars 94-106(80) and epimerals 80-92 (68-76) long respectively. Forefemora 296-308 (232-240) long, 160 (80-156) wide; foratarsal tooth (12-24) long. Pterothorax 412-520 (400-420) long, 460-512(420-440) wide at meso- and 488-504 (420-452) across metathorax. Forewings 1.02-1.05 mm. (935-969) long, 60-120 (48-100) wide with 10-13(11) double fringes; basal wing setae B_1 - B_3 : 72-76(48-72); 80-84(64) and 120-124(80) long respectively. Mesopraesternum incomplete, restricted to two lateral sclerites.

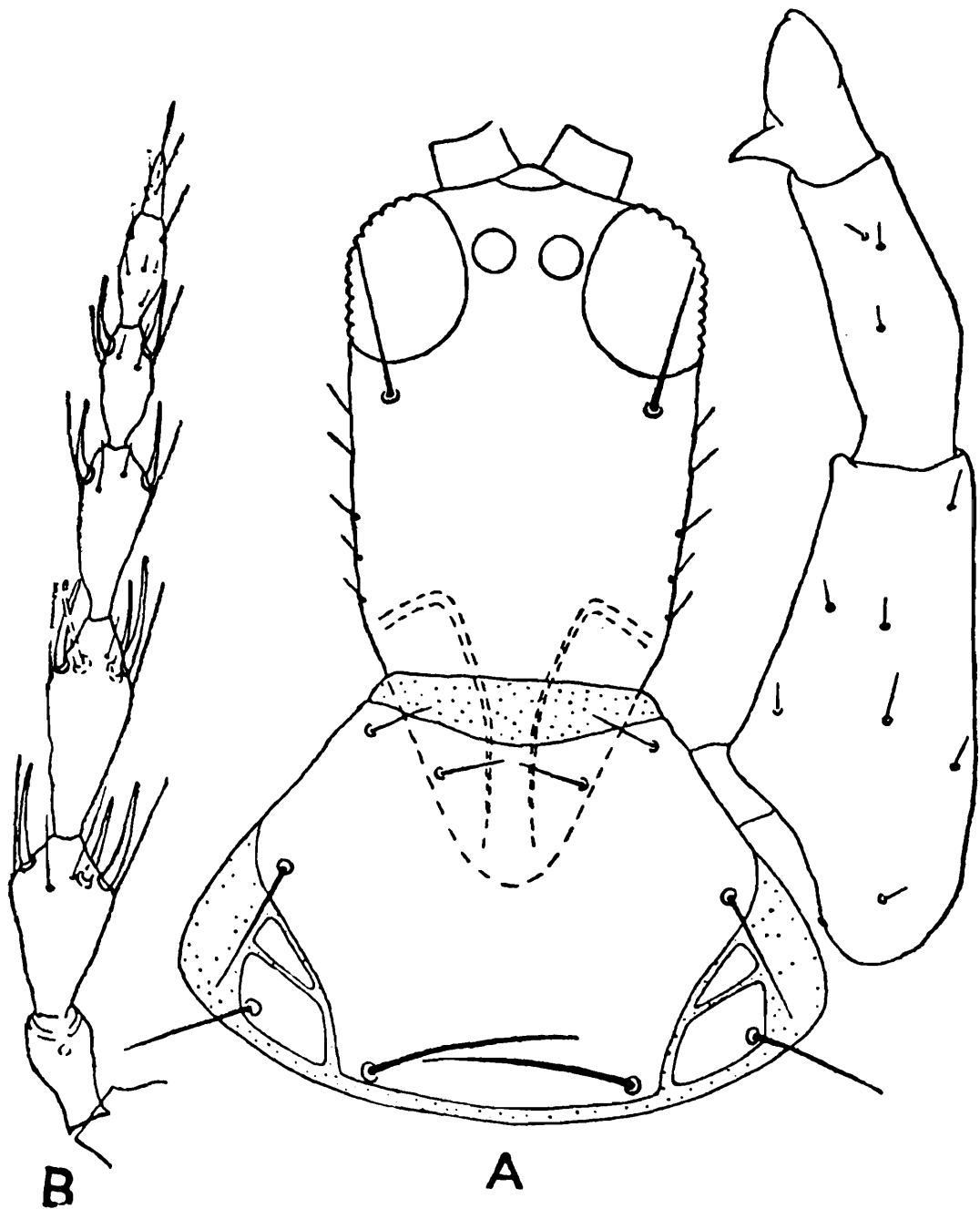
Abdomen 464-480(420-440) wide at base, 428-456 (360) at middle, 288-300(240) across segment VIII and 200-204 (160-168) across segment IX. Pelta hat shaped. B_1 - B_3 of segment IX : 272-276(200-220); 212-240(40-56) and 280-288(200-208) long respectively. Tube 248-260(212-220) long and anal setae 180-200 (200-216) long.

Total body length : 2.39-2.48(2.21-2.34) mm.

Specimen studied : Tripura : *Holotype* ♀ (Z.S.I. Reg. No. 209/H₁₇)
allotype ♂ (Z.S.I. Reg. No. 210/H₁₇) *paratypes*
 9 ♀ ♀, 1 ♂ (Z.S.I. Reg. No. 211-220/H₁₇) Sugan-
 mara, Belonia, 28.9.1977, coll. Dr. N. Muralee-
 dharan. 5 ♀ ♀, 1 ♂ (Z.S.I. Reg. Nos. 221-226/
 H₁₇) Arya Colony, Belonia, ex. leaf galls,
 3.10.1977, coll. Dr. N. Muraleedharan. 5 ♀
 ♀, 1 ♂ (Z.S.I. Reg. Nos. 227-232/H₁₇) Hrishya-
 mukh, ex. leaf galls, 30.9.1977, coll. Dr. N.
 Muraleedharan,

Distribution : Tripura.

76. *Mesothrips perlucidus* Muraleedharan & Sen,
 (Text fig. 13)



Mesothrips perlucidus Muraleedharan & Sen A. Head and Prothorax. B. Antenna

1981. *Mesothrips perlucidus* Muraleedharan & Sen, *Rec. zool. Surv. India*, 79 : 225-227

Female : (*Male*) : General body colour brown, terminal abdominal segments and tube darker; antennal segments 1, 7 & 8 brown, 2 brown at proximal third golden yellow beyond, 3-6 golden yellow; all femora, mid-and hindtibiae brown, foretibiae brown at base and margin rest golden yellow, all tarsi golden yellow; forewings clear to very faint yellow. All setae brown and blunt.

Head 1.3-1.4 times as long as broad, 340-344(288-304) long, 232-256(208-220) wide across eyes, 228-264(200-204) across cheeks, 180-216 (168) across base; cheeks strongly constricted at base with 5-7 stout setae; surface strongly reticulate. Eyes large 120-124(100-104) long. 80-84(80) wide; all ocelli large and very closely set, 32-36 wide. Postoculars 68-76(80-88) long. Antennal segments 3-6 pedicellate, segments 1-8 length (width).

	I	II	III	IV
<i>Female</i> :	40-44(44-48);	56-60(36-40);	100-104(48-52);	112(48-52)
<i>Male</i> :	40-44(44-48);	60-64(36);	96-100(40-44);	100-108(40-48)
	V	VI	VII	VIII
<i>Female</i> :	83-96(40);	68-76(32-36);	56-60(24-28);	36-40(16)
<i>Male</i> :	84-96(36-40);	60-68(28-32);	56-60(24);	32(16)

Sensecones elongate 40-44 long. Mouthcone broadly pointed, 140 (100-108) long, 160-220(148-164) wide at base, 92(80-100) at apex.

Prothorax 248-300(212-240) long, 200-252(160-200) wide at anterior margin and 368-444 (320-344) at posterior margin. Prothoracic chaetotaxy : anteroangulars 44-48 (28), anteromarginals 36-44 (44-48), midlaterals 80-92(68-80), posteroangulars 124 (104-120) and epimerals 120 (80-96) long respectively. Forefemora 380-440 (260-292) long, 180-208(132-140) wide; foretarsal tooth 36(24-32) long. Pterothorax 500-508(380-460) long, 520-540(380-452) wide across meso- and 512-520(372-460) across metathorax. Forewings 1.22-1.27 mm. (1.02-1.05mm.) long, 80-120 wide with 12(10-12) double fringes; basal wing setae B₁-B₃ : 100-120(76-88); 132-140 (96-104) and 168-200(140) long respectively. Mesopraesternum incomplete, restricted to two lateral sclerites.

Abdomen 388-440(320-388) wide at base, 260-328 (200-328) at middle, 260-264(196-220) across segment VIII and 180-184 (140-160) across segment IX. Pelta roughly triangular. B₁-B₃ of segment IX : 300-320(248-260); 240(108-128) and 340(272-280) long respectively. Tube 304-320(240-284) long; anal setae 280(260-280) long.

Total body length : 2.9-3.2(2.3-2.5) mm.

Specimen studied : **Tripura** : *Holotype* ♀ (Z.S.I. Reg. No. 233/H₁₇)
allotype ♂ (Z.S.I. Reg. No. 234/H₁₇) *paratypes*
 2 ♀♀, 1 ♂ (Z.S.I. Reg. No. 235-237/H₁₇) Sara-
 shima, ex. leaf galls of *Ficus* sp., 29.9.1977,
coll., Dr. N. Muraleedharan.

Distribution : Tripura.

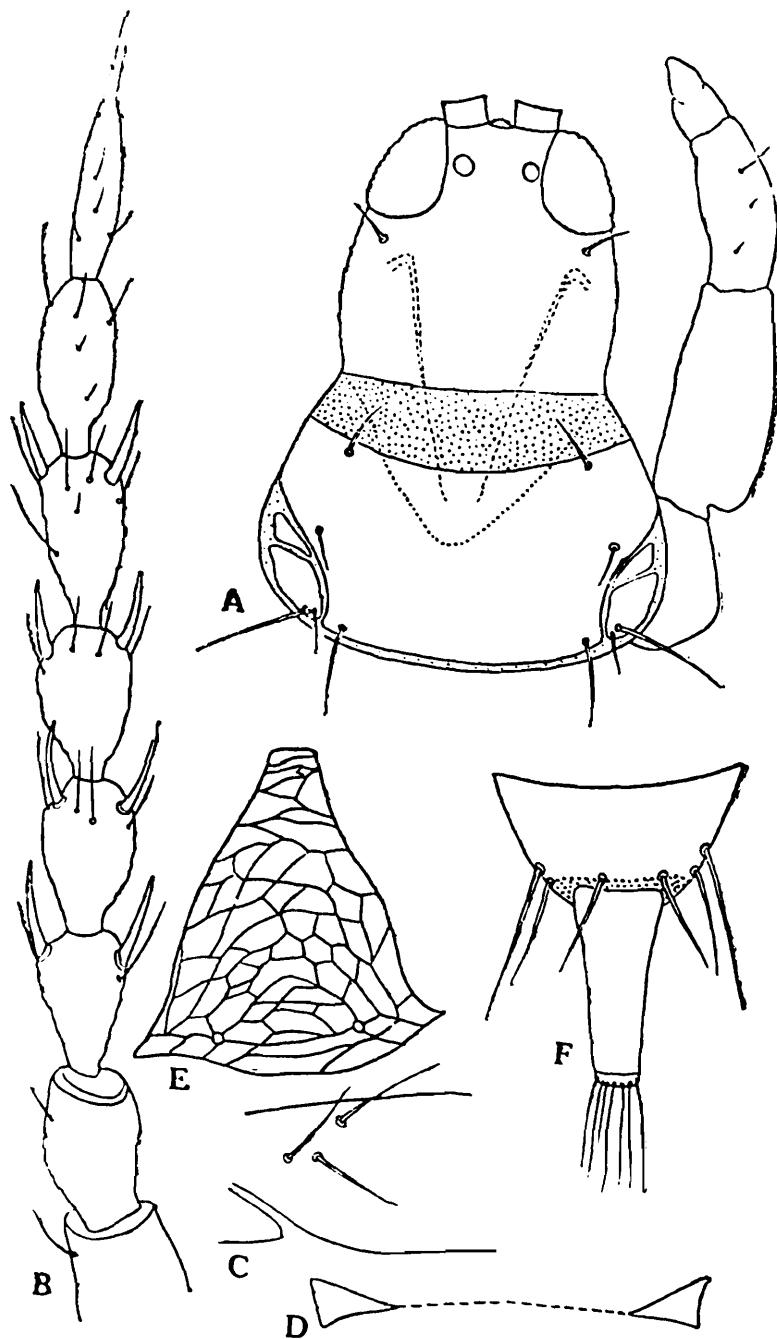
Genus 46. **Neodixothrips** Sen & Muraleedharan

1977. *Neodixothrips* Sen & Muraleedharan, *Entomon*, 1 (2) : 178-179.

77. **Neodixothrips assamensis** Sen & Muraleedharan

(*Text-fig. 14*)

1977. *Neodixothrips assamensis* Sen & Muraleedharan, *Entomon*, 1 (2) : 179-180.



Neodixothrips assamensis Sen & Muraleedharan A. Head and Prothorax B. Antenna.
 C. Basal wing setae D. Mesopraesternum E. Pelta. F. Segment IX of abdomen
 and tube.

Female (Male) : General body colour brown, head, prothorax, terminal segments of abdomen and tube darker; antennal segment 1 brown, 2 and 8 golden yellow with brownish tinge, 3-7 golden yellow; forefemora yellow with brownish tinge in proximal three fourth, rest yellow, mid-and hind femora brown, foretibiae and all tarsi yellow, mid-and hindtibiae brown in proximal three-fourth and yellow beyond; forewings light grey. All setae hyaline and pointed.

Head about as long as broad to slightly broader, 188-200(172) long, 168-180(152) wide across eyes, 192-220(168) across cheeks and 188-216 (160) across base; cheeks smooth, convex, surface strongly reticulate. Eyes 76-84(72) long, 44-52(40-44) wide; all ocelli 20-24 wide, median ocellus overhanging between base of antennae. Postoculars weak and pointed, 32-40(24-32) long. Antennal segments 3-6 pedicellate, 4 & 5 globular, 8 long, slender and constricted at base, areola of 2 at extreme apex; segments 1-8 length (width) :

	I	II	III	IV
<i>Female</i> :	40-48(32-36);	48-56(32-40);	40-44(28-32);	40-48(32-36)
<i>Male</i> :	40-44(36-40)	44-46(32-36);	40-44(28-32);	36-40(28-32)
	V	VI	VII	VIII
<i>Female</i> ;	44-52(32-36);	48-56(32-36);	52-56(24-28);	56-60(16)
<i>Male</i> ;	40-44(28-32);	44-48(28-32);	48-56(20-24);	48-56(12-16)

Mouthcone short, broadly pointed, 96-108(88-100) long, 116-132(120) wide at base, 44-56(72-80) at apex; maxillary stylets retracted ocular, wide apart.

Prothorax slightly sculptured, about as long as head, 188-192(160-172) long, 220-240(180) wide at anterior margin and 328-340(280) at posterior margin. Prothoracic chaetotaxy : anteroangulars 36(20-28) placed away from the lateral margin, anteromarginals vestigial, midlaterals 40-52(40-44), posteroangulars 76-80(40-48) and epimerals 92-112 (60-76) long respectively. Pterothorax 360-400(360) long, 348-360(320) wide at meso-and 340-348(308) at metathorax. Forewing; broad, 697-731 (646-663) long, 80-100(64-88) wide with 8-11(4-7) double fringes;

basal wing setae B_1 - B_3 well developed, pointed, arranged not in the same line, 40-48(40-44); 48-60(44-52) and 56-84(55-64) long respectively. Mesopraesternum very much reduced, restricted to two very small triangular sclerites.

Abdomen 300-320(268-272) wide at base, 300-328(260) at middle, 272-280(206) across segment VIII and 180-188(128) across segment IX. Pelta roughly triangular. B_1 - B_3 of segment IX : 80-100(56-88); 80-112(48-156) and 112-140(120-140) long respectively. Tube 140-148(128-132) long and anal setae 100-112(100) long.

Total body length : 1.77-1.82(1.36-1.65) mm.

Specimen studied : Assam : *Holotype* ♀ (Z.S.I. Reg. No. 493/ H_{12})
allotype ♂ (Z.S.I. Reg. No. 494/ H_{17}) *paratypes*
 10 ♀ ♀, 4 ♂ ♂ (Z.S.I. Reg. Nos. 495-508/ H_{12})
 Loharband, Cachar Dt., 3.10.1975, 4.10.1975,
coll. Dr. N. Mnraleedharan. 5 ♀ ♀ (Z.S.I. Reg.
 Nos. 571-574/ H_{12} , 1334/ H_{17}) Loharband,
 Cachar Dt, 3.10.1975, *coll.* Dr. N. Muralee-
 dharan.

Distribution : Assam

Genus 47. *Neoheegeria* Schmutz

1907. *Neoheegeria* Schmutz, *Ann. Mus. Wien.* 23 : 344.

78. *Neoheegeria montana* Ananthakrishnan & Jagadish

1970. *Neoheegeria monotana* Ananthakrishnan & Jagadish, *Oriental Ins.* 4 (3) :
 262-264.

Female (Male) : General body colour brown; antennal segments 1, 2, 7 & 8 brown, 3 yellow, 4-6 proximal half yellow distally brown; wings transparent except extreme base yellow. All setae dark and blunt.

Head 233-295(233-248) long, 179-202(155-171) wide across eyes and cheeks and 155-171(140-148) across base. Eyes 93 long and 62 wide. Postoculars 93-101(62-78) long. Antennal segments 3-8 length (width) :

	III	IV	V
<i>Female</i> :	78-91(34-36);	73-88(36-39);	62-78(34-36);
<i>Male</i> :	65-75(31-34);	73-78(34-36);	57-65(29-31);

	VI	VII	VIII
<i>Female</i> :	57-60(29-31);	60-65(26-29);	34-36(10-11)
<i>Male</i> :	52-62(26-29);	60-62(20-23);	29-31(13-14)

Mouthcone narrow, 155-171(124-132) long and 31-47(31-39) wide at apex; maxillary stylets mesad, wide apart.

Prothorax 171-202(155-171) long, 171-187(155-171) wide at anterior margin and 310(140-148) at posterior margin. Prothoracic chaetotaxy; anteroangulars 81-88(52-57), anteromarginals 49-52(26-32), midlaterals 62-65(60-65), posteroangulars 104-112(65-73) and epimerals 104-107(78-83) long respectively. Forefemora 70-93(62-78) wide, foretarsal tooth very minute 3-4(3-4) long. Forewings 930-1318(806-930) long with 8-12 (7-9) double fringes; basal wing setae B_1-B_3 : 65-78(52-65); 78-93(57-65) and 109-117(65-78) long respectively.

Abdomen 326-388(233-264) wide at base and middle, 233-248(155-171) across segment VIII and 140-155(93-108) across segment IX. Pelta triangular with apex flat. B_1-B_3 of segment IX : 233-248(186-194); 233-248(78-93) and 171-186(186-194) long respectively. Tube 202-233 (171-202) long.

Total body length : 2.4-2.9 (2.09-2.3) mm.

Specimen studied : West Bengal : 1 ♀, 1 ♂ (Z.S.I. Reg. Nos.3071-72 /H₁₇) Kurseong, ex. leaf curls, 24.4.1969, coll. Dr. T. N. Ananthakrishnan.

Distribution : Kurseong, Darjeeling Dt. (West Bengal)

Genus 48. *Ocythrips* Ananthakrishnan

1972. *Ocythrips* Ananthakrishnan, *Oriental Ins.*, 6 (4) : 440-441.

1973. *Ocythrips* : Ananthakrishnan, *Occl. Publ.* 2, *Ent. Res. Unit, Loyola College Madras* : 46.

79. *Ocythrips rarus* Ananthakrishnan

1972. *Ocythrips rarus* Ananthakrishnan, *Oriental Ins.*, 6(4) : 441-442.

1973. *Ocythrips rarus* : Ananthakrishnan, *Occl. Publ.*, 2, *Ent. Res. Unit, Loyola College, Madras* : 46-47.

Female (Macropterous) : Body light brown; antennal segments except 3 brown, 3 yellowish brown; all femora brownish at middle, yellowish brown at proximal and distal portion; all tibiae and tarsi yellow tinged with brown; wings clouded. All body setae long thin, brown and pointed.

Head much wider than long. Postoculars two pairs, outer very long and thin. Mouthcone elongate rounded; maxillary stylets retracted upto the level of postoculars, wide apart.

Prothorax much shorter than head, about 0.6 times as long as head, anteromarginals shorter than anteroangulars, other prothoracic setae long and thin. Foretarsi unarmed. Forewings parallel sided, without double fringes. Lateral abdominal setae long and thin.

Total body length : 1.7 mm.

Distribution : Kalimpong, Darjeeling Dt. (West Bengal).

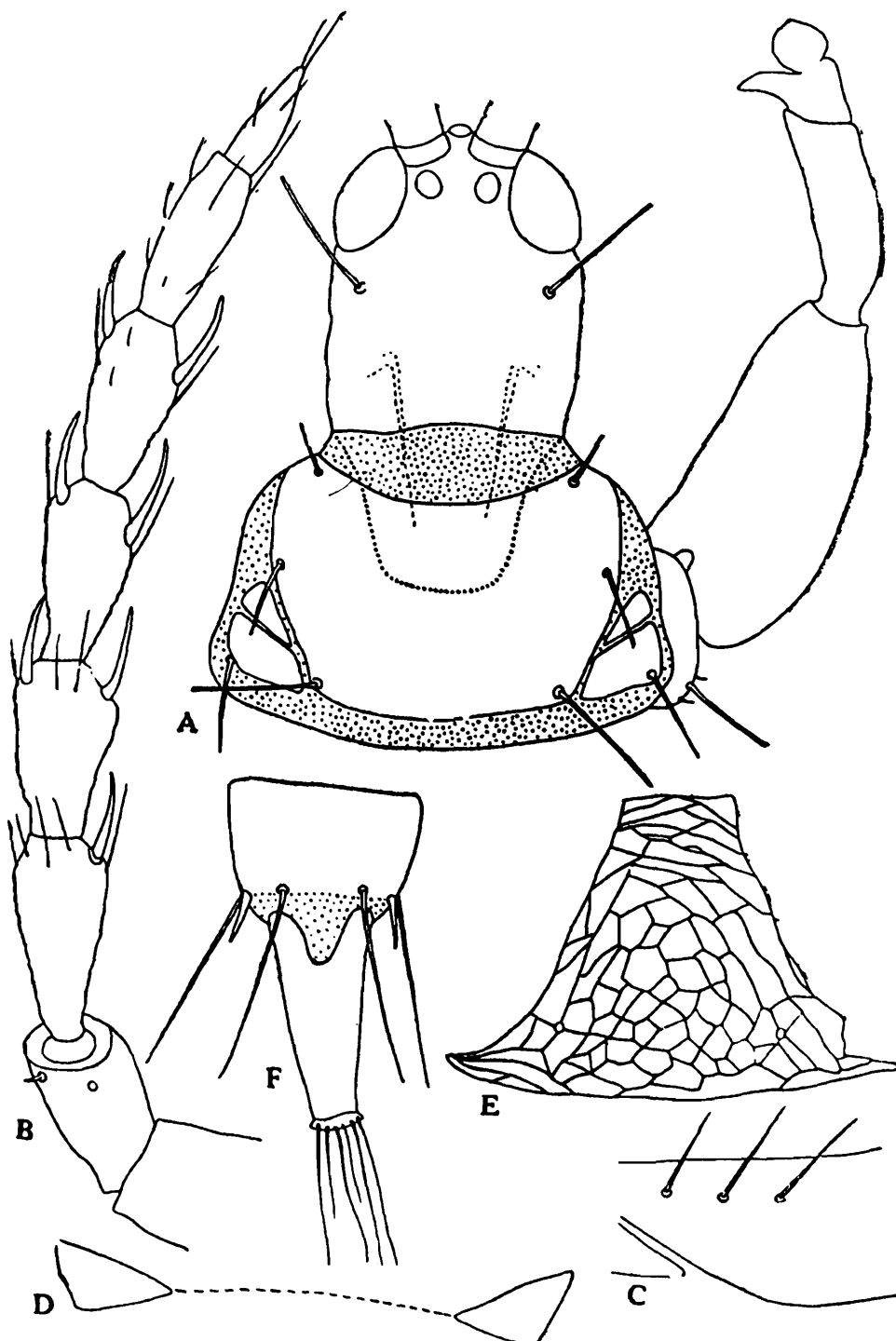
Genus 49. Pegothrips Sen & Muraleedharan

1977. *Pegothrips* Sen & Muraleedharan, *Entomon*, 1(2) : 175.

80. Pegothrips meghalaya Sen & Muraleedharan

(*Text fig. 15*)

1977. *Pegothrips meghalaya* Sen & Muraleedharan, *Entomon*, 1(2) : 175-178.



Pegothrips meghalaya Sen & Muraleedharan A. Head and Prothorax B. Antenna C. Basal wing setae D. Mesopraesternum E. Pelta. F. Segment IX of abdomen and tube of male.

Female (Male): General body colour dark brown, antennal segment 1 dark brown, 2 dark brown at proximal half and margin. 3-8 yellow; all femora, mid and hindtibiae dark brown, foretibiae yellow with a brownish shade at proximal half and along margin, all tarsi yellow; wings clear. All setae hyaline to light brown and pointed.

Head longer than broad, 240-256(200) long, 188(168) wide across eyes, 192-208(172-176) across cheeks, 188-196(164-168) across base; cheeks finely crenulate with 2-5 very minute setae. Eyes small with slight angular projection behind, 80-84(64-68) long, 56-60(44-48) wide; all ocelli 20-24 wide, median ocelli overhanging between bases of antennae. Postoculars thin and pointed 96-104(64-72) long. Antennal segments 3-6 subpedicellate, 4-6 symmetrical, segments 1-8 length(width).

	I	II	III	IV
<i>Female</i> :	52-56(40-48);	52-60(36);	64-72(32-36);	52-60(36-40)
<i>Male</i> :	40-44(36-40);	44-48(28-32);	52-56(28-32);	48-52(28-36)
	V	VI	VII	VIII
<i>Female</i> :	56-64(32-36);	56-60(28-32);	52-56(24-28);	44-48(12-16)
<i>Male</i> :	52-56(32-36);	48-56(28-32);	40-48(24-28);	36-40(16)

Mouthcone short and broad, 104-112 (80-88) long, 120-128 (108-116) wide at base and 104-112(84-92) at apex; maxillary stylets retracted mesad, wide apart 'V' shaped.

Prothorax 208(184-196) long, 240 (208-228) wide at anterior margin and 380 (328-340) at posterior margin. Prothoracic setae : anteroangulars placed away from the lateral margin 56-60(24-36), anteromarginals vestigial, midlaterals 80(36-40), posteroangulars 100-120 (78-84) and epimerals 88-100(60-72) long respectively; epimeral suture complete. Forefemora 260-300(228-240) long, 128(108-116) wide; foretibiae with a tubercle at apex, foretarsi with a downwards curved daggerlike tooth 36-40(32) long. Pterothorax 440-460(380-400) long, 460-480(400-420) wide across meso- and 420-440(380-400) across metathorax. Forewings broad, uniformly wide, 884-918(782-816) long with 2-4 double fringes; basal wing setae B₁-B₃ : 44-48(44-48); 80-84(52-60) and 80-88(56-68) long respectively. Mesopraesternum incomplete, restricted to two very small sclerites.

Abdomen 432(372-392) wide at base, 420-432 (352-360) at middle, 320(268-280) across segment VIII and 192-200(168-180) across segment IX. Pelta roughly triangular with apex flat. B_7 of segment IX of male exceptionally stout, B_1 - B_3 of segment IX : 184-200(160-168) 168-180(36-40) and 184-200(168-180) long respectively. Tube 200-208(164) long; anal setae 164-172(140) long.

Total body length : 2.31-2.35(1.99 2.04) mm.

Specimen studied : **Meghalaya** : *Holotype* ♀ (Z.S.I. Reg. No. 474/ H_{12}) *allotype* ♂ (Z.S.I. Reg. No. 475/ H_{12}) *paratypes* 12 ♀ ♀, 5 ♂ ♂ (Z.S.I. Reg. Nos. 476-492/ H_{12}) Songsak, Garo Hills, ex. leaf galls of wild plant, 22.9.1975, coll. Dr. N. Mnraleedharan. **West Bengal** : 2 ♀ ♀, 1 ♂ (Z.S.I. Reg. Nos. 1392-93/ H_{17} , 1676/ H_{17}) Sukhna, Darjeeling Dt, 30.10.1979, coll. Dr. P. Kulkarni.

Distribution : Meghalaya; Darjeeling Dt. (West Bengal); Uttar Kashi (U.P.)

Genus 50. *Podothrips* Hood

1913. *Podothrips* Hood, *Insec. Inscit menstr*, 1 : 67-70.

1974. *Podothrips* : Ritchie, *J. Ent* (B), 43(2) : 261-282.

KEY TO THE SPECIES OF *PODOTHRIPS* FROM NORTH-EASTERN INDIA

- 1 Body brown. Forewings without double fringe. Forefemora occasionally with a basal hump at inner margin. Antennal segment 3 with one sense cone.

... *lucasseni* (Krugger, 1890)

Body bicolourous; antennal segment 1 brown, 2 brown at base; forefemora brown in proximal half; pterothorax brown laterally and anteriorly; abdominal segment 6 with brown anterior markings. Forewing with double fringes.

... *odonaspicola* (Kurosawa, 1937)

81. *Podothrips lucasseni* (Kruger)

1980. *Phloethrips lucasseni* Kruger, *Ber. Vers. Stn. Zuck Rohr. W. Java*, 1 : 105.
 1928. *Kentronothrips hawaiiensis* Moulton, *Proc. Hawaii Ent. Soc.* 7 (1) : 126.
 1932. *Haplothrips lucasseni* : Girault, *New Pests from Australia*, 10 : 6.
 1938. *Podothrips (Kentronothrips) lucasseni* : Priesner, *Bull. Soc. Ent. Egypte*, 21 : 68
 1938. *Podothrips oryzae* Priesner, *Bull. Soc. Ent. Egypte*, 21 : 72-75.
 1954. *Podothrips oryzae* : Anathakrishnan, *J. zool. Soc. India*, 6 (2) : 104.
 1974. *Podothrips lucasseni* : Ritchie, *J. Ent. (B)*, 43(2) : 273-274.
 1980. *Podothrips lucasseni* : Ananthakrishnan & Sen, *Zool. Surv. India, Handbk Ser.*,
 1 : 111 & 162
 1984. *Podothrips lucasseni* : zur Strassen & Harten, *Senckenbergiana biol.*, 65(1-2) : 90.

Specimen studied : **Tripura** : 1 ♀ (Z.S.I. Reg. No. 302/H₁₇) Garjee,
 Udaipur, 7.11.1974, *coll.* Dr. M. S. Shishodia.
West Bengal : 1 ♀ (Z.S.I. Reg. No. 1759/H₁₇)
 Saradadevi, Coochbehar, 20.10.1982, *coll.* C. K.
 Sen Gupta.

Distribution : **INDIA** : Tamil Nadu; Andhra Pradesh.
Elsewhere : BANGLADESH; JAVA; MALAY;
 THAILAND.

Remarks : This species is recorded for the first time from
 North-Eastern India.

82. *Podothrips odonaspicola* (Kurosawa)

1937. *Haplothrips (Hindsiana) odonaspicola* Kurosawa, *Kontyu*, 11(3) : 266.
 1968. *Podothrips odonaspicola* : O'Neill, *Proc. Ent. Soc. Wash.*, 70(2) : 125.
 1974. *Podothrips odonaspicola* : Ritchie, *J. Ent. (B)*, 43(2) : 277.
 1980. *Podothrips odonaspicola* : Sen, *Rec. zool. Surv. India*, 77 : 352.

Specimen studied : **West Bengal** : 1 ♀ (Z. S. I. Reg. No. 1730/H₁₇)
 Tapurhat, Coochbehar, 25. 10. 1982, *coll.* C.
 K. Sen Gupta.

Distribution : **INDIA** : Andaman Is.
Elsewhere : JAPAN

Remarks : This species is recorded for the first time from
 North-Eastern India, as well as from the main-
 land of India.

Genus 51. *Sophiothrips* Hood

1933. *Sophiothrips* Hood, *J. New York Ent. Soc.* 51 : 425-426.
 1938. *Nanothrips* Faure, *Publ. Univ. Pretoria nat. Sci.*, 4 : 3.
 1977. *Nanothrips* : Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*, 36 (4) : 175-178.
 1982. *Sophiothrips* : Mound & Walker, *Syst. Ent.*, 7 : 349.

83. *Sophiothrips nigrus* Ananthakrishnan

1971. *Sophiothrips nigrus* Ananthakrishnan, *Oriental Ins.*, 5(2) : 197.
 1973. *Sophiothrips nigrus* : Ananthakrishnan, *Occl. Publ. 2, Ent. Res. Unit. Loyola College, Madras* : 58.
 1977. *Nanothrips nigrus* : Mound, *Bull. Br. Mus. nat, Hist. (Ent.)*, 36(4) : 180.

Apterous Female (Male) : General body colour almost uniformly brown except apices of all femora, antennal segments 1-3 and proximal halves of segments 4-6 brownish yellow.

Head 117-140(94-140) long, 140-148(120-140) wide across eyes, 143-156(125-140) across cheeks and base. Eyes 47-50(47-52) long, 40-45 (50) wide. Postoculars 30-35(45-50) long. Antennal segments 3-8 length (width) :

	III	IV	V
<i>Female</i> :	45-55(28-30);	42-50(28-30);	45-50(28-30)
<i>Male</i> :	50-55(25-26);	43-55(25-27);	45-53(25-26)
	VI	VII	VIII
<i>Female</i> :	58-63(28-30);	28-33(18-20);	25(8-10)
<i>Male</i> :	52-63(25-26);	25-38(15-17);	25(8-10)

Mouthparts 102-140(109-155) long, 140-150(170) wide across base and 62-70(60-70) across apex; maxillary stylets short, not retracted into the head capsule.

Prothorax 155-187(140-202) long, 172-195(156-187) wide at anterior margin and 281-291(234-296) at posterior margin. Prothoracic chaetotaxy : anteroangulars and anteromarginals equal 18-20(13-15), midlaterals and posteroangulars equal 15-16 (15-18), and epimerals 50-54(45-50) long respectively. Forefemora 62-70 (62-94) wide, foretarsal tooth 3-6(13-30) long. Pterothorax 172-204(172-187) long, 296-312(250-258) wide across meso- and metathorax.

Abdomen 250-291(187-234) wide across segment VIII and 156-164 (125) across segment IX, B₁-B₃ of segment IX : 88-90(86-100); 80-85 (20-25) and 100-104(113-125) long respectively. Tube 117-140(109-125) long; anal setae 70-75(62) long,

Total body length : 1.4-1.7(1.1-1.4) mm.

Distribution : Kurseong, Darjeeling Dt. (West Bengal)

Genus 52. *Stigmothrips* Ananthakrishnan

- 1964, *Stigmothrips* Ananthakrishnan, *Ent. Ts. Arg.* 85(3-4) : 231.

KEY TO THE SPECIES OF *STIGMOTHRIPS* FROM
NORTH-EASTERN INDIA

1. Wings transparent. Anteromarginals and anteroangulals equal. Epimeral suture complete. Sternite VIII of male with a large glandular area,

... *infirmus* Ananthakrishnan, 1971

Wings faint grey. Anteromarginals shorter than anteroangulals. Epimeral suture incomplete.

... *okajimai* Muraleedharan & Sen, 1981

84. *Stigmothrips infirmus* Ananthakrishnan

1971. *Stigmothrips infirmus* Ananthakrishnan, *J. zool. Soc. India*, 23(2) : 181-183.

1973. *Stigmothrips infirmus* : Ananthakrishnan, *Occl. Publ. 2, Ent. Res. Unit, Loyola College, Madras* : 62-63.

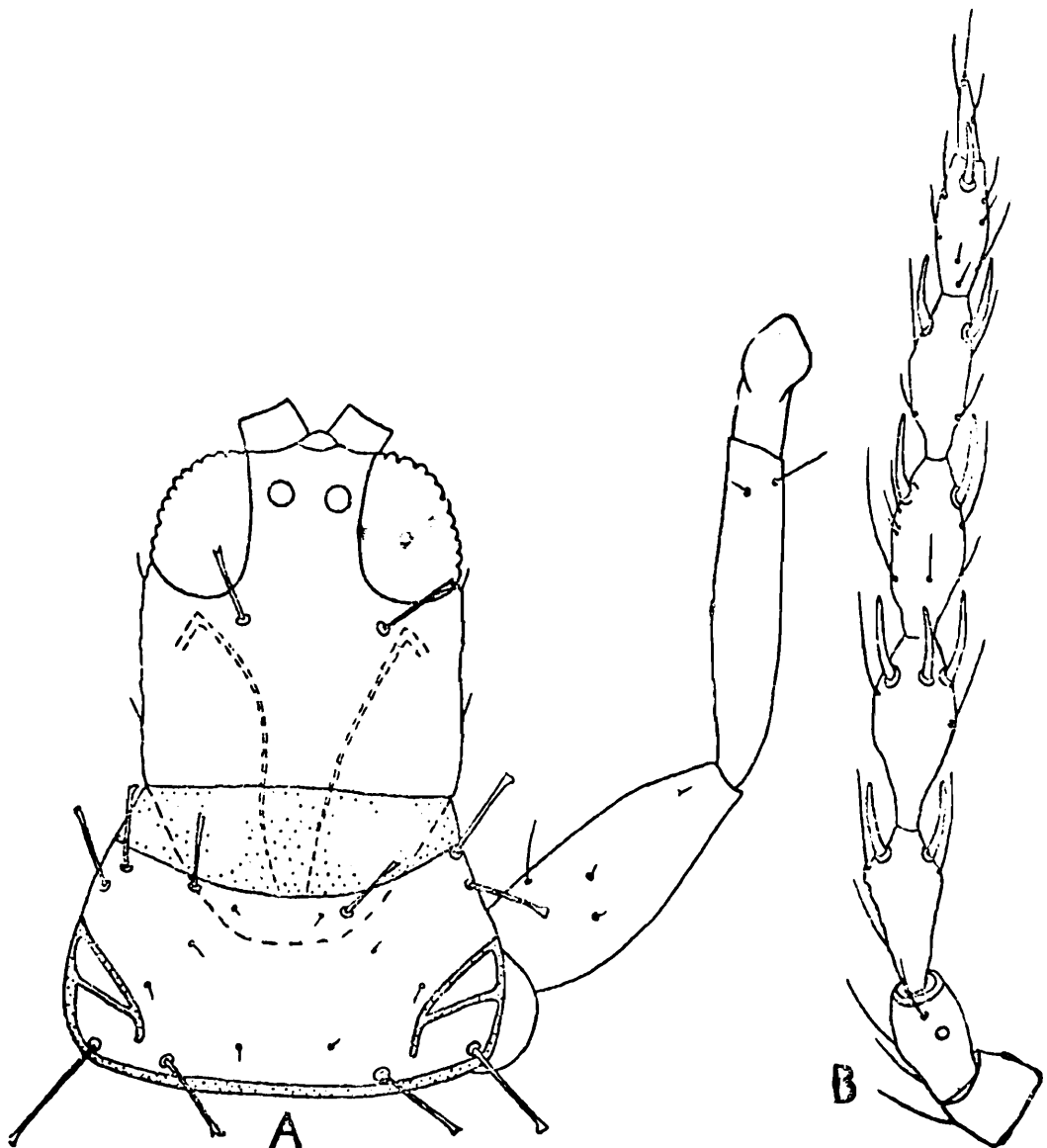
Distribution : Kurseong, Darjeeling Dt. (West Bengal)

85. *Stigmothrips okazimai* Muraleedharan & Sen

(*Text fig. 16*)

1981. *Stigmothrips okazimai* Muraleedharan & Sen, *Rec. zool. Surv. India*, 79 : 227-229.

1982. *Stigmothrips okazimai* : Muraleedharan, *Rec. zool. Surv. India*, 79 : 381.



Stigmothrips okazimai Muraleedharan & Sen A. Head & Prothorax. B. Antenna

Female (Macropterous) : General body colour light brown with plenty of red pigmentation; head, thorax and tube darker; antennal segments 1,2,7 & 8 brown, 4 & 5 bicoloured pale in proximal third and rest brown, 6 pale yellow with faint brown shade in distal third; all femora golden yellow with brownish shade, fore-and hind tibiae yellow, midtibiae yellow with shaded brown, all tarsi whitish yellow; forewings faint grey with a median streak in basal half. All setae hyaline, knobbed to dilated at tip.

Head very little longer than broad, 168-176 long, 140-148 wide across eyes, 156-170 across cheeks, 152-160 across base, cheeks finely crenulate with 2-3 spines; surface reticulate; vertex sub-conial. Eyes 76-78 long, 48-50 wide, all ocelli 24-28 wide, very close to each other. Postoculars 36-38 long, dilated at tip. Antennal segments 3-6 subpedicellate, segments 1-8 length (width) : I : 24-28(32); II : 42(24-28); III : 56-58(26-28); IV : 52-56(24); V : 52-58(20); VI : 46-50(20); VII : 40-42(16); VIII : 28(12); sense cones 24-28 long. Mouthcone very short and broad, 54-60 long, 114-118 wide at base, 64-88 at apex; maxillary stylets oculad, somewhat close and parallel sided.

Prothorax weakly sculptured, about half as long as head, 95-120 long, 172-176 wide at anterior margin, 202-206 at posterior margin. Anteroangulars 38, anteromarginals 24-32, midlaterals 36-38, posteroangulars 38 and epimerals 46 long respectively; epimeral suture incomplete. Pterothorax 228-248 long, 240-256 wide across meso- and 250-260 across metathorax. Forewings narrow 600-610 long, 32-54 wide with 4-5 double fringes; basal wing setae B_1 - B_2 equal and dilated at tip, B_3 blunt - 38; 38 & 62 long respectively. Mesopraesternum parallel sided, expanded laterally.

Abdomen 240-244 wide at base, 222-228 at middle, 164-172 across segment VIII, 114-116 across segment IX. Pelta bell shaped. B_1 - B_3 of segment IX short : 54; 46 and 64-76 long respectively. Tube 100-104 long, anal setae 76-80 long.

Total body length : 1.56-1.65 mm.

Specimen studied : Tripura : *Holotype* ♀ (Z.S.I. Reg. No. 241/ H_{17}), *paratypes* 5 ♀ ♀ (Z.S.I. Reg. Nos. 242-246/

H₁₇) Kalirbazar, *ex.* dry leaves, 1.10.1977, *coll.* Dr. N. Muraleedharan. *Paratype* 1 ♀ (Z.S.I. Reg. No. 247/H₁₇) Chandrapur, *ex.* dry twigs, 7.10.1977, *coll.* Dr. N. Muraleedharan, 2 ♀ ♀ (Z.S.I. Reg. Nos, 264-65/H₁₇) Amarapur, 21.10.1977, *coll.* Dr. N. Muraleedharan **Meghalaya** : *Paratypes* 3 ♀ ♀ (Z.S.I. Reg. Nos. 248-250/H₁₇) Songsak, Garo Hills, *ex.* dry leaves, 19.9.1975, *coll.* Dr. N. Muraleedharan. **Manipur** : 4 ♀ ♀ (Z.S.I. Reg. Nos. 667-670/H₁₇) Churachandpur, 23.3.1979, *coll.* Dr. N. Muraleedharan.

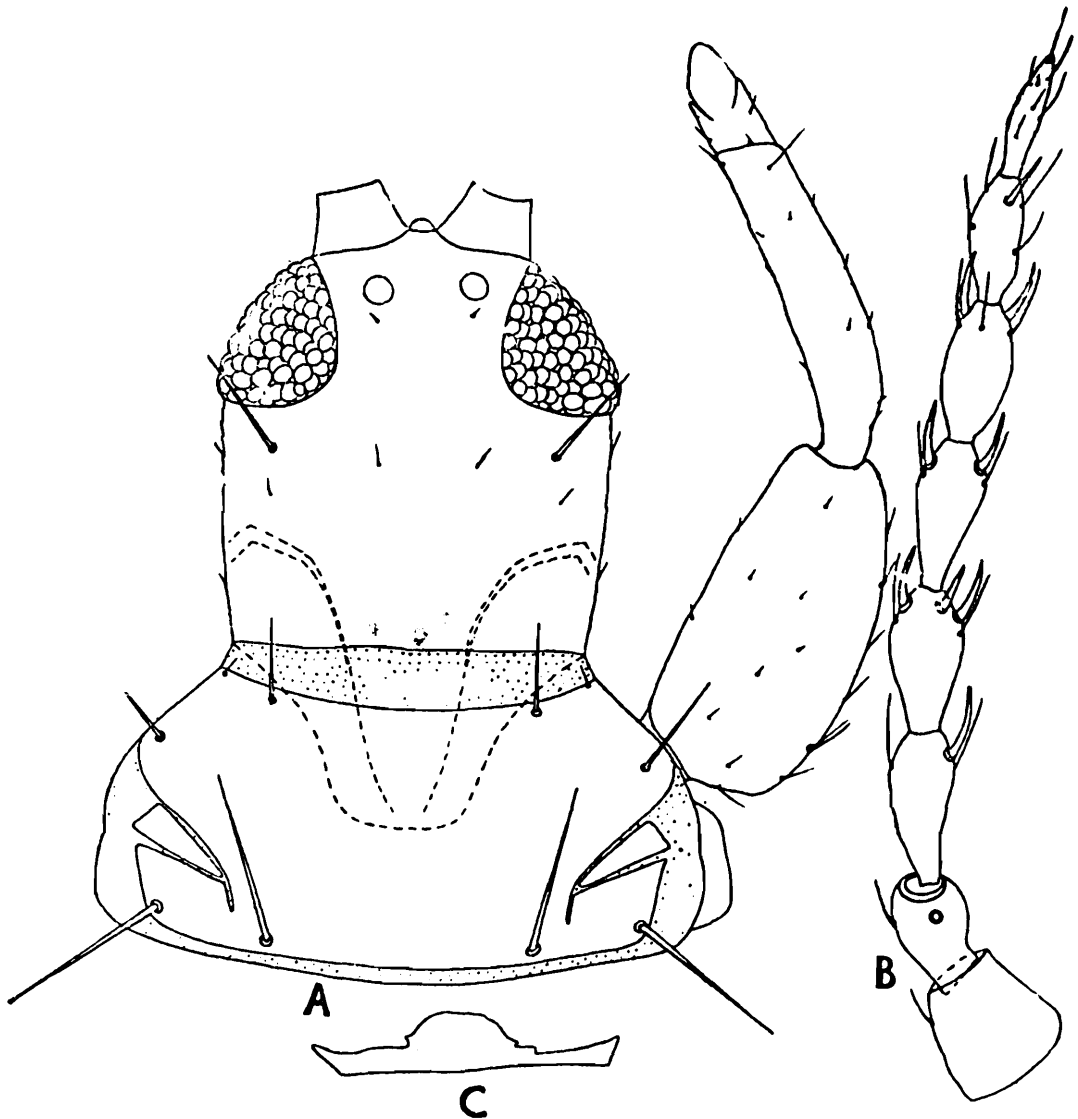
Distribution : Tripura; Meghalaya; Manipur.

Genus 53. Thlibothrips Priesner,

1952. *Thlibothrips* Priesner, *Indian J. Ent.* 13(2) : 199-200.

86. Thlibothrips manipurensis Muraleedharan
(*Text-fig. 17*)

1982. *Thlibothrips manipurensis* Muraleedharan *Rec. zool. surv. India.*, 79 : 381-383.



Thlibothrips manipurensis Muraleedharan

A. Head and Prothorax B. antenna.
C. Mesopraesternum.

Female (Male) : General body colour brown; antennal segments 1, 2, 7 & 8 and distal half of 6 dark brown. 3 & 4 pale yellow, apex of 5 with brownish tinge; all femora, mid-and hindtibiae dark brown, foretibiae yellow with margins dark brown and in some cases almost completely dark brown reducing the yellow portion to a long median streak, foretarsi yellow, mid-and hindtarsi pale brown; wings clear. All setae pale brown and pointed.

Head 220-240(204) long, 196-220(192) wide across eyes; 196-220 (168-184) across cheeks and 168-204(164-168) across base; cheeks crenulate with 2-3 minute setae; surface strongly reticulate. Eyes angular behind, 88(76-88) long, 60-68(60) wide; all ocelli 24-28 wide, median ocellus overhanging between base of antennae and paired ones placed above middle of eyes. Antennal segments elongate, segment 8 long and fusiform, very little shorter than 7, segments 1-8 length (width) :

	I	II	III	IV
<i>Female</i> :	44-56(40-48);	44-58(36);	72(32);	68-72(36)
<i>Male</i> :	48(36-40);	40(32-36);	64(28-32);	60-68(32)
	V	VI	VII	VIII
<i>Female</i> :	64-68(28);	60(24-28);	52-60(20-24);	52-56(12-16)
<i>Male</i> :	52-60(24-28);	52-56(24);	48(20);	44-48(12)

Mouthcone broad, 116-120(100-104) long, 168-200(164-172) wide at base, 72-92(80) at apex; maxillary stylets retracted to $\frac{1}{3}$ of head capsule, wide apart.

Prothorax sculptured, 148-164(152) long. 180-220(176-200) wide at anterior margin and 296-356(288-300) at posterior margin. Prothoracic chaetotaxy : anteroangulars vestigial, anteromarginals 40-48(40), midlaterals 60-68(60), posteroangulars 120(80-88) and epimerals 92-96(80) long respectively; epimeral suture incomplete. Pterothorax 391-442(374) long, 368-442(357) wide across meso-and 364-442(357) across metathorax. Forewings 800-816(663-680) long, 80(80-84) wide with 15-17(14) double fringes; basal wing setae B_1 - B_3 : 44(36-44); 56-60(44-56) and 60(44-60) long respectively. Mesopraesternum complete with a median crest.

Abdomen weakly sculptured, 408-425(352) wide at base, 408(320-328) at middle, 289-323(216-220) across segment VIII and 170(148) across segment IX. Pelta roughly triangular. B_1 - B_3 of segment IX : 184-216(180-192); 196-212(48-68) and 164-168(180) long respectively. Tube 240-252(212-216) long and anal setae 96-140(100-120) long.

Total body length : 2.15-2.52(2.09-2.10) mm.

Specimen studied : Manipur : *Holotype* ♀ (Z.S.I. Reg. No. 671/H₁₇)
allotype ♂ (Z.S.I. Reg. No. 672/H₁₇) *paratypes* 8
 ♀ ♀, 2 ♂ ♂ (Z.S.I. Reg Nos. 673-682/H₁₇) Moreh,
 ex. leaf gall, 11.3.1979, coll. Dr. N. Muralee-
 dharan.

Distribution : Manipur.

Genus 54. Tylothrips Hood

1932. *Tylothrips* Hood, *Revta. Ent. Rio. de J*, 7 (4) : 494.

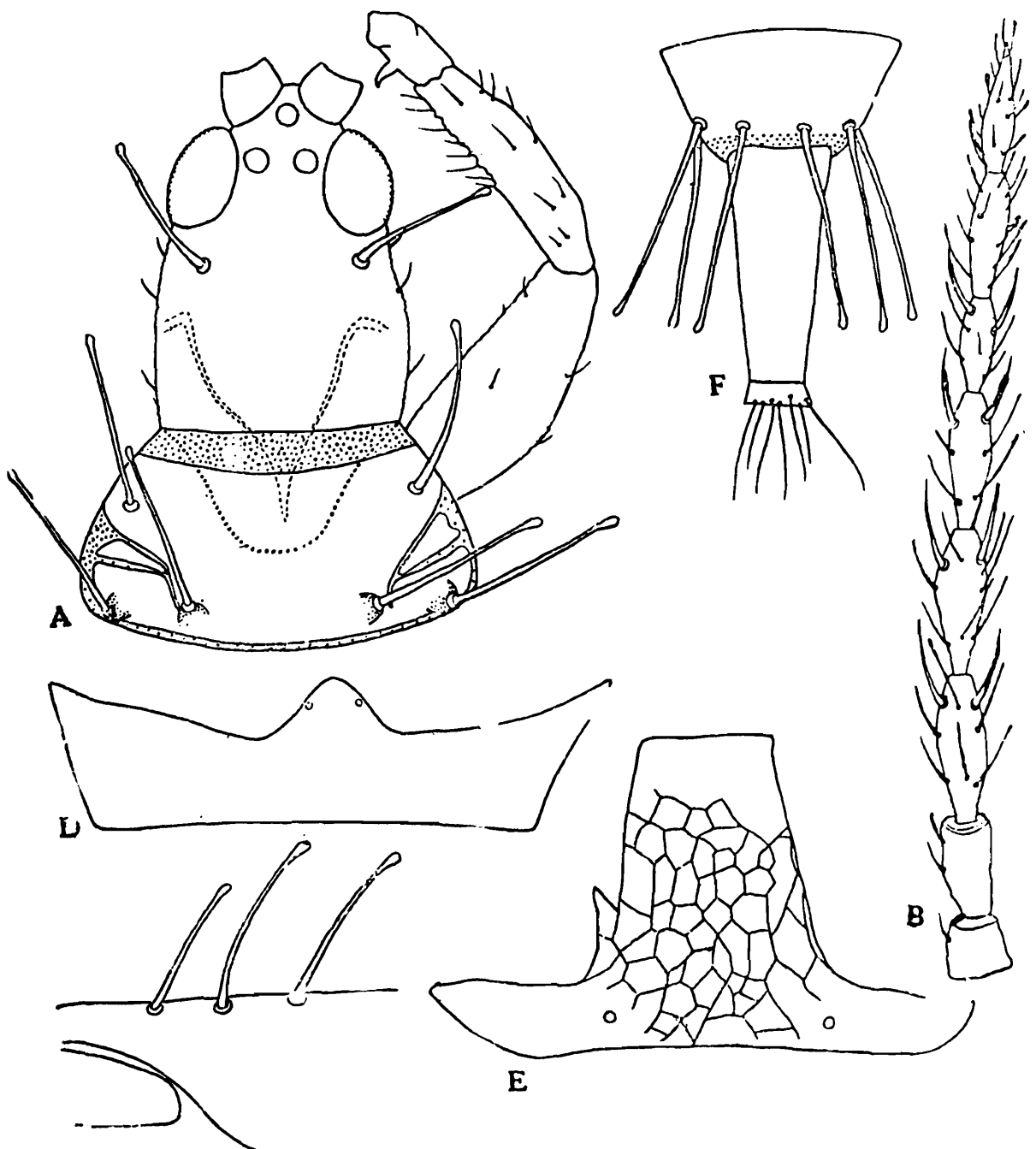
1949. *Tylothrips* : Priesner, *Bull. Soc. Found I. Ent.*, 33 : 89, 91.

1977. *Tylothrips* : Sen & Muraleedharan, *Entomon*, 1 (2) : 180.

87. Tylothrips indicus Sen & Muraleedharan

(*Text-fig. 18*)

1977 *Tylothrips indicus* Sen & Muraleedharan, *Entomon*, 1 (2) : 180-182.



Tylothrips indicus Sen & Muraleedharan. A. Head and Prothorax. B. Antenna. C. Basal wing setae. D. Mesopraesternum. E. Pelta, F. Last Abdominal segment and Tube.

Female (Male) : General body colour inclusive of antennae and legs dark brown with a blackish shade along the outer margin of antennae, cheeks and legs; forewings grey with a median streak. All setae dark brown, lighter at tip, long, stout and knobbed at tip.

Head a little produced in front of eyes, notched behind eyes, 248-280(228) long, 172-180(160) wide across eyes, 200(168) across cheeks and 192-196(152) across base; cheeks warty with 3 moderately strong spines, sides convex, converging at base; surface strongly reticulate. Eyes bulged, 76-80(80) long, 48-56(44-48) wide; all ocelli 20-24 wide. Postoculars 1.5 times longer than eyes, stout, expanded at tip 120-136 (104-112) long. Antennae very long 2.5 times longer than head, segments 3-6 pedicellate, 7 subpedicellate and almost rectangular, 8 constricted at base, pedicel of 3 crenulate; segments 1-8 length (width).

	I	II	III	IV
<i>Female</i> :	52-60(44-48);	60-64(32-36);	100-108(32-36);	96-104(36-40)
<i>Male</i> :	52(40);	56(32);	92(28);	96(28)
	V	VI	VII	VIII
<i>Female</i> :	88-96(28-32);	64-76(28-32);	84-92(24 28);	76-84(24-28)
<i>Male</i> :	88(28);	68(24);	72(24);	76(24)

Mouthcone very short and broad, 80-92(80) long, 120-132(116) broad at base and 72-80(80) at apex; maxillary stylets retracted measd, wide apart.

Prothorax 140-180(136) long, 234-240(180) wide at anterior margin, 300-340(260) at posterior margin. Prothoracic chaetotaxy : anteroangulars wanting, anteromarginals very weak 16-20, midlaterals 123-136(112), posteroangulars 140-148(104-112) and epimerals 140-156(120-128) long respectively; all setae arise from cone-like tuberculate projection, the cone of epimerals more prominent. Forefemora with minute tubercles, foretibiae long inner margin with 10-11 prominent teeth-like tubercles bearing setae, foretarsi with a incurved tooth 20(24) long. Pterothorax 460-529(400) long, 420-500(355) wide across meso- and 400-520(360) across metathorax. Forewings 1.037-1.105 mm. (918) long, 88(76) wide at base, 60(56) wide at middle and 28-40(48) at apex; double fringes absent; basal wing setae B₁-B₃ long, stout and expanded at tip : 38-100(80): 116-120 (72) and 96-100(80) long respectively. Mesopraesternum very well developed with a median crest.

Abdomen 460-500(364) wide at base, 440-560(300) at middle, 288-320(216) across segment VIII and 180-196(132) across segment IX. Pelta roughly triangular with apex flat. B_1 - B_3 of segment IX knobbed; 160-168(136-140); 160-176(44-48) and 164-172(160) long respectively. Tube 200(160) long and anal setae 100-120(100) long.

Total body length : 2.5-2.7(1.94) mm.

Specimen studied : Meghalaya : *Holotype* ♀ (Z.S.I. Reg. No. 509/ H_{T2}) *allotype* ♂ (Z.S.I. Reg. No. 510/ H_{T2}) *paratypes* 2 ♀ ♀ (Z.S.I. Reg. Nos. 511-512/ H_{T2}) Mawphlang, Shillong, 6.9.1975, coll. Dr. N. Muraleedharan.

Distribution : Meghalaya.

Genus 55. *Xylaplothrips* Priesner

1928. *Haplothrips* (*Xylaplothrips*) Priesner, *Thys. Europas* : 572.

1964. *Xylaplothrips* : Priesner, *Bestimmungsbucher zur Bodenfauna Europas*, 2 : 171.

1976. *Xylaplothrips* : Pitkin, *Bull. Br. Mus. nat. Hist. (Ent.)*, 34 (4) : 268.

KEY TO THE SPECIES OF *XYLAPLOTHRIPS* FROM NORTH-EASTERN INDIA

1. Antennal segments 4 & 5 pale yellow. Foretarsi with a small claw.

... *pictipes* (Bagnall, 1919)

Antennal segments 4 & 5 brown ... 2

2. Foretarsi unarmed. Head and pronotum brown, concolourous or slightly darker than antennal segments 4-8; wings shaded grey; anteromedian region of abdominal segments II-VIII with brownish patches. Mesopraesternum reduced. B_1 and B_2 of abdominal segment IX pointed.

... *debisli* Ananthakrishnan & Jagadish, 1971

Foretarsi armed. Head and thorax brown; abdominal segments III-IX distinctly paler than head with median transverse brown patches; wing grey. Mesopraesternum reduced. B_1 - B_3 of abdominal segment IX of female subequal.

... *pusillus* Ananthakrishnan & Jagadish, 1969.

88. Xylaplothrips debilis Ananthakrishnan & Jagadish

1971. *Xylaplothrips debilis* Ananthakrishnan & Jagadish, *Zool. Anz.* **186** : 266-267.
 1976. *Xylaplothrips debilis* : Pitkin, *Bull. Br. Mus. nat. Hist. (Ent.)*, **34** : (4) : 268-269.
 1980. *Xylaplothrips debilis* : Ananthakrishnan & Sen, *Zool. surv. India. Handbk. Ser. 1* : 116 & 166.

Specimen studied : **Arunachal Pradesh** : 1 ♀ (Z.S.I. Reg. No. 1961/H₁₇) Miao, Tirap Dt., Namdapha, 7.12.1982, coll. Dr. S. Biswas. **West Bengal** : 2 ♀ ♀ (Z.S.I. Reg. Nos. 1954/H₁₇; 2013/H₁₇) Tapurhat, Coochbehar, 25.10.1982, 1.1.1984, coll. C. K. Sen Gupta.

Distribution : Kerala; Andhra Pradesh

Remarks : This species is recorded for the first time from North-Eastern India.

89. Xylaplothrips pictipes Ananthakrishnan & Jagadish

1919. *Haplothrips pictipes* Bagnall, *Ann. Mag. nat. Hist.*, (9) **4** : 273-274.
 1968. *Neoheegeria pictipes* : Mound, *Bull. Br. Mus. nat. Hist. (Ent.) Suppl.*, **11** : 139.
 1969. *Xylaplothrips pictipes* : Ananthakrishnan, *C. S. I. R. Zool. Monogor.* **1** : 122.
 1976. *Xylaplothrips pictipes* : Pitkin, *Bull. Br. Mus. nat. Hist. (Ent.)*, **34** (4) : 274.
 1980. *Xylaplothrips pictipes* : Ananthakrishnan & Sen, *Zool. surv. India. Handbk. Ser. 1* : 116 & 166.

Specimen studied : **West Bengal** : 8 ♀ ♀, 2 ♂ ♂ (Z.S.I. Reg Nos. 983-988/H₁₇, 1050/H₁₇, 1535-37/H₁₇) Tapurhat, Coochbehar, 10.10.1980; 15.10.1980; 17.10.1980; 7.10.1981, coll. C. K. Sengupta.

Distribution : Kerala; Karnataka.

Remarks : This species is recorded for the first time from North-Eastern India.

90. Xylaplothrips pusillus Ananthakrishnan & Jagadish

1969. *Xylaplothrips pusillus* Ananthakrishnan & Jagadish, *Zool. Anz.*, **182** (1-2) : 125-126.
 1976. *Xylaplothrips pusillus* : Pitkin, *Bull. Br. Mus. nat. Hist. (Ent.)*, **34** (4) : 274-276.
 1980. *Xylaplothrips pusillus* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser.*, **1** : 116 & 166.

Specimen studied : **Manipur** : 1 ♀ (Z.S.I. Reg. No. 1350/H₁₇) Moreh, 12.3.1979, *coll.* Dr. N. Muraleedharan. **West Bengal** : 5 ♀ ♀ (Z.S.I. Reg. Nos. 1750/H₁₇, 1760-63/H₁₇) Coochbehar, 20.10.1982, *coll.* C. K. Sengupta. **Assam** : 1 ♀, 1 ♂ (Z.S.I. Reg. Nos. 1764/H₁₇, 1778/H₁₁) Goshgaonhat, Goalpara Dt., 18.10.1982, *coll.* C. K. Sen Gupta.

Distribution : Andhra Pradesh; Kerala.

Remarks : This species is recorded for the first time from North-Eastern India.

Subfamily IDOLOTHRIPINAE

Genus 56. *Allothrips* Hood

1908. *Allothrips* Hood, *Bull. Ill. nat. Hist. Surv.*, **8** : 372-373.
 1949. *Allothrips* : Priesner, *Bull. Soc. Fouad Ier. Ent.*, **33** : 88, 119.
 1957. *Allothrips* : Stannard, *Ill. Biol. Monogr.*, **25** : 91-93.
 1957. *Allothrips* : Ananthakrishnan, *Proc. ent. Soc. Wash.*, **60**(6) : 77.
 1964. *Allothrips* : Ananthakrishnan, *Opusc. ent. Suppl.* **25** : 83.
 1973. *Allothrips* : Ananthakrishnan, *Occl. Publ. 2, Ent. Res. Unit. Loyola College, Madras* : 77.

91. *Allothrips pillichellus bicolor* Ananthakrishnan

1964. *Allothrips bicolor* Ananthakrishnan, *Opusc. ent. Suppl.*, **25** : 83-84.
 1972. *Allothrips pillichellus bicolor* : Mound, *J. Aust. ent. Soc.*, **11** : 34-35.
 1973. *Allothrips bicolor* : Ananthakrishnan. *Occl. Publ. 2, Ent. Res. Unit., Loyola College, Madras* : 78.
 1980. *Allothrips pillichellus bicolor* : Ananthakrishnan & Sen, *Zool. Surv. India, Handbk. Ser 1* : 117.

Distribution ; *North-Eastern India* : Kalimpong, Darjeeling Dt, (West Bengal)

Elsewhere in India : Tamil Nadu; Kerala; Karnataka; Andhra Pradesh.

Genus 57. *Bactrothrips* Karny

1912. *Bactrothrips* Karny. *Ent. Rundschau*, **29** : 131
 1919. *Bactrothrips* Karny, *Zeit. f. Wiss. Ins. biol.*, **14** : 116.
 1949. *Bactrothrips* : Priesner, *Bull. Soc. Fouad Ier. Ent.*, **33** : 66, 121.
 1964. *Bactrothrips* : Ananthakrishnan, *Opusc. ent. Suppl.*, **25** : 84-85.
 1973. *Bactrothrips* : Ananthakrishnan, *Occl. Publ., 2, Ent. Res. Unit. Loyola College, Madras* : 79.
 1983. *Bactrothrips* : Mound & Palmer, *Bull. Br. Mus. nat. Hist. (Ent.)*, **46** (1) : 72-73.

92. *Bactrothrips idolomorphus* (Karny)

1919. *Bactridothrips idolomorphus* Karny, *Zeit. f. Wiss, Ins.-biol.*, 14 : 117-118.
 1970. *Bactridothrips idolomorphus* : Ananthakrishnan, *Oriental Ins.*, 5 (2) : 204-206.
 1921. *Bactrothrips serraticornis* Bagnall, *Ann. Mag. nat. Hist.*, (9) 8 : 397.
 1964. *Bactridothrips serraticornis* : Ananthakrishnan, *Opusc. Ent. Suppl.*, 25 : 85-86.
 1973. *Bactrothrips idolomorphus* : Ananthakrishnan, *Occl. Publ. 2, Ent. Res. Unit. Loyola College, Madras* : 80-81.
 1982. *Bactrothrips idolomorphus* : Muraleedharan, *Rec. zool. Surv. India*, 79 : 376.
 1983. *Bactrothrips idolomorphus* : Mound & Palmer, *Bull. Br. Mus. nat. Hist. (Ent.)*, 46(1) : 73.

Specimen studied : Manipur : 1 ♀, 2 ♂♂ (Z.S.I. Reg. Nos. 639-641/H₁₇) Ukhrul, 17.3.1979, coll. Dr. N. Muraleedharan.

Distribution : INDIA : Kerala; Bhowali (U.P.) : Manipur

Elsewhere : MALAYA; SRI LANKA

Genus 58. *Dinothrips* Bagnall

1938. *Dinothrips* Bagnall, *Trans. nat. Hist. Soc. Northumb.*, 3 : 190.
 1961. *Paxillothrips* Ananthakrishnan, *J. zool. Soc. India*, 12 : 250.
 1978. *Dinothrips* : Palmer & Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*, 37 (5) : 166.
 1983. *Dinothrips* : Mound & Palmer, *Bull. Br. Mus. nat. Hist. (Ent.)*, 46(1) : 64.

KEY TO THE SPECIES OF *DINOTHRIPS* FROM
NORTH-EASTERN INDIA

1. Mesothoracic process of male small. Antennal segment 3 pale at base. Pronotal anteromarginal setae longer than the distance between their bases. Median pair of setae on vertex small; cheek setae long and pale.

... *juglandis* Moulton, 1933

Mesothoracic process long. Antennal segment 3 dark at base and less than 3.5 times as long as the apical dark band of this segment. Cheek setae long & pale in male and shorter & sometimes dark in female. Males usually and females often with more than one pair of major posteroangular setae; epimeral tubercles often well developed.

... *sumatrensis* Bagnall 1908

93. *Dinothrips juglandis* Moulton

1933. *Dinothrips juglandis* Moulton, *Indian For. Rec.* 19 : 6.
 1978. *Dinothrips jnglandis* : Palmer & Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*,
 37(5) : 167.
 1980. *Dinothrips juglandis* : Ananthakrishnan & Sen, *Zool surv. India, Handbk. Ser.*
 1 : 118 & 168.
 1983. *Dinothrips juglandis* : Mound & Palmer, *Bull. Br. Mus. nat. Hist. (Ent.)*,
 46(1) : 64.

Distribution : INDIA : Lopchu, Darjeeling Dt. (West Bengal).

Elsewhere : BURMA

94. *Dinothrips sumatrensis* Bagnall

1908. *Dinothrips sumatrensis* Bagnall, *Trans. nat. Hist. Soc. Northumb.*, 3 : 191.
 1926. *Dinothrips sumatrensis* : Karny, *Mem. Dept. Agri. India Ent. Ser.*,
 9(6) : 239
 1964. *Dinothrips sumatrensis* : Ananthakrishnan, *Oppusc. ent. Suppl.*, 25 : 88-90.
 1968. *Dinothrips sumatrensis* : Mound; *Bull. Br. Mus. nat. Hist. (Ent.)*
Suppl., 11 : 84.
 1978. *Dinothrips sumatrensis* : Palmer & Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*,
 37(5) : 170-171.
 1980. *Dinothrips sumatrensis* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk.*
Ser. 1 : 118 & 168.
 1981. *Dinothrips sumatrensis* : Muraleedharan & Sen, *Rec. zool. Surv. India*, 79 : 209.
 1983. *Dinothrips sumatrensis* : Mound & Palmer, *Bull. Br. Mus. nat. Hist.*
(Ent), 46(1) : 64.

Specimen studied : Meghalaya 1 ♂ (Z.S.I. Reg.No. 563/H₁₂) Shillong,
 6.9.1975, coll. Dr. N. Muraleedharan. 1 ♂ (Z.
 S.I. Reg. No 532/H₁₂) Songsak, 21.9.1975, coll.
 Dr. N. Muraleedharan. 10 ♀ ♀ 7 ♂ ♂ (Z.S.I.
 Reg. Nos. 441-457/H₁₂) Dainadubi, Garo Hills,
 10.9.1975, coll. Dr. N. Muraleedharan. Assam :
 2 ♀ ♀, 1 ♂ (Z.S.I. Reg. Nos. 290-291/H₁₂ , 338/
 H₁₂) Kaziranga, 15.11.1974, coll. Dr. T. Sen
 Gupta. Arunachal Pradesh : 9 ♀ ♀, 6 ♂ ♂
 (Z.S.I, Reg. Nos. 1501-06/H₁₇ , 1544-48/H₁₇ ,
 1962/H₁₇ , 2030-32/H₁₇) Gibbon's Land, Nam-
 dhapa, 3.5.1981, coll. Dr. S. Biswas. 2 ♀ ♀

(Z.S.I.Reg.Nos. 1868-69/H₁₇) Miao, Tirap Dt., Namdapha, 30.11.1982, coll. Dr. S. Biswas. Tripura : 1 ♀ (Z.S.I. Reg. No. 136/H₁₇) Chandrapur, 8.10.1977, coll. Dr. N. Muraleedharan.

Distribution : INDIA : Tamil Nadu; Karnataka; Kerala; Tripura;

Flsewhere : SUMATRA; SRI LANKA; BHUTAN; MALAYA; JAVA; BORNEO.

Genus 59. *Elaphrothrips* Buffa

1909. *Elaphrothrips* Buffa, *Redia*, 5 : 162-163.
 1909. *Dicaiothrips* Buffa, *Redia*, 5 : 169-170.
 1932. *Elaphrothrips* (*Elaphrothrips*) : Bagnall, *Ann. Mag. nat. Hist.*, (10) 10 : 516-517.
 1973. *Elaphrothrips* (*Cradothrips*) Ananthakrishnan, *Pacific Insects*, 15 : 273,
 1978. *Elaphrothrips* : Palmer & Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*, 37(5) : 171-174.

KEY TO THE SPECIES OF *ELAPHROTHRIPS* FROM NORTH-EASTERN INDIA

1. Forefemora of females with a distinct tooth at middle of inner margins, males without, oedymorous males with sickle like setae at apex of forefemora. Cephalic production very short. All tibiae dark.

.... *insignis* Ananthakrishnan, 1973

Forefemora of females unarmed; without any hump or tooth or conical process on one or both margins 2

2. Cephalic production pronounced about 0.9-1.2 times long as wide. Oedymorous males without sickle-like setae at the apex of forefemora; all tibiae basally more brownish and yellowish beyond middle. Antennal segment 3 yellow with a tinge of brown at apex; 4 & 5 yellow at proximal half and brown beyond.

.... *denticollis* (Bagnall, 1909)

Cephalic production much shorter, distinctly wider than long, almost 0.5 times as long as wide. 3

3. Foretarsi of females unarmed; all tibiae basally more brownish and yellowish distally. Antennal segments 3 yellowish with a tinge of brown at apex, 4 & 5 yellow at proximal half and brown distally. Pronotal anteromarginals shorter than anteroangulars; midlaterals, epimerals and posteroangulars almost subequal.

.... *curvipes* Priesner, 1929

Foretarsi of females armed. Antennal segment 3 brown with the distal tip yellow, 4 & 5 proximal half yellow, and brown distally; all tibiae uniformly brownish; body setae brown.

.... *procer* Schmutz, 1913

95. *Elaphrothrips curvipes* Priesner

1929. *Elaphrothrips curvipes* Priesner, *Treubia*, **11** : 206.
 1973. *Elaphrothrips secus* Ananthakrishnan, *Pacific. Insects*, **15**(2) : 278.
 1978. *Elaphrothrips curvipes* : Palmer & Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*, **37** (5) : 178-179.
 1980. *Elaphrothrips curvipes* : Ananthakrishnan & Sen, *Zool surv India. Handbk. Ser. 1* : 120 & 168.
 1983. *Elaphrothrips curvipes* : Mound & Palmer, *Bull. Br. Mus nat. Hist. (Ent)*, **46** (1) : 66.

Female (Male) : General body colour dark brown; antennal segments 1 & 2 brown, 3 yellow brownish tinged at apex, 4 proximal two third yellow rest pale brown, 5 proximal half yellow rest brown; all femora brown, foretibiae yellowish brown with extreme apex yellow, midtibiae extreme base tinged yellow proximal half brown rest yellow, hindtibiae proximal third brown rest yellow, all tarsi yellow, wings clear. All setae hyaline and blunt.

Head 531(531) long, 249(241-299) wide across eyes, 199(183-232) across cheeks, 215-232(208-282) at base; head production 66(74-91) long, 133(116-166) wide, major setae on head production 148-182 (135-166). Postoculrars two pairs, outer 182-195(155-190) and inner 148(153-169) long respectively. Antennal segments 3-8 length (width) ;

	III	IV	V
<i>Female</i> :	155-183(41);	174-183(41);	164-166(33)
<i>Male</i> :	166-232(41-50);	174-199(35-50);	166-183(33 41);
	VI	VII	VIII
<i>Female</i> :	116(29-33);	66(21-25);	50-66(17)
<i>Male</i> :	108-116(25-33);	66-74(17-25);	58-66(13-17)

Prothorax 249-266(249-365) long, 249(249-315) wide at anterior margin, 415-432(382-581) at posterior margin. Prothoracic chaetotaxy : anteroangulars 62-65(57-99), anteromarginals 39-42(52-55), midlaterals 120(96-117), posteroangulars 120(104-117) and epimerals 122-140(117-156) long respectively. Forefemora 133-166(133-274) wide, foretarsal tooth absent in female and 21-66 long in males. Forewings 1.7-1.8(1.5-1.8) mm. long, 116-133(100-116) wide with 29(27-31) double fringes; basal wing setae B_1 - B_3 : 104-114(88-130); 117-143(91-114); 205-234 (172-247) long respectively.

Pelta roughly pyramid shaped. B_1 - B_3 of abdominal segment IX : 465-515 415-498); 415-488(299-332) and 515-531(432-481) long respectively. Tube 531-548(448-531) long; anal setae 315-332(282-332) long

Total body length : 4.1-5.3 (4.5-6.3) mm.

Specimen studied : **Meghalaya** : 1 ♀ (Z.S.I. Reg. No. 562/ H_{T_2}) Shillong, 6.9.1975, coll. Dr. N. Muraleedharan.
West Bengal : 1 ♀ (Z.S.I. Reg. No. 461/ H_{T_2}) Rongpo, Darjeeling; Dt., 16.4.1976, coll. A. R. Bhaumik. 5 ♀ ♀, 2 ♂ ♂ (Z.S.I. Reg. No. 999-1000/ H_{17} , 1044-48/ H_{17}) Coçhbehar, 12.10.1980, coll. C. K Sengupta, **Manipur** : 1 ♀, 2 ♂ ♂ (Z.S.I. Reg. Nos. 1347-48/ H_{17} , 2029/ H_{17}) Moreh, 12.3.1979, coll. Dr. N. Muraleedharan.

Distribution : **INDIA** : Kalimpong, Darjeeling Dt. (West Bengal).

Elsewhere : **BHUTAN; LAOS; THAILAND; MALAYA; SUMATRA; MENTAWEI IS; JAVA.**

96, *Elaphrothrips denticollis* (Bagnall)

1909. *Dicaiothrips denticollis* Bagnall, *Trans. nat. Hist. Soc. Northumb.*, 3 : 527
 1934. *Elaphrothrips beelsoni* Ramkrishna, *Indian For. Rec.*, 20 (4) : 7
 1935. *Elaphrothrips mucronatus* Priesner, *Konowia*, 14 : 167.
 1973. *Elaphrothrips beelsoni* : Ananthakrishnan, *Pacific Insects*, 15 (2) : 278-280
 1935. *Elaphrothrips productus* Priesner, *Konowia*, 14 : 170,
 1978. *Elaphrothrips denticollis* : Palmer & Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*,
 37 (5) : 179-180.
 1981. *Elaphrothrips denticollis* : Muraleedharan & Sen, *Rec. Zool. Surv. India* 79 : 209.

Specimen studied : **Tripura** : 2 ♀ ♀ (Z. S. I. Reg. Nos. 186-188/H₁₂) Kumarghat, 28.12.1972, coll. Dr. V. C. Agarwal. 4 ♀ ♀ (Z.S.I. Reg. Nos. 154-157/H₁₇) Suganmara, Belonia, 28.9.1977, coll. Dr. N. Muraleedharan, 3 ♀ ♀ (Z.S.I. Reg. Nos. 158-160/H₁₇) Ballamukha, Belonia, 28.2.1977, coll. Dr. N. Muraleedharan. 2 ♀ ♀ (Z.S.I. Reg. Nos. 161-162/H₁₇) Maichera, Belonia, 27.9.1977, coll. Dr. N. Muraleedharan. **Assam** : 2 ♀ ♀ (Z.S.I. Reg. Nos. 244-245/H₁₂) Kaziranga, ex. dry leaves, 14.1.1974, coll. Dr. T. Sen Gupta. **Sikkim** : 1 ♀ (Z.S.I. Reg. No. 396/H₁₂) Rongpo, 25. 12.1975, coll. Dr. G. K. Srivastava. **Meghalaya** : 11 ♀ ♀, 4 ♂ ♂ (Z.S.I. Reg. Nos. 414-422/H₁₂, 556-561/H₁₂) Dainaduti, Garo Hills, 12 9.1975, coll. Dr. N. Muraleedharan, 1 ♀ (Z.S I, Reg. No. 533/H₁₂) Songsak, 21.9. 1975, coll. Dr. N. Muraleedharan.

Distribution : **INDIA** : Kerala; Tamil Nadu; Karnataka; Tripura

Elsewhere : SRI LANKA; BURMA; MALAYA; JAVA; NIAS; SUBA; BORNEO.

97. *Elaphrothrips insignis* Ananthakrishnan

1973. *Elaphrothrips (Cradothrips) insignis* Ananthakrishnan, *Pacific Insects*, 15 : 273
 1978. *Elaphrothrips insignis* : Palmer & Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*,
 37 (5) : 181.
 1983. *Elaphrothrips insignis* : Mound & Palmer, *Bull. Br. Mus. nat. Hist. (Ent.)*,
 46(1) : 67.

Specimen studied : West Bengal : 1 ♀, 1 ♂ (Z.S.I. Reg. Nos. 1866-67/H₁₇) Mouchowki Beat, Neora Valley, Darjeeling Dt., 6.12.1982, coll. Dr. R. K. Kacker & D. K. Mondal,

Distribution : Almora (U. P.)

Remarks : This species is recorded for the first time from North-Eastern India.

98. *Elaphrothrips procer* (Schmutz)

1913. *Dicaiothrips procer* Schmutz, *Akad. Wiss. Wien*, **122** : 1063.
 1954. *Elaphrothrips eranthemi* Seshadri & Ananthakrishnan, *Indian J. Ent.*, **14** (3) : 224.
 1968. *Elaphrothrips procer* : Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*, *Suppl.* **11** : 98.
 1973. *Elaphrothrips procer* : Ananthakrishnan, *Occl. Publ.* **2**, *Ent. Res. Unit. Loyola College, Madras* : 102-103.
 1973. *Elaphrothrips procer* : Ananthakrishnan, *Pacific, Insects*, **15**(2) : 281.
 1978. *Elaphrothrips procer* : Palmer & Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*, **37** (5) : 183.
 1982. *Elaphrothrips procer* : Muraleedharan, *Rec. zool. Surv. India*, **79** : 378.

Specimen studied : Sikkim : 1 ♀ (Z.S.I. Reg No. 397/H₁₂) Rangpo, 26.12.1975, coll. Dr. G. K. Sivastava.
 Manipur : 2 ♀ ♀ (Z.S.I. Reg. Nos. 648-649/H₁₇) Ukhrul, 17 3.1979, coll. Dr. N. Muraleedharan.
 West Bengal : 2 ♀ ♀ (Z.S.I. Reg Nos. 1926/H₁₇, 1729/H₁₇) Mekhligunj, Coochbehar, 30.11.1981, 16.10.1982, coll. C. K. Sengupta. 1 ♂ (Z.S.I. Reg. No. 1865/H₁₇) Neora Valley, Darjeeling Dt., 6.12.1982, coll. Dr. R. K. Kacker & D. K. Mondal.

Distribution : INDIA : Kerala; Karnataka; Tamil Nadu; Maharashtra; Manipur.

Elsewhere : SRI LANKA; LAOS.

99. *Elaphrothrips spiniceps* Bagnall

1932. *Elaphrothrips spiniceps* Bagnall, *Ann. Mag. nat. Hist.*, (10) **10** : 514,
 1934. *Elaphrothrips graveleyi* Bagnall, *Ann. Mag. nat. Hist.* (10) **13** : 628.

1978. *Elaphrothrips spiniceps* : Palmer & Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*, 37 (5) : 184.
 1980. *Elaphrothrips spiniceps* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk. Ser. 1* : 120 & 168.
 1983. *Elaphrothrips spiniceps* : Mound & Palmer, *Bull. Br. Mus. nat. Hist. (Ent.)*, 46(1) : 68.

Distribution : North-Eastern India : Gangtok (Sikkim); Kurseong, Darjeeling Dt. (West Bengal).

Elsewhere : Kathgodam (U. P.) NEPAL; BURMA; TAIWAN; JAVA.

Genus 60. Ethirothrips Karny

1925. *Liothrips (Ethirothrips)* Karny, *Bull ent. Res.*, 16 : 133.
 1964. *Elaphridia* Ananthakrishnan, *Opusc. ent. Suppl.*, 25 : 90.
 1964. *Percipiothrips* Ananthakrishnan, *Opusc. ent. Suppl.*, 25 : 72.
 1969. *Decothrips* Ananthakrishnan, *Indian Forester*, 95 : 182.
 1969. *Uredothrips* Ananthakrishnan, *Indian Forester*, 95 : 184.
 1983. *Ethirothrips* : Mound & Palmer, *Bull. Br. Mus. nat. Hist. (Ent)*, 46(1) : 54-58.

100. Ethirothrips longisetis (Ananthakrishnan & Jagadish)

1970. *Diceratothrips (Diceratothrips) longisetis* Ananthekrishnan & Jagadish, *Oriental. Ins.*, 4(3) : 268-269.
 1973. *Diceratothrips (Diceratothrips) longisetis* : Ananthakrishnan, *Occl. Publ. Ent. Res. Unit. Loyola College, Madras*, 2 : 89.
 1983. *Ethirothrips longisetis* : Mound & Palmer, *Bull. Br. Mus. nat. Hist (Ent.)*, 46 (1) : 57.

Female (Male) : General body colour brown inclusive of legs and antennae except extreme base of antennal segment 3 and foretarsal tooth yellow; wings infumate with a longitudinal streak at middle. All setae hyaline and pointed.

Head 434(372) long, 279(264) wide across eyes; 264(233) across cheeks and 248(217) across base, Eyes 78(62) long and 62(47) wide. Postoculars very long about three times longer than eyes 288(213) long. Antennal segments 3-8 length (width)

	III	IV	V
<i>Female</i> :	163(48);	153(45);	108(45)
<i>Male</i> :	130(43);	113(43);	103(40)
	VI	VII	VIII
<i>Female</i> :	96(35);	63(28);	48(18)
<i>Male</i> :	85(35);	55(28);	43(18)

Mouthcone short and broad, 171(171) long, 233(217) wide at base and 93(93) at apex; maxillary stylets retracted little above middle of head capsule and close at middle.

Prothorax 233(233) long, 279(248) wide at anterior margin and 465(465) at posterior margin. Prothoracic chaetotaxy : anteroangulars 38 (35), anteromarginals 50(200), midlaterals 178(200), posteroangulars 218 (250) and epimerals 250(300) long respectively. Forefemora 202(171) wide, foretarsal tooth 31(39) long. Forewings 1.7(1.4) mm. long with 27(25) double fringes; basal wing setae B_1-B_3 : 155(150); 233(225) and 239(225) long respectively.

Abdomen 543(450) wide across segment VIII and 326(233) across segment IX. B_1-B_3 of segment IX : 481(465); 512(338) and 419(465) long respectively. Tube 512(419) long; anal setae 310(295) long.

Total body length : 4.4(3.6) mm.

Distribution : Darjeeling (West Bengal).

Genus 61. *Holothrips* Karny

1911. *Holothrips* Karny, *Zool. Anz.*, **38** : 502.
 1947. *Agnostothrips* Moulton, *Pan-Pacif. Ent.*, **23** : 172-173.
 1956. *Agnostothrips* (*Erythrinothrips*) Ananthakrishnan, *Indian J. Ent.*, **17** : 341.
 1969. *Stinothrips* Ananthakrishnan, *C. S. I. R. Zool. Monogr* **1** : 55 & 148
 1983. *Holothrips* : Mound & Palmer, *Bull. Br. Mus. nat. Hist. (Ent.)*, **46**(1) : 92-93.

101. *Holothrips minor* (Hood)

1937. *Polyphemothrips minor* Hood, *Rev. d Ent. Rio de Janeiro*, **6** : 513-517
 1969. *Polyphemothrips minor* : Ananthakrishnan, *Oriental Ins.*, **3** (3) : 306-307.
 1980. *Polyphemothrips minor* : Ananthakrishnan & Sen, *Zool. Surv. India. Handbk. Ser. 1* : 123 & 171.
 1983. *Holothrips minor* : Mound & Palmer, *Bull. Br. Mus. nat. Hist. (Ent.)*, **46**(1) : 94

Specimen studied : Tripura : 2 ♀ ♀ (Z.S.I. Reg. Nos. 966-977/H₁₇)
 Teliamura, 21.10.1977, coll. Dr. N. Muraleedharan.

Distribution : INDIA : Tamil Nadu; Kerala.

Elsewhere : PERU

Remarks : This species is recorded for the first time from North-Eastern India.

Genus 62. *Mecynothrips* Bagnall

1908. *Mecynothrips* Bagnall, *Ann. Mag. nat. Hist.* (8) 1 : 356.
 1913. *Phoxothrips* Karny, *H. Sauter's Formosa Ausbeute Suppl. ent.* 2 : 132.
 1913. *Kleothrips* Schmutz. *Sitz. Akad. Wiss. Wien*, 122 : 1057.
 1978. *Mecynothrips* : Palmer & Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*, 37(5) : 199-200.

102. *Mecynothrips simplex* Bagnall

1912. *Mecynothrips simplex* Bagnall, *Ann. Mag. nat. Hist.* , (8) 9 : 216.
 1913. *Kleothrips gigans* Schmutz, *Sitz Akad. Wiss Wien*, 122 : 1058.
 1964. *Kleothrips gigans* : Ananthakrishnan, *Opusc. Ent. Suppl.*, 25 : 100.
 1935. *Kleothrips agama* Priesner, *Konowia*, 14 (4) : 323.
 1969. *Kleothrips gigans* : Ananthakrishnan, *Bull. Ent.*, 10(2) : 130-133.
 1973. *Kleothrips gigans* : Ananthakrishnan, *Occl. Publ. 2, Ent. Res. Unit. Loyola College, Madras* : 103-105.
 1978. *Mecynothrips simplex* : Palmer & Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*, 37(5) (207-208).
 1980. *Mecynothrips simplex* : Ananthakrishnan & Sen, *Zool. surv. India, Handbk Ser.* 1 : 121.
 1982. *Mecynothrips simplex* : Muraleedharan, *Rec. zool. surv. India*, 79 : 381.

Specimen studied : **Manipur** : 2 ♀ ♀ , 4 ♂ ♂ (Z.S.I.Reg.Nos. 657-661/H₁₇) Churachandpur, 23.3.1979, coll. Dr N. Muraleedharan.

Distribntion : **INDIA** : Kerala; Karnataka; Manipur.

Elsewhere : SRI LANKA; MALAYA; JAVA; BORNEO; PHILIPPINES.

Genus 63. *Meiothrips* Priesner

1929. *Idolothrips (Meiothrips)* Priesner, *Treubia*, 11 : 197.
 1934. *Meiothrips* : Bagnall, *Ann. Mag. nat. Hist.*, (10) 13 : 494.
 1949. *Meiothrips* : Priesner, *Bull. Soc. Fouad Ier. Ent.*, 33 : 111.
 1974. *Meiothrips (Telothrips)* : Kudo & Ananthakrishnan, *Koutyu*, 42 : 385.
 1975. *Meiothrips (Aculeathrips)* : Kudo, *Kontyu*, 43 : 421.
 1978. *Meiothrips* : Palmer & Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*, 37(5) : 209-210.

103. *Meiothrips nepalensis* Kudo & Ananthkrishnan

1974. *Meiothrips (Telothrips) nepalensis* Kudo & Ananthkrishnan, *Kontyu*, **42** : 385-387.
 1975. *Meiothrips (Aculeathrips) nepalensis* : Kudo, *Kontyu*, **43** : 421.
 1978. *Meiothrips nepalensis* : Palmer & Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*, **37(5)** : 212.
 1982. *Meiothrips nepalensis* : Muraleedharan, *Rec. zool. Surv. India*, **79** : 381.
 1983. *Meiothrips nepalensis* : Mound & Palmer, *Bull. Br. Mus. nat. Hist. (Ent.)*, **46(1)** : 80.

Specimen studied : **Manipur** : 1 ♀, 2 ♂ ♂ (Z.S.I. Reg. Nos. 662-664 /H₁₇) Ukhrul, 17.3.1979, coll. Dr. N. Muraleedharan.

Distribution : **INDIA** : Manipur.

Elsewhere : **NEPAL; THAILAND**

Genus 64. *Nesothrips* Kirkaldy

1907. *Nesothrips* Kirkaldy, *Proc. Hawaii, ent. Soc.*, **1** : 103.
 1949. *Nesothrips* : Priesner, *Bull. Soc. Fouad. Ier. Ent.*, **33** : 87, 88, 139
 1913. *Rhaebothrips* Karny, *H. Sauter's Formosa-Ausbeute. Suppl. ent.*, **2** : 128.
 1983. *Nesothrips* : Mound & Palmer, *Bull. Br. Mus. nat. Hist. (Ent.)*, **46(1)** : 47.

104. *Nesothrips lativentris* (Karny)

1913. *Rhaebothrips lativentris* : Karny, *H. Sauter's Formosa-Ausbeute. Suppl. ent.*, **2** : 129-130.
 1971. *Rhaebothrips lativentris* : Sakimura, *Pacific. Ins.*, **13(2)** : 393-398.
 1973. *Rhaebothrips lativentris* : Ananthkrishnan, *Occl. Publ.*, **2**, *Ent. Res. Unit, Loyola College, Madras* : 127-128.
 1981. *Rhaebothrips lativentris* : Muraleedharan & Sen, *Rec. zool. Surv. India*, **79** : 227.
 1983. *Nesothrips lativentris* : Mound & Palmer, *Bull. Br. Mus. nat. Hist. (Ent.)*, **46(1)** : 48.

General body colour dark brown; foretibiae lighter brown, extreme base and apices of all tibiae lighter brown, all tarsi yellowish brown; antennal segments 1, 6 - 8 dark greyish brown 2 dark greyish brown distally lighter, 3-5 yellowish brown, the distal fourth of 4 weakly brown

and distal half to two third of 5 dark grey brown; wings pale brownish with a longitudinal brown streak; extreme tip of tube lighter brown. All setae brownish yellow and pointed.

Head about 1.5 times as long as broad, more slender in oedymorous males. Postoculars very long about 1.5 times longer than eyes.

Prothorax of females and gynaecoid males half as long as head and in oedymorous male two third as long as head. All prothoracic setae except anteromarginals well developed. Forefemora of oedymorous male strongly bent inwards; foretarsi of female unarmed and armed in males, tooth longer in oedymorous forms. Forewings with 13-21 double fringes. Pelta hat shaped.

Specimen studied : **Tripura** : 4 ♀ ♀, 3 ♂ ♂ (Z.S.I. Reg. Nos. 255-261 /H₁₇) Chandrapur, 7.10.1977, *coll.* Dr. N. Muraleedharan. **West Bengal** : 3 ♀ ♀, 1 ♂ (Z.S.I. Reg. Nos. 996-998/H₁₇, 1049/H₁₇) Coochbehar, 10.10.1982; 12.10.1980, *coll.* C. K. Sen Gupta. **Arunachal Pradesh** : 1 ♀ (Z.S.I. Reg. No. 1960/H₁₇) Miao, Tirap, Dt., Namdapha, 5.12.1982 *coll.* Dr. S. Biswas.

Distribution : **INDIA** : Chandannagar and Calcutta (West Bengal); Tripura.

Elsewhere : MAURITIUS; PHILIPPINES; JAPAN; GUAM; QUEENSLAND; HAWAII; JAMAICA; VIRGIN IS.

Genus 65. *Oidanothrips* Moulton

1944. *Oidanothrips* Moulton, *Occl. Paper Bernice P. Bishop. Mus. Hawaii*, **17** : 308-309.
1983. *Oidanothrips* : Mound & Palmer, *Bull. Br. Mus. nat. Hist. (Ent.)*, **46(1)** : 95.

105. *Oidanothrips megacephalus* (Ananthakrishnan)

1969. *Polyphemothrips megacephalus* Ananthakrishnan, *Oriental Ins.*, 3(3) : 303-304.
 1973. *Polyphemothrips megacephalus* : Ananthakrishnan, *Occl. Publ.*, 2, *Ent. Res. Unit, Loyola College, Madras* : 54.
 1983. *Oidanothrips megacephalus* : Mound & Palmer, *Bull. Br. Mus. nat. Hist. (Ent)*, 46 (1) : 96.

Female (Macropterous) : General body colour uniformly brown with profuse hypodermal pigment, except proximal half of antennal segment 3 and all tarsi yellow; wings uniformly shaded grey. All setae hyaline and pointed.

Head 2.3-2.4 times as long as wide, 780-864 long, 374-400 wide across eyes 368 across cheeks; cheeks with 6-7 pairs of setae 9-12 long. Eyes large, 125-192 long; ocellar cone strongly developed, 94-96 long and 144-156 wide at base; median ocellus 42-47 wide, paired ones 32 wide. Postoculars very long, fine, 320-368 long placed much below the eyes. Antennal segments 1-7 length (width) : I : 88-94(78-80); II : 120-144(62-64); III : 240-250(78-80); IV : 218-224(78-80); V : 172-192(62-64); VI : 148-160(48.60); VII : 156-160(31-35); sense cones on 3 and 4 very long, 80 long. Maxillary stylets ocular, almost meeting at middle.

Prothorax 352-390 long, 343-380 wide at anterior margin and 718-880 at posterior margin. Prothoracic chaetotaxy : anteroangulars curved, short 47-52, anteromarginals vestigial, midlaterals 156-172, posteroangulars 234-265 and epimerals 208-218 long respectively. Forefemora 624-768 long and 250 wide; foretarsal tooth 78-80 long. Pterothorax 796-832 long. 796-832 wide across, meso- and 796-800 across metathorax. Forewings 2.4-2.6 mm. long, 187-224 wide at middle with 50-62 double fringes; basal wing setae B₁-B₃ : 109-136; 187-224 and 234-256 long respectively.

Abdomen 930-936 wide at base, 853-862 at middle, 310-359 across segment VIII and 310-359 across segment IX. B₁-B₃ of segment IX : 156-160; 125-128 and 78-96 long respectively, Tube 534-608 long; anal setae 320-343 long.

Total body length : 5-6.7 mm.

This species is closely allied to both *brazilliensis* and *enormis* and is characterised by the strongly developed ocellar cone, extremely long

postoculars, short anteroangulars and vestigial anteromarginals and by the very large number of double fringes of forewings.

Distribution : Kalimpong, Darjeeling Dt. (West Bengal)

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SUMMARY

The monograph deals with the *Thysanopetra* fauna of North-Eastern India. Altogether 105 species pertaining to 65 genera under 3 families have been recorded. Before undertaking the work only 19 species were known from the area and as a result of the present study another 86 species have been added including the discovery of 2 new genera and 22 new species and 1 genus recorded for the first time from India. Key to the families, genera and species dealt in the paper and description of the species described from the area have been provided.

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Oriental Ins., 6(4) : 425-437.
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species of Tubuliferous Thysanoptera from
Darjeeling - *Oriental Ins.*, 4(3) : 259-264.
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Ann. Mag. nat. Hist., (8) 12 : 290-299.
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Ann. Mag. nat. Hist. (9)1 : 201-210
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Ann. Mag. nat. Hist. (9)8 : 393-400.
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Ann. Mag. nat. Hist., 10(10) : 505-520
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