

Thysanoptera of Africa — 7

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Introduction

In this paper two species of *Taeniothrips* Amyot & Serville 1843 are partly redescribed, and figured, namely *meruensis* (Trybom) and *fumosus* (Trybom). The specimens, on which the discussion of these two species is based, are part of a series of Trybom's types, sent to me on loan, in alcohol, by Prof. Dr. Lars Brundin, Head of the Department of Entomology, Swedish Museum of Natural History, Stockholm.

Then follows a discussion of *Caliothrips* Daniel 1904 (= *Hercothrips* Hood 1927), including a check list, a key for the identification of the known species of the world, and the description of one new species, *C. oneillae*. It is shown that *bromi* (Moulton) is a synonym of *marginipennis* (Hood), and *fumipennis* (Bagnall & Cameron) a synonym of *impurus* (Priesner).

Specimens of five of the African species of *Caliothrips*, which are discussed in this paper, will be donated to the Swedish Museum of Natural History in Stockholm.

Miss Kellie O'Neill of the Insect Identification and Parasite Introduction Research Branch, Entomology Research Division, United States Department of Agriculture and the authorities of the United States National Museum, in Washington, provided specimens of the following species of *Caliothrips*: *braziliensis* (Morgan), *cinctipennis* (Hood), *fasciapennis* (Hinds), *fasciatus* (Pergande), *insularis* (Hood) (= *bruneri* Morgan), *marginipennis* (Hood), and *striatus* (Hood). Specimens of *fumipennis* (Bagnall & Cameron) and *indicus* (Bagnall) were received some years ago from the British Museum. Prof. Dr. H. Priesner sent me two cotypes of his *impurus*. Many years ago I obtained specimens of four of his species from Prof. Dr. J. D. Hood, namely *insularis*, *nanus*, *phaseoli* and *striatus*.

I am greatly indebted to all these colleagues and institutions, and to others not mentioned above, for their kindness in providing material and assisting me in other ways in the preparation of this paper.

Finally, *Selenothrips rubrocinctus* (Giard), the well known pest of cacao, is recorded from the Republic of South Africa.

Suborder TEREBRANTIA

Family THIRIPIDAE

Taeniothrips meruensis (Trybom) 1908 (with 6 figures)

1908 *Physopus meruensis* Trybom, Wiss. Ergeb. schwed. zool. Exped. Kilimandjaro-Meru: 6—7, pl. 2, figs. 15—20, text-figs. B, C.

1914 Karny, Verh. k.k. zool-bot. Gesellsch., Wien: 50—60.

1933 *Taeniothrips meruensis*: Steinweden, Trans. Amer. ent. Soc. 59: 269—293.

In the original description this species was recorded from the rain forest of Meru mountain. In 1914 Karny recorded it from Malta, but in a letter addressed to me on 4th June 1961 Dr. Priesner stated that there are no specimens of *meruensis* from Malta in the Karny collection, and that Karny's record from this island was probably based on a misidentification.

Trybom's series of syntypes consisted of 86 females and 126 males, in alcohol. In 1958 I received 69 females and 81 males in alcohol from the Riksmuseet in Stockholm; of these 58 females and 56 males have been mounted by us on slides in Canada balsam. One female (No. X.1431-1) has been labelled "lectotype", and one male (No. X.1431-2) "allolectotype"; these, and most of the rest of the syntypes, on slides and in alcohol, will be returned to the Swedish Museum of Natural History in Stockholm.

This is a large, dark species with prominently bulging eyes. The inter-ocular setae are fine, about 17—24 μ long, situated within the ocellar triangle. On the hind margin of the *pronotum* there are usually 6 setae between the inner pair of large postero-angulars (fig. 1); but out of 21 females, 4 have only 5 setae, and one has 7 setae, while 16 have 6 setae; out of 13 males, one has 5 setae, and 12 have 6 setae.

The sculpturing of the *metanotum* is unusual (fig. 3) in that the median posterior area is finely and closely striate; this character serves to distinguish *meruensis* from the closely allied *fumosus* (fig. 5) in which the metanotum is rather coarsely reticulate. The two large median setae of the metanotum are apparently always situated caudad of the anterior margin in *meruensis* (fig. 3). In *fumosus* (fig. 5) these setae are usually on, or very close to the anterior margin, but in two males and one female they are situated slightly caudad of the margin. It therefore seems doubtful whether this character can be relied upon for the recognition of these two species.

Both veins of the *fore wing* usually bear a long series of setae (fig. 6), and in a few specimens the series of the anterior vein is so nearly complete throughout its length that this species could almost equally well be assigned to *Taeniothrips* Amyot & Serville 1843 or to *Isochaetothrips* Moulton 1928. Usually there are three setae in a group at the fork of the veins; distad of this group of three there is a gap which corresponds to two hind vein setae on figure 6. Out of 41 wings of 24 females of *meruensis*, the gap corresponds to only one hind vein seta on 3 wings, to 2 setae on 11 wings, 3 on 14 wings, 4 on 12 wings and to 5 setae on one wing. In the case of 25 wings of 14 males, these figures are: one hind vein seta on 6 wings, 2/8 wings, 3/7, 4/2, 5/1 and 6 setae on one wing. The setae distad of the gap were counted on 39 wings of 24 females, with these results: 5 setae/on one wing, 6/3, 7/7, 8/8, 9/10, 10/6, 11/1 and 12 setae/on 3 wings. For 27 wings of 15 males the corresponding figures are 7 distal setae/on one wing, 8/5, 9/8, 10/4, 11/3,

12/5 and 13 setae/on one wing. The posterior vein setae vary from 12 to 19 on 39 wings of 24 females, the most frequent numbers being 14 to 17 setae; on 33 wings of 20 males these setae also vary from 12 to 19, usually 15 to 17.

Tergite VIII bears a fine, somewhat irregular comb on the hind margin in the female, extending completely across the full width, its longest teeth about 17 μ in length; in the males there is usually no comb, only one male in the series before me having a weakly developed comb.

On sternites III—VII of the female, in addition to the usual six setae on the hind margin, there is one fairly regular median row of *accessory setae*, about 10—16 in number and about 35—40 μ in length. In the males accessory setae are also present on the sternites, extending right across, behind the glandular area, on sternites V—VII (fig. 7), but they are less numerous than in the females.

Teeth on laterosternites are comparatively heavy and blunt in this species (fig. 8).

Glandular areas are conspicuous on *sternites* III—VII of the males; measured on 7 males, they varied from 10 to 33 μ in length and from 31 to 73 μ in width (fig. 7); in shape these areas also vary somewhat, usually they are more or less kidney-shaped, but sometimes they tend to become more nearly circular. As a rule these glandular areas are larger in *meruensis* than in *fumosus*, but this could not be relied upon to distinguish these two species from one another, because the measurements overlap. The presence of accessory setae caudad of the glands in *meruensis* and their absence in *fumosus* appears to be a distinguishing character (compare figures 7 and 10).

Size: The length of the hind tibia varied from 190 to 317 μ on 30 females, and from 184 to 283 μ on 31 males.

Measurements of the smallest and the largest of the 30 *females* gave the following results, in μ :

Total body length 1464—2188.

Antennae: Total L. 329—414.

Segm.	L.	W.	Segm.	L.	W.
I	30—38,	28—35;	V	45—59,	21—21.
II	38—45,	28—31;	VI	66—73,	21—23.
III	66—87,	21—24;	VII	9—9,	7—7.
IV	56—76,	21—24;	VIII	12—14,	5—5.

Males: smallest and largest of the 31 males: total body length: 1306—1659.

Antennae: total L. 346—393.

Segm.	L.	W.	Segm.	L.	W.
I	31—35,	28—31;	V	49—52,	17—17.
II	35—45,	28—28;	VI	69—80,	19—21.
III	69—66,	17—21;	VII	7—10,	7—7.
IV	59—66,	19—17;	VIII	14—17,	7—7.

Taeniothrips fumosus (Trybom) 1908 (with 6 figures)

1908 *Physopus fumosa* Trybom, Wiss. Ergeb. schwed. zool. Exped. Kilimandjaro-Meru: 7—9, pl. 2, figs. 21—27, text — fig. D.

1911 *Physopus fumosa* Trybom, Arkiv för Zool. 7: 6

1933 *Taeniothrips fumosa*: Steinweden, Trans. Amer. ent. Soc. 59: 269—293.

The original series of syntypes of this species consisted of 41 females and 24 males, taken with *meruensis* on Meru mountain. In 1911 Trybom re-

corded one female from Kenya. In 1958 I received 13 female and 7 male syntypes in alcohol from Stockholm; these have been mounted on slides in Canada balsam. One female (No. X.1430-1) has been labelled "lectotype" and one male (No. X.1430-2) "allolectotype"; these, and most of the syntypes on slides will be returned to the Swedish Museum of Natural History in Stockholm.

This large, dark species is very similar to *Taeniothrips meruensis* (Trybom). According to Trybom (1908), *fumosus* differs from *meruensis* in having only a small clear window spot at the fork of the veins on the fore wing, instead of a distinct clear cross band. Since the specimens have been lying in alcohol for more than fifty years, one cannot say much about colour differences at this time.

As pointed out in my discussion of *meruensis*, the sculpture of the metanotum differs in the two species (compare figures 3 and 5). Trybom stated, with regard to *fumosus*: "Keine merkbare Vertiefungen in den Bauchplatten des 3—7 Abdominal-segmentes." But on the allolectotype, and three of the syntype males before me, glandular areas are very distinct on sternites V to VII or III to VII (see fig. 10). The absence of accessory setae behind the glandular area appears to be a distinguishing character between this species and *meruensis* (compare figures 10 and 7).

On 18 wings of 10 females of *fumosus* there are 7 distal setae on the anterior vein of 2 wings, 9 setae on 8 wings, 10/5, 11/2, and 12 setae on one wing. On 8 wings of 5 males the distal setae of the anterior vein vary from 7 to 11, four of the wings having 10 distals. As in *meruensis*, a complete comb is present on the hind margin of tergite VIII in the females, but only rarely present in the males.

The length of the hind tibia varies from 198 to 240 μ in the 13 females, and from 170 to 226 μ in the 7 males.

Measurements of the smallest and largest females gave the following results, in μ : —

Total body length 1659—1729.

Antennae: total L. 346—396.

Segm.	L.	W.	Segm.	L.	W.
I	31—35,	31—31;	V	45—49,	21—17.
II	42—45,	28—28;	VI	66—76,	21—21.
III	69—80,	21—24;	VII	7— 7,	7— 7.
IV	66—76,	21—21;	VIII	10—14,	7— 5.

Males: one of the smallest, and the largest: total body length: 1252—1553.

Antennae: total L. 311—382.

Segm.	L.	W.	Segm.	L.	W.
I	24—35,	24—31;	V	45—52,	17—19.
II	38—42,	24—28;	VI	59—75,	19—21.
III	59—73,	17—21;	VII	7— 7,	7— 7.
IV	56—69,	17—21;	VIII	10—14,	5— 7.

***Taeniothrips sjöstedti* (Trybom)**

In my recent discussion of this species (Faure 1960 page 34) I referred to Karny's record of its occurrence in Malta. In a letter dated 4th June 1961,

Entomol. Ts. Arg. 83. H. 1—2, 1962

addressed to me, Dr. Priesner stated that there are no specimens of *sjöstedti* from Malta in the Karny collection, and that Karny's record was probably based on a misidentification.

Genus CALIOTHRIPS Daniel 1904

1904 Ent. News, 15: 296—7

Typus generis: Caliothrips woodworthi Daniel 1904, a synonym of *Heliothrips fasciatus* Pergande 1895

Hercothrips Hood 1927: *Typus generis: Heliothrips striatus* Hood 1913

Daniel proposed the name *Caliothrips* in 1904, for the supposed new species *woodworthi*. Moulton (1907 and 1911) suppressed *woodworthi* as a synonym of *fasciatus* Pergande 1895. Russell (1912), on page 44 in his bibliography, stated that Daniel had described the male of *fasciatus* as a new species under the name *Caliothrips woodworthi*. In 1927 Hood proposed *Hercothrips* as a new generic name, cited *Heliothrips striatus* Hood 1913 as the type species, and included *fasciatus* (Pergande), as well as a number of other species of *Heliothrips* Haliday 1836, in the new genus. But Hood (1927) did not mention *Caliothrips*, or *woodworthi*.

Priesner (1949) listed *Hercothrips* Hood 1927 as a synonym of *Caliothrips* Daniel 1904, on page 132 of his "Genera Thysanopterorum". In a letter dated 4th June 1961, addressed to the writer, Dr. Priesner stated that *Caliothrips* should be used in preference to *Hercothrips*, because Daniel's description is quite detailed. Probably following Priesner (1949) several authors have since 1949 adopted the name *Caliothrips*, e.g. Morison (1957), Faure (1957 and 1961), and zur Strassen (1959 and 1960). But Bailey (1957) continued to use *Hercothrips*.

Although Daniel's type is apparently lost, I accept (i) that Moulton and Russell correctly identified *woodworthi* as a synonym of *fasciatus*; (ii) that Hood overlooked the name *Caliothrips* when he proposed *Hercothrips*; and (iii) that Priesner (1949) acted correctly when he suppressed *Hercothrips* Hood 1927 as a synonym of the older name *Caliothrips* Daniel 1904, because *striatus* is congeneric with *fasciatus*. Therefore I accept *Caliothrips* Daniel 1904 as the correct name for the genus formerly known as *Hercothrips* Hood 1927. Since *woodworthi* was the only species placed in *Caliothrips* by Daniel in 1904, it must be the type species of this genus. In my recent paper (Faure 1961) I have given a key for separating *Caliothrips* from three other closely related heliothripine genera.

All the species enumerated in the check list below, which have formerly been placed in *Hercothrips* Hood 1927, are hereby transferred to *Caliothrips* Daniel 1904.

Check list of the species of *Caliothrips* Daniel 1904

Names printed in italics are synonyms

Name, author and original reference	Sexes known	From Heliothrips	From Hercothrips	Distribution
<i>aulmanni</i> (Karny) 1911 Ent. Rdsch. 28:185, 2 figs.	♀	×	×	New Guinea

Name, author and original reference	Sexes known	From Heliothrips	From Hercothrips	Distribution
<i>bifascipennis</i> (Girault) 1926 Privately printed	♀	×	—	Australia: Queensland
* <i>braziliensis</i> (Morgan) 1929 Proc. ent. Soc. Wash. 31: 7	♀ ♂	×	—	Brazil, Paraguay, Ecuador, Peru
* <i>bromi</i> (Moulton) 1927 Pan-Pacif. Ent. 4: 31 synonym of <i>marginipennis</i> (Hood) <i>new synonymy</i>	♀ ♂	×	×	U.S.A.: California
* <i>cinctipennis</i> (Hood) 1912 Proc. ent. Soc. Wash. 14: 137	♀ ♂	×	×	U.S.A.: Illinois, Virginia
* <i>fasciapennis</i> (Hinds) 1903 Proc. U.S. nat. Mus. 26: 171, figs. 58—61	♀ ♂	×	×	U.S.A.: Massachusetts, Tennessee, Texas, Florida etc.
* <i>fasciatus</i> (Pergande) 1895 Insect Life, 7: 391	♀ ♂	×	×	U.S.A.: California, Texas; Mexico; Hawaii; S. America; Great Britain (glass houses)
* <i>fumipennis</i> (Bagnall and Cameron) 1932 Ann. Mag. nat. Hist. 10(10): 413 synonym of <i>impurus</i> (Priesner) <i>new synonymy</i>	♀ ♂	—	×	Africa: Sudan etc.
<i>funnebris</i> (Hood) 1927 Psyche, Camb. Mass. 34: 240	♀ ♂	—	×	Ecuador
* <i>graminicola</i> (Bagnall and Cameron) 1932 Ann. Mag. nat. Hist. 10(10): 417	♀ ♂	—	×	Africa: Sudan S. Rhodesia Republic of S. Africa
* <i>helini</i> (Hood) 1940 J. ent. Soc. S. Afr. 3: 35, fig. 1 a	♀ ♂	—	×	Africa: S. Rhodesia, Transvaal, Glorioso Island
* <i>impurus</i> (Priesner) 1928 Boll. Lab. Zool. Portici 21: 61	♀ ♂	×	×	Africa: Nigeria, Sudan, Gambia, S. Rhodesia
* <i>indicus</i> (Bagnall) 1913 Ann. Mag. nat. Hist. 8(12): 291	♀ ♂	×	×	India
* <i>insularis</i> (Hood) 1927 Psyche, Camb. Mass. 34: 234	♀	—	×	West Indian Islands; Mauritius
* <i>marginipennis</i> (Hood) 1912 Proc. ent. Soc. Wash. 14: 136	♀ ♂	×	×	U.S.A.: Texas, Utah, California, Arizona, Mexico
<i>masculus</i> (Hood) 1927 Psyche, Camb. Mass. 34: 236	♀	—	×	West Indies: Trinidad
<i>minutissimus</i> (Bagnall) 1919 Ann. Mag. Nat. Hist. (9)4: 260	♀ ♂	×	×	India
* <i>nanus</i> (Hood) 1927 Psyche, Camb. Mass. 34: 235	♀	—	×	West Indies

Name, author and original reference	Sexes known	From Heliothrips	From Herciothrips	Distribution
*oneillae sp. n.	♀ ♂	—	—	Africa: S. Rhodesia
*phaseoli (Hood) 1912 Psyche, Camb. Mass. 19: 113, figs. a, b, c	♀ ♂	×	×	U.S.A., Porto Rico, Cuba
punctipennis (Hood) 1912 Proc. ent. Soc. Wash. 14: 135	♀	×	×	U.S.A., Mexico
sculptilis (Hood) 1918 Mem. Queensland Mus. 6: 123	♀	×	×	Australia: Queensland
striatopterus (Kobus) from Thrips 1893 Arch. Java Suiker-Industrie p. 156, figs. 1, 2	♀ ♂	×	×	Java
*striatus (Hood) 1913 Canad. Ent. 45: 308, figs. 11 and 12	♀ ♂	×	×	U.S.A.: Maryland, Illinois
*sudanensis (Bagnall and Cameron) 1932 Ann. Mag. nat. Hist. 10(10): 415	♀ ♂	—	×	Africa: Sudan, S. Rhodesia, Republic of South Africa
trilineatus (Priesner) 1932 Stylops 1: 108	♀	—	×	Africa: Tanganyika
venustulus (Priesner) 1923 Tijdschr. Ent. 66: 89, fig. 1	♀	—	×	South America: Surinam
williamsi (Hood) 1927 Psyche, Camb. Mass. 34: 239	♀	—	×	West Indies: Trinidad

Specimens of the species marked with an asterisk (*) have been seen by the writer.

**Key for the identification of the species of *Caliothrips* Daniel 1904,
based mainly on characters of the females**

Four species have been omitted from the key. In the cases of *bifascipennis* (Girault) and *minutissimus* (Bagnall) the original descriptions are so brief and incomplete that I cannot place them in the key. The two other species, *masculus* (Hood) and *venustulus* (Priesner) were both described on uniques, which I have not seen; I have not been able to fit them into the key on the basis of the data available in the literature.

- 1 Antennal segment III about 70—73 μ long 2
- Antennal segment III about 38—59 μ long 4
- 2 (1) Antennal segments VII and VIII yellow *aulmanni* (Karny)
- Antennal segments VII and VIII dark brown 3
- 3 (2) Anterior vein (=principal vein plus anterior vein of Hood) of fore wing with 17 setae, posterior vein with 11 setae; antennal segment III wholly yellow. (This species may be a *Hercinothrips*.) *trilineatus* (Priesner)
- Anterior vein of fore wing with 8 or 9 setae, posterior vein with about 8 setae; antennal segment III largely blackish brown *williamsi* (Hood)

- 4 (1) All legs clear lemon yellow *punctipennis* (Hood)
- — Legs largely grey or brown, or variegated, with dark and pale parts .. 5
- 5 (4) Abdominal tergites III—V with prominent striae, ridges, or lamellae, often forming more or less complete reticles, but not with a large number of prominent wrinkles between the main lines over the whole of the sculptured areas, comprising the lateral one-third or one-fourth of the tergites on each side, or sometimes the whole surface of the tergites (figs. 13—16) 6
- — Abdominal tergites III—V with many wrinkles in the reticles, or between the main lines, over practically the whole of the sculptured areas on each side, and sometimes also in part of the median third (figs. 17—26) 15
- 6 (5) Abdominal tergites III—V without wrinkles or microtrichia between the main lines of sculpture, or in the reticles (figs. 14—16) 7
- — Tergites III—V with comparatively few wrinkles or microtrichia between the main lines, chiefly in the anterior part of the sculptured areas on each side (fig. 13) 12
- 7 (6) Tergites III—V completely reticulated, across their median parts also
funnebris (Hood)
- — Median thirds of tergites III—V largely smooth (i.e. not sculptured) .. 8
- 8 (7) Extreme apex of fore wing dark (figs. 29 and 36) 9
- — Extreme apex of fore wing pale (fig. 34) 11
- 9 (8) Fore wing predominantly dark (fig. 29), each of its two pale areas occupying only about one-twentieth or less of the wing length *oneillae* sp. n.
- — Fore wing with larger basal and subapical pale areas, occupying about one-eleventh to one-third of the wing length (fig. 36) 10
- 10 (9) Median dark area of fore wing occupying about one-half, and the apical dark area about one-sixth of the wing length (fig. 36) *helini* (Hood)
- — Median dark area of fore wing occupying about one-third, and the apical dark spot only about one-eleventh of the wing length *nanus* (Hood)
- 11 (8) The median dark area of the fore wing indistinctly divided into two darker areas and a paler band between them (fig. 34) *striatopterus* (Kobus)
- — The two median dark bands of the fore wing more distinctly separated from one another by the pale band between them
sudanensis (Bagnall and Cameron)
- 12 (6) Extreme apex of fore wing pale, about one-fourth of its length at base dark
sculptilis (Hood)
- — Extreme apex of fore wing dark, about one-fourth of its length at base pale, with a few darker spots in this basal pale area 13
- 13 (12) Tergite IX of abdomen in the female about 40 μ longer than VIII; no dark seta on posterior vein in the subapical pale area of fore wing; two or three setae at fork of veins and three others in dark area on posterior vein conspicuously dark and thick (fig. 31) *striatus* (Hood)
- — Tergite IX of the female not differing by more than about 10 μ in length from VIII; a dark seta on posterior vein in the subapical pale area of fore wing; setae at fork of veins and others in dark area less conspicuously dark and thick 14
- 14 (13) Abdominal tergites III—VII bearing microtrichia in about anterior one-third of sculptured area on each side in females *phaseoli* (Hood)
- — Tergites III—VII with some wrinkles between the main lines in about anterior one-third to one-half of the sculptured area on each side in females (fig. 13), but without microtrichia *braziliensis* (Morgan)

- 15 (5) Fore wings largely hyaline, with one dark band at fork of veins, and a brown line on hind margin, which becomes darkest at apex and curves back along anterior margin in apical twelfth (fig. 30) *marginipennis* (Hood)
- — Fore wings with about half or more of their surface dark, or with two or more conspicuous dark bands (figs. 31—33, 35) 16
- 16 (15) Abdominal tergites III—V with many prominent wrinkles in the reticles, not only at sides, but also in the median third of their width, the wrinkles extending caudad for more than half of the length of the tergites (excluding the posterior lobate margin, fig. 15: m. lob.) (fig. 26) *fasciapennis* (Hinds)
- — Tergites III—V at most with wrinkles in one or two transverse rows of reticles adjacent to the antecostal line, in the median third of their width . . . 17
- 17 (16) Fore wings from fork of veins to apex almost completely dark, with an indistinctly paler area in about the sixth seventh of their length, near apex 18
- — Fore wings with a prominent subapical pale band in about the sixth seventh (figs. 31, 32, 35) 19
- 18 (17) Pronotum caudad of the main foveae with elongate reticles formed by lines running mainly cephalo-caudad (fig. 37) *impurus* (Priesner)
- — Pronotum caudad of the main foveae with subrectangular reticles, whose long axes lie in the transverse direction (fig. 49) *insularis* (Hood)
- 19 (17) Fore wings largely pale in about basal one-fourth, not with four dark and three pale cross bands (figs. 31, 32) 20
- — Fore wings dark at base, with four dark and three pale cross bands (fig. 35) 22
- 20 (19) Abdominal tergites III—V in about one-fourth of their width at each side with heavy lines, close together, which do not form many complete reticles; these lines run in the transverse or cephalo-lateral directions in about the anterior half of the sculptured area, and in the caudolateral direction in the posterior half; further laterad the abdomen is heavily longitudinally striate (or ridged) *striatus* (Hood)
- — Tergites III—V at sides with mainly subrectangular reticles (fig. 18), or with mostly irregular reticles, whose long axes lie mainly in the cephalo-caudad or cephalo-lateral directions (figs. 17, 19, 24); further laterad the abdomen is not conspicuously longitudinally striate (or ridged) 21
- 21 (20) Abdominal tergites III—V at sides mainly with subrectangular reticles (fig. 18); pronotum with vermiform wrinkles in the reticles (fig. 42) *fasciatus* (Pergande)
- — Tergites III—V at sides mainly with irregular reticles whose long axes lie in the cephalo-caudad direction (fig. 24); pronotum with mostly dotlike thickenings in the reticles (figs. 46, 47) *cinctipennis* (Hood)
- 22 (19) The reticles in the median third of sternites III—VI of the abdomen less strongly developed and transversely wider (fig. 59). Glandular areas on sternites III—VII of the male arcuate (fig. 60), and about 75—85 μ wide *indicus* (Bagnall)
- — The reticles in the median third of sternites III—VI more prominent, and transversely narrower (fig. 58). Glandular areas on sternites IV—VII of the male non-arcuate, about 23—55 μ wide, that on III sometimes absent, or varying from about 4 to 34 μ in width *graminicola* (Bagnall and Cameron)

Caliothrips braziliensis (Morgan) (Figs. 13, 41 and 56)

1929 *Heliothrips braziliensis* Morgan, Proc. ent. Soc. Wash. 31: 7—8.

Two of the syntype females of this species are before me. Both specimens are mounted ventral side uppermost, and one of them has been macerated in caustic soda. I have designated and labelled the female not treated with caustic soda as lectotype, although it has no antennae, because it is generally in a better state of preservation, and shows the colour and structure of the fore wings well. It will be returned to the United States National Museum in Washington.

In the accompanying key (couplet 14(13)), this species stands next to *phaseoli* (Hood), and is indeed very similar to it. In the original description of *phaseoli*, (Hood 1912), the colour of the fore wing is not described, but the figure (plate 8 fig. a) shows a nearly uniformly dark median area, occupying nearly half the length of the wing. One female of *phaseoli* from Mexico, determined by Dr. Hood, and kindly given to me by him many years ago, has this median "dark area" of both fore wings divided into a large clear area in the middle, flanked by two smaller dark bands. This same wing colour is present on four females of *phaseoli* from Texas, Mexico and Porto Rico kindly sent to me by Miss O'Neill. In a letter dated 7th July 1961, addressed to me, Miss O'Neill writes: "the best difference I can find between *phaseoli* and *braziliensis* is that the median dark area of the fore wing is lighter in the middle in *phaseoli* and rather uniformly dark in *braziliensis*".

As far as the material of the two species before me is concerned, the difference used to separate *phaseoli* and *braziliensis* in the key (couplet 14(13)) is satisfactory. I have not referred to the fore wing colour in the key because Hood's figure suggests that this may be identical with that of *braziliensis*. Further detailed studies of large series of both these species might reveal further points of difference between them. In his original description Morgan gave no comparisons of *braziliensis* with *phaseoli* or any other species.

Caliothrips graminicola (Bagnall and Cameron) (Figs. 17, 43, 58)

1932 Bagnall and Cameron, Ann. Mag. nat. Hist. (10)10: 412—419.

1957 Faure, J. ent. Soc. S. Afr. 20: 79—88, figs. 1—8.

On the three figures (Nos. 17, 43 and 58) reproduced herewith some of the details of sculpture of this species are shown. Additional records: **Southern Rhodesia:** Chirinda (=Mount Silinda), 3-v-1958, one ♀ (No. X.1260) on *Parinari curatellifolium* Planch; Chipinga, May 1958, 7 ♀♀ and 4 ♂♂ (No. X.1224) on *Hyparrhenia filipendula* (Hochst.) Stapf.; **Zululand:** St. Lucia Estuary, 3-iv-1945, 5 ♀♀ and 3 ♂♂ (No. X.1228) on *Hibiscus diversifolius* Jacq.; all collected by J. C. Faure.

Caliothrips helini (Hood) (with 6 figs.)

1940 *Hercotithrips helini* Hood, J. ent. Soc. S. Afr. 3: 35—38, fig. 1 a.

1959 *Caliothrips helini* — zur Strassen, J. ent. Soc. S. Afr. 22: 393, fig. 2.

This species has been recorded from the Transvaal and from Glorioso Island near Madagascar.

Material studied

Total: 87 ♀♀ and 32 ♂♂, mounted on slides in Canada balsam. **Southern Rhodesia**, about 45 miles west of Birchenough Bridge, R. zur Strassen, 10-v-1958, 1 ♀ (No. X.1340) on *Gardenia* sp.; **Transvaal**, three lots collected by J. C. Faure: Potgietersrust, 8-v-1920, 5 ♀♀ and 1 ♂ (Hood's paratypes); Mariepskop near Acornhoek, 22-iv-1951, 45 ♀♀ and 28 ♂♂ (No. X.22) on *Helinus ovatus* E. Mey.; Messina, 14-v-1958, 36 ♀♀ and 3 ♂♂ (No. X.1393) on *Croton megalobotrys* Müll. Arg.

***Caliothrips impurus* (Priesner) (Figs. 21—23, 37 and 57)**

1928 *Heliothrips impurus* Priesner, Boll. Lab. Zool. gen. agr. Portici, 21: 61

1932 *Hercothrips fumipennis* Bagnall and Cameron, Ann. Mag. nat. Hist. 10(10): 412—13, 418. *New synonymy*

Having carefully compared the morphological details of two cotype females of *impurus* with two paratype females of *fumipennis*, I have no hesitation in stating that these two forms are identical, and that *fumipennis* must sink as a synonym of *impurus*.

Figures 21 and 22 are of special interest, representing the two halves of tergite IV of one of Priesner's cotypes from Nigeria; although the general pattern of reticles and wrinkles is the same on both halves, there is considerable difference between the two in the shape of the reticles. Figure 23, representing tergite IV of a female from Gambia, shows a different type of reticle structure again.

Material studied

Total: 142 ♀♀ and 84 ♂♂, mounted on slides in Canada balsam. **Nigeria**: Lagos, F. Silvestri, 1912—13, 2 ♀ cotypes det. H. Priesner (No. X.1778); Raba, Niger Province, J. L. Gregory, 22-iv-1953, 6 ♀♀, 4 ♂♂ (No. 6407, C.I.E. No. 13176), on onion; **Sudan**: Khartoum, W. P. L. Cameron, 2-x-1926, 2 ♀ paratypes det. Bagnall and Cameron as *fumipennis*, (No. X.1779) ex Bagnall collection, British Museum No. 1932-339, on cotton; Mitaleib, Ali Gaafar, 27-ix-1947, 3 ♀♀, 2 ♂♂, on cotton; Medani, M. A. A. Hamid, October 1948, 1 ♀ on berseem, 1 ♂ on *Heliotropium*, 2 ♀♀ on *Tephrosia uniflora*; Hag Abdalla, J. W. Cowland, October 1954, 1 ♀ on cotton, these 7 ♀♀ and 3 ♂♂ C.I.E. No. 12145 (det. E. K. Hartwig); **Gambia**: Yandum, April 1957, 14 ♀♀ and 6 ♂♂ ground nuts (No. X.994, C.I.E. No. 15372); Sapu, J. Mullholland, May 1958, 81 ♀♀ and 56 ♂♂, (No. X.1249) on ground nuts; **Southern Rhodesia**: Nyanyadzi Irrigation Scheme, about 25 miles north of Birchenough Bridge, R. zur Strassen, 9-v-1958, 25 ♀♀ and 15 ♂♂ (No. X.1221 A), on lucerne; Chipinga, J. C. Faure, 5-v-1958, 5 ♀♀ (No. X.1396) on garden beans.

***Caliothrips marginipennis* (Hood) (Figs. 25, 30, 50, 51 and 68)**

1912 *Heliothrips marginipennis* Hood, Proc. ent. soc. Wash. 14: 136—137.

1927 *Heliothrips bromi* Moulton, Pan.-Pacif. Ent. 4: 31—32. *New synonymy*.

There is no doubt that *bromi* must be suppressed as a synonym of *marginipennis*. I have before me one of Moulton's paratype females of *bromi*, one female from California determined as *bromi* by Professor S. F. Bailey,

and four specimens of *marginipennis*: one female from Arizona determined by J. C. Crawford, and one female and two males from Texas determined by Miss O'Neill. All these specimens are identical.

***Caliothrips oneillae* sp. n. (with 13 figures)**

Female (macropterous)

Colour

General colour light brown to brown, appendages variegated; walls of reticles and other lines of sculpture generally darker than rest of integument; *head* slightly paler than thorax and abdomen, light brown behind eyes, greyish yellow between eyes and in front of them, occipital apodeme on hind margin of head dark brown, cheeks light brown dorsally, laterally, and ventrally; ventral aspect of head slightly paler than dorsal aspect, brownish yellow; *mouth cone* light brown, darker at tip of labrum and paler at sides of labrum, palpi pale grey, transparent; *antennae*: segments I, II and basal half of III pale grey; third fourth of III dark grey, the distal fourth paler than base of segment and becoming transparent at apex, but all the darker and paler parts of III merging imperceptibly into one another; IV similar to III but its base paler and pedicel transparent; V practically transparent in about basal three-fifths, grey in distal two-fifths; VI darkest of all, light brown; VII and VIII grey; *pronotum* uniformly light brown; *pterothorax* mainly light brown, but dark brown at sides and on anterior margin, and with dark brown apodeme-lines at junction of meso- and metanotum; metathoracic crescents also darker than rest of ptero-thorax; meso- and metasternum light brown with some paler parts, and dark brown apodemes; *legs*: all coxae light to dark brown; all trochanters and about basal one-twelfth of all femora very pale grey, practically transparent; of the rest of fore femora basal half grey, rest becoming paler, yellow at apex; middle and hind femora brown except for short pale bands at base and apex; all tibiae shaded grey to brown in about three-fourths of their length, greyish yellow at base and at apex; all tarsi yellow, with grey cups; *fore wing* dark grey (fig. 29) with an irregular pale spot just beyond scale at base and a more clearly defined pale band near apex, the apex being the darkest part of the wing; hind wing pale grey with a dark median line extending over about basal six-sevenths of its length; *abdomen* generally darker than head and thorax, light brown dorsally, and ventrally, dark brown at each side in a longitudinal line about as wide as hind tibia, segment IX brown, darker than I—VIII, apodemes of ovipositor black; the thin antecostal lines on tergites III—VIII brown but not very conspicuous; on sternites II—VII there are much more conspicuous, heavier, dark transverse lines very close to their anterior margins; *major setae* of body and appendages as well as wing fringe hairs transparent to pale grey, the large dorsal setae on antennal segments III and IV dark grey.

All the specimens before me were collected into 10 % alcohol plus 0.1 % Triton emulsifier and the above description of the colour has been drawn up on such specimens. Specimens collected into 70 % alcohol will probably be generally darker.

Sculpture

Dorsal aspect of *head* (fig. 53), and the greater part of cheeks behind eyes on lateral aspect, heavily reticulated, with many fine wrinkles and dots in the reticles; ventrally: a few prominent transverse lines near antennae, but area between eyes only incompletely and lightly roughened with irregular transverse lines; mouth cone only slightly roughened, palpi smooth; antennae with transverse lines on II—V as illustrated (fig. 65).

Pronotum (fig. 44) with anastomosing lines forming irregular reticles, most of which are transversely elongate, or obliquely so in median area of disc cephalad of main group of foveae, and with numerous fine wrinkles in the reticles.

Pterothorax: mesoscutum heavily lined (fig. 45) but with wrinkles between the lines in antero-median area only; in the lateral one-fourth on each side the lines are close together and about as heavy as those on median half, not as light as indicated on the figure. *Metanotum* heavily lined and densely wrinkled in about median third; metascutellum with heavy-walled reticles, but practically no wrinkles, in median half, lateral one-fourth on each side very lightly and indistinctly reticulated.

Laterally: approximately the dorsal half of the lateral aspect of pterothorax sculptured like pronotum, with heavy lines and numerous fine wrinkles, but the main lines and the reticles formed by them run mainly in the cephalo-caudal direction; lower half of epimeron plus episternum of mesothorax also similarly sculptured but with less numerous wrinkles; lower small triangle just above middle coxa, and lower half of lateral extension of metasternum bearing heavy lines but practically no wrinkles.

Ventral aspect of pterothorax: transverse more or less curving lines prominent at sides of meso- and metasternum about as far mesad as inner margins of middle coxae, but no wrinkles between the lines: median area between the middle coxae lightly reticulated on both meso- and metasternum, the former only with some rough longitudinal lines in anterior two-thirds of its median sixth.

Wings: surface of both pairs densely clothed with microtrichia about 3—7 μ in length. *Legs*: all femora and tibiae, mainly on upper (outer) sides, rather heavily subreticulate.

Abdomen: discs of tergites I—VIII practically smooth on a middorsal stripe, except for antecostal lines and a few scattered irregular lines (fig. 15); this median smooth area, as measured on holotype, is about 71 μ wide on I, and 85—99 μ wide on II—VIII, whereas the abdomen is 233 μ wide at the widest point, i.e. segment IV.

Laterad of the median smooth stripe tergites II—VIII bear heavy lines on each side (fig. 15), without any wrinkles or tubercles between them; these lines are probably raised ridges, and have "shadow effects", as we have attempted to show semidiagrammatically on figure 16. Tergite I with somewhat lighter lines on each side; sculpture of tergites VIII—X as illustrated (fig. 54). In *lateral aspect* (fig. 28) one sees that the tergites III—VIII bear microtrichia on 3—6 lines in the cephalo-lateral angle; there is only one pleural sclerite, which I take to be the fused laterotergite plus laterosternite, and this has a few weak wrinkles between the lines on segments III—VII.

Behind the sculptured areas of tergites II—VIII, dorsally and laterally,

the fish fin type of comb is well developed (fig. 15 p.psc); posterior edges of tergites II—VIII with prominent lobate margins (fig. 15 m.lob.) on the median smooth area, these margins about $17\ \mu$ long in the median third and about $10\ \mu$ long in each lateral third. For definitions of terms used in this paragraph see the subsection "New terminology" below.

Sternites II—VII at their lateral extremities more or less obliquely lined, about as heavily as their tergites (fig. 28), but on the median parts the lines are somewhat lighter, transverse and crescentic, and without any wrinkles between them; on III—VI most of the reticles are wide, and short in the cephalo-caudal direction (fig. 63), but on VII they are somewhat narrower; the lobate margins conspicuous on sternites II—VII.

New terminology

Professor Priesner has suggested that I should propose special terms for some of the different types of combs and margins found on the hind margins of the tergites and sternites in *Caliothrips*. As shown on figures 14, 15 and 18, there is a special type of comb on the hind margin of the intermediate tergites, at the sides, in *Caliothrips oneillae*, *helini*, *fasciatus* and many other species of this genus. The teeth in this type of comb are apparently not free, but held together by a thin membrane, resembling the dorsal fins of fishes; for this I propose the term *pecten piscinus*, or fish fin comb (fig. 15: p.psc.). The usual type of comb on the hind margin of tergite VIII in *Taeniothrips inconsequens* (Uzel) and many other species of *Taeniothrips* and *Thrips* (see figure 20, page 377, J. ent. Soc. S. Afr. 22, 1959 for an illustration of such a comb in *Taeniothrips ghesquierei* Priesner) suggests a row of very fine pointed setae, and for this the term *pecten setiformis*, or setiform comb is suggested. The median parts of the hind margins of tergites II—VIII, and the whole of the hind margins of sternites II—VII of *Caliothrips oneillae*, and many other species of this genus, bear sclerotized borders, flanges or margins, which are clearly differentiated from the discs, bear longitudinal lines, and are more or less notched or scalloped on their caudal edges. These borders do not look like combs. Since they are more or less divided into lobes I propose the term *margo lobatus*, or lobate margin, for this type of border (fig. 15: m.lob.).

General structure

The head (figs. 52, 53), when scarcely tilted downward, about 0.7 as long as wide, or about 0.5 as long when tilted more distinctly, and respectively about 1.2 to 1.0 as long as the pronotum; width across eyes and across cheeks about equal; cheeks somewhat rounded near eyes and narrowed towards base, where least width is about $14\text{--}16\ \mu$ less than the greatest width. Eyes large, bulging, about 0.6—0.7 as long as median dorsal length of head; dorsal and ventral lengths of eyes about equal in specimens with dorsal surface of head approximately horizontal; dorsal and ventral widths of eyes about equal, and about half as wide as their dorsal and ventral intervals; ommatidia circular, contiguous, a few on ventral and lateral aspect somewhat enlarged; a few small setae between the ommatidia. Ocelli borne on a prominent hump; measured on females mounted laterally the top of the hump is about $10\text{--}14\ \mu$ above the dorsal surface of the head; in front of the anterior ocellus there is a flat-topped median ridge, about as wide as the anterior ocellus

and not noticeably higher than the eyes. Dorsal *head setae* as illustrated (fig. 52).

Mouth cone broad, heavy, rounded at tip, extending to hind margin of prothorax in most specimens, the head being generally tilted downward. Palpi small, inconspicuous, measured on a medium-sized female, L./W. in μ : maxillary I: 7/5, II: 17/3, labial 10/2. *Antenna* as illustrated (fig. 65); forked sense cones on III and IV situated on ventral aspect, the simple cones of VI and VII long and conspicuous, situated respectively on the inner and outer side; no areola on II.

Pronotum (figs. 52, 44) about 0.9—1.0 as long as the head, and about 0.4—0.5 as long as its own width; its setae variable in number and position, and often difficult to see on the background of the conspicuous lines of sculpture. Setae of meso- and metascutum as illustrated (fig. 45). *Fore wings* (fig. 29): costa with about 20—22 strong setae, most of them longer than the anterior fringe hairs; vein setae counted on 20 wings of 18 females showed that the scale always bears 4 setae, in addition to the two long ones at apex, and that there are two setae at apex of anterior vein; at base of anterior vein the one at extreme base is small and often difficult to see, including this there are 3—6 setae in the basal group, 3 on one wing, 5 on ten wings, and 6 on nine wings; posterior vein bears 4—7 setae, 4 found on one wing only, 5 on three, 6 setae on nine, and 7 setae on seven wings, the vein setae all more or less sharply pointed.

The *legs* all bear setae more or less like those illustrated for the fore pair (fig. 52); spurs at apex on inner side of hind tibiae about 20 μ in length, pointed. General structure of *abdomen*, its setae, combs and margins as shown on the figures (Nos. 15, 28, 54 and 63).

Measurements

Size was determined by measuring the length of the hind tibia; on 48 ♀♀ it varied from 101 to 127 μ .

Measurements of holotype (female No. X.1397-1, the largest) in μ , followed in parentheses by those of the smallest paratype female (No. X.1397-3): Length (distended) 1104(954); *head* L. 100(72) (both more or less tilted downward), W. across eyes 152(133), greatest W. across cheeks 152(131), least W. 136(199); *eyes* of a large and a small female macerated in NaOH, dorsal L. 63(56), W. 38 and 42(35—38), interval 76(73), ventral L. 63(63), W. 35 and 40(35), interval 83(76); *ocelli* anterior to posterior 17(13), interval of posterior pair 21(21), diameters longit. transv. anterior 6(5)/19(17), posterior 17(13)/11(11); *mouth cone* L. from posterior dorsal margin of head 110(110); *pronotum* L. 87(71), W. 191(161); pterothorax L. 212(174), W. 220(182); *fore wings* L. 698(564), W. across scale 68(55), W. at middle 49(40), W. 40 μ from apex 42(34); *legs* L./W. ff. 72(59)/32(25), ft. 89(68)/30(25), fta. 57(47)/20(18); hf. 93(76)/34(30), ht. 127(101)/25(23), hta. 66(51)/19(17); *abdomen* L. 698(599), W. 233(191).

Antennae: total L. 229(205).

Segm.	L.	W.	Segm.	L.	W.
I	17(15),	22(21);	V	34(30),	19(18).
II	38(38),	30(27);	VI	21(21),	17(15).
III	47(38),	21(19);	VII	13 (9),	6 (6).
IV	38(36),	21(19);	VIII	24(19),	4 (4).

Male (macropterous)

Smaller than the female, with the abdomen more slender and tapering more gradually towards apex, but otherwise very similar in colour and structure.

Testes not conspicuous in the four males that have not been macerated in NaOH; since the specimens were all collected into 10 % alcohol the colour of these organs has probably faded; they are subspherical to elongate-oval in shape, extend from the apex of segment VIII more or less as far as the middle of VII, and are grey in colour with a faint yellow tinge.

Glandular areas on sternites (fig. 64) variable in size and distribution: on 9 males these areas are clearly visible; 7 males have glandular areas on sternites V, VI and VII, their L./W. in μ about 2—5/2—17, 4—7/10—25, and 4—5/19—33 respectively; on one male there is a small gland on IV, and in another only the glands of VI and VII are present.

Setae on tergites VIII and IX as illustrated (fig. 66), but on the allotype male the left median dorsal seta of IX is in an abnormal position, in line with the four posterior large setae.

Measurements

Size: hind tibia length measured on 11 males gave a range of 97 to 114 μ .

Measurements of allotype (male No. X.1397-2, the largest) in μ , followed in parentheses by those of the smallest male paratype (No. X.1397-4), both NaOH-treated: Length (distended) 923(908); *head* L. 87(74), W. across eyes 140(140), least W. 114(119); *eyes* dorsal L. 57(55), W. 40(38), interval 61(64), ventral L. 64(66), W. 38(38), interval 68(68); *ocelli*: anterior to posterior 17(13), interval posterior pair 21(22), diameters longit./transv. anterior 5(5)/17(17), posterior 16(17)/12(11); *mouth cone* L. from posterior dorsal margin of head 93(106); pronotum L. 76(76), W. 157(161); pterothorax L. 191(191), W. 182(193); fore wings L. 578(578), W. across scale 57(59), at middle 38(38); legs L./W. ff. 68(66)/30(30), ft. 89(89)/25(25), fta. 51(53)/17(17); hf. 72(76)/30(30), ht. 114(97)/22(23), hta. 55(47)/15(17); *abdomen* L. 564(571), W. 148(157).

Antennae: total L. 224(224).

Segm.	L.	W.	Segm.	L.	W.
I	17(17),	19(21);	V	30(30),	17(18).
II	34(34),	25(25);	VI	25(25),	17(17).
III	47(47),	21(23);	VII	13(13),	7 (6).
IV	40(42),	21(21);	VIII	21(21),	4 (4).

Material studied

Type series: 49 ♀♀ and 11 ♂♂ (No. X.1397) mounted on slides in Canada balsam, collected by the writer, 9-v-1958, on the Lundi River, Southern Rhodesia, about 110 miles north of the Limpopo river, on the main road from Beit Bridge to Fort Victoria; the food plant, a bushy semi-creeper, was determined by the National Herbarium as cf. *Albizia brevifolia* Schinz.

Comparisons

The differences between *oneillae* sp.n. and the known species of *Caliothrips* are brought out in the accompanying key; it comes nearest to *helini*

(Hood), but differs, in addition to the characters used in the key, in: — (i) smaller size, (ii) setae at fork of veins on fore wing shorter, thinner, and (iii) reticles on median area of sternites transversely wider (compare figures 63 and 61).

This interesting little species is named for Miss Kellie O'Neill, in appreciation of her friendly co-operation, not only in the preparation of this paper, but also on previous occasions.

***Caliothrips sudanensis* (Bagnall and Cameron) (Fig. 48)**

1932 *Hercothrips sudanensis* Bagnall and Cameron, Ann. Mag. nat. Hist. 10(10): 412, 415, 419.

Females of this species are common in the Transvaal and Southern Rhodesia on various small indigenous leguminous shrubs, but apparently the males are rare.

In the accompanying key for the identification of the species of this genus, this species comes close to *striatopterus* (Kobus) from Java, in couplet 11(8). There is one slide (6 females and one male) of *striatopterus* in the United States National Museum in Washington, which I have not seen. The character used in couplet 11(8) of my key for separating *sudanensis* from *striatopterus*, was kindly provided by Miss O'Neill.

Material studied

Total: 226 ♀♀ and 3 ♂♂, mounted on slides in Canada balsam. **Sudan:** Khartoum, W. P. L. Cameron 1-ii-1927, 2 ♀♀ paratypes, ex Bagnall collection, British Museum No. 1932-339, on cotton; Medani, M. A. A. Hamid, 4-x-1948, 1 ♂, C.I.E. No. 12145, on *Heliotropium* (det. E. K. Hartwig, his No. 325). Collectors names abbreviated below: J.C.F. for J. C. Faure, R.z.S. for R. zur Strassen. **Southern Rhodesia:** Beit Bridge district, about 4 miles north of the bridge, J.C.F., 29-iv-1958, 25 ♀♀ (No. X.1218) on *Tephrosia contorta* N.E.Br.; R.z.S., 29-iv-1958, 26 ♀♀ (No. X.1220), on *Indigofera* sp. cf. *I. variabilis* N.E. Br; about 20 miles north of Beit Bridge, R.z.S., 13-v-1958, 6 ♀♀ and 1 ♂ (No. X.1341) on *Leucas glabrata* R. Brown; Nyanyadzi Irrigation Scheme, about 25 miles north of Birchenough Bridge, R.z.S., 9-v-1958, 30 ♀♀ and 1 ♂ (No. X.1221-B), on lucerne; J.C.F., 9-v-1958, one ♀ (No. X.1395) on green beans; **Transvaal:** Messina, Dr. C. van Bergen, 7-vii-1941, one ♀ on *Lachnopolis oppositifolia* Hochst.; J.C.F. 14-v-1958, 4 ♀♀ (No. X.1394) on *Croton megalobotrys* Müll. Arg.; Zoutpansberg district about 30 miles south of Messina, J.C.F., 28-iv-1958, 45 ♀♀ (No. X.1217), on *Indigofera tettensis* Klotzsch.; Beit Bridge, R.z.S., 13-v-1958, 25 ♀♀ (No. X.1222), on *Tephrosia* sp. cf. *T. purpurea* Pers.; J.C.F. 13-v-1958, 2 ♀♀ (No. X.1302) on *Cataphractes alexandri* Don.; Entabeni Forest Station, about 25 miles east of Louis Trichardt, J.C.F., 4 ♀♀ (No. X.1398) on *Argyrolobium tomentosum* (Andrews) Druce; Kruger National Park, Satara, J.C.F., 28-iv-1960, 51 ♀♀ (No. X.1696) on *Indigofera lydenburgensis* N.E.Br.; Pretoria, W. Powell, 4-xii-1941, 2 ♀♀ on beans; Rustenburg E.C.G. Bedford, 14-iii-1940 and 25-vii-1940, 2 ♀♀ on orange foliage.

Selenothrips rubrocinctus (Giard)

1901 *Physopus rubrocincta* Giard, Bull. Soc. ent. France 1901: 263.

To my knowledge this species, the tropicopolitan cacao thrips, has not been recorded in the literature from South Africa. I have material before me from several localities in the Republic of South Africa, but have had no reports of serious damage done by this species on guavas or any other plants. My records are: — **Natal:** Port Shepstone, 9-iii-1940, 20 ♀♀, W. Powell, on guava (X.823). **Zululand:** Richards Bay, 18-x-1955, 42 ♀♀, J. C. Faure, on *Macaranga capensis* Benth. ex Sim. (Euphorbiaceae), an indigenous tree (X.691). **Transvaal:** from two localities near Nelspruit, on guava fruits showing rough markings, similar to thrips injury on oranges, both collections made by F. J. Stoffberg: — White River, 10-iv-1957, 3 ♀ and about 10 larvae (X.993); Brondal, 17-v-1957, 1 ♀ with 40 larvae and pupae (X.1003).

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Explanations of figures

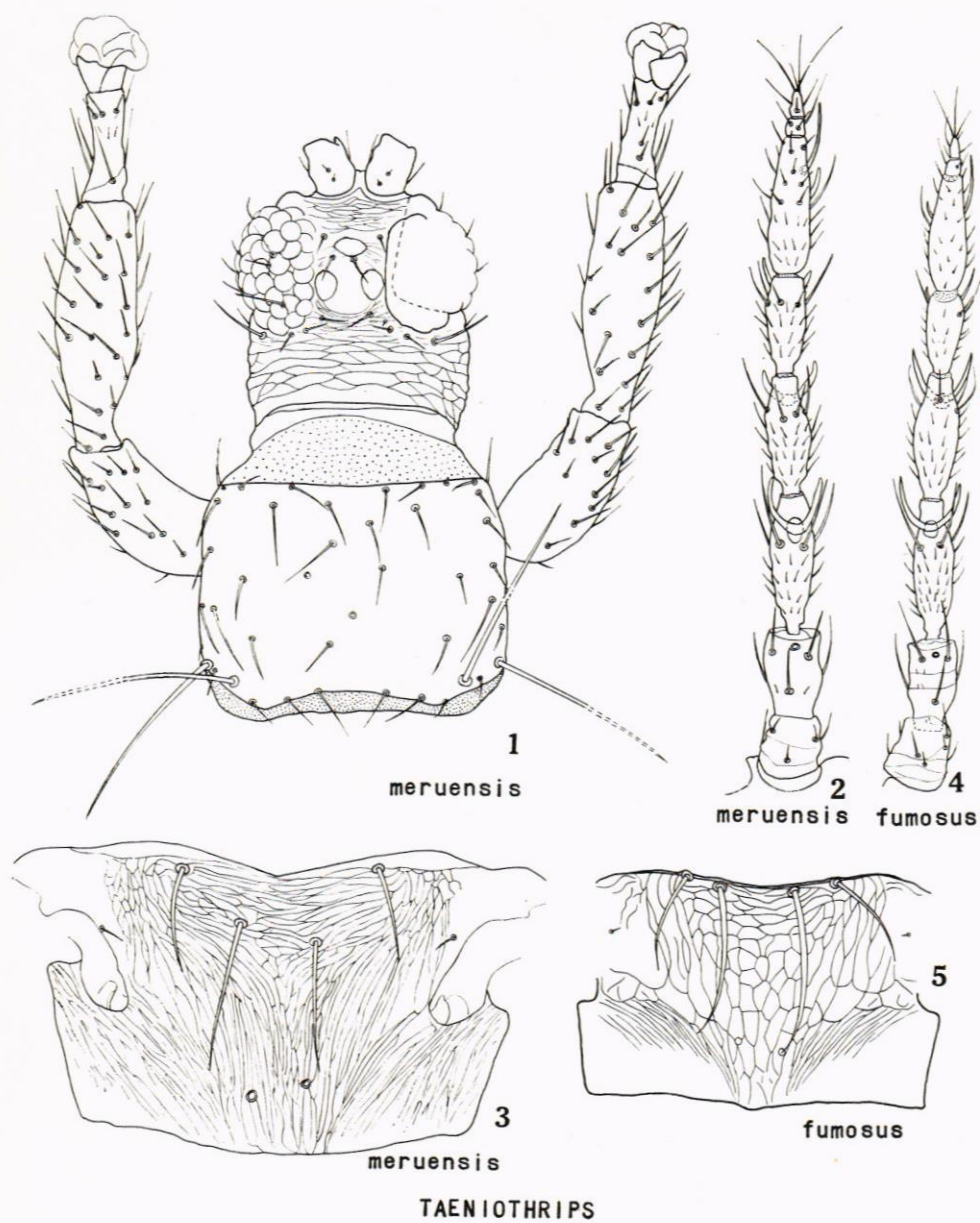
Taeniothrips meruensis (Trybom) syntypes

- Fig. 1 — ♀, No. X.1428-1, head and prothorax, sculpture omitted from pronotum and legs.
2 — ♀, No. X.1431-3, right antenna.
3 — ♀, No. X.1431-4, metanotum.

Taeniothrips fumosus (Trybom) ♀, No. X.1430-1, lectotype

- Fig. 4 — left antenna.
5 — metanotum.

Figs. 1—4: Miss J. C. F. Boshoff del.
5: Mrs. M. J. Meyer del.



Explanations of figures

Taeniothrips meruensis (Trybom) syntypes

- Fig. 6 — ♂, No. X.1431-5, right fore wing, fringes omitted.
7 — ♂, No. X.1431-6, sternite VI.
8 — ♀, No. X.1428-2, laterosternite teeth, segments IV and V, dorsal aspect, on left.

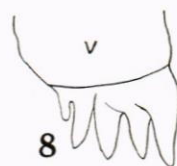
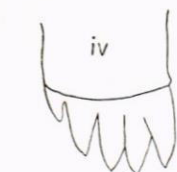
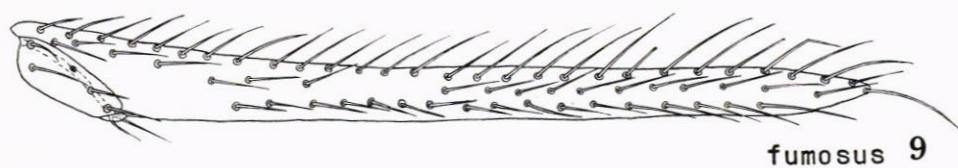
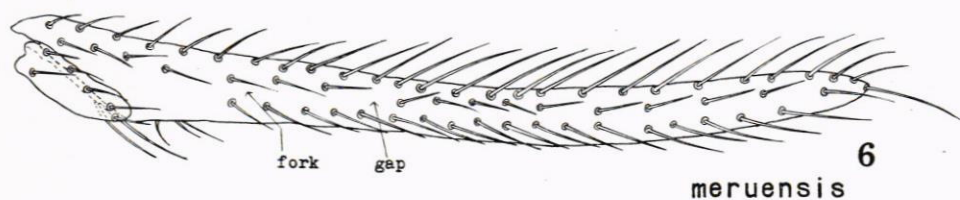
Taeniothrips fumosus (Trybom)

- Fig. 9 — ♀, No. X.1430-3, syntype, right fore wing, fringes omitted.
10 — ♂, No. X.1430-2, allolectotype, sternite VI.
11 — ♀, No. X.1430-4, syntype, laterosternite teeth, segments III—V, dorsal aspect, on left.
12 — ♀, No. X.1430-5, syntype, laterosternite teeth, segments III—V, dorsal aspect, on left.

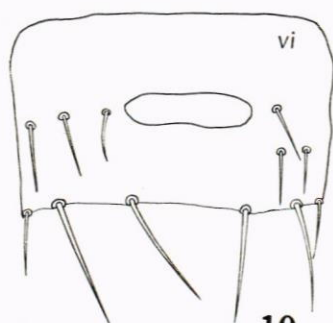
Figs. 6 and 9 are drawn to the same scale of magnification.

Figs. 6, 8—10: Miss J. C. F. Boshoff, del.

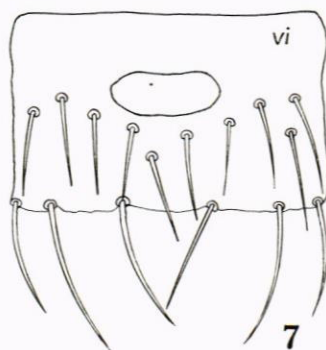
7, 11, 12: Mrs. M. J. Meyer, del.



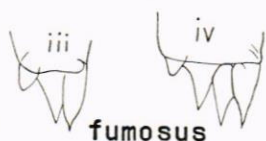
8
meruensis



10
fumosus

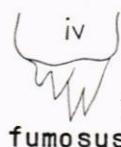
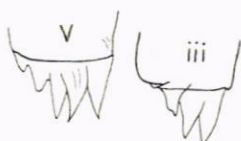


7
meruensis



fumosus

11



12
fumosus



TAENIOTHRIPS

Explanations of figures

Figs. 13—20. *Caliothrips*, abdominal tergites

Fig. 13 — *braziliensis* (Morgan), ♀, No. 57-3175, (ex U.S.N.M.), right half of tergite IV.

14 — *helini* (Hood), ♀, No. X.1393-1, right half of tergite III.

15 — *oneillae* sp.n., ♀, No. X.1397-9, paratype, right half of tergite IV; m.lob.: margo lobatus; p.psc.: pecten piscinus.

16 — ditto fig. 15, small part highly magnified, semi-diagrammatic.

17 — *graminicola* (Bagnall and Cameron), ♀, No. X.752-18, right half of tergite V.

18 — *fasciatus* (Pergande) ♀, No. X.1851-2, left half of tergite IV.

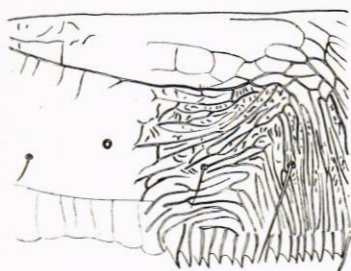
19 — *indicus* (Bagnall), ♀, B.M. 1924-473, cotype, right half of tergite IV.

20 — *insularis* (Hood), ♀, paratype, Trinidad, from grass, 2-i-1917, right half of tergite III.

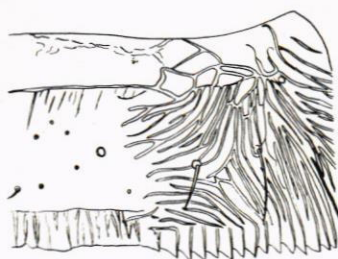
Figs. 13, 14 and 18—20 drawn to the same scale of magnification.

Figs. 13, 15, 16, 18—20: Miss J. C. F. Boshoff del.

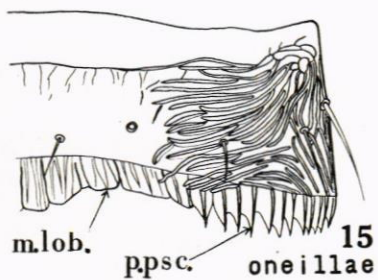
14, 17: Miss H. M. A. van Houte del.



braziliensis 13



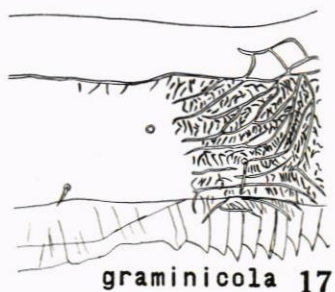
helini 14



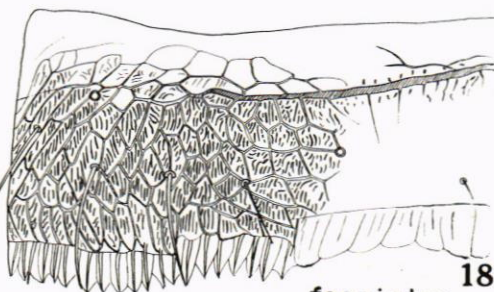
oneillae 15
mlob. ppsc.



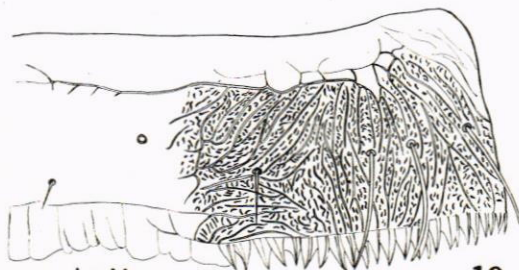
oneillae 16



graminicola 17

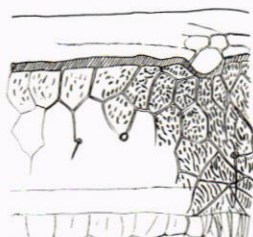


fasciatus 18



indicus

19



insularis 20

CALIOTHRIPS

Explanations of figures

Figs. 21—26 *Caliothrips*, abdominal tergites

Fig. 21 — *impurus* (Priesner), ♀, No. X.1778-1, cotype, from Nigeria, left and right half of tergite IV.

22 — *impurus* (Priesner), ♀, No. X.1249-1, from Gambia, right half of tergite IV.

24 — *cinctipennis* (Hood), ♀, det. Miss K. O'Neill, from Virginia, U.S.A., right half of tergite IV.

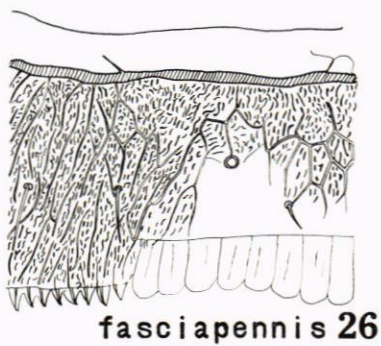
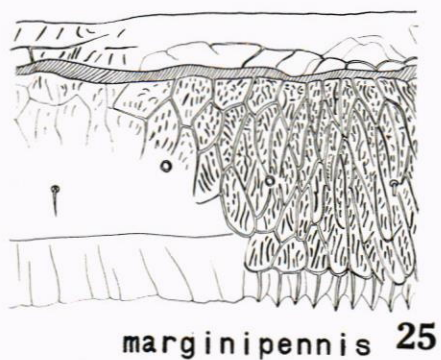
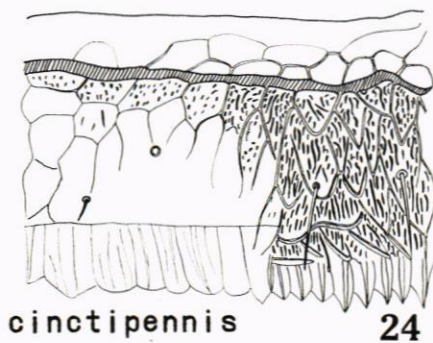
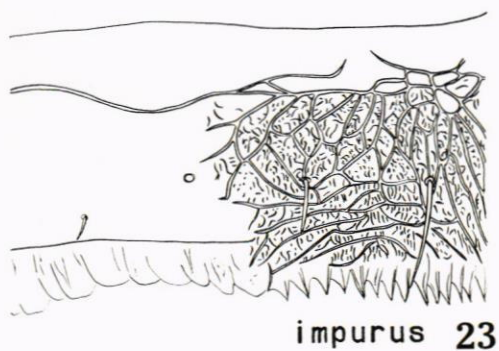
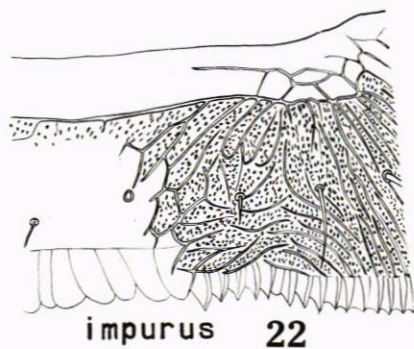
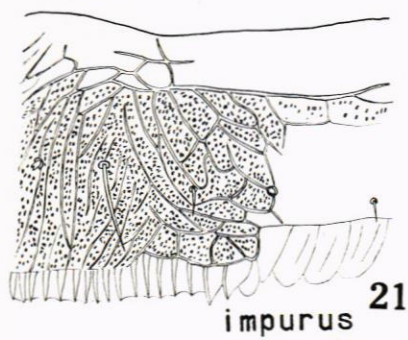
25 — *marginipennis* (Hood), ♀, det. J. C. Crawford, from Arizona, U.S.A., right half of tergite IV.

26 — *fasciapennis* (Hinds), ♀, det. Miss K. O'Neill, from Tennessee, U.S.A., left half of tergite III.

Figs. 21—26 all drawn to the same scale of magnification.

Figs. 21, 22, 24—26 Miss J. C. F. Boshoff del.

Fig. 23 Miss H. M. A. van Houte del.



CALIOTHRIPS

Explanations of figures

Figs. 27—30 *Caliothrips*

Fig. 27 — *indicus* (Bagnall), ♂, B.M. 1924-473, cotype, tip of abdomen.

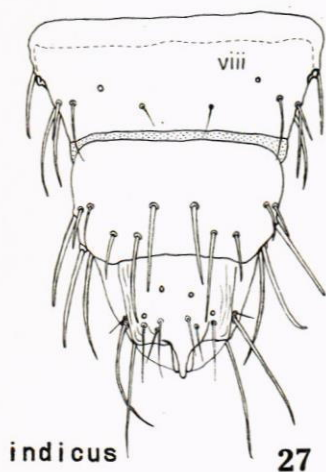
28 — *oneillae* sp.n., ♀, No. X.1397-10, paratype, lateral aspect, left side, of segment V; st.: sternite, pls.: pleural sclerite, terg.: tergite.

29 — *oneillae* sp.n., ♀, No. X.1397-7, paratype, right fore wing.

30 — *marginipennis* (Hood), ♀, det. Miss K. O'Neill, from Texas, U.S.A. (ex British Museum), right fore wing.

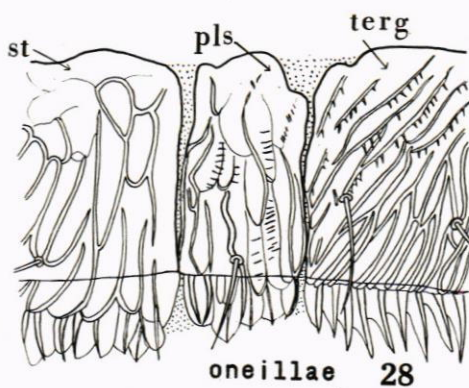
Fig. 27: Mrs. M. J. Meyer del.

28—30: Miss J. C. F. Boshoff, del.



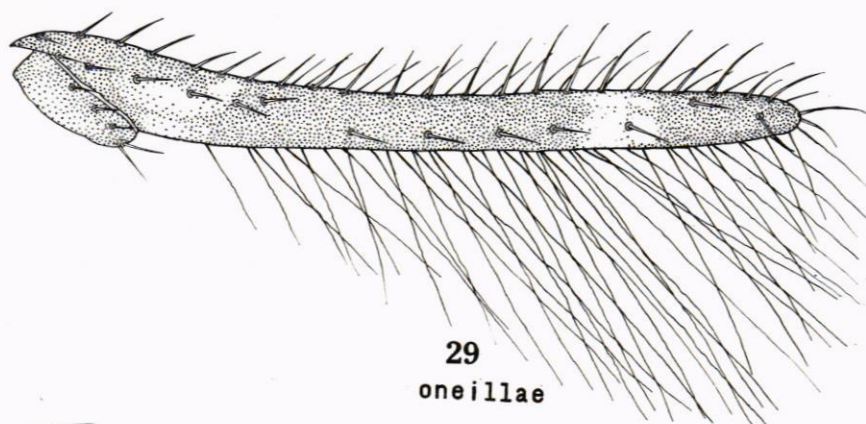
indicus

27



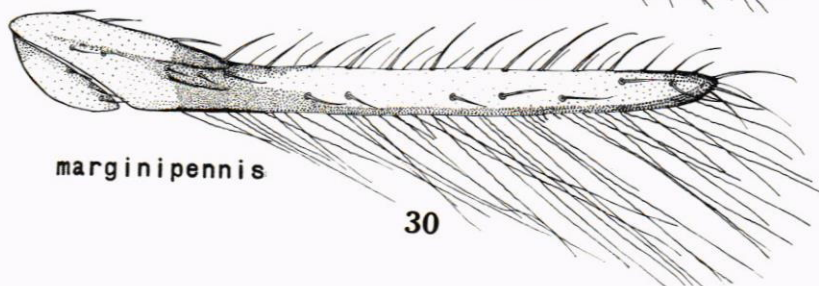
oneillae

28



29

oneillae



marginipennis

30

CALIOTHRIPS

Explanations of figures

Figs. 31—36 *Caliothrips*: fore wings

Fig. 31 — *striatus* (Hood), right wing.

32 — *fasciatus* (Pergande), type, right wing.

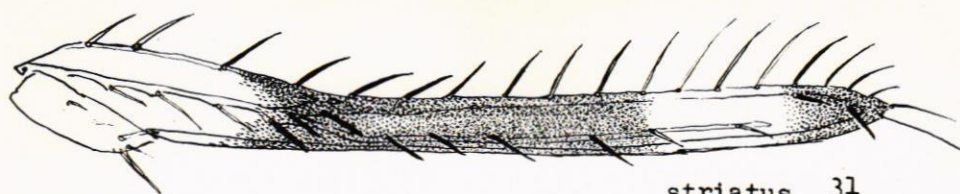
33 — *fasciapennis* (Hinds), right wing.

34 — *striatopterus* (Kobus), left wing.

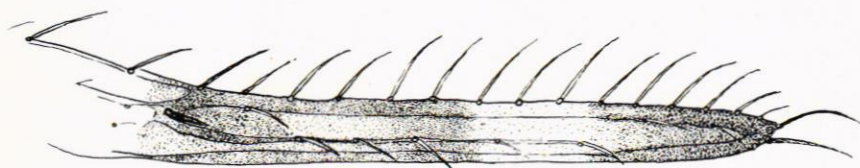
Figs. 31—34: Miss K. O'Neill del. wing fringes omitted.

Fig. 35 — *indicus* (Bagnall), ♀, B.M. 1924-473, cotype, right wing. Mrs. M. J. Meyer del.

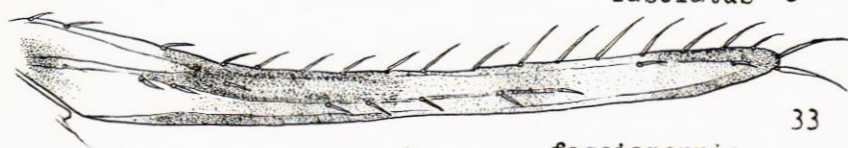
36 — *helini* (Hood), ♀, after zur Strassen (1959).



striatus 31



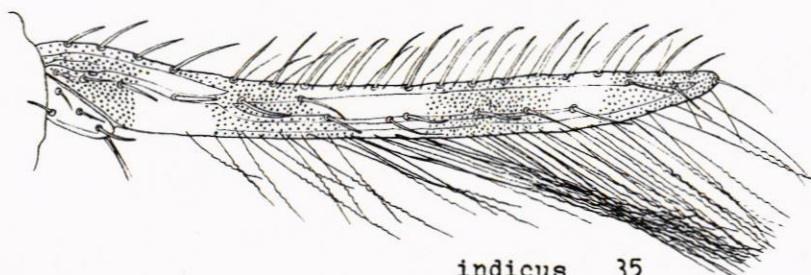
fasciatus 32



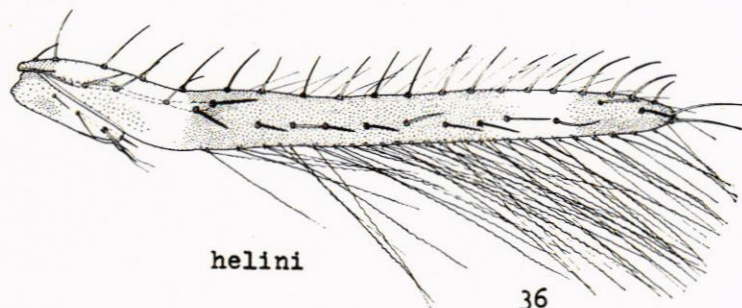
fasciapennis 33



striatopterus 34



indicus 35



helini

36

CALIOTHRIPS

Explanations of figures

Figs. 37—42 *Caliothrips*, right halves of pronota

Fig. 37 — *impurus* (Priesner), ♀, No. X.1249-1; mf.: main foveae.

38 — *fasciapennis* (Hinds), ♀, det. Miss K. O'Neill, from Tennessee, U.S.A.

39 — *indicus* (Bagnall), ♀, B.M. 1924-473, cotype.

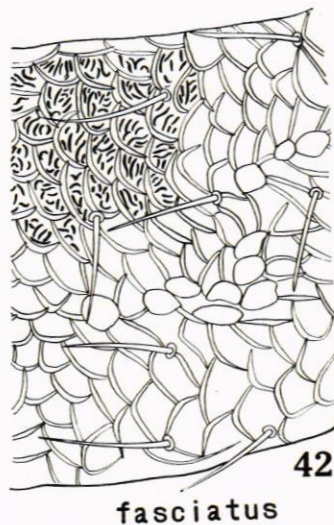
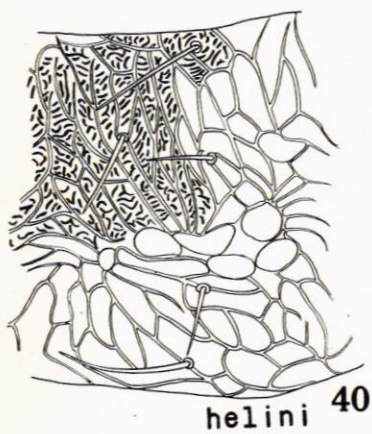
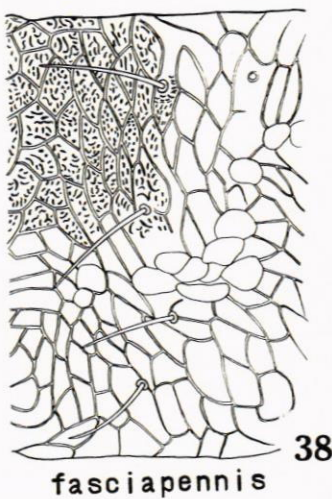
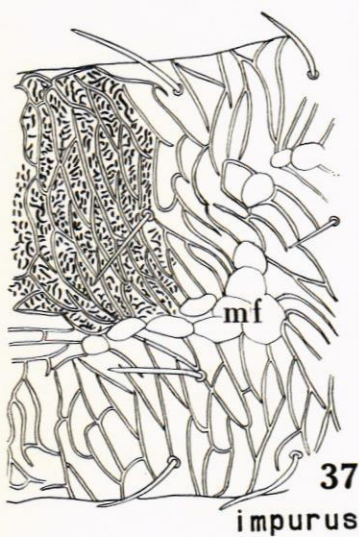
40 — *helini* (Hood), ♀, No. X.1393-1.

41 — *braziliensis* (Morgan), ♀, No. 57-3175 (ex U.S.N.M.).

42 — *fasciatus* (Pergande), ♀, No. X.1851-1.

Figs. 37—42: Miss J. C. F. Boshoff del., all drawn to the same scale of magnification.

In all cases the reticles left blank, and the rest of the surface of the pronotum (except the foveae), bear more or less the same sculpturing of wrinkles as that shown on the completed reticles.



CALIOTHRIPS

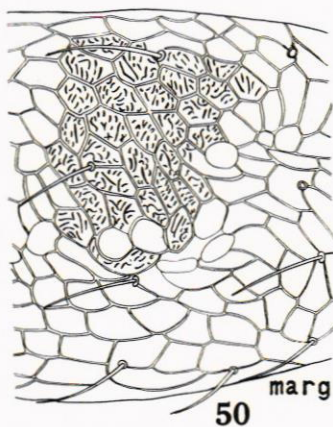
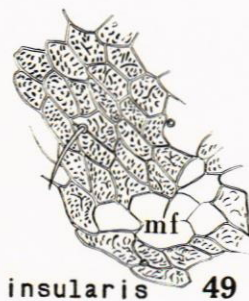
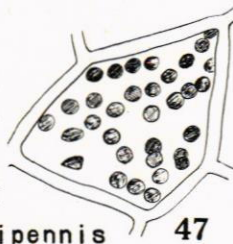
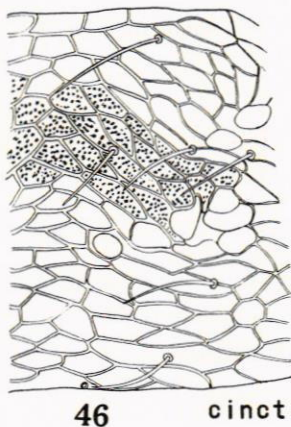
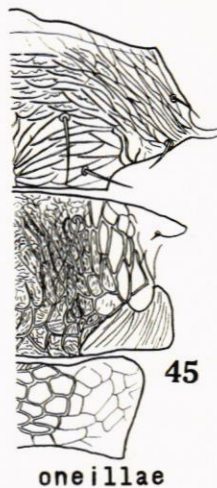
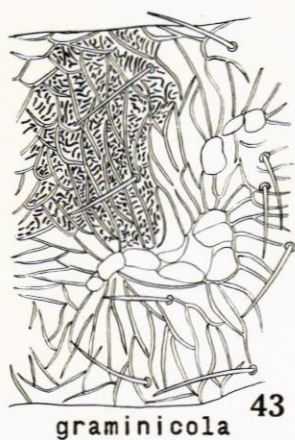
Explanations of figures

Figs. 43—51 *Caliothrips*

- Fig. 43 — *graminicola* (Bagnall and Cameron), ♀, No. X.752-18, right half of pronotum.
44 — *oneillae* sp.n., ♀, No. X.1397-6, right half of pronotum.
45 — *oneillae* sp.n., ♀, No. X.1397-5, right half of meso- and metanotum.
46 — *cintipennis* (Hood), ♀, det. Miss K. O'Neill, from Virginia, U.S.A., right half of pronotum.
47 — *cinctipennis* (Hood), ♀, paratype, (ex British Museum) one reticle of pronotum, greatly enlarged, semi-diagrammatic.
48 — *sudanensis* (Bagnall and Cameron), ♀, No. X.1217-1, right half of pronotum.
49 — *insularis* (Hood), ♀, paratype, Trinidad, from grass, 2-i-1917, part of right half of pronotum; mf: main foveae.
50 — *marginipennis* (Hood), ♀, det. J. C. Crawford, from Arizona, U.S.A., right half of pronotum.
51 — *marginipennis* (Hood), ♀, det. Miss K. O'Neill, from Texas, U.S.A., (ex British Museum) one reticle of pronotum greatly enlarged, semi-diagrammatic.

Figs. 43—51: Miss J. C. F. Boshoff del.

Figs. 43, 46 and 48—50 drawn to the same scale of magnification. In all the pronota figured the reticles left blank, and the rest of the surface of the pronota (except the foveae), bear more or less the same sculpturing of wrinkles as that shown on the completed reticles.



CALIOTHRIPS

Explanations of figures

Figs. 52—56 *Caliothrips*

oneillae sp.n.

Fig. 52 — ♀, No. X.1397-5, paratype, head and prothorax.

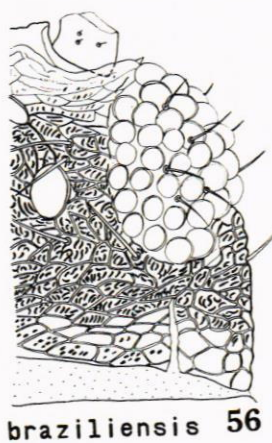
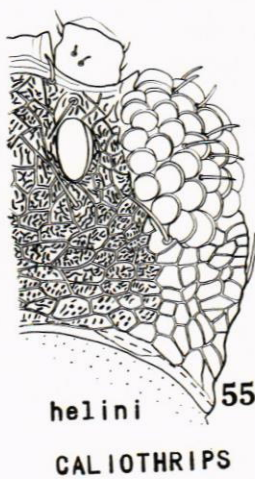
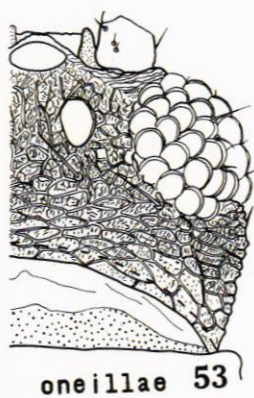
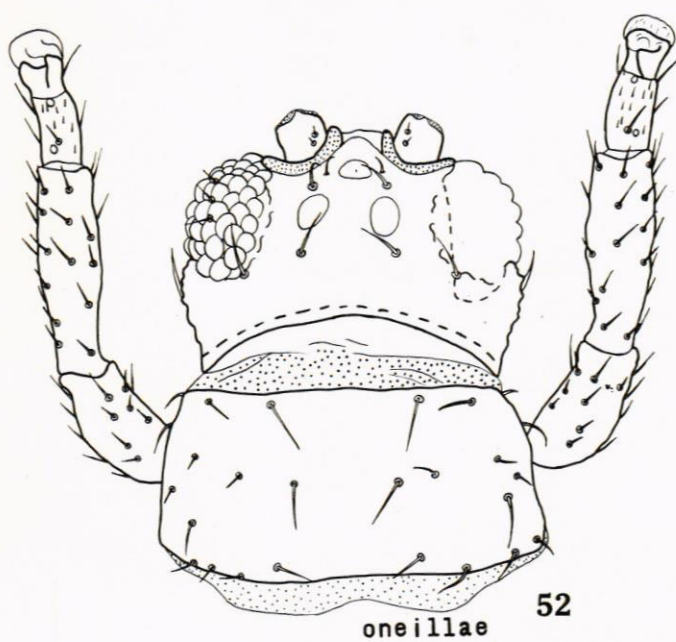
53 — ♀, No. 1397-6, paratype, right half of head.

54 — ♀, X.1397-12, paratype, tip of abdomen.

Fig. 55 — *helini* (Hood), ♀, No. X.1393-1, right half of head; wrinkles omitted from reticles caudad of compound eye.

Fig. 56 — *braziliensis* (Morgan), ♀, No. 57-3175, (ex U.S.N.M.), right half of head; the reticles left blank bear no wrinkles.

Figs. 52—56: Miss J. C. F. Boshoff del.



Explanations of figures

Figs. 57—64 *Caliothrips*: abdominal sternites

Fig. 57 — *impurus* (Priesner), ♀, No. X.1249-2, sternite V.

58 — *graminicola* (Bagnall and Cameron), ♀, No. X.752-19, sternite IV.

indicus (Bagnall)

Fig. 59 — ♀, from Bombay, India, det. H. H. Karny, sternite IV.

60 — ♂, B.M. 1924-473, cotype, sternites III—VII, sculpturing omitted.

helini (Hood)

Fig. 61 — ♀, No. X.1393-2, sternite V.

62 — ♂, No. X.22-1, sternite V.

oneillae sp.n.

Fig. 63 — ♀, No. X.1397-11, paratype, sternite V.

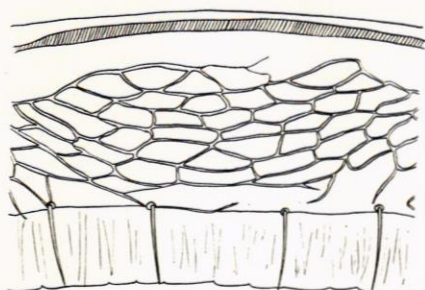
64 — ♂, No. 1397-13, paratype, sternite V.

Figs. 57, 61—63: Miss H. M. A. van Houte del.

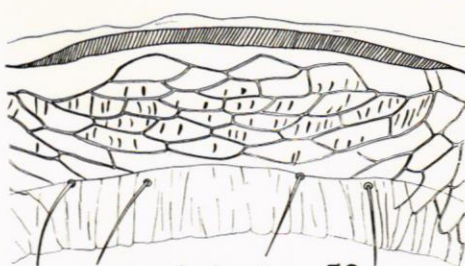
58, 59, 64: Miss J. C. F. Boshoff del.

60: Mrs. M. J. Meyer, del.

Figs. 57—59 drawn to same scale of magnification.



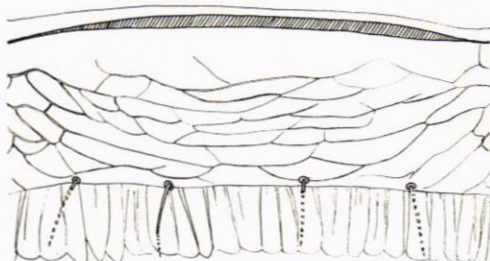
impurus 57



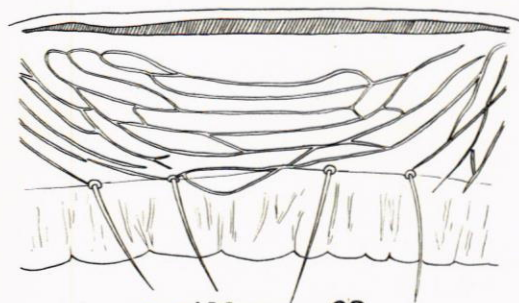
graminicola 58



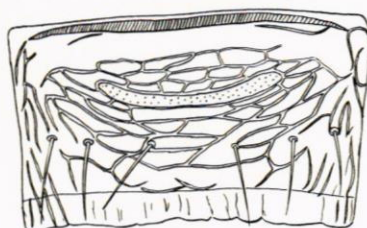
helini 61



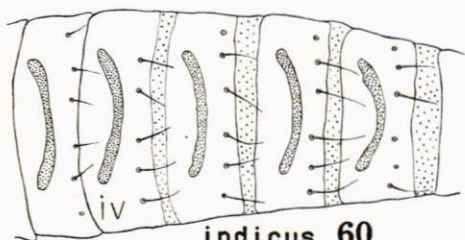
indicus 59



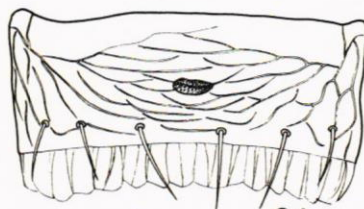
oneillae 63



helini 62



indicus 60



oneillae 64

CAL IOTHIRIPS

Explanations of figures

Figs. 65—68 *Caliothrips*

oneillae sp.n.

Fig. 65 — ♀, No. X.1397-8, paratype, right antenna.

66 — ♂, No. X.1397-4, paratype, tergites VIII and IX.

Fig. 67 — *indicus* (Bagnall) ♂, B.M. 1924-473, cotype, right antenna.

68 — *marginipennis* (Hood), ♀, det. Miss K. O'Neill, from Texas, U.S.A., (ex British Museum), left antenna, segments III—VIII.

Figs. 65, 66 and 68: Miss J. C. F. Boshoff del., all drawn to same scale of magnification.

Fig. 67: Mrs. M. J. Meyer del.

