Keys for the identification of the Tipuloidea (Insecta, Diptera) recorded for the Canary Islands.

BY

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INTRODUCTION.

The Tipuloidea in the conception of the present paper comprise the nematocerous families Cylindrotomidae, Limoniidae and Tipulidae. Flies belonging to these families are distinguished from the remainder of Diptera by the presence of two anal veins in the wing and the absence of ocelli. Of the three families belonging to the Tipuloidea representatives of the Limoniidae and Tipulidae are known to occur in the Canary Islands (fig. 1).

The keys presented here cover the species listed by Theowald (1977) for the Canary Islands with additions and corrections given by Theischinger (1979) and Theowald (1981). The historical development of the knowledge of Canarian Tipuloidea is reviewed by Theowald (1977) who also gives a comprehensive list of references. It seems that the fauna of the central islands La Palma, Gomera, Tenerife and Gran Canaria is rather well known, while that of Fuerteventura and Lanzarote is still insufficiently explored. There are no records of Tipuloidea for Hierro. As it is not unlikely that hitherto unrecorded species will be found in the Canary Islands details of the male genitalia of all species included in the keys are illustrated to facilitate comparison. Drawings of genital structures were made after macerated specimens.

Fig. 1.—Map showing position of Canary Islands. F: Fuerteventura; Gom: Gomera; Gran: Gran Canaria; H: Hierro; Lanz: Lanzarote; Lap: La Palma; T: Tenerife.
COLLECTING, PRESERVATION AND PREPARATION.

*Tipuloidea* are generally to be found in damp and shady situations notably along the borders of streams and standing waters. The adults can be individually netted or swept from the vegetation. Lighttrapping will also prove to be rewarding.

After being killed with ethyl acetate the bigger specimens are best direct pinned from the side. The pin is inserted into soft material (polystyrene, plastazote or the like) until the crane fly is about one centimeter removed from the pin's head. The legs are folded up under the body and secured with additional pins (fig. 2). After a couple of days the fly has dried sufficiently to be removed from the setting board and can be labelled. The smaller *Limoniiidae* are preferably micropinned (fig. 3). On long collecting trips *Tipuloidea* are satisfactorily packeted in (labelled) envelopes. At a later date they can be relaxed and pinned in the above described manners.

In order to study the genitalia the specimen is first relaxed for a few hours in a humified container. The postabdomen is then cut off and placed for about five minutes in nearly boiling 10% KOH (alternatively the postabdomen can be kept overnight in 10% KOH at room temperature). After washing it with water and alcohol the postabdomen is transferred to a watchglass filled with glycerine in which it can be studied. Upon examination the genitalia are stored in glycerine in a microvial attached to the same pin as the specimen.

TERMINOLOGY.

The terminology of the different structures of head, thorax and abdomen as used in the keys that follow is mainly in accordance with McALPINE (1981) and is explained in figures 4 to 18. However, the notation for the venation of the wing adopted here follows HENNIG (1954) in preference to McALPINE (cf. figs. 10, 11, 19, 22).

CHECKLIST.

The species recorded for the Canary Islands are listed below and their distribution range is given. In default of a consensus on the phylogeny of the *Tipuloidea* the taxa are alphabetically arranged while the traditional division of the *Limoniiidae* into subfamilies is retained for matters of convenience only. For the *Limoniiidae* the generic and subgeneric concepts of SAVCHENKO (1982, 1983, 1985) and KRZEMINSKI (1984) are followed. See fig. 1 for explanation of topographic abbreviations.

LIMONIIDAE

ERIOPTERINAE

Genus *Cheilotrichia* *ROSSI*, 1848
Subgenus *Empeda* *OSTEN SACKEN*, 1869
  *cinerascens* (MEIGEN, 1804)
  *nemorensis* (SANTOS, 1923)

Genus *Gonomyia* *MEIGEN*, 1818
Subgenus *Gonomyia* s.str.
  *copulata* (BECKER, 1908)

Distr.: T; west palaeartic
Distr.: Gom, Gran, Lap, T (endemic)
Distr.: Gom, Gran, Lap, T (endemic)
Fig. 2.—Tipulid on setting board. Fig. 3. Micropinned and labelled limoniid. Figs. 4, 5. *Tipula* (*T.*) *paludosa*: 4) lateral view of head; 5) lateral view of thorax. Figs. 6-8. *Trichiera pilipes*: 6) lateral view of thorax; 7) dorsal view of thorax; 8) ventral view of thorax. Fig. 9. *Gonomyia* (*G.*) *copulata*, dorsal view of thorax. cx: coxa; flg: flagellum; flgm: flagellomere; hlt: haltere; kn: knob; 1 presct pit: lateral prescutal pit; m presct pit: medial prescutal pit; nas: nasus; ped: pedicel; pl: pleura; plp: palp; presct: prescutum; prn: pronotum; rst: rostrum; scp: scape; set: scutum; st 1: sternum 1; vert: verticilis.
Genus *Idiocera* Dale, 1842
Subgenus *Idiocera* s.str.  
* pulchripennis* (Loew, 1856)  
* sziladyi* (Lackschewitz, 1939)  
Distr.: F; mediterranean

Genus *Molophilus* Curtis, 1833
Subgenus *Molophilus* s.str.  
* baezi* Theowald, 1981  
* griseus* (Meigen, 1804)  
Distr.: T; west palearctic

Genus *Trimicra* Osten Sacken, 1862
* pilipes* (Fabricius, 1787)  
Distr.: Gom, Gran, Lap, T; cosmopolitan

**HEXATOMINAE**

Genus *Austrolimnophila* Alexander, 1920
Subgenus *Austrolimnophila* s.str.  
* analis* (Santos, 1923)  
Distr.: Gom, Lap (endemic)

Genus *Phylidorea* Bigot, 1854
Subgenus *Phylidorea* s.str.  
* costalis* (Santos, 1923)  
Distr.: Lap (endemic)

Genus *Phyllolabis* Osten Sacken, 1877
* hemmingseni* Nielsen, 1959  
* mannheimiana* Nielsen, 1961  
* savshenkoi* Theowald, 1981  
Distr.: Gom, Gran, T (endemic)

**LIMONIINAE**

Genus *Atypophthalmus* Brunetti, 1911
* quinquevittata* (Santos, 1923)  
Distr.: Gom, Lap, T (endemic)

Genus *Dicranomyia* Stephens, 1829
Subgenus *Dicranomyia* s.str.  
* chorea* (Meigen, 1818)  
* hamata* Becker, 1908  
* intermedia* Santos, 1923  
* michaeli* Theowald, 1977  
* vicina* (Macquart, 1838)  
Distr.: F, Gom, Gran, Lanz, Lap, T; macaronesian

Genus *Geranomyia* Haliday, 1833
* atlantica annulirostris* Pierre, 1918  
* bezzii* Alexander & Leonard, 1912  
* canariensis* Becker, 1908  
* unicolor* Haliday, 1833  
Distr.: F, Gran, Lap, T (endemic)

Genus *Limonia* Meigen, 1803
* nubeculosa* Meigen, 1804  
Distr.: Gom, Gran, Lap, T (endemic)

**TIPULIDAE**

Genus *Tipula* Linnaeus, 1758
Subgenus *Lunatipula* Edwards, 1931
canariensis Theischinger, 1979  Distr.: Lanz (endemic)  
macquarti macquarti Becker, 1908  Distr.: T (endemic)  
macquarti lesnei Pierre, 1918  Distr.: Gran (endemic)  
vernalis Meigen, 1804  Distr.: “Canary Islands”; west palaeartic  
Subgenus Savtshenkia Alexander, 1965  
multipicta Becker, 1908  Distr.: Lap, T (endemic)  
rufina rufina Meigen, 1818  Distr.: Gran, Lap, T; mediterranean  
Subgenus Tipula s.str.  
mediterranea LackSchewitz, 1930  Distr.: Gom, Gran, T; mediterranean  
paludosa Meigen, 1830  Distr.: Gran, T; west palaeartic  
Subgenus Vestiplex Bezzi, 1924  
fernandezi Theowald, 1972  Distr.: T (endemic)

KEY TO FAMILIES OF TIPULOIDEA.

1. Sc1 present (cf. figs. 10, 11); anterior margin of pronotum long in profile (fig. 6); nasus absent; last palpal segment of same length as each preceding one; ♀: gonocoxite usually elongate and projecting (fig. 16); ♂: ovipositor with cercus upcurved when seen in profile (fig. 18); more delicate flies (body length 2.5-9 mm.) ........................................ Limonniidae (p. 77)

   — Sc1 absent (♀ sometimes subapterous); anterior margin of pronotum short and rounded in profile (fig. 5); nasus distinct (fig. 4); last palpal segment as long as or longer than preceding ones together (fig. 4); ♂: gonocoxite not projecting (fig. 14); ♀: ovipositor with cercus straight when seen in profile (fig. 17), sometimes reduced (fig. 56); more robust flies (body length 10-25 mm.) ........................................ Tipulidae (p. 79)

KEY TO (SUB)GENERA OF LIMONIIDAE.

1. Three branches of Rs (R3, R4 and R5) reach wingmargin (fig. 10) . 2.
   — Two branches of Rs (R3+4 and R5) reach wingmargin (fig. 11) .... 9.

2. Veins with long and abundant hairs, hairs about as long as width of adjacent cells (fig. 28); cx2 and cx3 widely separated (cf. fig. 6); abdomen with long yellowish hairs; ♀: genitalia inverted, gonostyles downward directed (figs. 27, 29) ................................................................. Molophilus (p. 81)

   — Veins with hairs shorter and less abundant ........................................ 3.

3. R2 present, ending in R1 (figs. 19, 30, 32); medial prescutal pit, if present, high on prescutum at level of lateral prescutal pit (cf. fig. 7) ........ 4.
   — R2 absent (figs. 10, 22, 24, 34, 36); medial prescutal pit, if present, along anterior margin of prescutum (cf. fig. 9) ......................... 6.

4. R1 terminates rather abruptly in stigma at point of insertion of R2; stigma blackish brown, well indicated (fig. 32); cx2 and cx3 close together (cf. fig. 44); medical prescutal pit absent .................. Austrolimnophila (p. 82)

   — R1 continuous towards costa, terminating well beyond point of insertion of R2; stigma only vaguely indicated or absent (figs. 19, 30); cx2 and cx3 widely separated (cf. fig. 6); medial prescutal pit present ...................... 5.

5. Discal cell present (fig. 30); femora distinctly dilated in apical third, subapi-
Fig. 10.—Phyllolabis hemmingseni, dorsal view of right wing showing notation of venation. Figs. 11, 16 and 18. Limonia nubeculosa: 11) dorsal view of right wing; 16) dorsal view of left part of ♀ genitalia; 18) lateral view of ovipositor. Fig. 12. Tipula (Savtshenkia) rufina rufina, dorsal view of base of right wing. Fig. 13. Tipula (Vestiplex) fernandezi, dorsal view of base of right wing. Figs. 14, 15 and 17. Tipula (T.) paludosa; 14) lateral view of ♀ genitalia; 15) lateral view of left inner gonostyle, outside; 17) lateral view of ovipositor. cerc: cercus; goncx: gonocoxite; gonst: gonostyle; hyp vlv: hypogynial valve; i gonst: inner gonostyle; o gonst: outer gonostyle; sq: squama; stg: stigma; s8: sternite eight; s9: sternite nine; t9: tergite nine.
cally darkened; more robust fly (wing length 5-8 mm.) .............................................. 8

Discal cell absent (fig. 19); femora of about same width throughout, unicolorous yellowish brown; more delicate flies (wingleftness 3.5-6 mm.) .............................................. 8

Discal cell absent (fig. 24); cx2 and cx3 close together (cf. fig. 44) .............................................. 8

Discal cell present .............................................. 7

M1+2 forked (M1 and M2 reach wingmargin separately; fig. 34); cx2 and cx3 close together (cf. fig. 44) .............................................. 7

M1+2 not forked (fig. 10, 22, 36) .............................................. 8

Cx2 and cx3 close together (cf. fig. 44); Sc1 terminating well before origin of R3+4 (fig. 22) .............................................. 7

Cx2 and cx3 widely separated (cf. fig. 6); Sc1 terminating beyond origin of R3+4 (fig. 10, 36) .............................................. 8

R1 continuous towards costa, terminating well beyond point of insertion of R2; origin of M4 halfway length of discal cell (fig. 11) .............................................. 7

R1 terminates rather abruptly at point of insertion of R2; origin of M4 in apical part of discal cell (figs. 40, 45, 50, 52) .............................................. 8

Mouthparts elongated, as long as head and thorax combined .............................................. 9

Mouthparts not elongated .............................................. 10

Sc1 and Sc2 terminate distally of origin of Rs (fig. 40); eyes above approaching for some distance; long hairs on thorax black .............................................. 10

Sc1 terminates near origin of Rs (fig. 45); eyes widely separated; long hairs on thorax yellowish .............................................. 11

KEY OF SUBGENERA OF TIPULIDAE.

1. Wingmembrane mottled .............................................. 2

— Wingmembrane immaculate (dark shadings along veins in Lunatipula vernalis; ♀ sometimes subapterous) .............................................. 2

2. Squama with hairs (fig. 12); pleura with broad dark streak from neck towards base of haltere; lateral prescutal pit funnelshaped, deep; scape and pedicel yellowish, flagellum uniformly dark .............. Savtschenkia (p. 90)

— Squama bare (fig. 13); pleura without dark streak; lateral prescutal pit shallow; scape and pedicel yellowish, flagellomeres yellowish with blackened base .............................................. Vestiplex (p. 90)

3. Costal cell darker than remainder of wingmembrane; yellowish grey spe-
cies, without distinct dorsal darker median stripe on abdomen; ♂: hindmargin of tergite nine with median extension bearing black spines (figs. 73, 75); outer gonostyle large, almost completely covering inner gonostyle (fig. 14); ♀: hypogynial valve well developed (fig. 17); ♀ fully winged .............................................. Tipula (p. 90)

— Costal margin not contrasting with remainder of wingmembrane; abdomen yellowish brown with more or less distinct dorsal median dark stripe; ♂: tergite nine emarginate, without spinous median extension (figs. 57, 59, 62, 65); outer gonostyle small, not covering inner gonostyle (figs. 58, 60, 63, 66); ♀: hypogynial valve reduced (figs. 56, 61, 64); wings reduced in ♀ of macquarti macquarti and m. lesnei; ♀ of canariensis unknown .............................................. Lunatipula (p. 88)
Key for the Identification of the «Tipuloidea»...

Genus Cheilotrichia Rossi

Subgenus Empeda Osten Sacken
1. Thorax dorsum uniformly greyish dusted; several yellowish long hairs on posterior part of scutum; species yellowish brown in groundcolor; head greyish, eyes well separated above, ventrally approached; antenna unicolorous dark; knob of haltere yellowish; stigma not indicated (fig. 19); abdomen brownish, genitalia yellowish brown; ♂ genitalia fig. 20; wing length 4.5-6 mm. ....................................................... cinerascens (Meigen).
— Thorax dorsum brownish, only thinly greyish dusted; usually one isolated dark hair on posterior part of scutum; species yellowish brown in groundcolor; head greyish, eyes well separated above, ventrally approached; antenna unicolorous dark; knob of haltere brownish; wingmembrane vaguely brownish tinged, stigma not indicated; abdomen brownish, genitalia yellowish brown; ♂ genitalia fig. 21; wing length 3.5-5 mm. ....................................................... nemorensis (Santos).

Genus Gonomyia Meigen

Subgenus Gonomyia s.str.
1. Species yellowish in groundcolor; head greyish, rostrum yellowish; eyes well separated above; antenna unicolorous dark; thorax dorsum densely greyish dusted, with yellowish sidemargins; knob of haltere brownish, pedicel long; stigma vaguely indicated (fig. 22); abdominal tergites brownish, sidemargins yellowish; sternites yellowish, genitalia yellowish brown; ♂ genitalia fig. 23; wing length 5-6 mm. .................... copulata (Becker).

Genus Idiocera Dale

Subgenus Idiocera s.str.
1. Wingmembrane maculated (fig. 24); species yellowish brown in groundcolor; head greyish dusted, with broad dark median stripe; eyes ventrally approached; antenna yellowish brown, base of flagellomeres darkened; thorax dorsum brownish grey dusted, with four dark brown stripes, median ones distinct; knob of haltere dark brown, pedicel long; abdomen contrasting dark brown dorsally, pale yellow ventrally; genitalia yellowish brown; ♂ genitalia fig. 25; wing length 5.5-6 mm. ....... pulchripennis (Loew).
— Wingmembrane immaculate; species yellowish in groundcolor with contrasting dark markings; head yellowish brown, with broad dark median stripe; eyes ventrally approached; antenna with yellowish scape, remainder dark; thorax dorsum brownish black, with four vaguely indicated darker stripes, sidemargins contrasting yellowish; knob of haltere yellowish brown, pedicel long; stigma vaguely indicated; abdomen brownish, hindmargins of tergites yellowish, sternites paler; genitalia yellowish; ♂ genitalia fig. 26; wing length 6-7 mm. ......................... sziladyi (Lackschewitz).

Genus Molophilus Curtis

Subgenus Molophilus s.str.
1. A2 terminates proximally of origin of m-cu; species brownish in groundcolor; head dark greyish brown; antenna with scape and pedicel yellowish
brown, flagellum darkened; thoraxdorsum uniformly dark greyish brown, paler along sidemargins; knob of haltere yellowish brown; wing with stigma not indicated; abdomen dark greyish brown, genitalia yellowish brown; \( \sigma \) genitalia fig. 27; wing length 4-5 mm. .................. baeki Theowald.

A2 terminates distally of origin of m-cu (fig. 28); species yellowish in groundcolor, extensively greyish brown colored; head greyish brown; antenna with scape and pedicel yellowish, flagellum darkened; thoraxdorsum uniformly greyish brown, sides paler; knob of haltere yellowish; wings with stigma not indicated; abdomen greyish brown, genitalia yellowish brown; \( \sigma \) genitalia fig. 29; wing length 4.5-5.5 mm. ............... griseus (Meigen).

**Genus Trimicra Osten Sacken**

1. Species yellowish brown in groundcolor; head with median dark stripe; antenna with yellowish scape and pedicel, flagellum uniformly darkened; thoraxdorsum darkened, with contrasting yellowish sidemargins; pleura with darker markings; knob of haltere yellowish; wingmembrane brownish tinged, stigma not indicated (fig. 30); abdomen somewhat darkened, genitalia yellowish; \( \sigma \) genitalia fig. 31; wing length 7.5-8.5 mm. (continental specimens bigger and darker, tip of femora, tibiae and tarsi with dense erect long hairs) ................................................ pilipes (Fabricius).

**Genus Austrolimnophila Alexander**

Subgenus Austrolimnophila s.str.

1. Species yellowish brown in groundcolor; head yellowish grey; antenna unicolorous dark; thoraxdorsum with broad dark median stripe, laterally with broad dark markings; knob of haltere blackish brown; stigma blackish brown (fig. 32); abdomen brown, genitalia blackish brown; \( \sigma \) genitalia fig. 33; wing length 7.5-8.5 mm. .................. analis (Santos).

**Genus Phylidorea Bigot**

Subgenus Phylidorea s.str.

1. Species brownish in groundcolor; head brownish grey; antenna with dark brown scape, pedicel yellowish brown; thorax uniformly brownish; knob of haltere dark; wing yellowish tinged, costal cell brownish, stigma dark brown (fig. 34); abdomen brownish, posterior half of segment eight brownish black, genitalia yellowish brown; \( \sigma \) genitalia fig. 35; wing length 9 mm. (characters adopted from Theowald, 1977) .............. costalis (Santos).

**Genus Phyllolabis Osten Sacken**

1. A2 terminating opposite origin of Rs; R5 almost in direct line with Rs (fig. 36); \( \sigma \) eyes approached above, separated by about width of first flagellomere; thorax without shining parts; species yellowish brown in groundcolor; head grey; antenna with yellowish brown pedicel, remainder somewhat darker; thorax pruinose; knob of haltere yellowish brown; abdomen with some erect yellowish hairs in \( \sigma \), brownish black pregenital ring in both sexes; \( \sigma \) genitalia fig. 37; wing length 9-9.5 mm. .. mannheimsiana Nielsen.

A2 terminating proximally of origin of Rs; R5 not continuous with Rs (fig. 10); \( \sigma \) eyes separated by about two times width of first flagellomere . 2.

2. Anterior part of prescutum shining; membrane of wingtip with only a few
Fig. 32, 33.—*Austrolimnophila* (A.) analis: 32) dorsal view of right wing; 33) dorsal view of left part of ♀ genitalia. Figs. 34, 35. *Phylidorea* (P.) costalis: 34) dorsal view of right wing (after Theowald); 35. dorsal view of left part of ♀ genitalia (after THEOWALD). Figs. 36, 37. *Phyllolabis mannheimsiana*: 36) dorsal view of right wing; 37) lateral view of ♀ genitalia. Fig. 38. *P. hemmingsseni*, lateral view of ♀ genitalia. Fig. 39. *P. savtshenki*, lateral view of ♀ genitalia. Figs. 40, 41. *Atypophthalmus quinquevittata*: 40) dorsal view of right wing; 41) dorsal view of left part of ♀ genitalia.
short hairs (fig. 10); species yellowish brown in groundcolor; head grey, antenna dark throughout; knob of haltere brownish; abdomen with long erect yellowish hairs in ♂, pregenital segments forming blackish brown ring in both sexes; ♂ genitalia fig. 38; wing length 8-8.5 mm. .......................... hemmingseni Nielsen.

THORAX without shining parts; membrane of wingtip with about one hundred short hairs; species dark brown in groundcolor; head grey; antenna brown; thorax pruinose; knob of haltere blackish brown; genital ring dark in ♂, ♀ with brownish genitalia; ♂ genitalia fig. 39; wing length 7.5-8 mm. .......................... savtshenkoi Theowald.

Genus *Atypophthalmus* Brunetti

1. Species yellowish brown in groundcolor; antenna unicolorous dark; thoraxdorsum with broad dark median stripe, laterally with two broad less well indicated dark stripes; knob of haltere yellowish brown; wingmembrane slightly tinged along veins, stigma brownish (fig. 40); abdominal tergites brown with yellowish hindmargin, sternites, especially anterior ones, more yellowish; genitalia yellowish brown; ♂ genitalia fig. 41; wing length 6-6.5 mm. .......................... quinquevittata (SANTOS).

Genus *Dicranomyia* Stephens

Subgenus *Dicranomyia* s.str.

1. Prescutum flattened in profile (fig. 42); species brownish in groundcolor; head brownish grey dusted; antenna and palp dark throughout; thoraxdorsum with three broad dark stripes; knob of haltere brownish, pedicel short; vein R with alternating lighter and darker sections; abdomen brownish, genitalia yellowish brown; ♂ genitalia fig. 43; wing length 5.5-10 mm. .......................... vicina (MACQUART).

— Prescutum arched in profile (fig. 44) .................................................. 2.

2. Thorax dark, brownish in groundcolor .................................................. 3.

— Thorax pale, yellow colored ................................................................. 4.

3. Wingmembrane with brownish spots near origin of Rs, at fork of R2+3+4 and R5 and along m-cu (fig. 45); femora yellowish, somewhat darker towards tip; pedicel of haltere relatively short, about length of second abdominal segment; species brownish in groundcolor; head somewhat dusted; antenna and palp brownish; thorax partly dusted, with broad dark median stripe and a pair of weaker lateral ones; knob of haltere dark brown; abdominal tergites brown, sternites and genitalia yellowish brown; ♂ genitalia fig. 46; wing length 5-7 mm. .......................... intermedia SANTOS.

— Wingmembrane without distinct spots; femora brownish, darkened towards apex; pedicel of haltere long and slender, longer than second abdominal segment, contrastingly colored: pale in basal quarter or third, dark brown in apical part; species brownish in groundcolor; head densely greyish dusted; antenna and palp dark brown; thorax without distinct stripes, partly dusted; knob of haltere dark brown; abdomen dark brown, genitalia brownish; ♂ genitalia fig. 47; wing length 5-7 mm. .......................... hamata Becker.

4. Body of gonostyle about as long as wide (fig. 48); base of Rs dark, vein R usually with alternating lighter and darker sections; species yellowish in groundcolor; antenna brownish; palp yellowish brown, darkened towards
Fig. 42, 43.—*Dicranomyia* (*D.*) *vicina*: 42) lateral view of part of thorax; 43) dorsal view of left part of ♀ genitalia. Figs. 44, 48. *D. (D.) chorea*: 44) lateral view of thorax; 48) dorsal view of left part of ♀ genitalia. Figs. 45, 46. *D. (D.) intermedia*: 45) dorsal view of right wing; 46) dorsal view of left part of ♀ genitalia. Fig. 47. *D. (D.) hamata*, dorsal view of left part of ♀ genitalia. Fig. 49. *D. (D.) michaeli*, dorsal view of left part of ♀ genitalia. Figs. 50, 51. *Geranomyia canariensis*: 50) dorsal view of right wing; 51) dorsal view of left part of ♀ genitalia. Figs. 52, 53. *G. unicolor*: 52) dorsal view of right wing; 53) dorsal view of left part of ♀ genitalia. Fig. 54. *G. atlantica annulirostris*, dorsal view of left part of ♀ genitalia. Fig. 55. *G. bezzii*, dorsal view of left part of ♀ genitalia.
tip; thorax without darker markings; stigma yellowish brown; knob of haltere yellowish brown; abdomen yellowish, genitalia yellowish brown; \( \sigma \) genitalia fig. 48; wing length 6-8 mm. ...................... \textit{chorea} (MEIGEN).

Body of gonostyle about twice as long as wide (fig. 49); base of Rs pale, R yellowish throughout; species yellowish in groundcolor, often partly greenish; antenna and palp unicolorous yellowish brown; thoraxdorsum sometimes partly yellowish brown; stigma brownish, sometimes only vaguely indicated; knob of haltere yellowish brown; abdomen and genitalia yellowish brown, often partly greenish; \( \sigma \) genitalia fig. 49; wing length 5-8 mm. .......................... \textit{michaeli} THEOWALD.

**Genus Geranomyia HALIDAY**

1. End of Sc1, Sc2 and A1 far beyond origin of Rs; terminal section of Cu in direct line with preceding section, longer than m-cu; wingmembrane with seven brownish spots along costal margin, stigma brownish black (fig. 50); species yellowish brown in groundcolor; head dark greyish, mouthparts unicolorous dark; thoraxdorsum densely greyish dusted, with three darker stripes; knob of haltere brownish black; abdomen with tergites darkened, genitalia yellowish brown; \( \sigma \) genitalia fig. 51; wing length 6-8 mm. .......................... \textit{canariensis} BECKER.

2. End of Sc1, Sc2 and A1 opposite origin of Rs; final section of Cu in transverse alignment with preceding part; costal margin of wing with fewer or without spots (cf. fig. 52). .............................. 2.

2. Thorax brownish to dark brown in groundcolor, without distinct stripes on dorsum; knob of haltere brownish; femora unicolorous yellowish brown throughout; abdomen unicolorous brown; head dark brown, antenna and mouthparts unicolorous dark brown; wing with brownish black, rather vaguely indicated stigma (fig. 52); \( \sigma \) genitalia fig. 53; wing length 6-7.5 mm. ............................. \textit{unicolor} HALIDAY.

3. Thorax yellowish in groundcolor, with three more or less distinct broad brownish stripes; knob of haltere yellowish; femora yellowish with darkened tip; abdomen yellowish in groundcolor, with darker bands on tergites. 3.

Abdominal sternites unicolorous yellowish; sternum 1 (cf. fig. 8) yellowish; wing with vaguely indicated brownish black stigma; \( \sigma \) genitalia fig. 54; wing length 5-6 mm. .......................... \textit{atlantica annulirostris} PIERRE.

Abdominal sternites with darker brownish bands along anterior margin; sternum 1 brownish; mouthparts distinctly darkened near insertion of palp and near apex; wing with distinct brownish stigma; \( \sigma \) genitalia fig. 55; wing length 6-7 mm. .......................... \textit{bezzi} ALEXANDER \& LEONARD.

**Genus Limonia MEIGEN**

1. Species yellowish brown in ground color; head brownish grey, eyes dorsally and ventrally approached for some distance; antenna with first flagellomere paler than remaining segments; thoraxdorsum with broad dark median stripe, laterally with two broad dark stripes; pleura with irregular dark stripe from neck towards base of haltere; knob of haltere yellowish brown; wingmembrane with brownish spots (fig. 11); femora with dark bands; abdominal tergites brown with yellowish hindmargins, sternites extensively yellowish; genitalia yellowish; \( \sigma \) genitalia fig. 16; wing length 9.5-11.5 mm. .......................... \textit{nubeculosa} MEIGEN.
Figs. 56-58.—*Tipula (Lunatipula) vernalis*: 56) lateral view of ovipositor; 57) dorsal view of t9 of C; 58) lateral view of left inner and outer gonostyles, outside. Figs. 59, 60. *T. (L.) canariensis*: 59) dorsal view of t9 of C; 60) lateral view of left inner and outer gonostyles, outside. Figs. 61-63. *T. (L.) macquarti macquarti*: 61) lateral view of ovipositor; 62) dorsal view of t9 of C; 63) lateral view of left inner and outer gonostyles, outside. Figs. 64-66. *T. (L.) macquarti lesnei*: 64) lateral view of ovipositor; 65) dorsal view of t9 of C; 66) lateral view of left inner and outer gonostyles, outside.
Genus Tipula LINNAEUS

Subgenus Lunatipula EDWARDS

1. Antenna uniformly dark except for brownish pedicel; median dark stripes on prescutum and scutum separated by blackish central line; wing with dark shadings along veins; tibiae and tarsi blackish brown; ♀ terminal tergites darkened with exception of yellowish side- and hindmargins; ♂ fully winged; cercus short and fleshy (fig. 56); species yellowish brown in groundcolor; head brownish to greyish dusted, with broad dark median stripe; palp brownish black towards tip; knob of haltere dark brown, pedicel reaching base of second abdominal segment; stigma brownish; genitalia yellowish brown, partly darkened; ♀ genitalia figs. 57, 58; wing length 14.5-16 mm.

VERNALIS MEIGEN.

2. Antenna yellowish to brown, at most base of flagellomeres and/or apical flagellomeres darkened; median dark stripes on prescutum and scutum separated by lighter central line; wing without dark shadings along veins; tibiae and tarsi yellowish brown (♂) or brown (♀); ♀ terminal tergites of same coloration as preceding ones; ♂ subapterous; cercus well developed (figs. 61, 64; ♀ of canariensis unknown) ... canariensis THEISCHINGER.

3. ♂: Base of flagellomeres hardly nodulose, of same coloration as remainder of flagellomeres; posterior margin of sternite eight without row of long yellowish hairs; yellowish brown in groundcolor; head greyish dusted; palp darkened with narrow dark median stripe; thorax densely greyish dusted; knob of haltere brown, pedicel reaching middle of abdominal segment two; stigma yellowish brown; genitalia yellowish, figs. 62, 63; wing length 14.5-15.5 mm; ♀: base of cercus with ventral lobe (fig. 61); brown in groundcolor; head greyish dusted, with dark median narrow stripe; antenna and palp dark throughout; knob of haltere brown; legs with dense erect hairs, hairs longer than width of tibia; genitalia yellowish brown ...

MACQUARTI MACQUARTI BECKER.

♂: Base of flagellomeres distinctly nodulose, darkened; posterior margin of sternite eight with row of scanty long yellowish hairs; yellowish brown in groundcolor; head greyish dusted, with narrow dark median stripe; palp brownish, darkened towards tip; thorax dorsum golden dusted, pleura greyish dusted; knob of haltere brown, pedicel reaching middle of abdominal segment two; stigma yellowish brown; genitalia yellowish brown, figs. 65, 66; wing length 14.5 mm; ♀: base of cercus without ventral lobe (fig. 64); brown in groundcolor; antenna with yellowish brown scape and pedicel, flagellum unicolorous brownish; palp brownish; legs with hairs less dense and less erect than in m. macquarti, hairs of about same length as width of tibia; genitalia yellowish brown ... macquarti lesnei PIERRE.
Fig. 67-69.—*Tipula (Savtshenkia) multipicta*: 67) dorsal view of t9 of δ; 68) lateral view of left outer gonostyle, outside; 69) lateral view of left inner gonostyle, outside. Figs. 70-72. *T. (S.) rufina rufina*: 70) dorsal view of t9 of δ; 71) lateral view of left outer gonostyle, outside; 72) lateral view of left inner gonostyle, outside. Figs. 73, 74. *Tipula (T.) mediterranea*: 73) dorsal view of t9 of δ; 74) lateral view of left inner gonostyle, outside. Fig. 75. *T. (T.) paludosa*, dorsal view of t9 of δ. Figs. 76-78. *T. (Vestiplex) fernandezi*: 76) dorsal view of t9 of δ; 77) lateral view of left outer gonostyle, outside; 78) lateral view of left inner gonostyle, outside.
Subgenus *Savtshenkia* ALEXANDER

1. Lateral stripes on thoraxdorsum unicolorous dark brown; pleura brownish in groundcolor, densely greyish pruinose all over; stigma blackish brown; wingtip with distinct brownish black patch from end of R3 over R4, leaving tip of cell r4 clear; wingmembrane with brownish black patches on pale background; ♂: posterior margin of sternite eight medially with concentration of short black hairs; ♂ genitalia figs. 67, 68, 69; wing length 11-12 mm. .......................................................... *multipicta* BECKER.

— Lateral markings on thoraxdorsum consisting of two dark stripes separated by a paler one; pleura yellowish brown in groundcolor, slightly pruinose, dense greyish pruinosity confined to sternal portions; wing with brownish stigma, tip with faint yellowish brown patch from end of R3 towards R5; tip of cell r4 brownish; wingmembrane slightly brownish tinged with lighter patches; ♂: posterior margin of sternite eighth laterally with long yellowish hairs; ♂ genitalia figs. 70, 71, 72; wing length 14-16.5 mm .............. *rufina rufina* MEIGEN.

Subgenus *Tipula* s.str.

1. Antenna 13 segmented, basal flagellomeres yellowish brown, apical ones becoming darker towards tip of antenna in ♂; ♀: wing distinctly longer than abdomen; species yellowish brown in groundcolor, densely greyish dusted; head with vague narrow dark median stripe; palp yellowish brown; thoraxdorsum with median and lateral stripes indicated by darker margins; knob of haltere brownish; abdomen greyish pruinose, genitalia yellowish brown; ♂ genitalia figs. 73, 74; wing length 18.5-21 mm ...................... *mediterranea* LACKSCHWITZ.

— Antenna 14 segmented (fig. 4), flagellum brownish (♀) to brownish black (♂) throughout its length; ♀: wing distinctly shorter than abdomen; species yellowish brown in groundcolor, densely greyish dusted; head greyish with narrow dark median stripe; palp brownish; thoraxdorsum with broad dark median stripe, lateral stripes indicated by dark margins; knob of haltere brownish; abdomen greyish pruinose, genitalia yellowish brown; ♂ genitalia figs. 14, 15, 75; wing length 16.5-18 mm .............. *paludosa* MEIGEN.

Subgenus *Vestiplex* BEZZI

1. ♂: yellowish brown in groundcolor; head greyish brown with narrow dark median stripe; palp dark brown; thoraxdorsum golden greyish brown, with four dark stripes, margins of stripes darker; pleura greyish pruinose; knob of haltere blackish brown, apex paler; wing with brownish stigma rather vaguely indicated; abdominal tergites with narrow dark median stripe and dark lateral margins; apical sternites greyish dusted; ♂ genitalia figs. 76, 77, 78; wing length 14-18 mm (♀ unknown) .......................... *fernandezi* THEOWALD.

Resumen.

El autor presenta una clave de determinación de los *Tipuloidea* de las Islas Canarias, entendiendo por *Tipuloidea* los nematóceros pertenecientes a las familias *Cylindrotomidae*, *Limoniidae* y *Tipulidae*, bien caracterizados por la presencia de dos venas anales en el ala y por la ausencia de ocelos. Las especies incluidas en la clave son las que figuran en la relación de THEOWALD (1977) con las
addiciones y correcciones de THEISCHINGER (1979) y de THEOWALD (1981). Lo Tipuloidea de las islas de La Palma, Gomera, Tenerife y Gran Canaria están bastante bien conocidos, los de Fuerteventura y Lanzarote se conocen mal, y no existe ninguna cita de la isla de Hierro.

Se han dibujado las genitalias masculinas de todas las especies incluidas en la clave, para facilitar la comparación si aparecen nuevas especies. Los dibujos de las estructuras genitales se han hecho a partir de ejemplares macerados. También se acompañan otros dibujos que aclaran el texto.

Summary.

Keys for the identification of the species of Tipuloidea known to occur in the Canary Islands are provided. Hints to collect, preserve and prepare crane flies are given. A checklist catalogues the species of Canarian Tipuloidea and summarizes their distribution ranges. Details of the male genitalia of all species included in the keys are illustrated.

Bibliography.

(The references listed below are supplementary to the bibliography given by THEOWALD, 1977).


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