



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

TB 1638 (1981)

USDA TECHNICAL BULLETINS

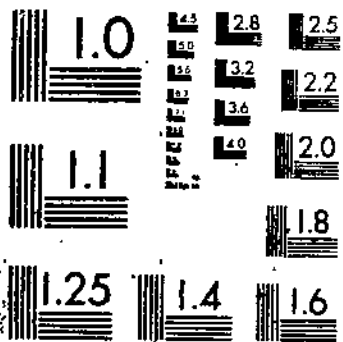
UPDATA

A MONOGRAPH OF TRICHONTA WITH A MODEL FOR THE DISTRIBUTION OF

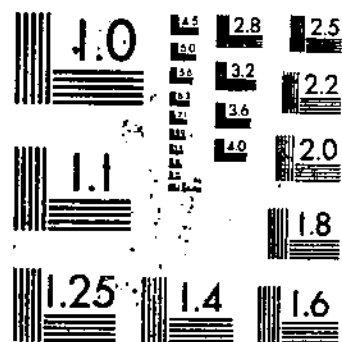
GAGNE, R J

1 OF 1

START



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

630.452-1
United States
Department of
Agriculture

Science and
Education
Administration

Technical Bulletin
Number 1638

ST

A Monograph of *Trichonta* With a Model for the Distribution of Holarctic Mycetophilidae (Diptera)

LOS ANGELES PUBLIC LIBRARY

NOV 10 1981

Abstract

Gagné, R. J. 1981. A monograph of *Trichonta* with a model for the distribution of Holarctic Mycetophilidae (Diptera). U.S. Department of Agriculture, Technical Bulletin 1638, 64 pp.

The 67 known species of fungus gnats in the genus *Trichonta* in the Northern Hemisphere are keyed and described. The terminalia of the male and, when known, those of the female are illustrated. The following 34 *Trichonta* species are new to science: *amica*, *beata*, *canora*, *clara*, *clemens*, *comica*, *comis*, *concinna*, *contenta*, *delicata*, *eximia*, *facilis*, *festiva*, *fidelis*, *flebilis*, *fragilis*, *generosa*, *gentilis*, *justa*, *languida*, *lucida*, *lyrica*, *merita*, *placida*, *pulchra*, *salva*, *secura*, *sedata*, *sedula*, *serena*, *sincera*, *sobria*, *superba*, and *valida*.

Trichonta is described and compared with its closest relatives, and data are given on biology, fossils, and Southern Hemisphere species not treated here. *Palaeotriconcha* is considered a new junior synonym.

Holarctic distribution patterns within *Trichonta* are elucidated and shown to be the same as for other northern groups of fungus gnats. The most striking of these patterns is that the eastern Nearctic fauna is more similar to the European fauna than to the western Nearctic fauna. A hypothesis is elaborated to explain these patterns in *Trichonta* and in the Mycetophiloidea in general.

KEYWORDS: Fungus gnats, key to *Trichonta* species, Mycetophilidae, *Trichonta*, zoogeography.

United States
Department of
Agriculture

Science and
Education
Administration

Technical Bulletin
Number 1638

**A Monograph of
Trichonta With a Model
for the Distribution of
Holarctic Mycetophilidae
(Diptera)**

By Raymond J. Gagné

Acknowledgments

I am grateful to the following persons and institutions for their assistance during this study: P. H. Arnaud, Jr., California Academy of Sciences, San Francisco, for his help during my visit to the Academy and for the loan of specimens, including a Van Duzee type; J. R. Baker, University of Wisconsin, Madison, for the loan of specimens; G. W. Byers, University of Kansas, Lawrence, for the loan of specimens; P. J. Chandler, Weston Research Laboratories, Ltd., Maidenhead, Berkshire, England, for his help in the attempt to see the Santos Abreu types and the loan of specimens; P. T. Cherian, Zoological Society of India, Calcutta, for notes on a Brunetti type; P. Clausen, University of Minnesota, St. Paul, for the loan of specimens; R. Danielsson, Zoological Institute, Lund, Sweden, for the loan of two Zetterstedt types; G. Demoulin, Institut Royal des Sciences Naturelles de Belgique, Brussels, for the loan of specimens, including a van der Wulp type; R. L. Fischer, Michigan State University, East Lansing, for the loan of specimens; B. B. Frost, Oregon State University, Corvallis, for the loan of specimens; W. Hackman, Zoological Museum, Helsinki, for the loan of specimens; Hungarian Museum, Budapest, whose authorities allowed the loan of their material, which is now in Paris; A. M. Hutson, British Museum (Natural History), London, for sorting through unidentified material, the loan of specimens, and his search for the Walker and Edwards types; M. Kosztarab, Virginia Polytechnic Institute, Blacksburg, for the loan of specimens; J. R. Lawrence (now with Commonwealth Scientific and Industrial Research Organization, Canberra, Australia) and M. K. Thayer, Museum of Comparative Zoology, Cambridge, Mass., for the loan of specimens, including Loew and Johannsen types; L. H. Lawrence, Systematic Entomology Laboratory, U.S. Department of Agriculture, for drawing the male and female terminalia; R. E. Lewis, Iowa State University, Ames, for the loan of specimens; R. Lichtenberg, Naturhistorisches Museum, Vienna, for the loan of a Winnertz type; B. Lindeberg, Zoological Museum, Helsinki, for the notes on types and the loan of specimens, including Lundström types; L. Lyneborg, Zoologisk Museum, Copenhagen, for the loan of Staeger types; L. Matile, Muséum National d'Histoire Naturelle, Paris, for the loan of specimens and arrangements for the loan of the Hungarian Museum specimens; G. Morge, Eberswalde bei Berlin, curator of the Strobl collection, for the loan of a Strobl type; L. L. Pechuman, Cornell University, Ithaca, N.Y., for the loan of specimens, including some Johannsen types; T. M. Peters, University of Massachusetts, Amherst, for his search for Shaw types and the loan of specimens; A. Provonsha, Purdue University, Lafayette, for the loan of specimens; D. Rentz (now with CSIRO, Canberra, Australia), Philadelphia Academy of Natural Sciences, for the loan of specimens; and J. R. Vockeroth, Biosystematics Research Institute, Agriculture Canada, Ottawa, for the loan of specimens and sorting through masses of unidentified material.

Contents

	Page
Procedures	1
Systematic position and relationships	2
Extraterritorial <i>Trichonta</i>	3
Fossils	3
Biology	3
Zoogeography	4
Terminology and data presentation	10
Genus <i>Trichonta</i> Winnertz	11
Key to species of <i>Trichonta</i>	12
Species descriptions	14
Unrecognized or unidentified species	30
List of names in <i>Trichonta</i>	31
Literature cited	31

A Monograph of *Trichonta* With a Model for the Distribution of Holarctic Mycetophilidae (Diptera)

By Raymond J. Gagné¹

Trichonta is a large genus of 67 species of small, yellow-to-dark-brown fungus gnats. Adults are usually caught flying above the forest floor and along damp ravines. Larvae have been taken from puffballs and various wood-en-crusting fungi. The genus is closely related to *Phronia*, and the two are remarkably similar in number of species and in geographical distribution. As defined, *Trichonta* occurs only in the Northern Hemisphere, although I consider the known species from Chile and Australia as belonging to this genus in the broad sense. The Austral species are treated briefly here in a separate section.

Trichonta has never been revised comprehensively, although Landrock's (1926)² compilation and atlas have been useful as a guide for identifying the Palaearctic European fauna. As with *Phronia*, revised in Gagné (1975), *Trichonta* has more than three times the number of Nearctic species listed in Laffoon (1965), a further indication that the family Mycetophilidae is rich in number of species and rivals the Tipulidae in this regard. Forty-six *Trichonta* species are known from North America, only 16 of them previously recognized from Europe, 6 previously described from the Nearctic region, and 24 new to science. Forty-seven species, 4 new to science, are now recognized from Europe where only 36 were known before, 5 new species are described from the Himalayan region, 1 species from the Afrotropical region, and 1 from the Philippines.

During this study, I have determined the identity of all but a few of the available names and scrutinized specimens of each species for available taxonomic characters. This study has enabled me to develop a key and atlas of the terminalia that can be used with confidence to identify all males and the females for the most common species. Because of the scope of this work, a general outline of the distribution of *Trichonta* emerges that allows one to generalize about the distribution and systematics of the family. In light of the extremely broad distribution of some species, it should be apparent to any-

one working on the taxonomy of fungus gnats that local faunal lists are not essential additions to the body of literature and that, conversely, meaningful revisions are those that treat all the names within a taxon, not just those previously recorded from the relatively restricted area in question. Further species should be described as new only if their authors have first compared them with all other congeners or made all reasonable efforts to do so.

Procedures

I examined over 4,500 specimens of *Trichonta* from 21 personal or institutional collections (see Acknowledgments) and from the U.S. National Museum. Past records, e.g., faunal lists, were substantiated by either specimens or illustrations or they were ignored.

Handling and preparing the terminalia are described in detail in Gagné (1975). Briefly, the terminalia were cleared in sodium hydroxide, neutralized in a drop of acetic acid, placed in 70 percent alcohol for a few minutes, and then in glycerin on a depression slide for microscopic study. The abdomen was later permanently stored in glycerin in a microvial, and the tip of the pin bearing the remainder of the specimen was run through the cork stopper of the microvial. Although I preferred pinned specimens, the richest collection in numbers and in species was in alcohol. This material was from the Zoological Museum in Helsinki. Most of it had been collected in the 1960's by R. Tuomikoski, W. Hackman, and others, sorted directly to genus, and stored in alcohol. Their greatest contribution was sorting to genus, and thus the material was available for study.

I sorted male specimens first according to the shape of the terminalia; those with like terminalia were considered the same species. I then scrutinized the specimens for other body characters that were consistent enough for species determination. The genitalic characters were the most heavily weighed. Thus two males with identical genitalia were considered conspecific even if one had setae on the anal wing vein and the other did not. The nongenitalic characters were then used to associate females with the various species. I was aided in this task when long series of both sexes were in the same catch or reared from the same mushroom. Since the nongenitalic characters were fairly diagnostic in *Trichonta*, I was able to associate the sexes of most of the common species. Counts of setae and measurements were based on 15 specimens, if available, but many more specimens as obtainable were checked against my descriptions and keys.

My species concept was necessarily morphological, based mainly on the very complicated male terminalia with their many parts and convolutions that are unlikely to have evolved more than

¹ Systematic Entomology Laboratory, Science and Education Administration, c/o U.S. National Museum, Washington D.C. 20560

² The year in italic after authors' names refers to literature cited, p. 31

Systematic Position and Relationships

once. I allowed for minor differences of setation and shape of the terminalia within a species, but in most species these characters were remarkably homogeneous. I then applied available names to most of the species by studying types or published illustrations of previously described species. Taxa not previously named were described as new here. I was able to study many problem types, those for which the terminalia had not been illustrated or that otherwise were difficult to identify. Especially important here were types of Staeger, Zetterstedt, Loew, Johannsen, Van Duzee, and several of Lundström. Others were originally well illustrated so that they could be placed without benefit of type study. Several types were lost or their deposition was unknown, and a few were unavailable for study.

Except in the discussion of extraterritorial species, the use of "*Trichonta*" in this bulletin refers only to the species of the Northern Hemisphere and not to the Austral species, which belong to *Trichonta* in the broad sense. They are retained in that genus for the time being because of lack of study. They may form the sister group of *Trichonta-phronia* of the Northern Hemisphere.

Trichonta and *Phronia* (revised in Gagné, 1975) together form a monophyletic group within the Mycetophilini by virtue of the bare mesepimeron and the characteristic gonostylus as outlined in the generic description. Additional characters to distinguish the two genera from other Mycetophilini are the short tibial setae, the fairly long Sc, even when free, termination of the costa just beyond its juncture with R_5 , and the gradually diverging branches of the cubital fork.

Phronia is separated from *Trichonta* by the combination of three synapomorphies: The short Cu fork beginning appreciably distad of the fork of M, the free Sc, and the lack of a posterobasal, hind coxal seta. Some *Trichonta* species also have a free Sc, or lack the coxal seta, or both, but all have a long Cu fork, and the shape of the terminalia does not particularly resemble that of any *Phronia* species. I am satisfied that those apomorphic character states, when present in *Trichonta*, are separately derived. Other examples of apparent convergence in both genera are the presence of only four large scutellar setae in most *Phronia* and a few *Trichonta* and the presence of three or four rows of hind tibial setae in various species of both genera. *Trichonta*, in addition, has species with five rows of hind tibial setae as well as some with two. One can hope that further knowledge of biology, hosts, internal anatomy, and immature stages will shed light on the natural relationships between and within these genera.

I have been able confidently to arrange more than half the *Trichonta* species into natural groups of two or more mainly on the basis of obvious similarities of the male terminalia (table 1). Reasons for the separate groupings are given in the systematic treatment under at least one species in each group. Beyond these general groupings I have avoided hypothesizing relationships. Differences in form of the terminalia do

not lend themselves, except among related species, to characterization as apomorphic or plesiomorphic, and those other body features that do can be shown to be separately derived. The groupings I have made help to point out trends in the distribution of *Trichonta*.

Table 1.—Grouping of related *Trichonta* species with number of their collection localities

Species	Collection localities in—	
	Nearctic region	Palearctic region
aberrans	---	2
gentilis	5	---
amica	8 (eastern)	---
bifida	---	19
brevicauda	28	34
clemens	2 (western)	---
generosa	2 (western)	---
merita	1 (western)	---
vulgaris	43	27
atricauda	13	40
delicata	6	2
eximia	35	2 (Himalayas)
melanura	11	53
beata	9 (eastern)	2
clavigera	---	4
comica	2 (western)	4
concinna	---	6
contenta	---	1 (Himalayas)
bicolor	2 (eastern)	15
canora	---	4
conjugens	---	10
festa	18 (western)	---
lidelis	---	4 (Himalayas)
llebilis	---	5 (Himalayas)
sedula	3 (eastern)	---
fragilis	1 (western)	4
languida	4 (eastern)	---
lucida	1 (eastern)	---
icenica	---	2
lyrica	---	1
pulchra	1	1
sobria	---	2 (Himalayas)
subfusca	24	69
submaculata	---	15
valida	2	---
vitta	58	86
facilis	1	18
terminalis	32	76
placida	1	---
superba	---	1 (Himalayas)

Several species of *Trichonta* have been described from the Austral regions of the world, and I have examined specimens of many undescribed species from southern South America. As mentioned previously, they are outside the scope of this revision but are discussed briefly here for completeness. No species of Mycetophilidae is common to both the Holarctic and Austral regions, but there are known sister group relationships on the generic level (Munroe, 1974). The *Trichonta* of the Southern Hemisphere do appear to be more closely related to the northern *Trichonta-Phronia* than to other genera but are nonetheless rather distinct, having developed in ways that are foreign to the concept one derives from the study of the strictly northern fauna.

Seven species were described from South America, specifically Chile, all by Freeman (1951): *Trichonta fasciata*, *funerea*, *longinervis* (transferred from *Phronia* by Gagné (1975)), *major*, *nubilipennis*, *similis*, and *spinifera*. These can be separated, as Freeman (1951) suggested, into three distinct, probably natural groups. Some characters that appear on the Austral *Trichonta* fauna and that are peculiar to it are well-developed wing maculations, corrugated wing membranes, long antennae, fore-shortened tibiae and tarsi, spurlike tibial setae, the loss of dorsocentral and mesoscutal bristles, the large body (occasionally over 1 cm long), and the relatively undeveloped dorsal and medial parts of the gonostylus.

In addition to the South American species, three other species have been reported from the Austral regions. *Trichonta illaetabilis* and *T. vegeta* were described by Skuse (1888) from New South Wales, Australia, and an undescribed species was reported by Freeman (1951) from Tasmania.

Three Baltic amber fossils, each described from a female by Meunier (1904), can be referred to *Trichonta*: *Trichonta brachycamptoides*, *crassipes*, and *brachycamptites*. The last is a new combination here, having originally been placed in *Palaeotrichonta*, here a synonym of *Trichonta*. In addition, one fragmentary North American Tertiary fossil, *Trichonta dawsoni* Scudder (1877), sex indistinguishable was properly referred here. These fossils establish not only that *Trichonta* was widespread in the Holarctic region during the Tertiary but that it existed in some variety with *brachycamptoides* and *crassipes* having a swollen front tarsus and *brachycamptites* a simple one, character states that are both present in modern species.

Little is known of the biology of the *Trichonta* species. From the time span in collection dates of most species, one can infer that these flies have several generations a year. Collection dates for adults of the more common species span between late winter and late autumn.

Several species have been reared from fungi, usually the "bark-encrusting" kinds, as Edwards (1925b) noted, but belonging to several orders—Agaricales, Polyporales, and Tremellales. Larvae of *T. foeda* (as *stereana*) and *T. falcata* were found in England, often together, in *Stereum hirsutum*, either within the fungus or on the surface and covered with mucilage and excrement (Edwards, 1925b). *T. foeda* was reared also from *Polystictus versicolor* in Virginia (unpub.). *T. vitta* was taken repeatedly in England and France from *Poria vaporaria* (or *P. versipora*) (Edwards, 1925b; Buxton, 1960; Matile, 1963). *T. terminalis* was reared from larvae feeding on a flat, purplish, wood-encrusting fungus, possibly a *Corticium*, and *T. atricauda* came from another possible *Corticium* (Edwards, 1925b). *T. brevicauda* was reared recently in large numbers from *Lentinellus vulpinus* in Vermont by J. Lawrence (unpub.). Buxton (1960) reported *T. vernalis* from *Calocera cornea*. These larvae were bright yellow, the same color as the fungus, and crawled away from the fungus to make their cocoons. *T. venosa* was reared from "puff balls" (Edwards, 1925b) and is the only *Trichonta* so far reared from other than wood-encrusting fungi.

Sixty-five *Trichonta* species are now known to occur in the Holarctic, one in the Oriental, and one from the Afrotropical region. This last species seems to be a derived representative of the genus, distinct from other *Trichonta*, and not discussed further in this section. About half of the other *Trichonta* occur in both North America and Eurasia; the other half are almost equally divided between the two continents. The number of species dwindles from north to south as it does for *Phronia* (Gagné, 1975).

Although more information would be desirable for some of the less common species, I believe that more collection data will strengthen the general trends that are repeated too many times to be regarded as chance occurrences. For example, since my revision of *Phronia* (Gagné, 1975), I have examined over 500 additional specimens and found that the geographic range has changed markedly for only 2 species, and then in a way that might have been predicted by my argument, specifically, that a western Nearctic species in Europe will also occur in the eastern Nearctic. Since I found no new or previously unreported Palaeartic species, the predictive value of studying all available material is good.

For even uncommon *Trichonta* species, one can safely guess the general range. For example, I saw only 20 American specimens of *T. perspicua*, but they came from Alaska, Washington to California, Alberta, Iowa, Wisconsin, Quebec, New York, New Hampshire to Virginia, and Louisiana. One might confidently assume that *perspicua* will eventually be found in the States and Provinces between those named. On the other hand, knowledge of the ranges of *T. bezzii* and *T. excisa*, known from eastern Europe and one eastern North American or one Mexican locality, is too sketchy to assume their presence in western North America.

As a confidence index in discussing various species mentioned here, I have, where pertinent, added in parentheses following species names the number of American collection localities. I was not able to see specimens of *Trichonta* from most of Asia, including Japan, but the genus doubtless occurs there. Regrettably, comparisons cannot be made between the fauna of that area and the remainder of the Holarctic.

Several major patterns are apparent in the distribution of *Trichonta*. They are reflected many times in this and other groups of fungus gnats and indicate the relative age of these and possibly other organisms. Only a few other genera of fungus gnats are well enough known across the Holarctic region to allow comparisons with *Trichonta*. Revisions that were helpful in relating Nearctic and Palaeartic faunas are Laffoon (1957) for *Mycetophila*, a revision of the Nearctic and a partial review of the Palaeartic species; Laštovka (1972), a refinement on a part of *Mycetophila* group A of Laffoon (1957); Laštovka and Matile (1972), a revision of Holarctic *Diadocidia*, but based on limited Nearctic material; Munroe (1974), a revision of *Symmerus* and *Australosymmerus* of the world; and Gagné (1975), a revision of Nearctic *Phronia* and a review of the Palaeartic species.

The first general pattern concerns the gross distribution of *Trichonta* and *Phronia*. Twenty-eight *Trichonta* species occur in both Eurasia and North America, 18 are Nearctic only, and 19 Palaeartic. *Phronia* has 37 Holarctic, 16 Nearctic, and at least 21 Palaeartic species. There are actually 37 nominal Palaeartic *Phronia* species, but 10, known from the female only, and 6 others, known only from the Canary Islands and unavailable for study, are probably synonymous with other taxa. The corrected number for Palaeartic *Phronia* will probably be closer to 21 than 37 and thus will show a closer resemblance to *Trichonta*.

The second general pattern is that most natural groups of species have one or more Holarctic, one or more Nearctic, and/or one or more Palaeartic species (table 1). This not only reflects the distribution of the genus as a whole but shows that the pattern has repeated itself many times. This is true for *Phronia* (cf. the groups of species related to *conformis*, *tenebrosa*, and *nigricornis*), *Mycetophila* (for each of Laffoon's (1957) groups A-F and for Laštovka's *ruficollis* group), and for the small genus *Diadocidia*.

The third general pattern is that the eastern Nearctic fauna is more similar to the European fauna than to the western Nearctic fauna. Although most Nearctic species occur from coast to coast, some are found only east of the Great Plains (inclusively) and others

only west of the Rocky Mountains (inclusively). *Trichonta* species in Europe and eastern North America, with number of collection localities, are *beata* (9), *bezzii* (1), *bicolor* (2), *clara* (8), *excisa* (1), *foeda* (9), and *pulchra* (1); species common to Europe and western North America only are *comica* (2), *fissicauda* (6), and *fragilis* (1). Only 2 Nearctic species of *Phronia*, both common, do not occur in the western Nearctic; they are *similis* (54), which is confined in the east, and *conformis* (63), which occurs also in Europe. In western North America, 12 species of *Phronia* are endemic. *P. matilei* and *P. digitata*, both of which are also European and which I indicated as only western (Gagné, 1975), have since been found in material collected from New England and Quebec, respectively (unpub.).

Mycetophila, with 96 species known from the Nearctic region, shares at least 21 species with Europe (Laffoon, 1957), and many of the remaining 75 species are either eastern or western Nearctic. Sixteen of the twenty-one Holarctic species are widespread in North America. Of the remaining 5, *finlandica* (3), *mitis* (47), *pictula* (16), and *unipunctata* (48) are eastern Nearctic only, and *scotica* (2) is western Nearctic only.

Symmerus shows this pattern also, but on the subgeneric level. No species is known from both Eurasia and North America, but the subgenus *Symmerus* consists of one eastern Nearctic, two European, and one Japanese species.

To summarize these trends, a particular model for the distribution pattern shows itself repeatedly enough so that whatever the reason it is probably the same in each instance. A satisfying hypothesis will be one that explains why the eastern North American fauna resembles more closely the European fauna than does the western North American fauna.

Trichonta, *Mycetophila*, and *Symmerus-Australosymmerus* have amphipolar distributions. The last has been well researched by Munroe (1974), who showed that *Symmerus* was probably the northern vicariant of *Australosymmerus* of the Austral regions. *Trichonta* and *Mycetophila*, both in the broad sense, occur in the southern part of the world also, but the species there are different from the concepts one derives

from study of the northern fauna alone and are probably sister groups of the northern section of their respective genera. For a discussion of *Trichonta* in this regard, see the section on Systematic Position and Relationships.

The widespread distribution, both amphipolar and Holarctic, indicates that these genera are very old when compared with the other groups of organisms that have no connections among the southern continents except via Laurasia.

In addition, speciation in these genera progressed at different rates as seen in *Trichonta*, which has species common to both continents, and *Symmerus*, which has taxa common to both continents but only on the subgeneric level.

Congruence between the European and eastern Nearctic fungus gnats suggests a connection between the two areas other than the Beringian one. If Beringia had been a major pathway for gene exchange in these flies, why then should the eastern fauna resemble more closely the European fauna than does the fauna of western North America? Pleistocene glaciation might not have been as great a factor in the creation of differences between the eastern and western American faunas as it was in maintaining the status quo of the separate faunas.

The most recent land connections between eastern North America and Europe was before the middle Eocene, a time when North America and Eurasia were both divided from North to South by seas. McKenna (1975) summarized fossil mammal and geological evidence, which strongly supports an early Eocene North Atlantic Euramerican connection. Fossil mammals of Europe and eastern North America were similar up to the middle Eocene but developed distinct differences after that time, differences that can be attributed to dispersal by the Bering route. The presumed Euramerican connection before the middle Eocene was fairly broad and considerably south of the pole, making it a more suitable faunal connection than the simultaneous Bering bridge, then much closer to the pole than it is now (McKenna, 1975) and consequently much colder and darker.

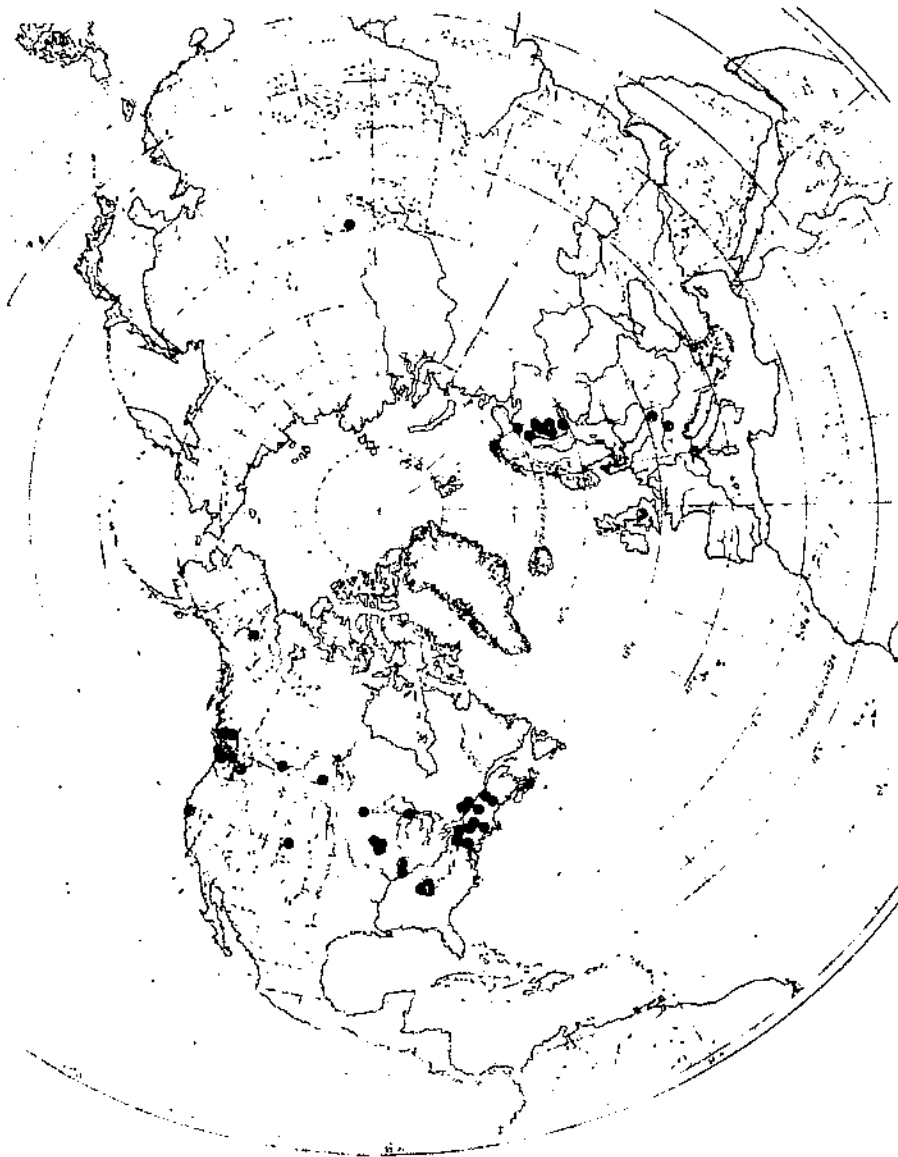
Can species of fungus gnats remain essentially unchanged for 50 million years, from the middle Eocene to the

present? The fossil record gives some support for an affirmative answer. *Trichonta* is well defined and fairly diversified in Baltic amber (ca. 30 million years old) and in undated Tertiary deposits of North America. I cannot identify known fossil *Trichonta* species beyond generic level (see under Fossils) because they are represented only by females or specimens of indeterminate sex. But other Mycetophiloidea, specifically the Cecidomyiidae from Mexican amber (Oligocene-Miocene, ca. 25–30 million years old), are virtually the same as extant *Clinodiplosis terrestris* (Felt), and female specimens of *Contarinia* sp. and *Lestodiplosis* sp. from the same amber are similar to extant species (Gagné, 1973). The fact that these fossils, which include a presumptive gallmaker of angiosperms, are so similar to our present fauna supports the assumption that species of fungus gnats could have remained essentially unchanged since the early Tertiary.

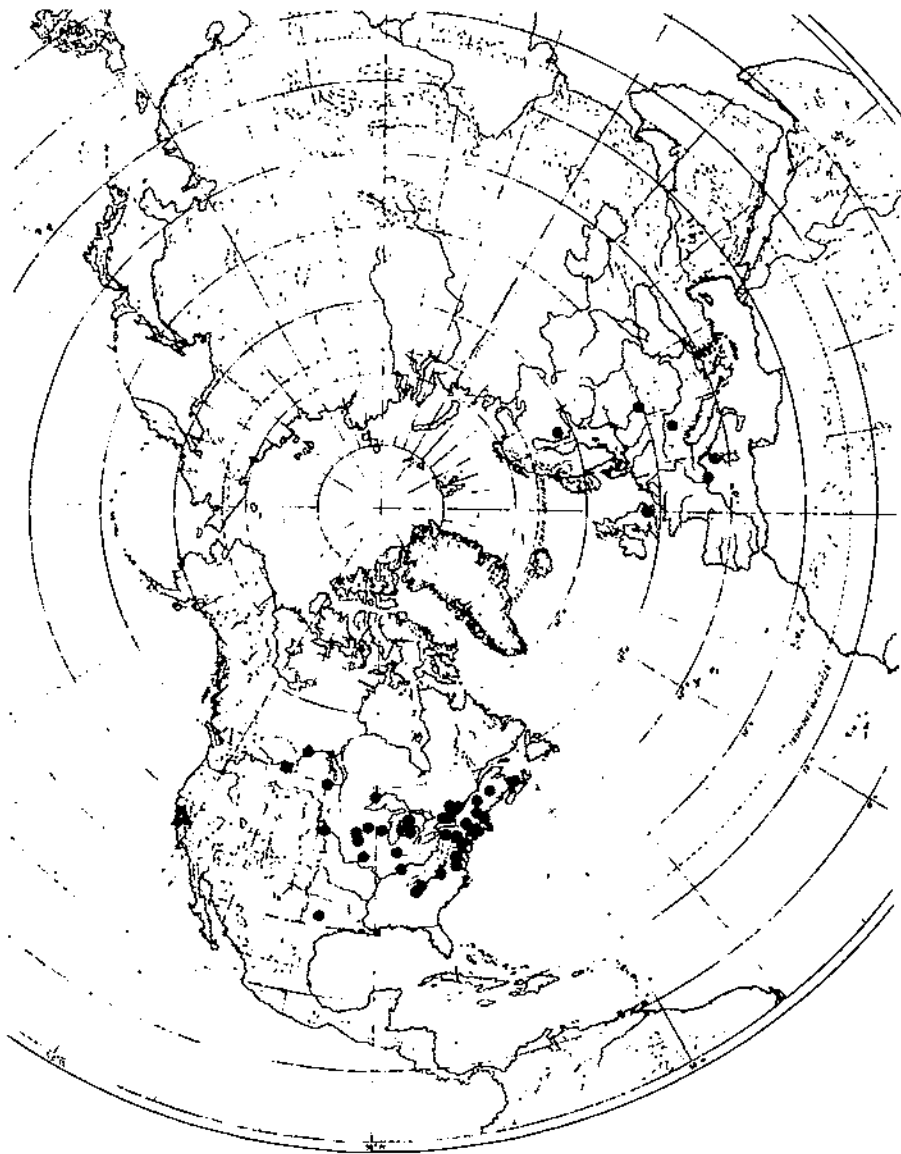
My hypothesis for the distribution of the Holarctic groups of Mycetophilidae is as follows: That the Laurasian fauna at the beginning of the Tertiary had many widespread species similar to extant species, e.g., *Trichonta vulcani* (map 1), *T. melanura*, and *Phronia flavipes*; that toward the early Eocene when Europe was divided from Asia and western North America from eastern North America, differentiation occurred in some species, resulting in a distribution as seen for *Phronia conformis-P. latfooni* (map 2) and for *Symmerus (Symmerus)-Symmerus (Psilosymmerus)* (Munroe, 1974); and that after the middle Eocene, when Euramerica separated, further differentiation occurred between the American and European populations of some taxa as, e.g., in *Trichonta conjungens-T. sedula* (map 3) and subsequently between populations on each continent (maps 4–5). This hypothesis does not depend on directional movement across a narrow land bridge or extinctions. If correct, it should explain the distribution of other insect groups.

An example is the presence in the Americas of two vicariant tribes of Cecidomyiidae, the Alycaulini and the Lasiopterini, and the presence in the Old World of only the latter tribe. Each contains hundreds of species of host-specific gallmakers, chiefly of stems. The previous hypothesis does not beg the

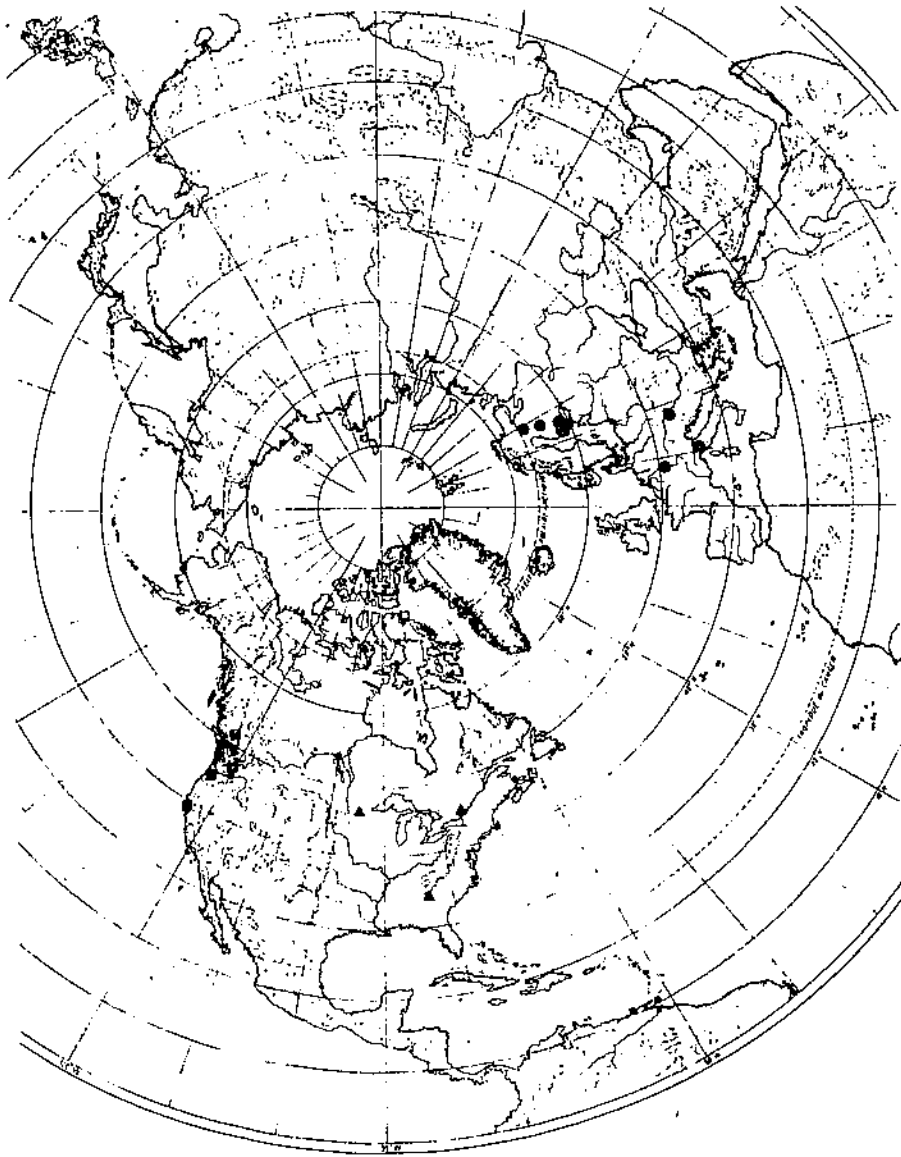
question of why the Alycaulini never crossed Beringia because it does not assume that the Lasiopterini crossed. More probably the Lasiopterini occurred on at least Euramerica before the middle Eocene and the Alycaulini developed from a branch of the former after the breakup of Euramerica in the middle Eocene, as indicated in map 5. The main difference between what is shown in map 5 and the two tribes of Cecidomyiidae is that the rate of speciation was much faster in Cecidomyiidae than in the fungus gnats, and thus in the same period of time hundreds of taxa were produced rather than only two.



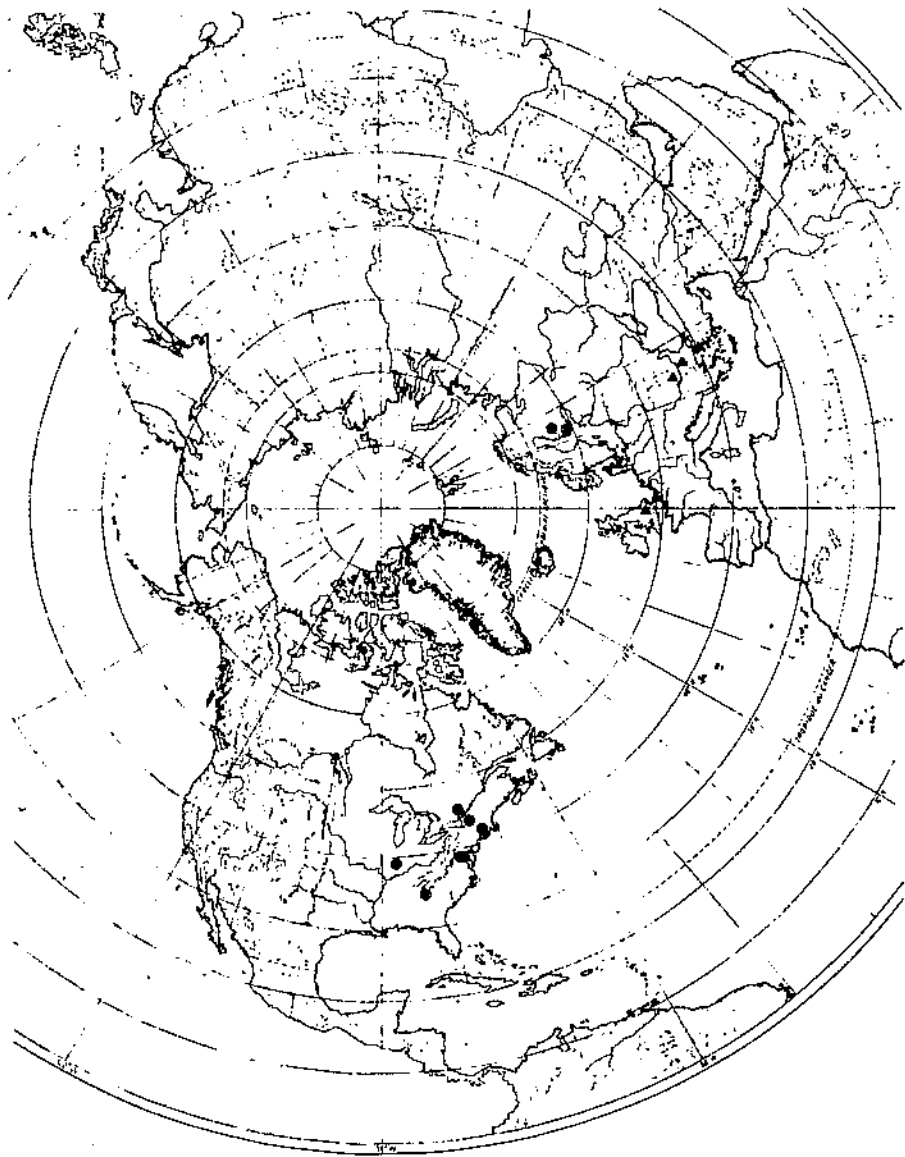
MAP 1.—*Trichonta vulcani* collection localities.



MAP 2.—*Phronia conformis* (circles) and *P. falfooni* (triangles)
collection localities.

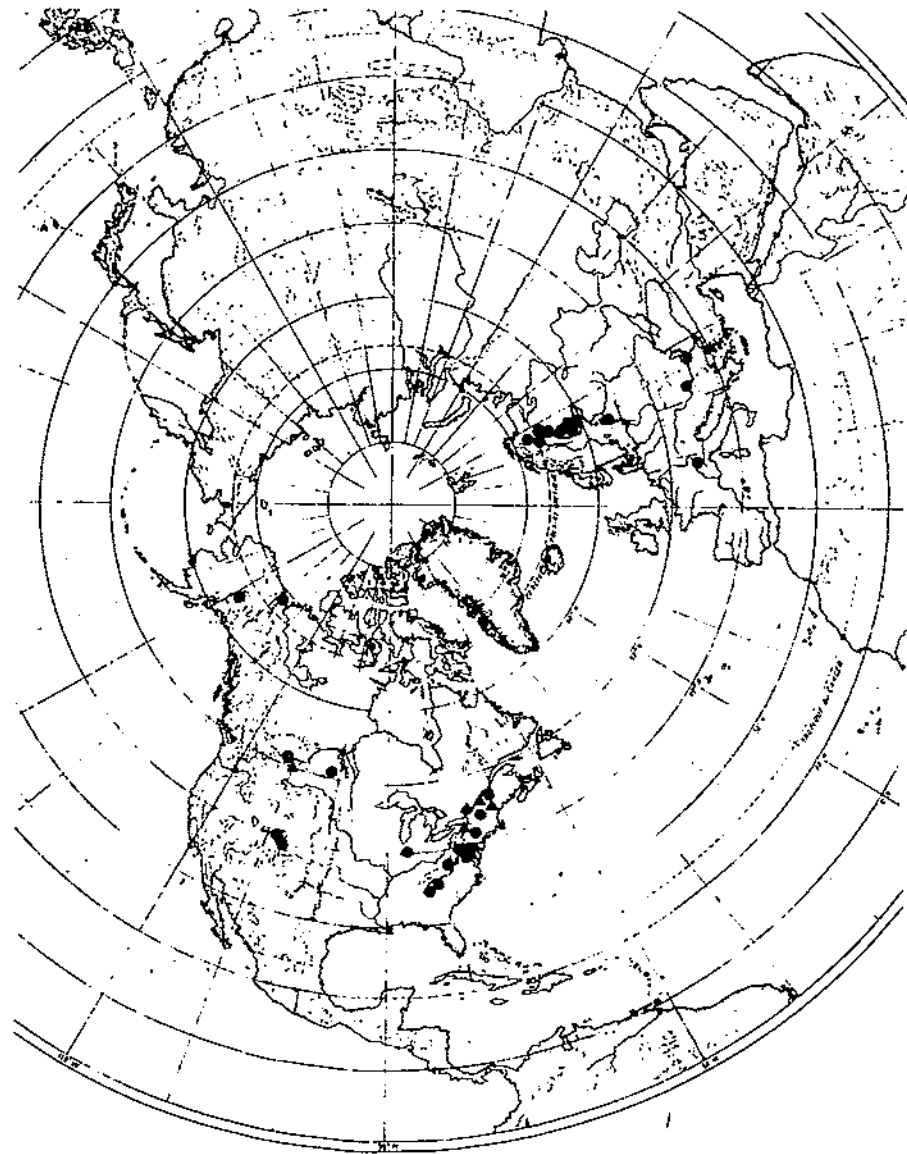


MAP 3.—*Trichonta foeda* (triangles), *T. sedula* (squares), *T. conjungens* (circles)
collection localities.



MAP 4.—*Trichonta beata* (circles) and *T. clavigera* (triangles) collection localities.

Terminology and Data Presentation



MAP 5.—*Trichonta vulgaris* (circles) and *T. amica* (triangles) collection localities.

Under Species Descriptions, the 67 recognized species are treated alphabetically followed by descriptions of the few unrecognized ones. Names for new species are short adjectives with pleasant sounds and connotations.

Various characters in the descriptions need some explanation. Color is used only as a general guide. Some species are always dark, others always light, but most show much color gradation. Wing length indicates general size. It is measured from the base of the costa along a straight line sighted on the basal half of the costa to a point perpendicular to the wing tip. Position of bases of M and Cu forks is estimated in relation to a line perpendicular to the wing length line and running through Rs.

In my revision of *Phronia* (Gagné, 1975), I used "basimere" and "telomere" for what I now term "gonocoxite" and "gonostylus," respectively, which are subdivisions of the gonopod. In addition, my former "male tergum X" and "cerci" are changed to tergite IX and X, respectively. The lobes of the latter are probably not homologous to cerci, but they may be called surstyli. I converted to this terminology in consideration of the usage in a manual for the Diptera of North America, being prepared by the Diptera Unit of the Biosystematics Research Branch, Agriculture Canada. As with *Phronia*, I refer for practical reasons to lateral, dorsal, and medial (changed here from mesal in Gagné (1975)) parts of the gonostylus. The description of the female terminalia includes anything remarkable about tergum VII and the shape and setation of tergum and sternum VIII and of cercus I and II; the last two roman numerals denote the first and second cercal segments, respectively.

Genus TRICHONTA Winnertz

Localities are given according to current maps. Usually only the names of States, Provinces, and, for Europe with occasional exceptions, countries are given for specimen localities. The exceptions are for type data and for those few new species for which only a few specimens are known. Complete specimen data and deposition were recorded in longhand on 8- by 10-inch paper, which will be kept for permanent record in the files of the Diptera Unit, Systematic Entomology Laboratory, U.S. Department of Agriculture.

The only locality abbreviations used in the text are of zoogeographical areas in Finland when denoted on the specimen labels: KS = Kuusamo, KB = Karelia borealis, AB = Regio aboënsis, LIM = Lapponia Imandrae, and LKEM = Lapponia kemsis. Abbreviations for paratype depositories are as follows: ANSP, Academy of Natural Sciences, Philadelphia; CAS, California Academy of Sciences, San Francisco; CNC, Canadian National Collection, Ottawa; HNHM, Hungarian Natural History Museum, Budapest; IRSNB, Institut Royal des Sciences Naturelles de Belgique, Brussels; ISU, Iowa State University, Ames; MNHN, Muséum National d'Histoire Naturelle, Paris; PU, Purdue University, West Lafayette, Ind.; USNMNH, U.S. National Museum of Natural History, Washington, D.C.; UW, University of Wisconsin, Madison; and ZM, Zoological Museum, Helsinki.

Unless otherwise noted in the legends for the illustrations of the male terminalia, gonopods are shown in ventral view, gonostyli in dorsal view, and tergites IX and X (illustrations of which sometimes also include part of sternum X) in dorsal view.

Trichonta Winnertz 1863: 847. Type-species, *Myceophila melanura* Staeger (Johannsen 1909: 94).

Palaeotrichonta Meunier 1904: 119. Type-species, *brachycamptites* Meunier (monotypy). New synonym.

Adult.—Antenna with 14 flagellomeres. Palpus 4-segmented. Mesoscutum (fig. 1) with long setae laterally and in 2 longitudinal rows beginning near humeral angles and converging toward scutellum. Scutellum with 4, 6, or 8 strong marginal setae, these usually interspersed with weaker setae. Mediotergite bare. Pronotum and proepimeron only partially separated, each usually with 2 strong setae and several weaker ones. Mesanepisternum hexagonoid, 0–4 setae along anterodorsal and 3–7 along posterodorsal border, usually 1–4 additional setae immediately cephalad of posterodorsal row. Mesokatepisternum and mesepimeron bare. Laterotergite with numerous long setae. Metepisternum without or with 1–5 short or long setae. Hind coxa with 0, 1–2 posterobasal, or a row of strong posterior setae. Front tibia with 1 apical spur, middle and hind tibiae each with 2 apical spurs; middle tibia with 4–5 longitudinal rows of setae; hind tibia with usually strong anterior and dorsal setae along entire length, shorter posterior setae along distal half at least, and, if present, sparse, short, anteroventral and/or posteroventral setae. Front tarsomeres dilated in some species, usually only in female. Wing (figs. 5–12): Anterior edge convex or straight; C only slightly produced beyond apex of R_5 ; Sc ending free or in R; Cu fork usually basad, occasionally even with or slightly distad of fork of M; Cu petiole with or without setae; branches of M and Cu usually setose except basally; A weak to strong, with or without setae.

Male abdomen with terga I–VI broad and rectangular and with corresponding sterna much narrower; terga and sterna VII and VIII very short; gonocoxites fused basally and ventrally to form cupulate structure surrounding aedeagus; gonostylus of complicated form, usually with distinct lateral, dorsal, and medial parts; segment X and cerci variously shaped.

Female abdomen with terga and sterna I–VII rectangular; tergum and sternum VIII smaller, of various shapes, often divided caudomedially; cerci 2-segmented.

Larva.—Those described short-cylindrical. For available details and illustrations, see Madwar (1937).

Remarks.—Meunier (1904) distinguished his fossil *Palaeotrichonta* from *Trichonta* on the basis of the simple female front tarsus as opposed to the swollen one he thought was normal for *Trichonta*. Although the females of most species have swollen front tarsi, many, including the type-species, *T. melanura*, do not. For this reason, I consider *Palaeotrichonta* a junior synonym of *Trichonta*.

Key to Species of *Trichonta*

- | | | |
|-----|---|----------------------|
| 1. | Hind coxa with strong posterobasal seta(e) (figs. 1-3)..... | 2 |
| | Hind coxa without strong posterobasal seta (fig. 4)..... | 49 |
| 2. | Hind coxa with row of several strong posterior setae (fig. 2). Holarctic | <i>T. perspicua</i> |
| | Hind coxa with 1 (rarely 2) strong posterobasal seta | 3 |
| 3. | Hind tibia with anteroventral and or posteroventral setae | 4 |
| | Hind tibia without anteroventral and or posteroventral setae | 10 |
| 4. | Scutellum with only 4 large setae. Cu petiole setose; Holarctic | <i>T. faicata</i> |
| | Scutellum with 6-8 large setae; Cu petiole setose or asetose | 5 |
| 5. | Hind tibial posterior setae of unequal length; setae on basal two-thirds longer than tibial width, those on distal third shorter than tibial width; Holarctic | <i>T. venosa</i> |
| | Hind tibial posterior setae of uniform length | 6 |
| 6. | Hind tibia with anteroventral and posteroventral setae | 7 |
| | Hind tibia without anteroventral setae | 10 |
| 7. | Hind tibial middorsal setae not longer than width of tibia at midlength, male terminalia as in figures 142-144; Holarctic | <i>T. excisa</i> |
| | Hind tibial middorsal setae appreciably longer than width of tibia at midlength | 8 |
| 8. | Male terminalia brown; female unknown, western Nearctic | <i>T. secura</i> |
| | Male terminalia brown and yellow | 9 |
| 9. | Male tergite X attenuate, gonocoxite with dorsocaudal extensions (fig. 52); female sternum X cleft to base; Holarctic | <i>T. fissicauda</i> |
| | Male tergite X not attenuate, gonocoxite without dorsocaudal extensions (fig. 99); female sternum X weakly cleft; Holarctic | <i>T. hamata</i> |
| 10. | Cu petiole setose | 11 |
| | Cu petiole asetose | 14 |
| 11. | Wing hyaline; lateral part of gonostylus with very strong seta near ventral corner (fig. 126). Palaearctic | <i>T. comis</i> |
| | Wing fumose at least in part; lateral part of gonostylus without conspicuous, large seta near ventral corner | 12 |
| 12. | Wing fumose on apical third; lateral part of gonostylus short, rectangular, with strong setae (fig. 56); western Nearctic | <i>T. salva</i> |
| | Wing fumose throughout, lateral part of gonostylus attenuate, sinuous, with weak setae (fig. 94) | 13 |
| 13. | Male cerci stout, shorter than gonocoxite (fig. 95); Holarctic | <i>T. terminalis</i> |
| | Male cerci attenuate, longer than gonocoxite (fig. 97); Holarctic | <i>T. facilis</i> |
| 14. | Scutellum with 4 large setae | 15 |
| | Scutellum with 6-8 large setae | 18 |
| 15. | Cu forking appreciably distad of M fork (fig. 10); hind tibial posterior setae distinctly shorter on apical third than basally; Holarctic | <i>T. vulcani</i> |
| | Cu forking even with or basad of M fork, hind tibial setae of equal length | 16 |
| 16. | Lateral part of gonostylus broadly rounded at apex of dorsal section (fig. 17); Nearctic | <i>T. languida</i> |
| | Lateral part of gonostylus attenuate at apex of dorsal section (fig. 18) | 17 |
| 17. | Lateral part of gonostylus broadly rounded apically and covered with setae on ventral section (fig. 19); Nearctic | <i>T. lucida</i> |
| | Lateral part of gonostylus crenulate apically and with naked areas on ventral section (fig. 22); Holarctic | <i>T. fragilis</i> |
| 18. | Sc free (fig. 6) | 19 |
| | Sc joining R (fig. 5) | 21 |
| 19. | Hind tibia brown on basal 3d and distal 10th, posterior setae absent, front larso-meres II-III of male slightly swollen; Afrotropical | <i>T. sincera</i> |
| | Hind tibia yellow, posterior setae present, front tarsomeres not swollen | 20 |
| 20. | Dorsal part of gonostylus quadrate (fig. 102); eastern Nearctic | <i>T. gentilis</i> |
| | Dorsal part of gonostylus triangular (fig. 105); Palaearctic | <i>T. aberrans</i> |
| 21. | Cu, sinuous, A usually weak (fig. 51); male terminalia brown, female sternum VIII dark brown in contrast to remainder of female terminalia | 22 |
| | Cu, evenly curved, occasionally weakly sinuous, A moderate to strong (fig. 8); male genitalia brown and or yellow; female terminalia unicolorous | 28 |
| 22. | Lateral part of gonostylus not indented caudally, tapering to point or convexly rounded (figs. 35, 38) | 23 |
| | Lateral part of gonostylus indented caudally (figs. 31, 36, 37, 39) | 24 |
| 23. | Lateral part of gonostylus setose over most of surface, setae short dorsocaudally (fig. 35); Holarctic | <i>T. brevicauda</i> |
| | Lateral part of gonostylus with extensive naked area, setae where present uniformly long (fig. 38); western Nearctic | <i>T. menta</i> |
| 24. | Lateral part of gonostylus with pointed, setose caudal projection (fig. 40); Palaearctic | <i>T. bilida</i> |
| | Lateral part of gonostylus without caudal projection (figs. 31, 36, 37, 39) | 25 |

25.	Lateral part of gonostylus indented ventrally (figs. 31, 39)	26
	Lateral part of gonostylus undivided ventrally (figs. 36, 37)	27
26.	Lateral part of gonostylus strongly indented ventrally, area caudad of indentation with row of strong setae (fig. 39); western Nearctic	<i>T. clemens</i>
	Lateral part of gonostylus weakly indented, area caudad of indentation naked (fig. 31); Holarctic	<i>T. vulgaris</i>
27.	Lateral part of gonostylus with most setae uniformly long (fig. 37); western Nearctic	<i>T. generosa</i>
	Lateral part of gonostylus with approximately equal areas of long and short setae (fig. 36); Nearctic	<i>T. amica</i>
28.	Male terminalia brown	29
	Male terminalia partly or entirely yellow	43
29.	Metepisternal setae short, much less than half height of sclerite (figs. 3-4)	30
	Metepisternal setae long, as long as or longer than height of sclerite (fig. 1)	31
30.	Lateral part of gonostylus shorter than wide, distal edge pointed (fig. 28); Holarctic	<i>T. beata</i>
	Lateral part of gonostylus longer than wide, distal edge blunt (fig. 25); Palaearctic	<i>T. clavigera</i>
31.	Hind coxa brown	32
	Hind coxa yellow	36
32.	Dorsal part of gonostylus wider than long, widest distally	33
	Dorsal part of gonostylus longer than wide, widest before midlength	34
33.	Lateral part of gonostylus with strong, recurved setae dorsally (fig. 84); Palaearctic (Himalayan)	<i>T. flebilis</i>
	Lateral part of gonostylus without strong, recurved setae dorsally (fig. 79); eastern Nearctic	<i>T. sedula</i>
34.	Lateral part of gonostylus greatly attenuate ventrally (fig. 81); western Nearctic	<i>T. festa</i>
	Lateral part of gonostylus weakly attenuate ventrally (figs. 82, 86)	35
35.	Dorsal part of gonostylus about twice as long as wide (fig. 86); Palaearctic	<i>T. conjungens</i>
	Dorsal part of gonostylus about 3 times as long as wide (fig. 82); Palaearctic (Himalayan)	<i>T. fidelis</i>
36.	Dorsal part of gonostylus elongate-attenuate, narrowest distally	37
	Dorsal part of gonostylus triangular, widest distally	39
37.	Gonostylus in dorsal view with 2 discrete, setose lobes distad of dorsal part (fig. 162); Holarctic	<i>T. girschneri</i>
	Gonostylus in dorsal view with 3 discrete, setose lobes distad of dorsal part (figs. 42, 44)	38
38.	Dorsal part of gonostylus an acute triangular plane, less than 3 times as long as wide (fig. 42); Nearctic (Mexico)	<i>T. placida</i>
	Dorsal part of gonostylus parallel sided for most of length, about 5 times as long as wide (fig. 44); Palaearctic (Himalayan)	<i>T. superba</i>
39.	Anal vein setose	40
	Anal vein aetose	41
40.	Gonocoxite longer ventrally than dorsally, obscuring gonostylus in ventral view (fig. 137); Sc long, joining R much beyond midlength of R cell; western Nearctic	<i>T. serena</i>
	Gonocoxite as long ventrally as dorsally, gonostylus not obscured in ventral view (fig. 13); Sc short, joining R near midlength of R cell (fig. 8); Palaearctic	<i>T. trivittata</i>
41.	Aedeagal projections strongly twisted; Palaearctic	<i>T. concinna</i>
	Aedeagal projections straight	42
42.	Lateral part of gonostylus setose on most of medial surface (fig. 71); Holarctic	<i>T. comica</i>
	Lateral part of gonostylus setose only distally on medial surface (fig. 77); Palaearctic (Nepal)	<i>T. contenta</i>
43.	Male terminalia yellow; abdominal terga usually yellow along cephalic margins; Holarctic	<i>T. foeda</i>
	Male terminalia yellow and brown; abdominal terga yellow along caudal margins	44
44.	Male terminalia brown only on triangular area on venter of gonocoxite	45
	Male terminalia brown on apical third of gonocoxite and all of gonostylus	46
45.	Dorsal part of gonostylus disk shaped, rounded apically (fig. 140); Holarctic	<i>T. flavicauda</i>

¹ *T. subascipennis* from the Philippines also runs here. As noted under species treatment, it differs from *bezzii* only in minor details.

Species Descriptions

	Dorsal part of gonostylus narrow, tapering to point distally (fig. 160); Holarctic	<i>T. bezzii</i> ¹
46.	Gonocoxite with concave ventrocaudal margin and strong setae on mediodorsal margin (fig. 132); tergite X attenuate; Palaearctic	<i>T. fusca</i>
	Gonocoxite with quadrately incised ventrocaudal margin and no uncommonly strong setae mediodorsally (fig. 69); cerci not attenuate	47
47.	Gonocoxite with patch of very strong medioventral setae; gonostylus short, lateral part with corniform ventrocaudal setae (figs. 69-70); Holarctic	<i>T. patens</i>
	Gonocoxite without patch of inordinately strong medioventral setae; gonostylus longer, without corniform ventrocaudal setae (fig. 48)	48
48.	Lateral part of gonostylus with simple, rectangular ventral section and distally pointed dorsal section (fig. 48); Holarctic	<i>T. bicolor</i>
	Lateral part of gonostylus with bilobed ventral section and quadrate dorsal section (fig. 50); Palaearctic	<i>T. canora</i>
49.	Cu petiole with setae	50
	Cu petiole without setae	52
50.	Cu forking even with or distad of M fork; metepisternum asetose; gonocoxite brown, gonostylus yellow; Palaearctic	<i>T. apicalis</i>
	Cu forking basad of M fork; metepisternum usually with short setae; male terminalia brown	51
51.	Body dark brown; hind coxa brown; wing fumose on apical third, A setose; western Nearctic	<i>T. chaoi</i>
	Body light brown; hind coxa yellow; wing hyaline; A asetose; Holarctic	<i>T. clara</i>
52.	Hind femur brown on distal third or fourth	53
	Hind femur completely yellow	59
53.	Hind tibia with posterior row of setae	54
	Hind tibia without posterior row of setae	57
54.	Sc free; Holarctic	<i>T. pulchra</i>
	Sc ending in R	55
55.	Male terminalia yellow, dorsal part of gonostylus attenuate (fig. 114); Palaearctic	<i>T. submaculata</i>
	Male terminalia brown, dorsal part of gonostylus short, triangular (figs. 110, 118)	56
56.	Hind coxa yellow; Palaearctic	<i>T. lyrice</i>
	Hind coxa brown; Palaearctic (Nepal)	<i>T. sobria</i>
57.	Sc free (fig. 9); dorsal part of gonostylus elongate (fig. 107); Holarctic	<i>T. vitta</i>
	Sc ending in R; dorsal part of gonostylus triangular (fig. 112)	58
58.	Gonocoxite with caudoventral group of very strong setae (fig. 111); Palaearctic	<i>T. icenica</i>
	Gonocoxite without differentiated group of strong setae caudoventrally (fig. 122); Nearctic (Mexico)	<i>T. valida</i>
59.	Male cerci and dorsal part on gonostylus long and slender (figs. 58-60); female abdominal terga VII and VIII with spinose setae (fig. 187)	60
	Male cerci wide; dorsal part of gonostylus attenuate only in <i>subfusca</i> ; female abdominal terga VII and VIII without spinose setae	63
60.	Medial part of gonostylus with spines, aedeagal prongs attenuate to apices (figs. 58-59)	61
	Medial part of gonostylus without spines, aedeagal prongs barbed at apices (figs. 62-63)	62
61.	Lateral part of gonostylus with ventral and dorsal lobes of approximately equal length (fig. 68); Holarctic	<i>T. delicata</i>
	Lateral part of gonostylus with ventral lobe much longer than dorsal lobe (fig. 57); Holarctic	<i>T. melanura</i>
62.	Lateral part of gonostylus short, ventral corner turned medially (fig. 65); Holarctic	<i>T. eximia</i>
	Lateral part of gonostylus long, ventral corner not conspicuously turned medially (fig. 61); Holarctic	<i>T. atricauda</i>
63.	Hind tibia with anteroventral and posteroventral setae; western Nearctic	<i>T. fusciventris</i>
	Hind tibia without anteroventral and posteroventral setae	64
64.	M petiole and rm subequal in length, A strong, setose (as in fig. 11); western Nearctic	<i>T. sedata</i>
	M petiole appreciably longer than rm, A weak, asetose (as in fig. 6)	65
65.	Male terminalia yellow and brown; dorsal part of gonostylus long, slender (fig. 116); female cerci bilaterally flattened (fig. 170); Holarctic	<i>T. subfusca</i>
	Male terminalia brown; dorsal part of gonostylus triangular (fig. 46); female cerci cylindrical (fig. 185); western Nearctic	<i>T. justa</i>

Trichonta aberrans (Lundström)

aberrans Lundström 1911: 402.

Adult (male only).—Wing length, 3.6–3.7 mm. Fits description of *gentilis* except in shape of terminalia (figs. 104–105).

Types.—Syntypes, 2 males, Budapest, Hungary, 22–V–1910, Kertész, originally deposited in Hungarian Natural History Museum, Budapest, destroyed in 1956.³

Remarks.—The illustrations in Lundström (1911) are adequate for placing this species. I saw only two specimens of *aberrans* from Oltenia in Rumania. Landrock (1912a) reported *aberrans* from Moravia (Czechoslovakia); otherwise there have been no other records of this rare species subsequent to the original description. See under *gentilis* for remarks concerning affinities.

Trichonta amica Gagné, new species

Adult (male only).—Wing length, 3.0–3.3 mm. Fits description of *vulgaris* except in shape of terminalia (fig. 36).

Types.—Holotype, male, Old Chelsea, Quebec, 18–VII–1961, J. R. Vockeroth, in Canadian National Collection. Paratypes (all males): 2, Old Chelsea, Quebec (CNC); 3, Mt. Orford, Quebec (CNC); 1, Abbotsford, Quebec (CNC); 4, S. March, Ontario (CNC); 1, Keene Valley, Essex Co., N.Y. (CNC); 1, White Mts., N.H. (USNMNH); 1, Elkwater, Alberta (CNC).

Remarks.—I examined 17 males from 12 collections made in the 7 localities listed here, all of which except the Alberta locality, are in a fairly small, circumscribed area. The only apparent difference between *amica* and the five other species related to *vulgaris* lies in the shape of the gonostylus. In *amica*, the lateral part has a sinuous but undivided caudal edge and an extensive asetose area, and it narrows ventrally to the scalloped tip. See further remarks under *vulgaris*.

Trichonta apicalis Strobl

apicalis Strobl 1897: 286.

vernalis Landrock 1913: 88. New synonym.
phrontoides Lundström 1913: 310. New synonym.

³ Throughout this bulletin information pertaining to specific distribution records is given essentially as it appears on the insect labels.

Adult (male only).—Wing length, 2.8–3.3 mm. Body mostly brown, humeral angles of mesoscutum and prothoracic sclerites usually yellow; legs yellow to fuscous yellow; male terminalia brown except yellow gonostylus. Scutellum with 6 strong setae. Mesanepisternum with 4–5 setae along posterodorsal margin and 1–2 in dorsal corner. Metepisternum bare. Wing: Membrane hyaline; occasionally clouded on apical third; anterior edge straight; Sc parallel to R for most of length joining R apically; M forking distad of Rs; Cu forking below or distad of Rs but not distad of M fork. Cu petiole setose, Cu₂ not sinuous; A moderate, asetose. Front tarsomeres not swollen. Hind coxa without posterobasal seta. Hind tibial setae: 4–5 anterior; 4–5 dorsals, middorsals slightly longer than width of tibia at midlength; 4–6 widely separated posteriors; usually 0 (occasionally 1) anteroventrals and 0 posteroventrals. Male genitalia as in figures 129–131.

Types of names included in this taxon:

T. apicalis: Holotype male, #3210, Lichtmessberge [Austria], 10–VIII, in Benedictiner-Abtei, Admont, Austria.

T. vernalis: Male, Bilowitz, near Brünn, Czechoslovakia, 4–V, type depository unknown to me.

T. phronioides: Male, Fuzine, Hungary, 7–VI–1912, Kertész, originally deposited in Hungarian Natural History Museum, Budapest, destroyed in 1956.

Remarks.—I saw only seven specimens from six separate collections and localities in France, Austria, and Hungary. Edwards (1925b) reported *apicalis* from Britain and his description of the dorsal part of the telomere fits only this species. Although I saw neither of the types of *vernalis* and *phronioides*, the original figures are adequate evidence on which to base this synonymy. The holotype of *apicalis* is damaged. All that remains of the terminalia are the cerci and aedeagus, but these are distinctive and similar to the other specimens I have placed under *apicalis*. *T. apicalis* even without terminalia is readily keyed by the characters outlined in the key.

***Trichonta atricauda* (Zetterstedt)**

atricauda Zetterstedt 1852: 4219 (*Mycetophila*).

parallela Walker 1856: 31 (*Leia*); Edwards 1913: 338 (tentative syn. of *atricauda*).
adunca Edwards 1925a: 164. New synonym.

Adult (male only).—Wing length, 3.3–4.0 mm. Fits description of *melanura*, differing only in shape of male terminalia (figs. 61–64).

Types of names in this taxon:

T. atricauda: Lectotype here designated, male, Skalstugan, Jämtland, Sweden, 16–VII–1840, in Zoological Institute, Lund.

T. parallela: Type(s), England, lost (A. M. Hutson, pers. commun.).

T. adunca: Lectotype here designated, male, Kuustö, Finland, Lundström, in Zoological Museum, Helsinki.

Remarks.—*T. atricauda* appears to be a widespread Holarctic species. I saw 17 North American specimens from 14 collections made in 13 localities in Northwest Territories, British Columbia, Alberta, Ontario, Quebec, Michigan, New York, and Maine. I saw 237 European specimens from Norway, Sweden, Finland, Scotland, England, and Belgium.

For convenience, I follow Edwards (1913) in his tentative synonymy of *parallela* with *atricauda*. The type of *parallela* is lost so there is no way to ascertain what Edwards had before him. Edwards (1925a) gave the name *adunca* to the species misidentified by Lundström (1909) as *fissicauda* Zetterstedt. Neither Lundström nor Edwards gave any information about the specimen illustrated (terminalia only) by Lundström, but I was able to examine the terminalia of a specimen labeled "*fissicauda*" from the Zoological Museum in Helsinki that fits exactly figure 45 in Lundström (1909). That specimen is a typical *atricauda*, but it has had the aedeagus thrust forward and thereby other features of the terminalia are distorted. The cerci do not lie flat and so are foreshortened in Lundström's illustration. For relationships of *atricauda*, see *melanura*.

***Trichonta beata* Gagné, new species**

Adult (male only).—Wing length, 2.9–3.5 mm. Body brown except yellow humeral angles of mesoscutum, prothoracic sclerites, and caudal margins of abdominal terga II–V; male terminalia brown; legs yellow. Scutellum with 6–8 setae. Mesanepisternum with 4–5 setae

along posterodorsal border and 2–3 cephalad of that row. Metepisternum (fig. 3) with 2–3 short setae. Wing: Membrane darkish; anterior edge straight; Sc ending in R, parallel with R for most of length; M fork distad of or below Rs; Cu fork basad of Rs, Cu petiole asetose, Cu₂ not sinuous; A strong, with or without setae. Front tarsomeres not swollen. Hind coxa with strong, posterobasal seta. Hind tibial setae: 5–8 anteriors; 5–7 dorsals, middorsals subequal to or slightly longer than width of tibia at midlength; 4–7 widely spaced posteriors; 0 anteroventrals and posteroventrals. Male terminalia as in figures 28–30.

Types.—Holotype, male, Redding, Conn., 3–VI–1934, A. L. Melander, USNM type No. 75641. Paratypes (all males): 3, Old Chelsea, Quebec (CNC); 1, Redding, Conn. (USNMNH); 3, Thomkins, N.Y. (ANSP, USNMNH); 4, Baltimore Co., Md. (ANSP, USNMNH); 3, Macon Co., N.C. (1 CNC, 2 ISU); 2, Needmore, Ind. (USNMNH); 1, Juuma (ZM); 1, N. Esbo Kolmpera, Finland (HNHM).

Remarks.—*T. beata* is known from 15 male specimens, from 6 localities in eastern North America and 2 localities in Finland. This species and *clavigera* resemble one another closely. The male cerci of both species have a strong apical seta and a dense group of strong setae medioapically with a similar aedeagus and basimere, but the gonostylus of both species is distinct. *T. clavigera* has been found only in Europe. This species pair is another example of both members found in Europe, but only one in eastern North America.

***Trichonta bezzii* Landrock**

bezzii Landrock 1913: 89.

Adult (male only).—Wing length, 2.8–3.2 mm. Body mostly brown, humeral angles, prothoracic sclerites, and anterior margins of basal abdominal terga yellow; terminalia yellow except venter of gonocoxite; legs yellow. Scutellum with 6 setae. Mesanepisternum with 3–4 setae along posterodorsal margin. Metepisternum with 1 long seta. Wing: Membrane hyaline; anterior edge straight; Sc parallel to R for most of length, ending in R; M forking below Rs; Cu forking below or basad of Rs, Cu petiole asetose, Cu₂ not sinuous; A

strong, setose. Front tarsomeres not swollen. Hind coxa with 1 long, postero-basal seta. Hind tibial setae: 7 anteriors; 10–11 dorsals, middorsals approximately as long as width of tibia at midlength; 8 posteriors along length of tibia; 0 anteroventrals and 0–4 posteroventrals. Male terminalia as in figures 159–160.

Types.—Holotype, male, Adamstal, Moravia, Czechoslovakia, 27–V. Type depository unknown to me.

Remarks.—Although I did not see the holotype, Landrock's (1913) illustrations of the male terminalia are an adequate basis for identification of this species. *T. bezzii* is evidently Holarctic, although I saw only three specimens, two from Lockeport, Nova Scotia, Canada, and one from Magas Tatra, Otátrafüred, Hungary. The only other previous record of this species was of the type specimen in Czechoslovakia. *T. bezzii* is remarkably similar to *subfascipennis* (q.v.).

Trichonta bicolor Landrock

bicolor Landrock 1912b: 182.

Adult (male only).—Wing length, 2.7–3.0 mm. Body brown except yellow humeral angles of mesoscutum and prothoracic sclerites; male terminalia yellow except brown gonostylus and caudal margin of gonocoxite; legs yellow. Scutellum with 6 setae. Mesanepisternum with 4 setae along posterodorsal margin and 1 in dorsal corner. Metepisternum with 2–3 long setae. Wing: Membrane hyaline; anterior edge straight; Sc ending in R, parallel to R for most of length; M forking distad of Rs; Cu forking basad of Rs, Cu petiole asetose, Cu₂ not wavy; A weak, asetose. Front tarsomeres not swollen. Hind coxa with strong postero-basal seta. Hind tibial setae: 7–9 anteriors; 8–10 dorsals, middorsals longer than tibial width at midlength; 8–12 posteriors two-thirds of length; 0 anterodorsal or posterodorsal setae. Male terminalia as in figures 48–49.

Types.—Syntypes, males, Adamstal, 17–V, Hobitschau, 25–VI, Czechoslovakia, depository unknown to me.

Remarks.—Although I did not see the types, Landrock's figures of the male terminalia are diagnostic. *T. bicolor* is known from eastern North America and Europe. I saw only 2 specimens from the United States, one from Con-

necticut, the other from Maryland, but many more from Europe: 52 specimens from 18 collections made in 15 localities in Finland, England, France, Switzerland, and Hungary. The general similarity of the terminalia of *bicolor* and of *canora* suggests the species are closely related; they differ only in the shape of the gonostylus.

Trichonta bifida Lundström

bifida Lundström 1909: 31.

Adult (male only).—Wing length, 3.3–3.5 mm. Fits description of *vulgaris* except in shape of gonostylus (fig. 40).

Types.—Syntypes: Male, Kuustö, AB, Finland, VI–1907, Lundström; male, Muonioniska, KEM, Finland, 27–VI–1867, Palmén.

Remarks.—I examined 90 males, including the syntypes, caught on 28 occasions in 19 localities in Norway, Sweden, Finland, and Italy. *T. bifida* is one of six species related to *vulgaris* and can be separated from them by the shape of the gonostylus that has a characteristic setose, fingerlike lobe on the caudal margin of the lateral part. *T. bifida* otherwise closely resembles *generosa*, a species restricted to western North America. See further remarks concerning affinities under *vulgaris*.

Trichonta brevicauda Lundström

brevicauda Lundström 1906: 29.

Adult (male only).—Wing length, 3.0–3.5 mm. Fits description of *vulgaris* except shape of gonostylus (fig. 35).

Types.—Holotype, male, Kuustö, AB, Finland, 1905, Lundström, in Zoological Museum, Spec. type No. 4211, Helsinki.

Remarks.—From North America I examined 72 males from 35 collections made in 28 localities in Alberta, Oregon, Idaho, Montana, California, Arizona, New Mexico, Ontario, Michigan, Iowa, Quebec, Nova Scotia, Maine, Vermont, New York, Connecticut, and North Carolina; from Europe, 133 males, including the holotype, from 37 collections made in 34 localities in Norway, Finland, France, Spain, Switzerland, Hungary, and Rumania.

The only apparent differences between *brevicauda* and the other five species related to *vulgaris* are in the shape of the gonostylus. In *brevicauda*, the lateral part is widest dorsally, where

the caudal half is covered with very short setae, and tapers to the narrow ventral corner. See further remarks under *vulgaris*. The female *brevicauda* is probably similar to that of *vulgaris*.

Trichonta canora Gagné, new species

Adult (male only).—Wing length, 3.4–3.6 mm. As for *bicolor* except shape of male gonostylus (figs. 50–51).

Types.—Holotype, male, Kitee, KB, Finland, 28–VI–1963, W. Hackman. Paratypes (all males, all Finnish): 3, Jakalavuoma, KS (1 USNMNH, 2 ZM); 3, Kesälahti, KB (ZM); 1, N. Esbo, Kolmperä (ZM).

Remarks.—This species is rare, with seven known specimens from four collections made in four localities in Finland. The general configuration of the terminalia suggests that *canora* is related to *bicolor*; *canora* differs from the latter only in the shape of the gonostylus.

Trichonta chaoi Shaw

chaoi Shaw 1951: 279.

Adult.—Wing length, 3.5–4.2 mm. Body brown, including terminalia; legs yellow brown, hind coxa light brown. Scutellum with 6–8 setae. Mesanepisternum with 3–5 setae along posterodorsal edge and an occasional seta in dorsal corner. Metepisternum with 1–3 short setae. Wing: Membrane dusky, apical third darkest; anterior edge straight; Sc parallel to R for most of length, joining R apically; M forking apical of Rs; Cu forking basad of Rs, Cu petiole setose, Cu₂ slightly sinuous; A strong, setose. Front tarsomeres not swollen. Hind coxa naked posterobasally. Hind tibial setae: 5–7 anteriors; 6–9 dorsals, those at tibial midlength slightly longer than tibial width; 5–7 widely spaced posteriors; 0 anteroventrals and posteroventrals. Female terminalia (fig. 174): Tergum VIII longest laterally, bare medially, setose only laterally; sternum VIII slightly longer than tergum VIII, setose on caudal two-thirds with strongest setae along triangular mediocaudal incision; cercus I cylindrical, slightly bilaterally flattened; cercus II ovoid, setae strongest caudally. Male terminalia as in figures 145–147.

Types.—Holotype, male, Snowy Range Mts., Albany Co., Wyo., 17–VII–1948, D. G. Denning, deposited in Uni-

versity of Massachusetts, Amherst.

Remarks.—*T. chaoi* appears to be limited to western North America. I examined 30 specimens from 21 collections made in 16 localities in British Columbia, Washington, Idaho, Wyoming, and Colorado. This species is distinctive and without apparent close relatives. The type was not located during this study, but Shaw's (1951) illustrations of the male terminalia definitely show this species.

Trichonta clara Gagné, new species

Adult.—Wing length, 2.5–2.9 mm. Body mostly brown, humeral angle of mesoscutum and prothoracic sclerites yellow; legs yellow; terminalia brown. Mesanepisternum with 3–4 setae along posterodorsal edge only. Metepisternum with 0–2 setae, short when present. Scutellum with 4 strong setae, occasionally 2 weaker setae. Wing: Membrane hyaline; anterior edge straight. Sc parallel to R except apically, joining R at approximately 45° angle; M forked distad of Rs; Cu forking basad of Rs. Cu petiole setose, Cu₁ slightly sinuous, setose along whole length; A moderately developed, aetose. Front larso-meres II–IV swollen in female. Hind coxa without basoposterior seta. Hind tibial setae: 6–8 anteriors, 6–9 dorsals, middorsals longer than width of tibia at midlength; 3–6 posteriors, widely spaced; 0 anteroventrals and posteroventrals. Female terminalia (fig. 177) Tergum VIII longest laterally, setose on caudal half; sternum VIII longer than tergum VIII, triangularly incised medio-caudally, setose on caudal two-thirds, cercus I cylindrical, longest ventrally; cercus II ovoid, setae strongest along caudal edge caudally. Male terminalia as in figures 156–158.

Types.—Holotype, male, Crawford Noich, White Mts., N.H., 27–VIII–1937, A. L. Melander, USNMNH type No. 75642. Paratypes: 3 males, female, Knowlton Landing, Quebec (CNC); 2 females, Mt. Orford, Quebec (CNC); female, Gatineau Park, Quebec (CNC); 4 males, 4 females, Macon Co., N.C. (4 ISU, 4 USNMNH); male, Indian Gap, Tenn. (CNC); male, Hertogenwald, Belgium (Belg.); male, Utsjoki (ZM); Kusamo (2 males USNMNH, 4 males ZM); male Pielisjärvi (ZM), male Kesalahti (ZM); male, Esbo Kolmpera (ZM); 3 males, Vihtiäarvi (ZM); (all Finland)

Remarks.—This species is another

with an eastern North American and European distribution. I saw 17 specimens from 8 localities in North America, 11 specimens from 7 localities in Finland, and 1 specimen from Belgium

Trichonta clavigera Lundström

clavigera Lundström 1913: 309.

Adult (male only).—Wing length, 3.5–3.9 mm. Body brown, occasionally with yellow prothoracic sclerites and caudal margins on abdominal segments II–III; male genitalia brown; legs yellow except hind coxa usually brown. Thoracic sclerites and wing as for *beata*. Hind coxa with strong posterobasal seta. Hind tibial setae: 5–7 anteriors: 6–7 dorsals, middorsals approximately as long as width of tibia at midlength; 5–11 widely spaced posteriors, 0 anteroventrals and posteroventrals. Male terminalia as in figures 25–27

Types.—Syntypes, 5 males, Kovacs-patak, Hungary, 16–V–1912, Kertesz Type depository given as Hungarian Museum (Lundström, 1913), but I saw 1 syntype (Spec. Type No. 4758) from the Zoological Museum, Helsinki

Remarks.—Besides the syntype collected in Hungary, I saw three other specimens of this species, one each from Vallee Lupsa, Oltenia, Rumania, Cerfontaine, Belgium, and Brockenhurst, Hants, England. See under *beata* for further remarks

Trichonta clemens Gagné, new species

Adult (male only).—Wing length, 3.4–3.5 mm. Fits description of *vulgaris* except shape of gonostylus (fig. 39).

Types.—Holotype, male, Roaring River, 9400, Rocky Mt. N.P., Colo., VII–11–1959, Jean Laloon, USNM Type No. 75643. Paratypes (all males): 2, same data as holotype (ISU); 1, W. Craigs Pass, 7900, Yellowstone Park, Wyo., 18 Aug. 1918, A. L. Melander (USNMNH)

Remarks.—I saw only four males from two Rocky Mountain localities listed here. The only apparent differences between *clemens* and the other five species related to *vulgaris* are in the shape of the gonostylus. In *clemens*, the lateral part has a distinctive setal row leading to the ventral edge and the ventral corners are on the same plane. See further remarks concerning affinities under *vulgaris*

Trichonta comica Gagné, new species

Adult (male only).—Wing length, 3.1–3.4 mm. Body brown, prothoracic sclerites occasionally yellow; male terminalia brown; legs yellow. Mesanepisternum with 4 setae along posterodorsal border and 1–2 in dorsal corner. Metepisternum with 2 long setae. Wing: Membrane darkish; anterior edge straight; Sc ending in R, parallel with R for most of length; M forking below or distad of Rs; Cu forking basad of Rs, Cu petiole aetose, Cu₁ slightly sinuous; A strong, aetose. Front larso-meres not swollen. Hind coxa with strong posterobasal seta. Hind tibial setae: 5–7 anteriors: 7–9 dorsals, middorsals as long as to slightly longer than width of tibia at midlength, 9–13 posteriors, 0 anteroventral and posteroventral setae. Male terminalia as in figures 71–73

Types.—Holotype, male, Strawberry Canyon, Alameda Co., Calif., XI–1948, W. W. Wirth, USNM Type No. 75644. Paratypes (all males): 2, same data as holotype except II, 1949 (USNMNH); 1, Rocky Mt. National Park, Colo. (ISU); 3, 1 each from Helsinki, Juuma, and Vihti-äarvi, Finland (ZM.); 1, Agneliers, Basses-Alpes, France (MNHN)

Remarks.—*T. comica* is rare but widespread, it is known from two localities in western North America and four in Europe. It resembles *concinna* and *contenta* in the structure of the male terminalia as well as in various characters used in the key. In these species, the lateral part of the gonostylus is generally triangular, simple, with uniformly long setae laterally and partially setose mesally, the basal arm of the dorsal part of the gonostylus is fairly large, with short, stubby setae apically, the cerci are not flared but curve to cover sternum X laterally, the aedeagus has two long, lateral prongs

Trichonta comis Gagné, new species

Adult (male only).—Wing length, 3.5 mm. Body brown except yellow humeral angles of mesoscutum and prothoracic sclerites; male terminalia brown; legs yellow. Scutellum with 6 setae. Mesanepisternum with 4 setae along posterodorsal border and 1 in dorsal corner. Metepisternum with 2 long setae. Wing: Membrane hyaline; anterior edge straight; Sc ending in R, parallel with R for most of length; M forking below Rs; Cu forking basad of Rs, Cu petiole se-

tose, Cu_2 slightly sinuous; A moderate, setose. Front tarsomeres not swollen. Hind coxa with strong posterodorsal seta. Hind tibial setae: 9 anteriors; 8 dorsals, middorsals slightly longer than width of tibia at midlength; 7 closely spaced posteriors; 0 anteroventrals and posteroventrals. Male terminalia as in figures 126–128.

Types.—Holotype, male, Juuma, Finland, 21–VIII–1964, R. Tuomikoski, in Zoological Museum, Helsinki.

Remarks.—*T. comis* is known only from the holotype.

Trichonta concinna Gagné, new species

Adult (male only).—Wing length, 3.2–3.5 mm. Nongenitalic characters as for *comica*. Male terminalia as in figures 74–76.

Types.—Holotype, male, Forêt de Măgura, Oltenia, Rumania, 15–X–1968, L. Matile, in Muséum National d'Histoire Naturelle, Paris. Paratypes (all males), all from Finland: 7 Vihtjarvi (3 USNMNH, 4 ZM); 1, Lumland, Veringboda (ZM); 4, Helsinki (ZM); 1, Kittila, Pallas (ZM); 1, Kuusamo, Kukanen (ZM).

Remarks.—*T. concinna* is rare and known only from Rumania and Finland. For remarks on relationships, see under *comica*.

Trichonta conjungens (Lundström)

conjungens Lundström 1909: 33.

Adult.—Wing length, 3.1–3.6 mm. Body mostly brown, prothoracic sclerite occasionally yellow; male terminalia brown; legs yellow except hind coxa and occasionally middle coxa brown. Scutellum with 6–8 large setae. Mesanepisternum usually with 3 (sometimes 4) setae along posterodorsal border only, occasionally with 1 other in dorsal corner. Metepisternum with 2–3 long setae. Wing: Membrane darkish, occasionally darker on distal third; anterior edge straight; Sc ending in R, parallel to R for most of length; M fork distad of Rs; Cu fork basad of Rs. Cu petiole a-setose, Cu_2 slightly sinuous; A strong, usually setose apically. Front tarsomeres II–III swollen in female. Hind coxa with 1 (occasionally 2) strong, posterobasal seta. Hind tibial setae: 7–11 anteriors; 8–11 dorsals, middorsals longer than width of tibia at midlength; 6–8 closely spaced posteriors on distal

half; 0–1 posteroventrals and 0 anteroventrals. Female terminalia as for *festu* (fig. 180). Male terminalia as in figure 86.

Types.—Holotype, male, Pojo, AB, VI, Frey, in Zoological Museum, Helsinki.

Remarks.—*T. conjungens* appears to be limited to Europe. I saw 93 specimens, including the holotype, from 22 collections in 10 localities in Finland, Germany, Italy, and Hungary. *T. conjungens* forms a natural group with *festu*, *sedula*, *fidelis*, and *flebilis* on the basis of the general similarities of both the male and female terminalia. The aedeagus is globular with two lateral prongs that articulate with the caudal surface of the globe. *T. festu* is restricted to western North America, *sedula* to eastern North America, and *fidelis* and *flebilis* to the Himalayan region.

Trichonta contenta Gagné, new species

Adult (male only).—Wing length, 3.0–3.3 mm. Nongenitalic characters as for *comica* except wings fumose on apical third and middorsal setae on hind tibia slightly longer than tibial width at midlength. Male terminalia as in figures 77–78.

Types.—Holotype, male, 27 58' N. 85°00' E., Nepal, 11,100', 7–VI–1967, Canadian Nepal Expedition, in Canadian National Collection. Paratypes, 4 males, same locality as holotype on 4 separate dates (3 CNC, 1 USNMNH).

Remarks.—The five known specimens of *contenta* were each collected on a different date in the same locality in Nepal. For remarks on relationships, see under *comica*.

Trichonta delicata Gagné, new species

Adult (male only).—Wing length, 3.2–3.5 mm. Fits description of *melanura*, differing only in shape of male terminalia (fig. 68).

Types.—Holotype, male, Lake McDonald, Glacier Park, Mont., 14–VIII–1916, A. L. Melander, USNM Type No. 45645. Paratypes (all males): 1, Kootenay National Park, British Columbia (CAS); 1, Ottawa, Ontario (CNC); 1, S. March, Ontario (CNC); 1, Hull, Quebec (CNC); 1, Knowlton Landing, Quebec (CNC); 6, Kuusamo, and 2, Vihtjarvi, Finland (ZM).

Remarks.—*T. delicata* is distributed across North America and in Finland. It is uncommon in collections. For remarks concerning relationships, see under *melanura*.

Trichonta excisa Lundström

excisa Lundström 1916: 73.

Adult (male only).—Wing length, 3.6 mm. Body mostly brown, mesoscutum with striking brown and yellow pattern, 2 brown stripes beginning at humeral angles, converging at scutellum, yellow between, yellowish white laterally; male terminalia brown; legs yellow. Scutellum with 6 large setae. Mesanepisternum with 6 setae along posterodorsal border and 2 in dorsal corner. Metepisternum with 2 long setae. Wing: Membrane hyaline-fumose; anterior edge straight; Sc ending in R, parallel to R for most of length; M forking below Rs; Cu forking basad of Rs, Cu petiole a-setose, Cu, slightly wavy; A strong, setose. Front tarsomeres not swollen. Hind coxa with 1 strong, posterodorsal seta. Hind tibial setae: 6 anteriors; 5 dorsals, middorsals approximately as long as width of tibia at midlength; 5 short spaced posteriors; 1 anteroventral and 5 posteroventrals. Male terminalia as in figures 142–144.

Types.—Holotype, male, Czibebes, Hungary, V–1913, Ujhelyi, originally deposited in Hungarian Natural History Museum, Budapest, destroyed during 1956.

Remarks.—I saw a single specimen caught 10 miles west of El Salto, Durango, Mexico (deposited in CNC). Its terminalia fit to the last detail those of the type as drawn by Lundström (1916). I have drawn the gonostylus in lateral view so that it can be compared to Lundström's figure. I think the distance between the type locality and the present and only other record of this species, namely Mexico, only shows that *excisa* is widespread but rare.

Trichonta eximia Gagné, new species

Adult (male only).—Wing length, 2.7–3.7 mm. Fits description of *melanura*, differing only in shape of male terminalia (figs. 65–67).

Types.—Holotype, male, Priest Lake, Idaho, VIII–1920, A. L. Melander, USNM Type No. 75646. Paratypes: 46 males from 35 collections in 35 North

American localities in British Columbia, Alberta, Washington, Oregon, Idaho, Wyoming, California, Iowa, Minnesota, Ontario, Quebec, New York, Pennsylvania, Virginia, and North Carolina. (ANSP, CAS, CNC, ISU, USNMNH) and 2 males from the Palaearctic region, 1 from Jammu and Kashmir, the other from Nepal (CNC, USNMNH).

Remarks.—The distribution of *eximia* is noteworthy in that the species is fairly common in North America, but it is represented in the Palaearctic region by only two specimens found in the Himalayas. For remarks concerning relationships, see under *melanura*.

Trichonta facilis Gagné, new species

Adult (male only).—Wing length, 3.1–3.5 mm. As for *terminalis* except differences in male terminalia (figs. 96–97).

Types.—Holotype, male, 4100, North Fork Pass, Ogilvie Mts., Yukon Territory, 21–VI–1962, P. J. Skitsko, in Canadian National Collection. Paratypes: 39 males from 22 collections in 18 localities in northern Sweden, northern Norway, and Finland (CNC, USNMNH, ZM).

Remarks.—This species is uncommon and rather local, but similarities of the male terminalia indicate it is related to the widespread *terminalis*. The female of *facilis* may be similar to that of *terminalis*. Lundström (1914) must have been aware of this species when he wrote about the specimens of *terminalis* with longer cerci.

Trichonta falcata Lundström

falcata Lundström 1911: 401.
albescens Dziedzicki 1915: Pl. X; Landrock 1926: 134 (n. syn.).

Adult.—Wing length, 2.6–3.7 mm. Body mostly brown except yellow on humeral angles of mesoscutum, prothoracic sclerites, and caudal margins of abdominal terga; male terminalia brown; legs yellow. Scutellum with 4 large setae. Mesanepisternum with 3–4 setae along posterodorsal border and 0–2 in dorsal corner. Metepisternum with 2 long setae. Wing: Membrane hyaline; anterior edge straight; Sc ending in R, parallel to R for most of length; M fork distad of Rs; Cu fork basad of Rs, Cu petiole setose. Cu₂ not sinuous; A strong, setose. Front tarsomeres not swollen. Hind coxa with 1

(occasionally 2) strong posterobasal seta. Hind tibial setae: 5–8 anteriors; 5–9 dorsals, middorsals longer than width of tibia at midlength; 7–13 posteriors; 1–3 posteroventrals and 0 anteroventrals. Female terminalia (fig. 175): Tergum VIII more or less quadrate, setose on caudal half; sternum VIII slightly longer than tergum VIII, incised a short distance mediocaudally, setose on caudal half; cercus I somewhat bilaterally flattened, longest ventrally, evenly setose; cercus II elongate-ovoid, evenly setose. Male terminalia as in figures 164–165.

Types of names in this taxon:

T. falcata: Syntypes: 2 males, 1 female, Orsova, Hungary, 27–28–V–1904, Kertész, and male, Rekawinkl, Austria, 6–IX–1887, Pokorny, originally deposited in Hungarian Natural History Museum, destroyed in 1956.

T. albescens: Data not given with original description; specimen(s) returned by Dziedzicki to Winnertz collection in Bonn; destroyed during World War II.

Remarks.—I saw none of the types, but the original illustrations are detailed enough to identify this species. Its closest relatives are not apparent to me. The presence of only four large setae on the scutellum set this species apart from most. I have seen 47 specimens from 23 localities in Norway, Finland, France, England, Switzerland, and Hungary and 43 from 35 collections made in 24 localities in Ontario, Quebec, Massachusetts, Connecticut, New York, Pennsylvania, Washington, D.C., Virginia, North Carolina, Iowa, British Columbia, and Washington. In addition, one of the types was collected in Austria.

Trichonta festa Gagné, new species

Adult.—Wing length, 3.1–3.5 mm. As for *conjungens* except none seen with posteroventral setae on hind tibia and except differences in shape of male terminalia (fig. 81). Female terminalia (fig. 180): Tergum VII with strong, slightly flattened, upturned setae; tergum VIII short, rectangular, setose only caudally, setae short; sternum as long as tergum VIII, deeply incised, setose only caudally; cercus I cylindrical, long; cercus II ovoid, 2-tipped or 3-tipped caudally with strong seta on each tip.

Types.—Holotype, male, Tacoma, Wash. [no other data], USNM Type No.

75647. Paratypes: 12 males and 10 females from 19 collections made in 17 localities in British Columbia, Washington, Oregon, Idaho, and California (CAS, CNC, PU, USNMNH).

Remarks.—*T. festa* differs from the eastern Nearctic *sedula* only in several aspects of the shape of the gonostylus. See under *conjungens* for further remarks.

Trichonta fidelis Gagné, new species

Adult.—Wing length, 3.3–3.8 mm. As for *conjungens* except shape of terminalia, those of male as in figures 82–83, those of female as in *festa* (fig. 180) except setae on tergum VII are straight, not upturned.

Types.—Holotype, male, 27° 57' N. 84° 59' E., Nepal, 30–V–1967, Canadian Nepal Expedition, in Canadian National Collection. Paratypes: 15 males and 22 females, all from Nepal on 12 different dates in 3 localities (CNC, USNM).

Remarks.—*T. fidelis* is known only from Nepal. See under *conjungens* for discussion concerning relationships.

Trichonta fissicauda (Zetterstedt)

fissicauda Zetterstedt 1852: 4221 (*Mycetophila*).

claripennis Lundström 1914: 19; Edwards 1925a: 164 (syn. *fissicauda*).

Adult.—Wing length, 3.5–4.2 mm. Body mostly brown, except humeral angles of mesoscutum and prothoracic sclerites; female abdomen yellow caudally; male terminalia brown except yellow cerci and dorsum of basimere; legs yellow. Scutellum with 6–8 setae. Mesanepisternum with 4–5 setae along posterodorsal margin and 0–1 before. Metepisternum with 2–3 long setae. Wing: Membrane hyaline; anterior margin straight; Sc ending in R, parallel to R for most of length; M forking distad of Rs; Cu forking basad of Rs, Cu petiole asetose, Cu₂ slightly wavy; A strong, usually setose. Front tarsomeres not swollen. Hind coxa with long, posterodorsal seta. Hind tibial setae: 8–10 anteriors; 7–9 dorsals, middorsals longer than width of tibia at midlength; 10–15 posteriors; 1–3 anteroventrals and 1–3 posteroventrals. Female terminalia (fig. 173): Tergum VIII longest laterally, setose on caudal half, setae strong along caudal margin; sternum VIII longer than tergum VIII, setose throughout, deeply incised mediocaudally, setose through-

out; cercus I cylindrical, longest ventrally; cercus II ovoid, evenly setose. Male terminalia as in figures 52–54.

Types of names in this taxon:

T. fissicauda: Lectotype here designated, male, Stalltjernstugan, Jemtlandia borealis, 23–VII–1840, in Zoological Institute, Lund. Paralectotypes unknown.

T. claripennis: Holotype, male, Kantaklaks, LIM, Russian Lapland, USSR, 8–VII–1913, Frey, in Zoological Museum, Helsinki.

Remarks.—I studied the type of *fissicauda* but not of *claripennis*. Lundström's (1914) figures of the male terminalia definitely show this species.

T. fissicauda occurs in western North America and Europe. I saw 13 specimens from 10 collections made in 6 localities in British Columbia and Washington and 50 specimens from 7 collections in 17 localities in Sweden, Finland, Russian Lapland, and Italy.

The male terminalia are unique among *Trichonta* in that the sides of the gonocoxite next to the cerci are smooth, asetose, and elongated caudally. The cerci are long-attenuate and the gonostylus is slightly reduced in size.

***Trichonta flavicauda* Lundström**

flavicauda Lundström 1914: 19.

largolamellata Landrock 1918: 116; Landrock 1926: 135 (syn. *flavicauda*).

Adult.—Wing length, 3.4–5.2 mm. Body yellow with 2 longitudinal, brown, mesoscutal stripes, occasionally brown pleurites, and saddle-shaped dorsal areas on abdominal terga; male terminalia yellow except triangular ventral area on gonocoxite; legs yellow. Scutellum with 6–8 setae. Mesanepisternum with 4–5 setae along posterodorsal margin and 1–5 in dorsal corner. Metepisternum with 2–3 long setae. Wing: Membrane hyaline; anterior edge straight; Sc ending in R, parallel with R for most of length; M forking below or distad of Rs; Cu forking basad of Rs, Cu petiole asetose, Cu₂ not sinuous; A strong, setose. Front tarsomeres not swollen. Hind coxa with strong postero-basal seta. Hind tibial setae: 8–11 anteriors; 8–12 dorsals, middorsals longer than width of tibia at midlength; 12–20 closely spaced posteriors; 0 anteroven-tral or posteroventral setae. Female terminalia: Tergum VIII longest laterally,

setae evenly distributed; sternum VIII slightly longer than tergum VIII, narrowing caudally, setae large, present only along caudal margin; cercus I cylindrical, narrowing caudally, with mostly short, strong, dark-brown setae; cercus II elongate-ovoid, setae mostly short, dark brown, color in sharp contrast to yellow ground color of cercus. Male terminalia as in figures 139–141.

Types of names in this taxon:

T. flavicauda: Syntypes, 3 males, female, Bjäloguba, Lutarmajok, IM, Russian Lapland, USSR, 1–VII–1913, Frey, in Zoological Museum, Helsinki.

T. largolamellata: Syntypes, male, female, Borosjenő, Hungary. Type depository unknown to me.

Remarks.—I saw neither series of syntypes, but the illustrations accompanying the original descriptions are adequate for identification of this species. *T. flavicauda* is a widespread Holarctic species. I saw 29 North American specimens from 16 collections made in 14 localities in Alaska, British Columbia, Washington, Oregon, Quebec, Newfoundland, New York, Massachusetts, and North Carolina and 60 European specimens from Finland, England, and Hungary. In addition, the types of *flavicauda* were taken in what is now Russian Lapland.

This species is distinctive for its flat, oval, dorsal part of the gonostylus. In the key, *flavicauda* comes out in the same couplet as *bezzii*, and the similarities in the structure of the terminalia indicate that the two species are probably related.

***Trichonta flebilis* Gagné, new species**

Adult (male only).—Wing length, 2.8–3.0 mm. As for *conjungens* except shape of male terminalia (figs. 84–85).

Types.—Holotype, male, 27 58 N. 85 00 E., 11,100 ft., Nepal, 24–V–1967, Can. Nepal Expedition, in Canadian National Collection. Paratypes, 4 males from 4 separate localities in the same vicinity as holotype (CNC, USNMNH).

Remarks.—*T. flebilis* is known only from Nepal. See under *conjungens* for discussion concerning relationships.

***Trichonta foeda* Loew**

foeda Loew 1869: 150.

stereana Edwards 1925b: 619. New synonym.

Adult.—Wing length, 2.9–3.3 mm. Body brown except yellow humeral angles of mesoscutum, prothoracic sclerites, and usually basal parts of abdominal segments II–V; male terminalia yellow; legs yellow. Scutellum with 6 large setae. Mesanepisternum with 3–4 setae along posterodorsal margin and 1–2 in dorsal corner. Metepisternum with 1–2 short to long setae. Wing: Membrane darkish; anterior edge straight; Sc ending in R, parallel with R for most of length; M fork distad of or below Rs; Cu fork basad of Rs, Cu petiole asetose, Cu₂ not sinuous; A strong, usually asetose. Front tarsomeres not swollen. Hind coxa with strong basoposterior seta. Hind tibial setae: 4–8 anteriors; 5–10 dorsals, mid-dorsals subequal in length to width of tibia at midlength; 6–9 posteriors on distal half of tibia; 0 anterodorsals and posterodorsals. Female terminalia (fig. 176): Tergum VIII rectangular, setose caudally, setae short; sternum VIII longer than tergum VIII, deeply incised mediolaterally, setose on caudal half; cercus I cylindrical, somewhat bilaterally flattened; cercus II ovoid, caudal end pointed ventrad in repose, evenly setose. Male terminalia as in figures 124–125.

Types of names in this taxon:

T. foeda: Holotype, female, "Middle States," MCZ type No. 1202, in Museum of Comparative Zoology, Cambridge, Mass.

T. stereana: Holotype, male, Shetford, Beds., England, II–1918, F. W. Edwards, in BM(NH).

Remarks.—The terminalia of Loew's type female agree exactly with those of females reared with males from *Poly-stictus versicolor* found in Clarendon, Va. Besides the type, I saw only 10 specimens from 7 collections made at 7 localities in Maryland, Virginia, and Iowa and 6 from 4 collections made at localities in Wales, England, and Hungary. Striking features of the female terminalia are the short terga VII and VIII and the decumbent second cercal segment.

***Trichonta fragilis* Gagné, new species**

Adult (male only).—Wing length, 2.5–2.7 mm. Body brown except yellow humeral angles of mesoscutum and prothoracic sclerites; male terminalia brown except gonostylus yellow; legs

yellow. Scutellum with 4 large setae. Mesanepisternum with 4 setae along posterodorsal border and 0-1 in dorsal corner. Metepisternum with 1-2 long setae. Wing: Membrane hyaline; anterior edge straight; Sc ending in R, converging gradually toward R for most of length; M fork distad of Rs; Cu fork basad to below Rs, Cu petiole asetose, Cu₂ not sinuous; A weak, asetose. Front tarsomeres not swollen. Hind coxa with strong posterobasal seta. Hind tibial setae: 7-9 anteriors; 6-9 dorsals, middorsals shorter or subequal to width of tibia at midlength; 4-7 posteriors on distad half; 0 anteroventrals and posteroventrals. Male terminalia as in figures 22-24.

Types.—Holotype, male, Matanuska, Alaska, 16-VIII-1945, J. C. Chamberlin, USNM Type No. 75648. Paratypes (all males): 1, Treskavica, Yugoslavia (ISU); 1, Forêt de Vissavona, Corsica (MNHN); 1, Kiutaköngas, KS, Finland (ZM); 1, Yla-Tuloma, Nuortijärvi, Russian Lapland, USSR (ZM).

Remarks.—*T. fragilis* is rare but widely distributed. The lateral part of the gonostylus varies slightly in shape and setation from one place to another, but I do not consider the difference of specific significance.

T. fragilis forms a natural group with two other rare species, *languida* and *lucida*. Shared synapomorphies are the brown terminalia except the yellow gonostylus, the two-lobed lateral part of the gonostylus with its characteristic medial part, the aedeagal lateral arms that are pectinate caudally, the elongate apical seta of the cerci, and the presence of only four large setae on the scutellum. Of the three species, only *fragilis* is Holarctic; *languida* and *lucida* are eastern Nearctic. The first and last are probably more closely related to one another than to *languida* because they both have the dorsal lobe of the lateral part of the gonostylus tapering to a dark, glabrous point.

Trichonta fusca Landrock

fusca Landrock 1918: 115.

Adult (male only).—Wing length, 3.1-3.4 mm. Body mostly brown, yellow on humeral angles of mesoscutum, prothoracic sclerites, and venter of abdomen; male genitalia yellow on basal half to two-thirds, brown beyond; legs yellow. Scutellum with 6 long setae. Mes-

anepisternum with 4 setae along posterodorsal border. Metepisternum with 2 long setae. Wing: Membrane darkish; anterior edge straight; Sc ending in R₁, parallel with R for most of length; M forking distad of Rs; Cu forking basad of Rs; Cu petiole asetose; Cu₂ slightly wavy; A weak, asetose. Front tarsomeres not swollen. Hind coxa with strong posterobasal seta. Hind tibial setae: 7-9 anteriors; 7-10 dorsals, middorsals longer than width of tibia at midlength; 12-15 long posteriors; 0 anterodorsal and posterodorsal setae. Male terminalia as in figures 132-133.

Types.—Holotype, male, Hungary, type depository unknown to me.

Remarks.—I saw 13 males of this species, 2 from 1 locality in England and 11 from 5 collections and 3 localities in Finland; in addition, the type was from Hungary. Landrock's (1918) drawings of the male terminalia of *fusca* do not show all the details in my figures 132-133, especially the peculiar cerci and large setae on the dorsal margin of the basimere, but there are enough similarities to satisfy me that the two illustrations show the same species.

Trichonta fusciventris Van Duzee

fusciventris Van Duzee 1928: 43.

Adult.—Wing length, 3.6-4.0 mm. Body brown except yellow humeral angles of mesoscutum and prothoracic sclerites; terminalia brown; legs yellow. Scutellum with 6 setae. Mesanepisternum with 3-4 setae before posterodorsal margin. Metepisternum bare. Wing: Membrane dark, in some specimens darker on apical third; anterior edge straight; Sc parallel to R for most of length, ending in R; M forking below or distad of Rs; Cu forking basad of Rs, Cu petiole asetose, Cu₂ slightly sinuous; A strong, setose. Apex of front tarsomere I and all of II-IV conspicuously swollen in females. Hind coxa without posterobasal seta. Hind tibial setae: 4-7 anteriors; 5-8 dorsals, middorsals approximately as long as width of tibia at midlength; 4-7 widely spaced posteriors; 3-6 anteroventrals and 3-6 posteroventrals. Female terminalia (fig. 172): Tergum VIII secondarily subdivided and folded at midlength, setose on caudal parts of both halves; sternum VIII longer than tergum, triangularly incised caudomedially, uniformly setose; cercus I cylindrical; cercus II ovoid,

evenly setose. Male terminalia as in figures 87-89.

Types.—Holotype, male, Mill Valley, Marin Co., Calif., 13-III-1926, M. C. Van Duzee, in California Academy of Sciences.

Remarks.—*T. fusciventris* is restricted to far western North America. I saw 13 specimens, including the holotype, from 8 collections and localities in British Columbia, Washington, Oregon, and California.

Trichonta generosa Gagné, new species

Adult (male only).—Wing length, 3.3-3.5 mm. Fits description of *vulgaris* except shape of gonostylus (fig. 37).

Types.—Holotype, male, Roaring River, 9400, Rocky Mt. N. P., Colo., VII-11-1959, Jean Lafoon, USNM Type No. 75649. Paratypes (all males): 4, same data as holotype (2 ISU, 2 USNMNH); 1, mi. 206, Richardson Hwy., Isabel Pass, Alaska, 15-VII-1962, P. J. Skitsko (CNC).

Remarks.—I saw only the six males from the two western North American localities given here. The only apparent differences between *generosa* and the other five species related to *vulgaris* are in the shape of the gonostylus. As in *brevicauda*, the lateral part is widest dorsally where the caudal half is covered with very short setae, but the setae are more numerous and longer basally in *generosa*; the ventral corner is notched and almost asetose. See remarks concerning affinities under *vulgaris*.

Trichonta gentilis Gagné, new species

Adult (male only).—Wing length, 3.1-3.7 mm. Body brown except yellow humeral angles of mesoscutum and prothoracic sclerites; male terminalia brown; legs yellow. Scutellum with 6 large setae. Mesanepisternum with 4 setae along posterodorsal margin and 1-2 setae in dorsal corner. Metepisternum with 2 long setae. Wing (fig. 6): Membrane hyaline; anterior edge straight; Sc free, parallel with R; M forking distad of Rs; Cu forking basad of Rs, Cu petiole asetose, Cu₂ not sinuous; A moderate, asetose. Front tarsomeres not swollen. Hind coxa with strong posterobasal seta. Hind tibial setae: 10-12 anteriors; 8-10 dorsals; middorsals subequal in length to width of

tibia at midlength; 6–8 posteriors on distal third; 0 anteroventrals and posteroventrals. Male terminalia as in figures 101–103.

Types.—Holotype, male, Ledges State Park, Boone Co., Iowa, 19–IX–1962, R. J. Gagné, USNM Type No. 75650. Paratypes (all males): 4 from type locality on 3 different dates (2 ISU, 1 USNMNH); 1, Ames, Iowa (ISU); 1, Needmore, Ind. (USNMNH); 1, Washburn Co., Wis. (UW); 1, 14 mi sw El Salto, Durango, Mexico (CNC).

Remarks.—*T. gentilis* is known only from the central United States and Mexico. It resembles the European *aberrans* rather closely, differing only in the shape of the lateral part of the gonostylus. The ventral lobe of this lateral part is quadrate and more setose than the triangular one of *aberrans*. The two species have some characters in common with *vitta* and some of its relatives, mainly the free Sc and the long dorsal part of the gonostylus, but the anterior edge of the wing is straight and the coxa has a strong posterobasal seta.

Trichonta girschneri Landrock

girschneri Landrock 1912a: 33.
lobata Bukovsky 1935: 185. New synonym.

Adult.—Wing length, 3.1–3.6 mm. Body mostly brown except yellow humeral angles of mesoscutum, prothoracic sclerite, and caudal margins on abdominal terga I–IV; male terminalia brown; legs yellow. Mesanepisternum with 4 setae along posterodorsal border and 1–3 anterior to those. Metepisternum with 2 long setae. Wing: Membrane hyaline; anterior edge straight; Sc ending in R, slightly convergent to R for much of length; M forking distad of Rs; Cu forking basad of Rs, Cu petiole aseptose, Cu₂ slightly sinuous; A moderate, aseptose. Front tarsomeres II–IV swollen in female. Hind coxa with strong posterobasal seta. Hind tibial setae: 6–8 anteriors; 8–11 dorsals, middorsals slightly longer than width of tibia at midlength; 4–8 closely spaced posteriors on distal third; 0 anteroventrals and posteroventrals. Female terminalia (fig. 178): Tergum VIII short, deeply incised mediocaudally, setose, setae mainly short; sternum VIII much longer than tergum VIII, narrowing gradually from base, tapering to narrow, deeply incised point, setose only at caudal tips; cercus I very long, narrow, setose basally and

caudally, glabrous between; cercus II elongate-ovoid, uniformly setose. Male terminalia as in figures 161–163.

Types of names included in this taxon:

T. girschneri: Holotype, male, near Tracht, Moravia, Czechoslovakia, 17–V, depository unknown.

T. lobata: Holotype, male, nr. Alushta, Crimea, Ukrainian SSR, in Zoological Institute, Leningrad.

Remarks.—This is a widespread Holarctic species. I examined 41 North American specimens from 33 collections made in 25 localities in British Columbia, Alberta, Oregon, California, Colorado, Idaho, Montana, Ontario, Iowa, Michigan, Quebec, New York, and Pennsylvania and 13 Palaearctic specimens from 12 localities in Finland, Italy, Rumania, and Iran. In addition, the types were from Czechoslovakia and Ukrainian SSR. I did not see the types, but the original illustrations are accurate enough to place this species.

Trichonta hamata Mik

hamata Mik 1880: 604.
sagana Shaw 1940: 51. New synonym.

Adult.—Wing length, 3.5–4.5 mm. Body mostly brown, yellow on humeral angles of mesoscutum, prothoracic sclerites, and caudal margins of abdominal terga; male terminalia yellow except brown on venter of basimere and on telomere; legs yellow. Scutellum with 6–8 strong setae. Mesanepisternum with 3–4 setae along posterodorsal margin and 1–2 setae in dorsal corner. Metepisternum with 2 long setae. Wing: Membrane hyaline; anterior margin straight; Sc ending in R, parallel with R for most of length; M forking below to distad of Rs; Cu forking basad of Rs, Cu petiole with or without setae, Cu₂ slightly sinuous; A strong, aseptose. Front tarsomeres not swollen. Hind coxa with strong posterobasal seta. Hind tibial setae: 7–11 anteriors; 7–11 dorsals, middorsals much longer than width of tibia at midlength; 9–18 posteriors along whole length of tibia; 1–5 anteroventrals and 2–5 posteroventrals. Female terminalia (fig. 181): Tergum rectangular, setose on caudal half; sternum VIII slightly longer than tergum VIII, caudal margin uneven, weakly incised mediocaudally, setose on caudal half, setae on caudal margin strongest; cercus I cylindrical, longest medioven-

trally, and with short lateral seta-tipped point, 3–4 caudolateral setae black, remainder brown; cercus II ovoid, setae strongest on dorsocaudal margin. Male terminalia as in figures 98–100.

Types of names in this taxon:

T. hamata: Syntypes: Males, near Freyestad, Austria, VII to VIII–1871; male, Kopaling, Galicia, Ukrainian SSR, 6–VIII–1878, presumably in Naturhistorisches Museum, Vienna.

T. sagana: Holotype, male, Mt. Desert Is., Maine, VI–1935, C. P. Alexander, cannot be located, but deposited in Department of Entomology, University of Massachusetts, Amherst.

Remarks.—I saw 23 American specimens from 12 collections made in 10 localities in British Columbia, Washington, Idaho, Ontario, New York, Maine, and North Carolina and 348 European specimens from 86 collections in 55 localities in Norway, Sweden, Finland, Russian Lapland, Scotland, England, Belgium, France, Spain, Switzerland, Italy, and Austria. In addition, a type was collected in what is now Ukrainian S.S.R. I did not see any syntypes of *hamata* or the type of *sagana*, but Mik's (1880) and Shaw's (1940) original figures definitely show this species.

Trichonta hungarica Landrock

hungarica Landrock 1925a: 37.

I did not recognize this species among the material I studied, but I suspect, judging from Landrock's figures of the terminalia, that it is distinct. Because the original description included none of the taxonomic characters I have used in the descriptions, I could not redescribe *hungarica* or include it in the key to species.

Types.—Holotype, male, Borosjenő, Hungary, 24–IV, depository of type unknown to me.

Trichonta icenica Edwards

icenica Edwards 1925b: 622.

Adult (male only).—Wing length, 2.1–2.2 mm. As for *vitta* except wing membrane hyaline, Sc ending in R, and genital differences. Male terminalia as in figures 111–112.

Types.—Holotype, male, Hitchin, Herts., England, IX–1916 or IX–1917, F. W. Edwards, originally deposited in British Museum (Nat. Hist.), now lost along with paratypes (Hutson, in litt.).

Remarks.—I have examined only two specimens of *icenicica*, one (possibly the lost type or paratype) from the type locality in England (IX-1916) and the other from Vihtijärvi, Finland. This species has a characteristic patch of strong setae near the caudoventral margin of the gonocoxite. See under *vitta* for remarks concerning related species.

***Trichonta justa* Gagné, new species**

Adult.—Wing length, 2.7–2.9 mm. Body mostly brown, humeral angles of mesoscutum and prothoracic sclerites yellow; terminalia dark brown; legs yellow. Scutellum with 6 setae. Mesanepisternum with 4 setae along posterodorsal margin and 1 in dorsal corner. Metepisternum with 1–2 short setae. Wing: Membrane hyaline; anterior edge straight; Sc parallel with R for most of length, joining R at apex; M forking distad of Rs; Cu forking basad of Rs, petiole aetose. Cu₂ slightly sinuous; A weak, aetose. Front tarsomeres not swollen. Hind coxa without posterobasal seta. Hind tibial setae: 7–8 anteriors; 5–7 dorsals, middorsals approximately as long as width of tibia at midlength; 5–6 long, widely spaced posteriors; 0 anteroventrals and posteroventrals. Female terminalia (fig. 180): Tergum VIII widest medially, triangularly incised mediocaudally, setose on rugose caudal half; sternum VIII subequal in length to tergum VIII, triangularly incised mediocaudally, setose along caudal margin and internally; cercus I cylindrical, setose caudally and ventrally; cercus II ovoid, almost spherical, evenly setose. Male terminalia as in figures 45–47.

Types.—Holotype, male, 1500', Lily Pond, Alpine Lake, Marin Co., Calif., 15–XII-1970, D. D. Munroe, in Canadian National Collection. Paratypes: 5 males, same data as holotype (3 CNC, 2 USNMNH); female, same locality, but caught the following year (CNC).

Remarks.—This species is known only from the type locality. The female is only tentatively referred here.

***Trichonta languida* Gagné, new species**

Adult (male only).—Wing length, 2.4–2.9 mm. As for *fragilis* except differences in male terminalia (figs. 16–18).

Types.—Holotype, male, Coy Glen, Ithaca, N.Y., 9–VIII-1961, J. L. Laffoon, USNM Type No. 75651. Paratypes (all

males): 1, same locality as holotype (ISU); 1, Clayton Co., Iowa (USNMNH); 1, Old Chelsea, Quebec (CNC); 1, Stirling, Ontario (CNC).

Remarks.—This species appears to be restricted to the eastern Nearctic area. For remarks concerning relationships, see under *fragilis*.

***Trichonta lucida* Gagné, new species**

Adult (male only).—Wing length, 2.9–3.3 mm. As for *fragilis* except differences in male terminalia (figs. 19–21).

Types.—Holotype, male, Needmore, Ind., 30–V-1961, J. C. Schaffner, USNM Type No. 75652. Paratype, male, same locality as holotype (USNM).

Remarks.—This species is known only from the type locality. For remarks concerning relationships, see under *fragilis*.

***Trichonta lyrica* Gagné, new species**

Adult (male only).—Wing length, 2.8–2.9 mm. As for *vitta* except male terminalia brown, wing membrane hyaline. Sc joining R, hind tibia with 7–8 posterior setae, and genitalic differences. Male terminalia as in figures 109–110.

Types.—Holotype, male, Cerfontaine, L'Eau d'Heure, Belgium, 2–V-1950, R. Tolle, in Institut Royale des Sciences Naturelles de Belgique. Paratypes, 2 males, same data as holotype (IRSNB, USNMNH).

Remarks.—This species is known only from the type locality. See under *vitta* concerning related species.

***Trichonta melanura* (Staeger)**

melanura Staeger 1840: 259 (*Mycetophila*).
atricauda Zetterstedt: Lundström 1909: 29 (misident.).

melanopyga Zetterstedt 1852: 4222 (*Mycetophila*); Edwards 1925b: 621 (fig. 45).
Lundström (1909), syn. *melanura* (but misident!); Landrock 1926: 136 (syn. *melanura*).

Adult (male only except female terminalia).—Wing length, 3.1–3.7 mm. Body mostly brown, usually yellow humeral angles of mesoscutum, prothoracic sclerites, and caudal margins of some abdominal terga; male terminalia brown except yellow dorsal part of gonostylus; legs yellow. Scutellum with 6–8 setae. Mesanepisternum with 4–5 setae

along posterodorsal edge and 2–4 others anterior to that row. Metepisternum with 1–3, usually 2, long setae. Wing: Membrane hyaline; anterior edge straight; Sc parallel to R for most of length, joining R apically; M forking distad of Rs; Cu forking basad of Rs, Cu petiole aetose, Cu₂ slightly sinuous; A weak, aetose. Front tarsomeres not swollen. Hind coxa without posterobasal seta. Hind tibial setae: 8–14 anteriors; 8–15 dorsals, middorsals slightly longer than width of tibia at midlength; 13–22 posteriors closely set on distal two-thirds of tibia; 0 anteroventrals and posteroventrals. Female terminalia of specimens probably referable to this species (fig. 187): Tergum VII laterally with short, strong, flattened setae; tergum VIII widest laterally, setose on caudal half, setae strong, flattened; sternum VIII rectangular, triangularly incised mediocaudally, setose on caudal third, setae strongest on caudal margin; cercus I bilaterally flattened, longest dorsally and ventrally, setae mainly caudal; cercus II bilaterally flattened, caudal margin crenulate, setae strongest caudally. Male terminalia as in figures 57–60.

Types of names in this taxon:

T. melanura: Lectotype here designated, male, Fredriksburg, Denmark, in Universitetets Zoologiske Museum, Copenhagen. Paralectotypes: 3 males, 5 females, same data as lectotype; only the males and possibly 1 female are *melanura*; 1 female is a *subfusca*, 2 are *terminalis*, and 1 is an unknown species, not related to *melanura*.

T. melanopyga: Lectotype here designated, male, near Oslo, Norway, 5–IX-1849, Siebke, in Zoological Institute, Lund.

Remarks.—*T. melanura* is widespread in Europe and even occurs in Iran, but it appears to be fairly northern in North America. I examined 25 American males from 15 collections made in 11 localities in British Columbia, Washington, Idaho, Ontario, Michigan, and Quebec and 276 Palaearctic males from 67 collections in 52 localities in Norway, Finland, Russian Lapland, England, Denmark, France, Germany, Italy, Austria, Hungary, and Iran.

The male terminalia of *melanura* are similar in gross aspect to those of *atricauda* and the two have been confused in the past. To separate the two species, one should see the aedeagus and the mesal part of the gonostylus for the

characters outlined in couplets 60–62 of the key. Edwards (1925a) correctly synonymized the names *melanura* and *melanopyga* but misapplied them to *melanopyga* of Lundström (1909, fig. 45), which actually fitted *atricauda*. Lundström's figure shows well the characteristically shaped, membranous lobe lying just caudoventrad of the dorsal part of the gonostylus of *atricauda*. Specimens I saw that were identified by Edwards as *melanura* also belong to *atricauda*. The most characteristic feature of *melanura* is the presence of two enlarged, often curved setae and a setalike prong caudo-mesad of the dorsal arm of the gonostylus.

T. melanura, *atricauda*, *delicata*, and *eximia* form a natural group. Males can be separated by using the characters outlined in the key, but I did not attempt to separate females, which probably in all these species have flattened setae on terga VII and VIII as in figure 187. The four species have the following synapomorphies: Lack of a postero-basal hind coxal seta; the general conformation of the male terminalia, viz. the elongate cerci, the aedeagus with two long, lateral prongs and one ventral prong, the extremely long dorsal arm of the dorsal part of the gonostylus, and the simple lateral part of the same; and, if indeed present in all females, the flattened setae of the terga VII and VIII. All are Holarctic, but two are apparently local in the Palearctic region: *eximia* is known only from the Himalayas and *delicata* only from Finland.

Trichonta merita Gagné, new species

Adult (male only).—Wing length, 3.8–4.1 mm. Fits description of *vulgaris* except shape of gonostylus (fig. 38)

Types.—Holotype, male, North Fork Pass, Ogilvie Mts., Yukon Territory, 4100 ft., 21–VI–1962. P. J. Skitsko, in Canadian National Collection. Paratypes: 4 males, same data as holotype except 2 collected on 20–VI–1962. R. E. Leach (2 CNC, 2 USNMNH).

Remarks.—I saw only five specimens from one locality in the Yukon Territory, Canada. The only apparent differences between *merita* and the other five species related to *vulgaris* are in the shape of the gonostylus. The lateral part of that of *merita* is mostly covered with long setae, which end abruptly before a

bare depressed area beyond which, along the caudal margin, is a row of fine setae. See remarks concerning affinities under *vulgaris*.

Trichonta patens Johannsen

patens Johannsen 1912: 305.

Adult (male only).—Wing length, 2.7–3.5 mm. Body brown except yellow humeral angles of mesoscutum, prothoracic sclerites, and caudal margins of abdominal terga I–IV; male cerci and basal half of gonocoxite yellow, remainder brown; legs yellow except distal fifth of hind femur. Scutellum with 6 setae. Mesanepisternum with 4 setae along posterodorsal border and 1–2 in dorsal corner. Metepisternum with 2–3 long setae. Wing: Membrane hyaline; anterior edge straight; Sc ending in R, parallel with R for most of length; M forking below or distad of Rs; Cu forking below or basad of Rs. Cu petiole asetose, Cu slightly wavy; A weak, asetose. Front tarsomeres not swollen. Hind coxa with strong posterobasal seta. Hindtibial setae: 7–11 anteriors; 7–11 dorsals, mid-dorsals longer than width of tibia at midlength; 4–7 posteriors; 0 anteroventrals or posteroventrals. Male terminalia as in figures 69–70.

Types.—Holotype, male, Ithaca, N.Y., 29–VIII–1901, O. A. Johannsen, OAJ Lot No. 476, Type No. 2004, Cornell University, Ithaca, N.Y.

Remarks.—*T. patens* is rare but has a wide Holarctic distribution. From North America I saw nine specimens, including the holotype, from localities in Alaska, British Columbia, Colorado, Ontario, Quebec, and New York. From Europe I saw only two specimens from two localities in Finland. This species is similar in many ways to *bicolor* and *canora*.

Trichonta perspicua Wulp

perspicua Wulp 1881: 142
mediastinalis Lundström 1906: 19 (*Rhymosia*); Lundström 1909: 22
(*Dynatosoma*), Mikolajczyk 1970: 781
(n. comb.) New synonym
triangularis Johannsen 1912: 303 New synonym.

Adult.—Wing length, 3.5–6.0 mm. Body mostly yellow brown to brown, mesoscutum often with 3 longitudinal brown stripes on yellow background;

male terminalia yellow; legs yellow. Scutellum with 8 setae. Mesanepisternum with 4–6 setae along posterodorsal margin, 3–4 along anterodorsal margin, and 2–5 between. Metepisternum (fig. 2) with 4–5 long setae. Wing (fig. 11): Membrane hyaline; anterior edge straight; Sc ending in R, parallel to R for most of length, joining R apically; M fork below Rs; Cu fork basad of Rs, Cu petiole setose. Cu, not sinuous; A strong, setose. Front tarsomeres not swollen. Hind coxa (fig. 2) with row of 5–7, strong, posterior setae. Hind tibial setae: 7–9 anteriors; 7–10 dorsals, mid-dorsals longer than width of tibia at midlength; 6–8 posteriors on distal half; 0 anteroventrals and posteroventral bristles. Female terminalia (fig. 184): Tergum VIII incised near laterocaudal angle, setose on caudal half; sternum VIII longest medially and longer than tergum VIII; cercus I cylindrical, narrowing caudally; cercus II ovoid, evenly covered with setae. Male terminalia as in figures 90–92.

Types of names in this taxon:

T. perspicua: Holotype, male, vic. Quebec, Provancher, in Institut Royal des Sciences Naturelles de Belgique, Brussels.

T. mediastinalis: Holotype, female, Saarijärvi (Woldstedt), Finland, in Zoological Museum, Helsinki.

T. triangularis: Holotype, male, Ithaca, N.Y., 19–VIII–1909, O. A. Johannsen, OAJ Lot 466, Type No. 2002, Cornell University, Ithaca, N.Y.

Remarks.—*T. perspicua* is one of the largest *Trichonta* and the only one with a row of strong posterior setae on the hind coxa. It is not apparent to which other *Trichonta* this species is most closely related, although the gonostylus of *girschneri* does show a superficial resemblance to that of *perspicua*. *T. perspicua* is not common in collections. I saw only 12 male and 8 female North American specimens, including the Wulp and Johannsen types, but it is apparent that *perspicua* is widespread. The specimens were caught in 17 collections and localities in Quebec, New Hampshire, New York, New Jersey, Maryland, Virginia, Louisiana, Wisconsin, Iowa, Alberta, Alaska, Washington, Oregon, and California. I saw no European specimens, but Mikolajczyk (1970) illustrated the terminalia of a specimen from Poland, and Lindeberg (in litt.) certified for me that the

hind coxal setation of the *mediastinalis* holotype from Finland fits that of *per-spicua*.

***Trichonta placida* Gagné, new species**

Adult (male only).—Wing length, 3.3 mm. Body brown except yellow humeral angles of mesoscutum, prothoracic sclerites, and caudal margins of abdominal terga I–IV; male terminalia brown; legs yellow. Scutellum with 6 setae. Mesanepisternum with 5 setae along posterodorsal margin and 8 others in dorsal corner. Metepisternum with 3–4 long setae. Wing: Membrane hyaline; anterior edge straight; Sc ending in R, parallel to R for most of length; M forking below Rs; Cu forking basad of Rs, Cu petiole asetose. Cu, not sinuous; A strong, asetose. Front tarsomeres not swollen. Hind coxa with strong, posterobasal seta. Hind tibial setae: 8 anteriors; 8 dorsals, middorsals longer than width of tibia at midlength; 5 posteriors on distal half of tibia; 0 anteroventrals and posteroventrals. Male terminalia as in figures 41–43.

Types.—Holotype, male, 6300', 4.5 mi. w. El Palmito, Sinaloa, Mexico, 25–VII–1964, J. F. McAlpine, in Canadian National Collection.

Remarks.—*T. placida* is known only from the holotype. Its closest relative is *superba*, also known only from its holotype caught in Nepal. The only difference that I noticed between the two species was the much shorter dorsal part of the gonostylus in *T. placida*. Both species superficially resemble the widely distributed *girschneri*, but *girschneri* has one less setose lobe on the gonostylus.

***Trichonta pulchra* Gagné, new species**

Adult (male only).—Wing length, 2.4–2.6 mm. As for *vitta* except wing membrane hyaline, terminalia brown, hind tibia with 5–7 posterior setae, and differences in male genitalia. Male terminalia as in figures 119–121.

Types.—Holotype, male, Stittsville, Ontario, 21–IX–1963, W. R. M. Mason, in Canadian National Collection. Paratypes, 4 males, Monks Wood, Hunts., England, 5–VII to 1–IX–1972, J. H. Cole (P. Chandler collection).

Remarks.—I saw this rare species

from only the two localities given here. See under *vitta* for remarks concerning relationships.

***Trichonta salva* Gagné, new species**

Adult (male only).—Wing length, 3.3 mm. Body brown except yellow prothoracic sclerites; male terminalia brown; legs yellow. Scutellum with 6 setae. Mesanepisternum with 3 setae along posterodorsal margin, Metepisternum with 2 long setae. Wing: Membrane darkish, with darker apical third; anterior edge straight; Sc ending in R, parallel to R for most of length; M forking distad of Rs; Cu forking basad of Rs, Cu petiole setose, Cu₂ slightly wavy; A strong, setose. Front tarsomeres not swollen. Hind coxa with strong posterobasal seta. Hind tibial setae: 6 anteriors; 9 dorsals, middorsals slightly longer than width of tibia at midlength; 7 posteriors; 0 anteroventrals and posteroventrals. Male terminalia as in figures 55–56.

Types.—Holotype, male, 1500', Lily Pond, Alpine Lake, Marin Co., Calif., in Canadian National Collection.

Remarks.—*T. salva* is known only from the holotype.

***Trichonta segura* Gagné, new species**

Adult (male only).—Wing length, 3.5 mm. Body mostly brown except yellow on humeral angles of mesoscutum and caudal margins of abdominal terga III–V; male terminalia brown; legs yellow except brown basal half of coxae II–III. Scutellum with 6 large setae. Mesanepisternum with 3 setae along posterodorsal border. Metepisternum with 2 long setae. Wing: Membrane hyaline; anterior edge straight; Sc ending in R although connection weak, parallel to R for most of length; M forking distad of Rs; Cu forking basad of Rs, Cu petiole asetose, Cu₂ not sinuous; A moderate, setose. Front tarsomeres not swollen. Hind coxa with 1 strong, posterodorsal seta. Hind tibial setae: 7 anteriors; 6 dorsals, middorsals much longer than width of tibia at midlength; 5 long posteriors; 3 anteroventrals and 6 posteroventrals. Male terminalia as in figures 148–149.

Types.—Holotype, male, Horseshoe Bay, British Columbia, 29–V–1961, J.

R. Vockeroth, in Canadian National Collection.

Remarks.—*T. segura* is known only from the holotype.

***Trichonta sedata* Gagné, new species**

Adult (male only).—Wing length, 3.3 mm. Body mostly brown except yellow on humeral angles of mesoscutum and prothoracic sclerites; terminalia brown; legs yellow except brown apex of hind tibia. Scutellum with 6 setae. Mesanepisternum with 3 setae along posterodorsal margin and 1 in dorsal corner. Metepisternum with 2 short setae. Wing: Membrane hyaline; anterior edge straight; Sc parallel to R for most of length, joining R at apex; M forking below Rs; Cu forking basad of Rs, Cu petiole asetose, Cu₂ not sinuous; A moderate, setose. Front tarsomeres not swollen. Hind coxa without posterobasal seta. Hind tibial setae: 9 anteriors; 8 dorsals, middorsals not longer than width of tibia at midlength; 8 widely spaced posteriors; 0 anteroventrals and posteroventrals. Male terminalia as in figures 153–155.

Types.—Holotype, male, Mt. Kobau, 6200', Osoyoos, British Columbia, 13–VIII–1967, J. R. Vockeroth, in Canadian National Collection.

Remarks.—*T. sedata* is known only from the holotype.

***Trichonta sedula* Gagné, new species**

Adult (male only).—Wing length, 3.2–3.4 mm. As for *conjungens* except absence of posteroventral setae on hind tibia and differences in shape of male terminalia (figs. 79–80).

Types.—Holotype, male, Itasca State Park, Minn., 2–IX–1950, J. L. Laffoon, USNM Type No. 75710. Paratypes: 3 males, 1 each from Itasca State Park, Minn. (ISU), Rockport, Ontario (CNC), and Great Smoky Mts. National Park N.C. (CNC).

Remarks.—*T. sedula* differs from *festi*, which is restricted to western North America, in certain striking characters of the gonostylus, mainly in the smaller, distally rounded dorsal section and the size and shape of various parts of the ventral section. The female may resemble that of *festi* (fig. 180). For further remarks, see under *conjungens*.

***Trichonta serena* Gagné, new species**

Adult (male only).—Wing length, 3.9 mm. Body mostly brown, yellow on humeral angles of mesoscutum and prothoracic sclerites; male terminalia brown; legs yellow. Scutellum with 6 large setae. Mesanepisternum with 3 setae along posterodorsal margin. Metepisternum with 2 long setae. Wing (fig. 12): Membrane darkish, especially on distal third; anterior edge straight; Sc ending in R, parallel for most of length; M fork distad of Rs; Cu fork basad of Rs, Cu petiole aetose, Cu₂ not sinuous; A strong, setose. Front tarsomeres not swollen in male. Hind coxa with strong posterobasal seta. Hind tibial setae: 7 anteriors; 9 dorsals, middorsals longer than width of tibia at midlength; 15 long posteriors along distal three-fourths of tibial length; 0 anteroventrals and posteroventrals. Male terminalia as in figures 137–138.

Types.—Holotype, male, Apex Mt., 5800', Penticon, British Columbia, 5–VIII–1967, J. R. Vockeroth, in Canadian National Collection.

Remarks.—*T. serena* is known only from the holotype.

***Trichonta sincera* Gagné, new species**

Adult (male only).—Wing length, 2.0 mm. Head and mesoscutum yellow orange, remainder of thorax yellow brown, abdomen brown; male terminalia mostly yellow brown, gonostylus yellow; legs yellow except basal half and apical 10th brown. Scutellum with 6 setae. Mesanepisternum with 4 setae along posterodorsal margin and 2 others in dorsal corner. Metepisternum with 1–2 long setae. Wing: Membrane dark on basal and apical thirds, hyaline in middle third; anterior edge straight; Sc ending free, parallel to R; M forking below Rs; Cu forking slightly distad of Rs, Cu petiole aetose, Cu₂ not sinuous; A weak, aetose. Front tarsomeres II–III of male slightly swollen. Hind coxa with strong, posterobasal seta. Hind tibial setae: 6 anteriors; 6 dorsals, middorsals shorter than width of tibia at midlength; 0 posteriors; 0 anteroventrals or posteroventrals. Male terminalia as in figures 150–152.

Types.—Holotype, male, Forêt gal. de Bébé, Dépt. de la Labaye, Central

African Republic, 10–IX–1970, L. Matile, in Muséum National d'Histoire Naturelle, Paris.

Remarks.—This species is known from only the holotype and represents the only African *Trichonta* species south of the Sahara. In general, it hardly resembles a *Trichonta* with its banded wing and hind leg and its tawny-yellow head and abdomen. The dististylus is especially unique in that the lateral part is fluted caudally.

***Trichonta sobria* Gagné, new species**

Adult (male only).—Wing length, 2.5 mm. As for *vitta* except whole body brown except legs yellow exclusive of hind coxa and distal fourth of hind femur, Sc ending in R, hind tibia with 5 posterior setae, and genitalic differences. Male terminalia as in figures 117–118.

Types.—Holotype, male, 27° 56' N., 85° 00' E., 9900', Nepal, 22–V–1967, Canadian Nepal Expedition, in Canadian National Collection, Paratype, male, 27° 58' N., 85° 00' E., 11,400', Nepal, Canadian Nepal Expedition (CNC).

Remarks.—*T. sobria* is known from only the two specimens listed here. See under *vitta* for remarks concerning relationships.

***Trichonta subfascipennis* Edwards**

subfascipennis Edwards 1929: 72.

Adult (male only).—Wing length, 3.5 mm. Fits description of *bezzii* except presence of dark, apical and medial wing clouds and details of terminalia.

Types.—Holotype, male, Balabasang, Philippines, III–1913, in Zoological Museum, Helsinki.

Remarks.—Known only from the holotype, which I was able to study. This species is remarkably similar to *bezzii*, differing from it in minor details of the male terminalia. The dark wing clouds are distinctive, of course, but the wings of some common species from a given locality may be hyaline or have wing clouds. Terminalia differences are a much weaker seta on the ventral corner of the gonostylus, slight differences in shape of the mesal part of the gonostylus, and longer terminal prongs of the

aedeagus. One might consider these differences as infraspecific variation, but I do not do so here because the two species are so rare and so widely separated.

***Trichonta subfusca* Lundström**

subfusca Lundström 1909: 35.

Adult.—Wing length, 2.3–3.0 mm. As for *vitta* except wing membrane hyaline, Sc ending in R, hind femur entirely yellow, hind tibia with 5–8 posterior setae, and genitalic differences. Female terminalia (fig. 170): Tergum VIII longest mediolaterally, triangularly incised caudally, setose on caudal two-thirds; sternum slightly longer than tergum VIII, deeply incised mediocaudally, bare except for strong caudal setae; cercus I bilaterally flattened, sparsely setose; cercus II bilaterally flattened, short, caudal edge straight, setae situated along caudal margin. Male terminalia as in figures 115–116.

Types.—Syntypes, male, female, Kuustö, AB, Finland, VII, Lundström, in Zoological Museum, Helsinki.

Remarks.—I saw no types of *subfusca*, but Lundström's original figures of the male terminalia are diagnostic. *T. subfusca* is widespread in North America and Europe. I examined 44 North American specimens from 33 collections made in 24 localities in Alaska, Northwest Territories, British Columbia, Alberta, Idaho, Oregon, California, Colorado, Ontario, Quebec, and Georgia. From Europe I saw 204 specimens from 86 collections in 69 localities in Norway, Sweden, Finland, Scotland, England, Belgium, Spain, Hungary, and Rumania. See under *vitta* for remarks concerning related species.

***Trichonta submaculata* (Staeger)**

submaculata Staeger 1840: 251 (*Mycetophila*); Edwards 1924a: 17 (syn. of *vitta*). Restored name.

Adult.—Wing length, 2.6–3.0 mm. As for *vitta* except wing membrane hyaline, Sc ending in R, hind tibia with 5–6 posterior setae, and genitalic differences. Female terminalia (fig. 171): Tergum VIII rectangular, setose on caudal half; sternum VII slightly longer than tergum VIII, deeply incised mediocaudally, setose caudally; cercus I cylindrical,

slightly bilaterally flattened; cercus II elongate-ovoid, setae strongest on caudal margin. Male terminalia as in figures 113–114.

Types.—Lectotype here designated, male, Fredriksburg, Denmark, in Universitetets Zoologiske Museum, Copenhagen. Paralectotypes: 17 males and 6 females, same data as lectotype, 1 female a *submaculata*, all others *vitta* Meigen.

Remarks.—*T. submaculata* is uncommon but fairly widespread in Europe. I examined 27 specimens from 17 collections made in 15 localities in Finland, Denmark, England, Belgium, France (Corsica), Hungary, and Rumania.

I have fixed as lectotype of *submaculata* the male of the pair of 22 syntypes that did not belong to *vitta*. Staeger (1840) described a typical variety and varieties b, c, and d on the basis of body color, which is rather variable within species. One of the non-*vitta* syntypes was in the typical variety, the other in variety c. See under *vitta* for remarks about related species.

Trichonta superba Gagné, new species

Adult (male only).—Wing length, 3.5 mm. As for *sobria* except shape of gonostylus (fig. 44).

Types.—Holotype, male, 27° 00' N, 85° 00' E, 9900', Nepal, 26–V–1967, Canadian Nepal Expedition, in Canadian National Collection.

Remarks.—*T. superba* is known only from the holotype. It appears to be closely related to the Mexican *placida*. For further remarks concerning affinities, see under *placida*.

Trichonta terminalis (Walker)

terminalis Walker 1856: 21 (*Mycetophila*).
funeris Winnertz 1863: 852; Edwards 1913: 369 (syn. *terminalis*).

Adult.—Wing length, 3.0–3.4 mm. Body mostly brown, humeral angles of mesoscutum and prothoracic sclerites occasionally yellow; male terminalia brown; legs yellow. Scutellum with 6–8 large setae. Mesanepisternum with 3–4 setae along posterodorsal border only and 2–3 in dorsal corner or along anterodorsal border. Metepisternum with 2–3 long setae. Wing (fig. 7): Membrane

darkish; anterior edge straight; Sc ending in R, parallel to R for most of length; M fork distad of Rs; Cu fork basad of Rs, Cu petiole setose, Cu₂ slightly sinuous; A moderate, with or without setae. Front tarsomeres not swollen. Hind coxa with 1 (occasionally 2) strong, posterodorsal seta. Hind tibial setae: 6–9 anteriors; 7–10 dorsals, mid-dorsals longer than width of tibia at midlength; 9–12 closely spaced posteriors; 0 anterodorsals and posterodorsals. Female terminalia (fig. 179): Tergum VIII rectangular, setose on caudal half; sternum VIII longest medially, deeply incised mediocaudally, setose on caudal half; cercus I cylindrical, longest medioventrally, uniformly setose; cercus II ovoid, uniformly setose. Male terminalia as in figures 93–95.

Types of names in this taxon:

T. terminalis: Type(s), England, lost (A. M. Hutson, pers. commun.).

T. funebris: Type(s), Germany, destroyed during World War II, but genitalia of a male type illustrated by Dziedzicki (1915, fig. 149).

Remarks.—*T. terminalis* is a widespread Holarctic species, fairly northern in North America. I saw 58 North American specimens from 47 collections made in 34 localities in Alaska, Yukon Territory Northwest Territories, British Columbia, Alberta, Saskatchewan, Manitoba, Quebec, Washington, Oregon, Idaho, Colorado, Wisconsin, and New Hampshire and 316 specimens from 109 collections in 76 localities in Norway, Sweden, Finland, Russian Lapland, England, Scotland, Belgium, France, Germany, Switzerland, Spain, Italy, Austria, and Hungary.

This species is closely related to the much rarer *facilis*. Their terminalia are different from those of other *Trichonta*.

Trichonta trivittata Lundström

trivittata Lundström 1916: 74.

Adult (male only).—Wing length, 3.5–4.0 mm. Body brown except yellow humeral angles of mesoscutum and prothoracic sclerites; male terminalia brown; legs yellow. Scutellum with 6–8 setae. Mesanepisternum with 4–5 setae along posterodorsal margin and 1–5 others in dorsal corner. Metepisternum with 2–4 long setae. Wing (fig. 8): Membrane darkish; anterior edge

straight; Sc ending in R₁, slightly convergent to R for most of length; M forking distad of Rs; Cu forking basad of Rs, Cu petiole aetose, Cu₂ not sinuous; A strong, setose. Front tarsomeres not swollen. Hind coxa with strong posterobasal seta. Hind tibial setae: 7–12 anteriors; 8–14 dorsals, mid-dorsals longer than width of tibia at midlength; 9–12 long posteriors; 0 anteroventral and posteroventral setae. Male terminalia as in figures 13–15.

Types.—Syntypes, 2 males, 2 females, Czibles, Hungary, V–1913, Ujhelyi, in Zoological Museum, Helsinki. Spec. Type No. 4786.

Remarks.—I saw, in addition to the type caught in Hungary, a specimen from Austria and 19 specimens from 16 collections made in 6 localities in Finland.

Trichonta valida Gagné, new species

Adult.—Wing length, 2.2–2.6 mm. As for *vitta* except wing membrane with dark band at midlength and dark apically, male terminalia mostly brown, Sc ending in R, front tarsomeres not swollen in female, and genitalic differences. Male terminalia as in figures 122–123.

Types.—Holotype, male, San Cristobal de las Casas, Chiapas, Mexico, 25–V–1969, B. V. Peterson, deposited in Canadian National Collection. Paratype, male, 15 mi. w. El Palmito, 5000', Sinaloa, Mexico, 30–VII–1964, W. R. M. Mason (CNC).

Remarks.—*T. valida* is known from only the two Mexican localities given here. For further remarks about relationships, see under *vitta*.

Trichonta venosa Staeger

venosa Staeger 1840: 256 (*Mycetophila*).
spinosa Lundström 1906: 24; Edwards 1925a: 167 (syn. *venosa*).
hansoni Shaw 1940: 50. New synonym.

Adult.—Wing length, 3.7–5.5 mm. Body yellow to mostly light brown with brown longitudinal stripes on mesonotum and saddle-shaped markings on abdominal terga; legs yellow; male terminalia yellow except brown on distal third of gonocoxite and lateral part of gonostylus. Scutellum with 8 setae. Mesanepisternum with 4–7 setae along posterodorsal border and 0–2 in dorsal corner. Metepisternum with 3–5 long

setae. Wing: Membrane hyaline; anterior edge straight; Sc ending in R, parallel to R for most of length; M fork distad of Rs; Cu fork basad of Rs, Cu petiole aetose, Cu₂ slightly sinuous; A strong, usually aetose, with occasional seta present on some specimens. Front tarsomeres swollen on female at apex I and on II-IV. Hind coxa with 1 strong, posterobasal seta. Hind tibial setae: 5-8 anteriors; 7-13 dorsals, middorsals much longer than width of tibia at midlength; 10-15 posteriors, those on apical third shorter than those on basal two-thirds, latter longer than tibial width; 1-5 posteroventrals and 0 anteroventrals. Female terminalia (fig. 183): Tergum VIII longest medially, most of area covered with short setae; sternum VIII as long as tergum VIII, deeply incised mediocaudally, bare externally, setose on caudal half of inner surface and on caudal margin; cercus I cylindrical, evenly setose, setae longest dorsally; cercus II ovoid, evenly setose. Male terminalia as in figures 134-136.

Types of names in this taxon:

T. venosa: No data given with original description, presumably from Denmark. In Universitetes Zoologiske Museum, Copenhagen.

T. spinosa: Syntypes, 2 males, Regis aboënsis, Kuustö, 1905, Lundström, in Zoological Museum, Helsinki.

T. hansonii: Holotype, male, Mt. Desert Is., Maine, 16-IV-1935, C. P. Alexander, misplaced but presumably in Department of Entomology, University of Massachusetts, Amherst.

Remarks.—I saw no type specimens of these names, but the terminalia are so distinctive that I trust Edwards' (1925a) identification of *venosa* as *spinosa*, itself well illustrated by Lundström (1906). Shaw's (1940) figure is clearly of *venosa*.

Close relatives of this species are not apparent, but I suppose they would be found among other species with posteroventral tibial setae and large, yellow and brown patterned male terminalia. *T. venosa* is widespread. From North America I saw 54 specimens from 51 collections made in 40 locations in Alaska, Northwest Territories (as far north as Axel Heiberg I), British Columbia, Alberta, Saskatchewan, Idaho, Montana, Colorado, Ontario, Quebec, Maine, New Hampshire, New York, and North Carolina; from Europe, 442 specimens from 89 collections in 42 localities

in Norway, Sweden, Finland, Scotland, England, Belgium, France, Switzerland, Italy, Austria, and Rumania.

Trichonta vitta (Meigen)

vitta Meigen 1830: 300 (*Mycetophila*).
submaculata Staeger 1840: 251 (*Mycetophila*), in part; Edwards 1924a: 17 (syn. of *vitta*). Restored elsewhere in this paper.

trossula Winnertz 1863: 850; Dziedzicki 1915: 11 (syn. *submaculata*); Edwards 1925b: 622 (syn. *vitta*).

umbratica Winnertz 1863: 853; Dziedzicki 1915: 11 (syn. *submaculata*); Landrock 1926: 138 (syn. *vitta*).

diffissa Johannsen 1912: 305. New synonym.

nigritula Edwards 1925b: 623. New synonym.

Adult.—Wing length, 2.1-2.6 mm. Body mostly brown, humeral angles of mesoscutum and prothoracic sclerites yellow, abdomen usually brown, occasionally some yellow basally; male terminalia usually yellow, light brown in some specimens; legs yellow except brown on distal fourth of hind femur. Scutellum with 6 setae. Mesanepisternum with 3-5 setae along posterodorsal edge and 1-3 setae anterior of that row. Metepisternum (fig. 4) with 1-2 short setae. Wing (fig. 9): Membrane hyaline, apical third sometimes darkened; anterior edge convex; Sc slightly convergent to R, ending free; M forked distad of Rs; Cu forked basad of Rs, petiole aetose, Cu₂ not sinuous; A weak, aetose. Front tarsomeres II-IV slightly swollen in female. Hind coxa (fig. 4) aetose posterobasally. Hind tibial setae: 7-12 anteriors; 7-11 dorsals, middorsals no longer than width of tibia at midlength; 0 posteriors; 0 anteroventrals and posteroventrals. Female terminalia (fig. 169): Tergum VIII longest mediolaterally, setose mediocaudally; sternum VIII slightly longer than tergum VIII, deeply incised mediocaudally, setose caudally; cercus I bilaterally flattened, short; cercus II bilaterally flattened, short, setae strongest along caudal margin. Male terminalia as in figures 106-108.

Types of names in this taxon:

T. vitta: Sex and collection data unspecified; in Muséum National d' Histoire Naturelle, Paris (specimen lacks abdomen and hind legs; Matile (in litt.)).

T. trossula: Syntypes, male and female, collection data unspecified, lost

during World War II, but male terminalia of syntype illustrated by Dziedzicki (1915).

T. umbratica: Same as for *trossula*.

T. diffissa: Holotype, male, Ithaca, N.Y., 29-VIII-1901, O. A. Johannsen, O.A.J. Lot 477, Type No. 2003, Cornell University, Ithaca, N.Y.

T. nigritula: Holotype, male, Shefford, Beds., England, X-1917, F. W. Edwards, orig. depos. in British Museum (Nat. Hist.), now lost (Hutson, in litt.)

Remarks.—*T. vitta* is a common, widespread Holarctic species. From North America I have examined 134 specimens, including the type of *diffissa* Johannsen, from 78 collections made in 58 localities in the following territories, Provinces, and States: Yukon Territory, Northwest Territories, British Columbia, Alberta, Washington, Oregon, California, Colorado, Manitoba, Ontario, Wisconsin, Iowa, Indiana, Michigan, Quebec, Maine, New Hampshire, New York, Pennsylvania, Maryland, North Carolina, Tennessee, Florida, and Durango in Mexico; from the Palaearctic region, 245 specimens from 95 collections in 86 localities in Norway, Sweden, Finland, Scotland, England, Belgium, France (incl. Corsica), Germany, Switzerland, Austria, Italy, Hungary, Rumania, and Algeria.

Edwards (1924a) placed *submaculata* Staeger in synonymy under *vitta*. Most of the syntypes of *submaculata* do belong to *vitta*, but two do not. One of the latter group is designated lectotype elsewhere in this bulletin and thus *submaculata* is taken out of synonymy. The type of *nigritula* is lost, but Edwards' (1925b) figures of the terminalia could pass for those of *vitta*. Nothing in Edwards' description precludes *nigritula* from being placed under *vitta*, and the short, free Sc and lack of posterior ("inner") hind tibial setae confirm the placement. Edwards differentiated the two species on the basis of a completely hyaline wing in *nigritula* (some *vitta* have no wing cloud) and a Sc shorter in *nigritula* than in *vitta*, a subjective difference.

T. vitta, *icenica*, *lyrica*, *pulchra*, *so-bria*, *subfusca*, *submaculata*, and *valida* form a monophyletic group. They share the following synapomorphies: The general structure of the aedeagus with two lateral prongs, each connected to one side of a hemispherical base, and a ventromedial prong; the same

general conformation of the gonostylus; the curved anterior wing edge; the Sc convergent to R; and the absence of a strong posterobasal hind coxal seta. Another group of species has a generally similar aedeagus (see *melanura*), and other species lack a strong hind coxal posterobasal seta, but no other *Trichonta* species have the wing characters of this group.

T. vitta differs from the other seven species listed here by the characters outlined in the key and the distinctive male genitalia, notably the long but apically blunt dorsal part of the gonostylus. The female terminalia are similar to those of *subfusca* except tergum VIII is longest laterally.

Trichonta vulcani (Dziedzicki)

vulcani Dziedzicki 1889: 490 (*Phronia*)

trifida Lundström 1909: 32. Lundström

1912: 29 (syn. *vulcani*)

setigera Ostroverkhova 1970: 455 (*Phronia*)

New synonym, new combination

Adult.—Wing length, 2.3–3.0 mm. Body brown except yellow humeral angles of mesoscutum, prothoracic sclerites, and usually caudal margins of abdominal terga; male terminalia yellow to brown; legs yellow. Scutellum with 4 large setae. Mesanepisternum with 2–3 setae along posterodorsal border. Metepisternum with 2 short setae. Wing (fig. 10): Membrane hyaline, anterior edge straight; Sc ending in R, slightly convergent toward R along most of length; M forking distad of Rs. Cu forking considerably distad of Rs and M petiole, Cu petiole asetose. Cu not sinuous; A moderate, asetose. Front tarsomeres not swollen in males, apex of I and entire II–III swollen in female. Hind coxa with strong posterobasal seta. Hind tibial setae: 6–8 anteriors, 6–9 dorsals, middorsals subequal to width of tibia at midlength; 9–13 posteriors spaced along most of tibial length, long except distal 4–5 distinctly shorter than others; 0 anteroventrals and posteroventrals. Female terminalia (fig. 186): Tergum VIII incised mediocaudally, setose on caudal half, usually enveloping cercus; sternum VIII slightly shorter than tergum VIII, evenly setose; cercus I bilaterally flattened, short, setose caudally and dorsally, some setae short, peglike; cercus II flattened-spherical, evenly setose, setae on caudal margin peglike. Male terminalia as in figures 166–168.

Types of names in this taxon:

T. vulcani: Syntypes, 4 males. V and VII, Villach, Austria, and Graefenberg and Karlsbrunn, Czechoslovakia, destroyed during World War II.

T. trifida: Holotype, male, Karislojo, Regio aboënsis, Finland, VI, Frey, in Zoological Museum, Helsinki.

T. setigera: Holotype, male, Stolby Res., Krasnoyarsk Terr., Synzhul, U.S.S.R., 17 VII–1965, in Zoological Institute, Leningrad.

Remarks.—I saw none of the types of the three names involved here, but the illustrations accompanying the original descriptions are diagnostic.

T. vulcani is much more commonly collected in North America than in Europe. From North America I saw 216 specimens from 86 collections made in 58 localities in Yukon, British Columbia, Washington, Idaho, California, Colorado, Minnesota, Iowa, Indiana, Michigan, Ontario, Quebec, New York, New Hampshire, Connecticut, Pennsylvania, Maryland, Virginia, Tennessee, and North Carolina. From Europe I saw 1 specimen from northern Italy, 1 from England, and 51 from 27 collections in 15 localities in Finland and northern Norway. In addition, the types of *vulcani* were from Austria and Czechoslovakia and of *setigera* from central Siberia.

This species has at various times been placed in *Phronia* on the basis of the short Cu fork, but the characters of Sc joining R and the presence of a posterobasal seta on the hind coxa refer the species without doubt to *Trichonta*.

Trichonta vulgaris Loew

vulgans Loew 1869: 149

nigricauda Lundström 1906: 27. New synonym

bellula Johannsen 1912: 304. New synonym

exigua Lackschewitz 1937: 38. New synonym

Adult.—Wing length, 2.9–3.9 mm. Body mostly brown, yellow on humeral angles of mesoscutum, prothoracic sclerites, and usually caudal margins of abdominal terga II–V, male terminalia dark brown, female terminalia light brown except sternum X dark brown, legs yellow. Scutellum with 6–8 setae. Mesanepisternum with 4–6 setae along posterodorsal border and 2–4 cephalad of that row. Metepisternum (fig. 1) with 2–3 long setae. Wing (fig. 5): Mem-

brane darkish; anterior edge straight; Sc ending in R, parallel with R for most of length; M fork distad of Rs; Cu fork basad of Rs. Cu petiole asetose, Cu sinuous; A weak, asetose. Front tarsomeres II–III slightly swollen in female. Hind coxa (fig. 1) with 1 strong, posterobasal seta. Hind tibial setae: 7–10 anteriors; 8–13 dorsals, middorsals longer than width of tibia at midlength; 7–11 posteriors; 0 anterodorsals or posterodorsals. Female terminalia of specimens probably this species (fig. 182): Tergum VIII incised caudolaterally, setose on caudal half medial to incision; sternum VIII slightly longer than tergum VIII, bare externally, dark brown in striking contrast to lighter remainder of terminalia, with strong seta caudally along margin and on inner surface; cercus I cylindrical, evenly setose, some setae strong; cercus II ovoid, some setae strong. Male terminalia as in figures 31–34.

Types of names in this taxon:

T. vulgans: Lectotype here designated, male, Washington, D.C., MCZ #1203, in Museum of Comparative Zoology, Cambridge, Mass. Paralectotype, male, same data as lectotype. Loew (1869) described the male and female of this species, but only 2 male syntypes are in the MCZ.

T. nigricauda: Syntypes 3 males, Regio aboënsis, Kuusto, 1905, Lundström (examined 1 specimen), male, Muonioniska, Lapponia kernsis, Finland, 27–VI–1867, Palmén, in Zoological Museum, Helsinki.

T. bellula: Holotype, male, Mt. Ascutney, VI, II–VII–1908, C. W. Johnson, O.A.J. #565, MCZ Type No. 27263, in Museum of Comparative Zoology, Cambridge, Mass.

T. exigua: Holotype, male, Kalvene, Latvian SSR, 21–VI–1935, Lackschewitz, depository unknown (in possession of heirs. Horn and Kahle, 1935).

Remarks.—*T. vulgaris* is common and widespread. I examined 143 North American specimens (only males counted) from 70 collections made in 43 localities in Alaska, Yukon Territory, Northwest Territories, Alberta, Saskatchewan, Ontario, Quebec, New York, Vermont, Pennsylvania, Maryland, Washington, D.C., Virginia, North Carolina, Indiana, and Colorado. From Europe I saw 316 specimens (only males) from 40 collections in 27 locations in Finland, Switzerland, Hungary, and Ru-

Unrecognized or Unidentified Species

mania. In addition, the type of *exigua* is from Latvian S.S.R.

T. exigua is the only *vulgaris* synonym for which I did not see a type, but Lackschewitz's figures of the male terminalia satisfy me that *exigua* is a synonym of *vulgaris*.

Six other *Trichonta* species—*amica*, *bifida*, *brevicauda*, *clemens*, *generosa*, and *merita*—resemble *vulgaris* closely and can be separated only on differences of the male terminalia as outlined in couplets 22–27 of the key and as illustrated in figures 31–40. Females are probably similar in general aspect to that described here for *vulgaris*. Synapomorphies of the seven species comprise the sinuous Cu_2 ; the dark female sternum VIII, striking next to the lighter sclerites of the postabdomen; and the characteristic male terminalia, dark brown, with the cerci subequal in length to tergum X and without strong apical setae, the lateral part of the gonostylus short, simple, and single lobed, and the characteristic aedeagus with a short caudal projection on each side. Other characters that unite these seven species but are shared with some other *Trichonta* are Sc ending in R; Cu petiole asetose; A weak, asetose; hind coxa with posterobasal seta; and hind tibia without anteroventral or posteroventral setae.

Six species are included here for various reasons. Three should be recognizable when the types are studied, assuming they are in good condition. *T. cincta*, *obesa*, and *floresiana* are true incertae sedis because they lack abdomens and cannot otherwise be keyed to species. The type of *floresiana* is also probably lost.

Trichonta canariensis Landrock 1925b: 182

trivittata Santos Abreu 1920: 122, preocc. Lundström (1916), replaced with new name, *canariensis*, by Landrock (1925b).

A 3½-page original description, mostly of color characters, in Santos Abreu (1920) gives little more meaningful information other than that the species is a *Trichonta*. The type, unavailable for loan at present, must be examined before this species can be identified.

Syntypes, males, Barranco del Rio, La Palma, Canary Is., 4–XI–1907, in the care of Santos Abreu's heirs.

Trichonta cincta Johannsen 1912: 303

The type lacks the abdomen and hind legs beyond the coxae and consequently cannot be identified with certainty.

Holotype, female, Eastport, Maine, 16–VII–1909, MCZ Type No. 27262, in Museum of Comparative Zoology, Cambridge, Mass.

Trichonta floresiana Storå 1945: 11

The type, originally deposited in the Zoological Museum, Helsinki, is apparently lost (Lindeberg, in litt.), but it might not be identifiable because the postabdomen is lost. Two items in the original description, the darkened wing apex and the brown distal section of the hind femur, indicate that *floresiana* might belong to *vitta* or to a close relative.

Holotype, sex unknown ("hypopygium broken off"), Vales, Flores, Azores, 28–VI, Storå, originally deposited in Zoological Museum, Helsinki.

Trichonta genitalis (Brunetti) 1912: 104 (*Rhymosia*)

T. genitalis was transferred from *Rhymosia* to *Trichonta* by Edwards

(1924b). The type is now in the Zoological Survey of India in Calcutta. The specimen is very fragile and partly damaged (P. T. Cherman, in litt.). It is probably best left in Calcutta until someone can study it there.

Holotype, male, "Darjiling," 29–V–1910, E. Brunetti, in Indian Museum, Calcutta.

Trichonta obesa Winnertz 1863: 854

The type of *obesa* is one of the few Winnertz types that are extant because it was not part of his collection and was returned after study to the Schiner collection in Vienna, its original depository. Since the type, a female, lacks an abdomen and hind tibiae, it probably cannot now be referred to any known species. Mik (1880) identified specimens of *venosa* Staeger as alleged males of *obesa*, but the two species are not identical. The type of *obesa* has narrow front tarsomeres, whereas in *venosa* females they are strongly dilated. The identification of a Greenland specimen as *obesa* by Lundbeck (1898) was the source of the listing in Laffoon (1965) through Johannsen (1912). Since that identification was based on Mik (1880), the specimen may have belonged to *venosa*.

Holotype, female, Austria, in Schiner collection, Naturhistorisches Museum, Vienna.

Trichonta pilicauda Bukovsky 1949: 409

This name is probably a synonym of *atricauda* or *melanura*, but one cannot determine which one from the illustration accompanying the original description of *pilicauda*. An inquiry I made about the type to the Zoological Museum in Leningrad has so far been unanswered.

Holotype, male, Crimea, U.S.S.R., presumably deposited in the Zoological Institute, Leningrad.

List of Names in *Trichonta*

[Valid names are in roman and synonyms and unidentified names in italic>

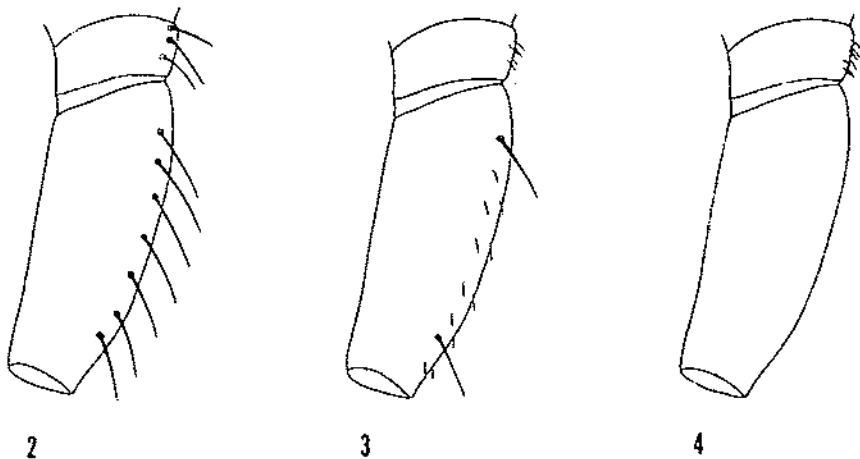
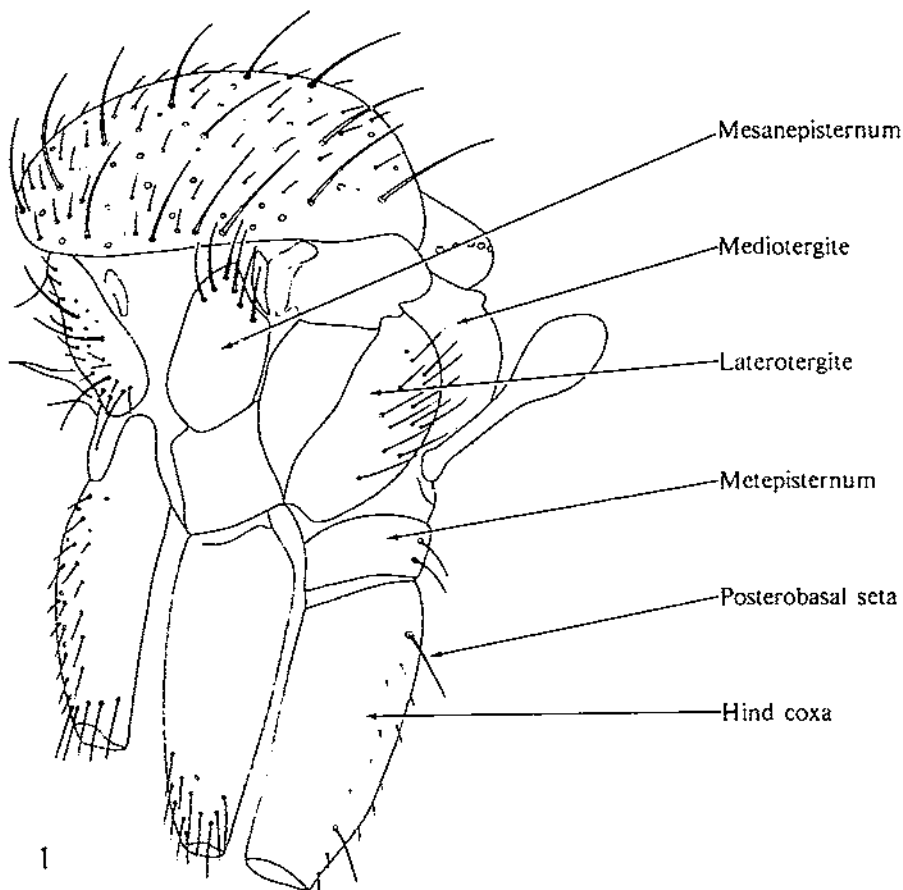
- aberrans Lundström 1911
adunca Edwards 1924, syn. *atricauda*
albescens Dziedziński 1915, syn. *falcata*
amica Gagné 1979
apicalis Strobl 1897
atricauda (Zetterstedt) 1852 (Mycetophila)
beata Gagné 1979
bellula Johannsen 1912, syn. *vulgaris*
bezzii Landrock 1913
bicolor Landrock 1912
bifida Lundström 1909
brachycampites (Meunier) 1904 (Palaeotrichonta); fossil
brachycampitoides Meunier 1904; fossil
brevicauda Lundström 1906
canariensis Landrock 1925, unidentified
canora Gagné 1979
chaoi Shaw 1951
cincta Johannsen 1912, unidentifiable
clara Gagné 1979
claripennis Lundström 1914, syn. *fissicauda*
clavigera Lundström 1913
clemens Gagné 1979
comica Gagné 1979
comis Gagné 1979
concinna Gagné 1979
conjungens Lundström 1909
contenta Gagné 1979
crassipes Meunier 1904 fossil
dawsoni Scudder 1877; fossil
delicata Gagné 1979
diffissa Johannsen 1912, syn. *vitta*
excisa Lundström 1916
exigua Lackschewitz 1937, syn. *vulgaris*
eximia Gagné 1979
facilis Gagné 1979
falcata Lundström 1911
fasciata Freeman 1951; Chile
festu Gagné 1979
fidelis Gagné 1979
fissicauda (Zetterstedt) 1852 (Mycetophila)
flavicauda Lundström 1914
flebilis Gagné 1979
floresiana Storå 1945, unidentifiable
foeda Loew 1869
fragilis Gagné 1979
funebri Winnertz 1863, syn. *terminalis*
funerea Freeman 1951; Chile
fusca Landrock 1918
fusciventris Van Duzee 1928
generosa Gagné 1979
genitalis Brunetti 1912 (Rhymosia), unidentified
gentilis Gagné 1979
girschneri Landrock 1912
hamata Mik 1880
hansonii Shaw 1940, syn. *venosa*
hungarica Landrock 1925
icenia Edwards 1925
illaetabilis Skuse 1888; Australia
justa Gagné 1979
languida Gagné 1979
largolamellata Landrock 1918, syn. *flavicauda*
ludata Bukovsky 1935, syn. *girschneri*
longinervis (Freeman) 1951 (Phronia)
lucida Gagné 1979
lyrica Gagné 1979
major Freeman 1951; Chile
mediastinalis Lundström 1906 (Rhymosia), syn. *perspicua*
melanopyga (Zetterstedt) 1852 (Mycetophila), syn. *melanura*
melanura (Staeger) 1840 (Mycetophila)
merita Gagné 1979
nigricauda Lundström 1906, syn. *vulgaris*
nigritula Edwards 1925, syn. *vitta*
nubilipennis Freeman 1951; Chile
obesa Winnertz 1863, unidentifiable
parallela (Walker) 1856 (Leia), syn. *atricauda*
patens Johannsen 1912
perspicua Wulp 1881
phronioides Lundström 1913, syn. *apicalis*
pilicauda Bukovsky 1949, unidentified
placida Gagné 1979
pulchra Gagné 1979
sagana Shaw 1940, syn. *hamata*
salva Gagné 1979
secura Gagné 1979
sedata Gagné 1979
sedula Gagné 1979
serena Gagné 1979
setigera (Ostroverkhova) 1970 (Phronia), syn. *vulcani*
similis Freeman 1951; Chile
sincera Gagné 1979
sobria Gagné 1979
spinifera Freeman 1951; Chile
spinosa Lundström 1906, syn. *venosa*
stereana Edwards 1925, syn. *foeda*
subfascipennis Edwards 1929
subfusca Lundström 1909
submaculata (Staeger) 1840 (Mycetophila)
superba Gagné 1979
terminalis (Walker) 1856 (Mycetophila)
triangularis Johannsen 1912, syn. *perspicua*
trifida Lundström 1909, syn. *vulcani*
trivittata Lundström 1916
trivittata Santos Abreu 1920, preocc., replaced by *canariensis*
trossula Winnertz 1863, syn. *vitta*
umbratica Winnertz 1863, syn. *vitta*
valida Gagné 1979
vegeta Skuse 1888; Australia
venosa (Staeger) 1840 (Mycetophila)
vernalis Landrock 1913, syn. *apicalis*
vitta (Meigen) 1830, (Mycetophila)
vulcani (Dziedziński) 1889 (Phronia)
vulgaris Loew 1869

Literature Cited

- BRUNETTI, E. A.
 1912. THE FAUNA OF BRITISH INDIA, INCLUDING CEYLON AND BURMA; DIPTERA NEMATOCERA (EXCLUDING CHIRONOMIDAE AND CULICIDAE). *Diptera*, v. 1, xxviii, 581 pp., 12 pls. London.
- BUKOVSKY, W.
 1935. NEUE UND ABWEICHENDE FORMEN VON PILZMUCKEN (DIPTERA FUNGIVORIDAE) AUS DER KRIM. *Koňowia* 13: 183-192.
1949. [NEW SPECIES OF FUNGUS GNATS (DIPTERA, FUNGIVORIDAE) FROM THE CRIMEA.] *Ent. Obozr.* 30: 405-409.
- BUXTON, P. A.
 1960. BRITISH DIPTERA ASSOCIATED WITH FUNGI. III. FLIES OF ALL FAMILIES REARED FROM ABOUT 50 SPECIES OF FUNGI. *Ent. Monthly Mag.* 96: 61-94.
- DZIEDZIŃSKI, H. A.
 1889. REVUE DES ESPECES EUROPEENES DU GENRE PHRONIA WINNERTZ, AVEC LA DESCRIPTION DE DEUX GENRES NOUVEAUX: MACROBRACHIUS ET MEGOPHTHALMIDIA. *Horae Soc. Ent. Rossica* 23: 404-532, pls. XII-XXI.
1915. ATLAS DES ORGANES GENITAUX (HYPOGIUM) DES TYPES DE WINNERTZ ET DES GENRES DE SA COLLECTION DE MYCETOPHILES. 16 pp., 21 pls. Warsaw.
- EDWARDS, F. W.
 1913. NOTES ON BRITISH MYCETOPHILIDAE. *Roy. Ent. Soc., London, Trans.* 1913: 334-382, pls. 12-18.
- 1924a. NOTES ON MEIGENS FUNGUS-GNAT TYPES (DIPTERA, MYCETOPHILIDAE). *Encyclopédie Ent.* 1: 13-17.
- 1924b. NOTES ON THE TYPES OF DIPTERA NEMATOCERA (MYCETOPHILIDAE AND TIPULIDAE) DESCRIBED BY MR. E. BRUNETTI. *Calcutta Indian Mus. Rec.* 26: 291-307.
- 1925a. NOTES ON THE TYPES OF MYCETOPHILIDAE (DIPTERA) DESCRIBED BY STAEGER AND ZETTERSTEDT. *Ent. Tidskr.* 45 (1924): 160-168.
- 1925b. BRITISH FUNGUS-GNATS (DIPTERA, MYCETOPHILIDAE) WITH A REVISED GENERIC CLASSIFICATION OF THE FAMILY. *Roy. Ent. Soc. London, Trans.* 1924: 505-670, pls. 49-61.
1929. PHILIPPINE NEMATOCEROUS DIPTERA III. *Notulae Ent.* 9: 70-81.

- FREEMAN, P.
1951. DIPTERA OF PATAGONIA AND SOUTH CHILE. PT. III. MYCETOPHILIDAE. 133 pp., 49 pls. London.
- GAGNÉ, R. J.
1973. CECIDOMYIIDAE FROM MEXICAN TERTIARY AMBER (DIPTERA). Wash. Ent. Soc. Proc. 75: 169-171.
1975. A REVISION OF THE NEARCTIC SPECIES OF THE GENUS PHRONIA (DIPTERA: MYCETOPHILIDAE). Amer. Ent. Soc. Trans. 101: 227-318.
- JOHANSEN, O. A.
1909. DIPTERA FAM. MYCETOPHILIDAE FASC. 93. GENERA INSECTORUM. 141 pp., 7 pls. Brussels.
1912. THE FUNGUS GNATS OF NORTH AMERICA. PT. III. Maine Agr. Expt. Sta. Bul. 196 (2): 249-328, 5 pls.
- LACKSCHEWITZ, P.
1937. DIE FUNGIVORIDEN DES OSTBALTISCHEN GEBIETES. Arb. Naturf.-Ver. Riga, N.F. 21: 1-47.
- LAFFOON, J. L.
1957. A REVISION OF THE NEARCTIC SPECIES OF FUNGIVORA (DIPTERA, MYCETOPHILIDAE). Iowa State Col. Jour. Sci. 31: 141-340.
1965. FAMILY MYCETOPHILIDAE (FUNGIVORIDAE). In Stone, A., et al., A Catalog of the Diptera of America North of Mexico, pp. 196-229. U.S. Dept. Agr. Agr. Handb. 276, iv, 1696 pp. Washington, D.C.
- LANDROCK, K.
1912a. NEUE ODER SELTENE MYCETOPHILIDEN AUS MAHREN. Wien. Ent. Ztg. 31: 27-39.
- 1912b. NEUE ODER WENIG BEKANNTE PILZMUCKEN. Wien. Ent. Ztg. 31: 175-185.
1913. ZWEI NEUE ARTEN DER FUNGIVORIDEN-GATTUNG TRICHONTA WINN. Ztschr. f. Wiss. Insektenbiol. 9: 87-90.
1918. TABELLEN ZUM BESTIMMEN EUROPÄISCHER PILZMUCKEN. Wien. Ent. Ztg. 37: 107-120.
- 1925a. NEUE MYCETOPHILIDEN. Naturhist. Maandblad 14: 37-40.
- 1925b. DIPTEROLOGISCHE MISZELLEN. Wien. Ent. Ztg. 42: 179-182.
1926. [FAM.] 8. FUNGIVORIDAE. In Lindner, E., ed., Die Fliegen der Palaearktischen Region, Lieferung 14, 97-144, pls. 7-9. Stuttgart.
- LASTOVKA, P.
1972. Holarctic species of Mycetophila ruficollis-group (Diptera, Mycetophilidae). Acta Ent. Bohemoslovaca 69: 275-294.
- and MATILE, L.
1972. REVISION DES DIADOCIDIA Holarctiques (DIPT. MYCETOPHILIDAE). Soc. Ent. de France Ann. (N.S.) 8: 205-223.
- LOEW, H.
1869. DIPTERA AMERICAE SEPTENTRIONALIS INDIGENA. CENTURIA NONA. Berlin Ent. Ztschr. 13: 129-186.
- LUNDBECK, W.
1898. DIPTERA GROENLANDICA. Vidensk. Meddel. Naturhist. For. Kjöbenhavn 1898: 236-314, pls. 5-6.
- LUNDSTROM, C. A.
1906. BEITRÄGE ZUR KENNNTNIS DER DIPTEREN FINLANDS. I. MYCETOPHILIDAE. Soc. Fauna et Flora Fennica Acta 29 (1): 1-50, pls. 1-4, map.
1909. BEITRÄGE ZUR KENNNTNIS DER DIPTEREN FINLANDS. IV. SUPPLEMENT MYCETOPHILIDAE. Soc. Fauna et Flora Fennica Acta 32 (2): 1-67, pls. 1-14.
1911. NEUE ODER WENIG BEKANNTE EUROPÄISCHE MYCETOPHILIDEN. Mus. Nat. Hungarici Ann. 9: 390-419, pls. 11-15.
1912. BEITRÄGE ZUR KENNNTNIS DER DIPTEREN FINLANDS VIII. SUPPLEMENT 2. MYCETOPHILIDAE UND LIMNOBIDAE. Soc. Fauna et Flora Fennica Ann. 36 (1): 1-70.
1913. NEUE ODER WENIG BEKANNTE EUROPÄISCHE MYCETOPHILIDEN III. Mus. Nat. Hungarici Ann. 11: 308-322, pls. 15-16.
1914. BEITRÄGE ZUR KENNNTNIS DER DIPTEREN FINLANDS IX. SUPPLEMENT 3. MYCETOPHILIDAE. Soc. Fauna et Flora Fennica Acta 39 (3): 1-27, 3 pls.
1916. NEUE ODER WENIG BEKANNTE EUROPÄISCHE MYCETOPHILIDEN IV. Mus. Nat. Hungarici Ann. 14: 72-80.
- MCKENNA, M. C.
1975. FOSSIL MAMMALS AND EARLY EOCENE NORTH ATLANTIC LAND CONTINUITY. Mo. Bot. Gard. Ann. 62: 335-353.
- MADWAR, S.
1937. I. BIOLOGY AND MORPHOLOGY OF THE IMMATURE STAGES OF MYCETOPHILIDAE (DIPTERA, NEMATOCERA). Roy. Soc. London, Phil. Trans., Ser. B, 227: 1-110.
- MATILE, L.
1963. DIPTERES FUNGIVORIDAE RECOLTES A RICHELIEU (INDRE-ET-LOIRE) ET AUX ENVIRONS. Cahiers des Nat. Bul. N.P. 19: 75-80.
- MEIGEN, J. W.
1830. SYSTEMATISCHE BESCHREIBUNG DER BEKANNTEN EUROPÄISCHEN ZWEIFLUGELIGEN INSEKTEN. V. 6, iv, 401 pp., pls. 55-66. Hamm.
- MEUNIER, F.
1904. MONOGRAPHIE DES CECIDOMYIIDAE, DES SCIARIDAE, DES MYCETOPHILIDAE ET DES CHIRONOMIDAE DE L'AMBRE DE LA BALTIQUE. Soc. Sci. de Bruxelles Ann. 28 (4): 12-264, pls. 1-16.
- Mik, J.
1880. DIPTEROLOGISCHE MITTHEILUNGEN. Zool.-Bot. Gessel. Wien, Verhandl. 30: 587-610, pl. XVII.
- MIKOLAJCZYK, W.
1970. SYSTEMATISCHE STELLUNG VON TRICHONTA MEDIASTINALIS LUNDST. (DIPTERA, MYCETOPHILIDAE). Acad. Polon. Sci. (Biol. Sci.) Bul. 18: 781-783.
- MUNROE, D. D.
1974. THE SYSTEMATICS, PHYLOGENY, AND ZOOGEOGRAPHY OF SYMMERUS WALKER AND AUSTRALOSYMMERUS FREEMAN (DIPTERA, MYCETOPHILIDAE, DITOMYIINAE). Canada Ent. Soc. Mem. 92: 1-183.
- OSTROVERKHOVA, G. P.
1970. NEW DATA ON THE FAUNA OF FUNGUS GNATS (DIPTERA, MYCETOPHILIDAE) FROM SIBERIA. Ent. Obozr. 49: 452-458.
- SANTOS ABREU, E.
1920. MONOGRAFIA DE LOS FUNGIVORIDOS DE LA ISLAS CANARIAS. Barcelona R. Acad. de Cièn. y Artes Mem. 16: 1-152, pls. 1-2.
- SCUDDER, S. H.
1877. THE INSECTS OF THE TERTIARY BEDS AT QUESNEL. Canad. Geol. Survey Ann. Rpt. 1875-76 (100) A: 266-280.
- SHAW, F. R.
1940. SOME NEW MYCETOPHILIDAE. Canad. Ent. 72: 48-51.
1951. SOME NEW SPECIES OF WESTERN MYCETOPHILIDAE (DIPTERA). Wash. Ent. Soc. Proc. 53: 275-280.

- SKUSE, F. A. A.
1888. DIPTERA OF AUSTRALIA. PT III. THE MYCETOPHILIDAE. Linn. Soc. N.S. Wales, Proc. 3 (2): 1122-1223.
- STAEGER, R. C.
1840. SYSTEMATISK FORTEGNEISE OVER DE I DANMARK HIDLIT FUNDNE DIPTERA. Naturhist. Tidsskr. 3: 228-288.
- STORA, R.
1945. TR FLORESIANA STORA N. SP. In Frey, R., Tiergeographische Studien Über die Dipterenfauna der Azoren, p. 11. Finska Vetensk.-Soc. Sci. Fenn. Comm. Biol. 8 (10): 1-114, pls. 1-4.
- STROBL, P. G.
1897. DIE DIPTEREN VON STEIERMARK IV. THEIL NACHTRAGE. Naturw. Ver. f. Steiermark Mitt. 34: 192-298.
- VAN DUZEE, M. C.
1928. NEW MYCETOPHILIDAE TAKEN IN CALIFORNIA AND ALASKA. Calif. Acad. Sci. Proc., Ser. 4, 17: 31-63.
- WALKER, F.
1856. DIPTERA. V 3 INSECTA BRITANNICA. xxiv, 352 pp., pls. 21-30. London.
- WINNERTZ, J.
1863. BEITRAG ZU EINER MONOGRAPHIE DER PILZMUCKEN. K. K. Zool.-Bot. Gesell. Wien, Verhandl. 13 (Abhandl.): 637-964, 4 pls.
- WULP, F. M. VAN DER.
1881. AMERIKAANSCH DIPTERA. Tijdschr. v. Ent. 24: 141-168.
- ZETTERSTEDT, J. W.
1852. DIPTERA SCANDINAVIAE DISPOSITA ET DESCRIPTA. V. 11, v-xii, 4091-4546 pp. Lund.



FIGURES 1-4.—1, Thorax and coxae, *T. vulgaris*. 2-4, Metepisterna and coxae: 2, *T. perspicua*; 3, *T. beata*; 4, *T. vitta*.



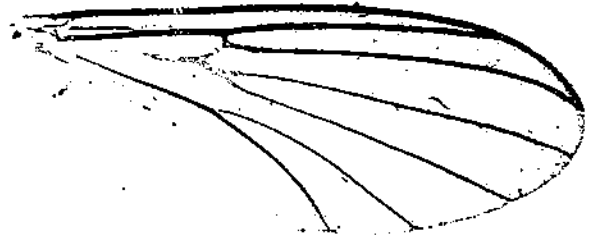
5



6



7



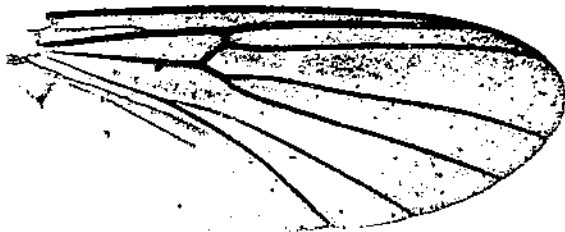
8



9



10

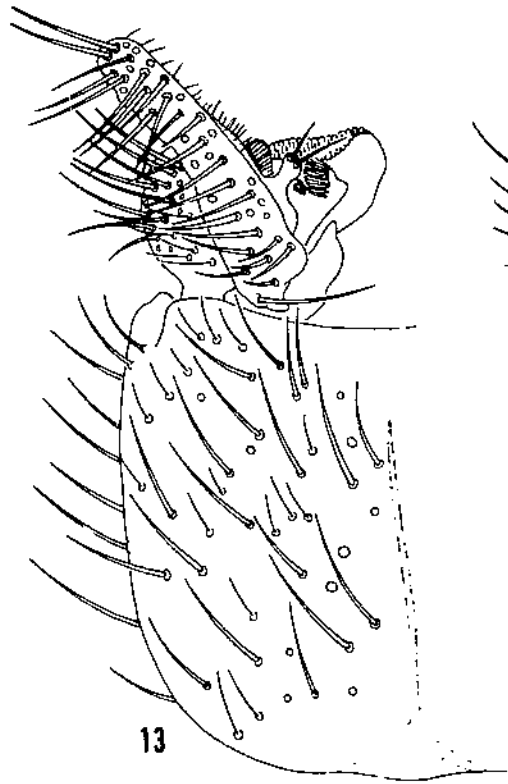


11

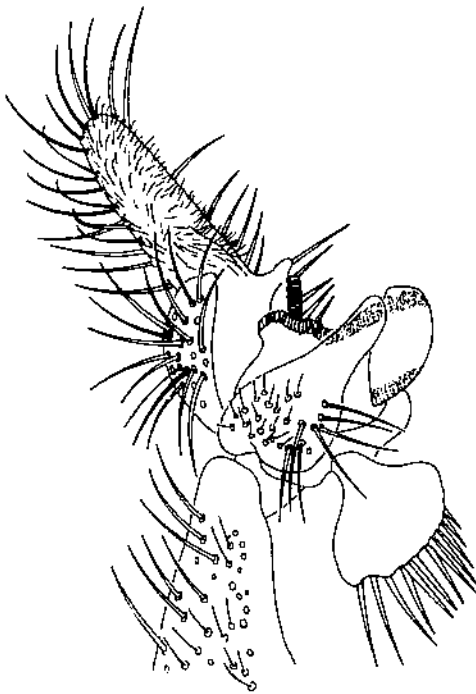


12

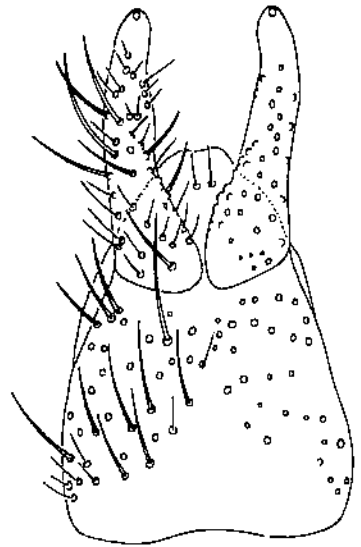
FIGURES 5-12.—Wings. 5, *T. vulgaris* (Knowlton Landing, Quebec); 6, *T. gentilis* (Boone Co., Iowa); 7, *T. terminalis* (Humbog State Park, Oreg.); 8, *T. trivittata* (Zwieselstein, Austria); 9, *T. vitta* (White Mountains, N.H.); 10, *T. vulcani* (Bethesda, Md.); 11, *T. perspicua* (Montgomery Co., Md.); 12, *T. serena* (Penticton, Brit. Col.).



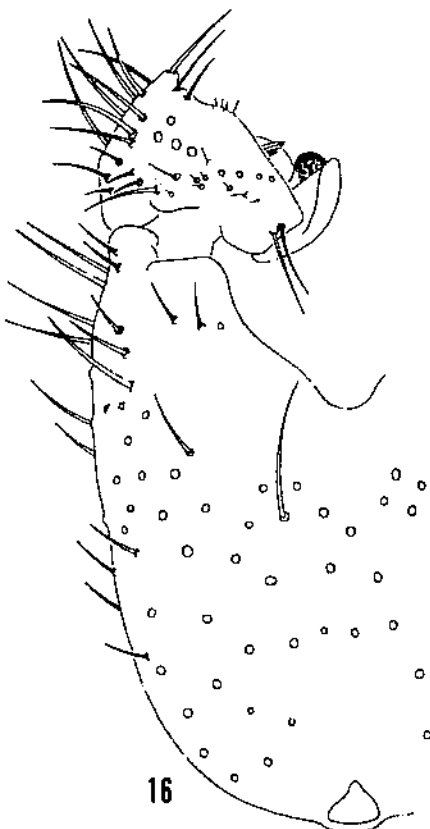
13



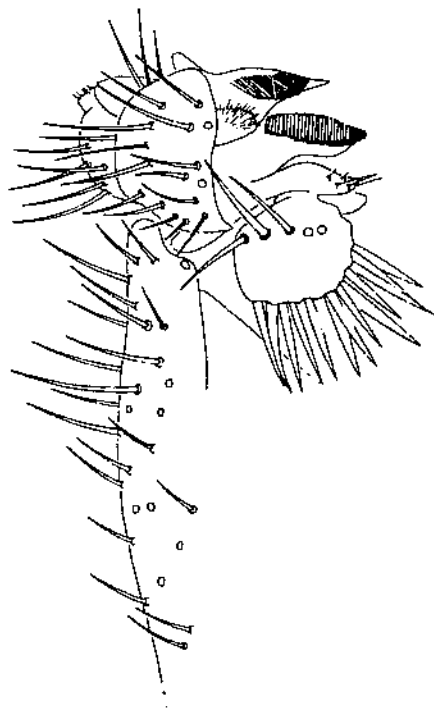
14



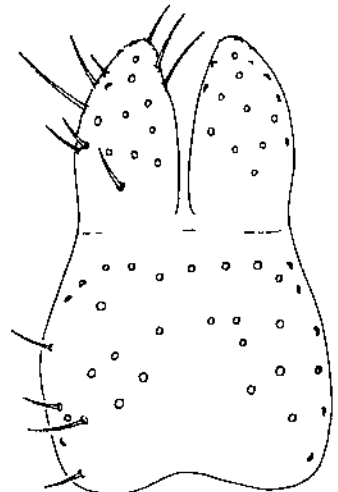
15



16

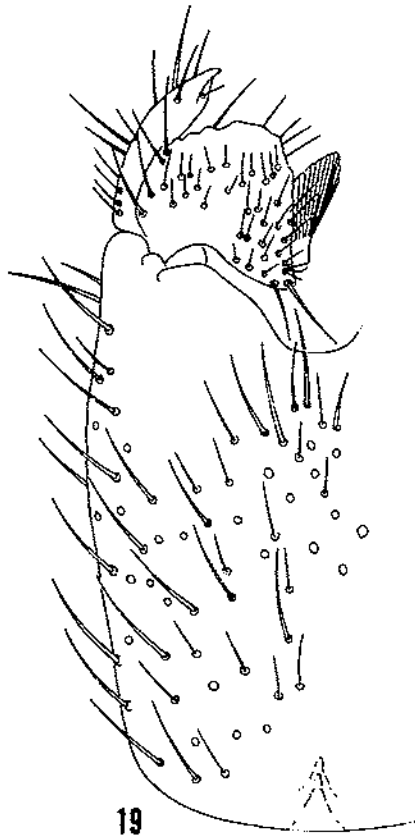


17

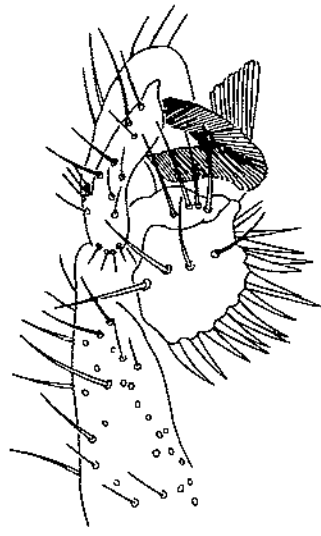


18

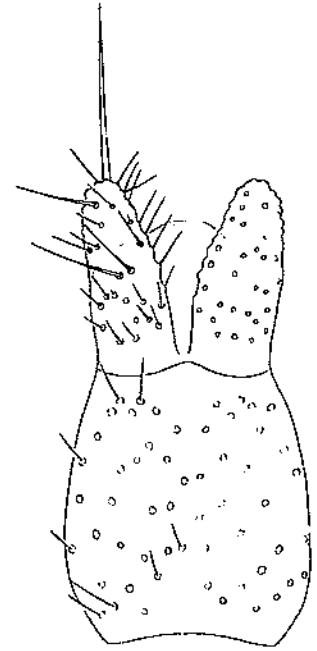
FIGURES 13-18.—Male terminalia. *T. trivittata* (Czibles, Hungary): 13, Gonopod; 14, gonostylus; 15, tergites IX-X. *T. languida* (Ithaca, N.Y.): 16, Gonopod; 17, gonostylus; 18, tergites IX-X.



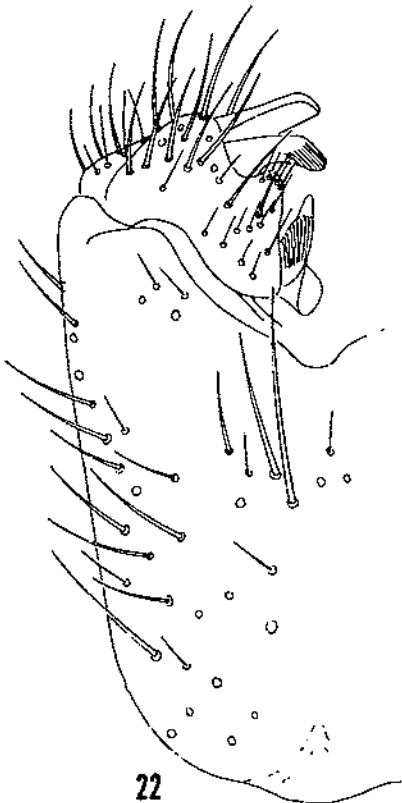
19



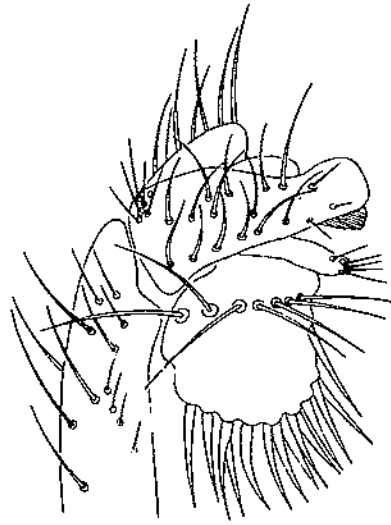
20



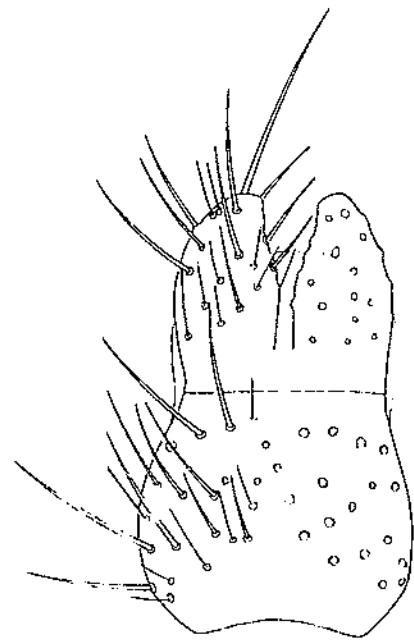
21



22



23

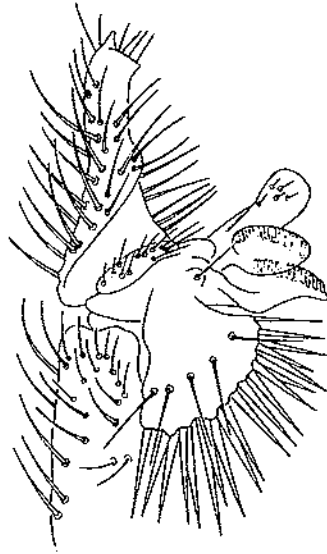


24

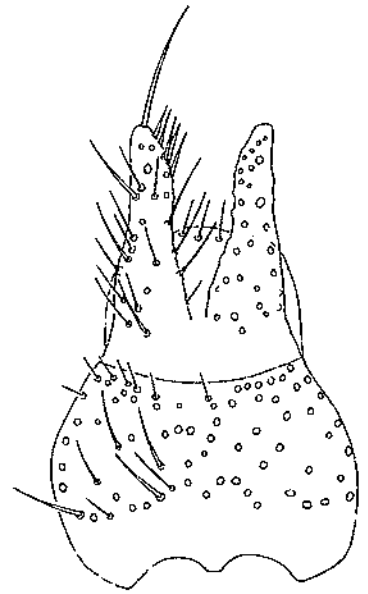
FIGURES 19-24.—Male terminalia. *T. lucida* (Needmore, Ind.): 19, Gonopod; 20, gonostylus; 21, tergites IX-X. *T. fragilis* (Matanuska, Alaska): 22, Gonopod; 23, gonostylus; 24, tergites IX-X.



25



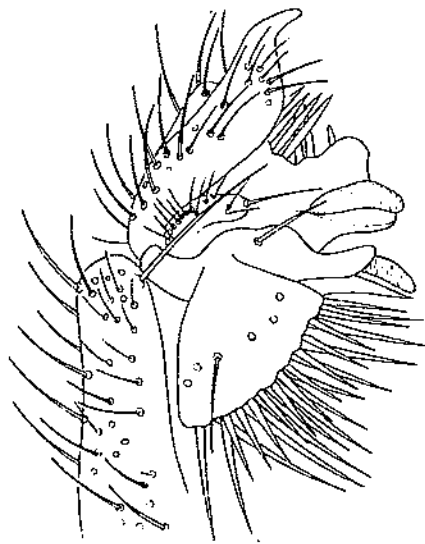
26



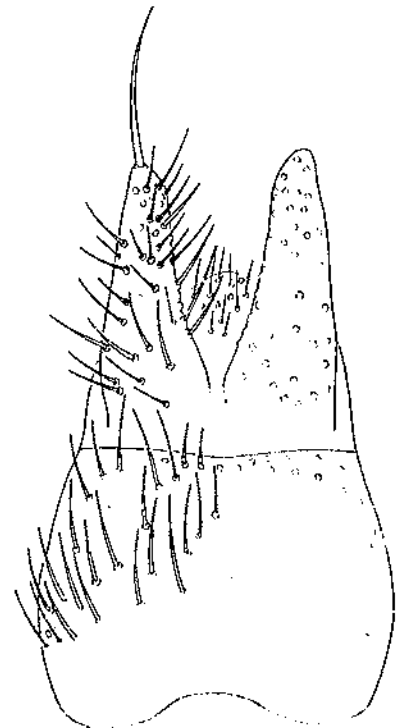
27



28

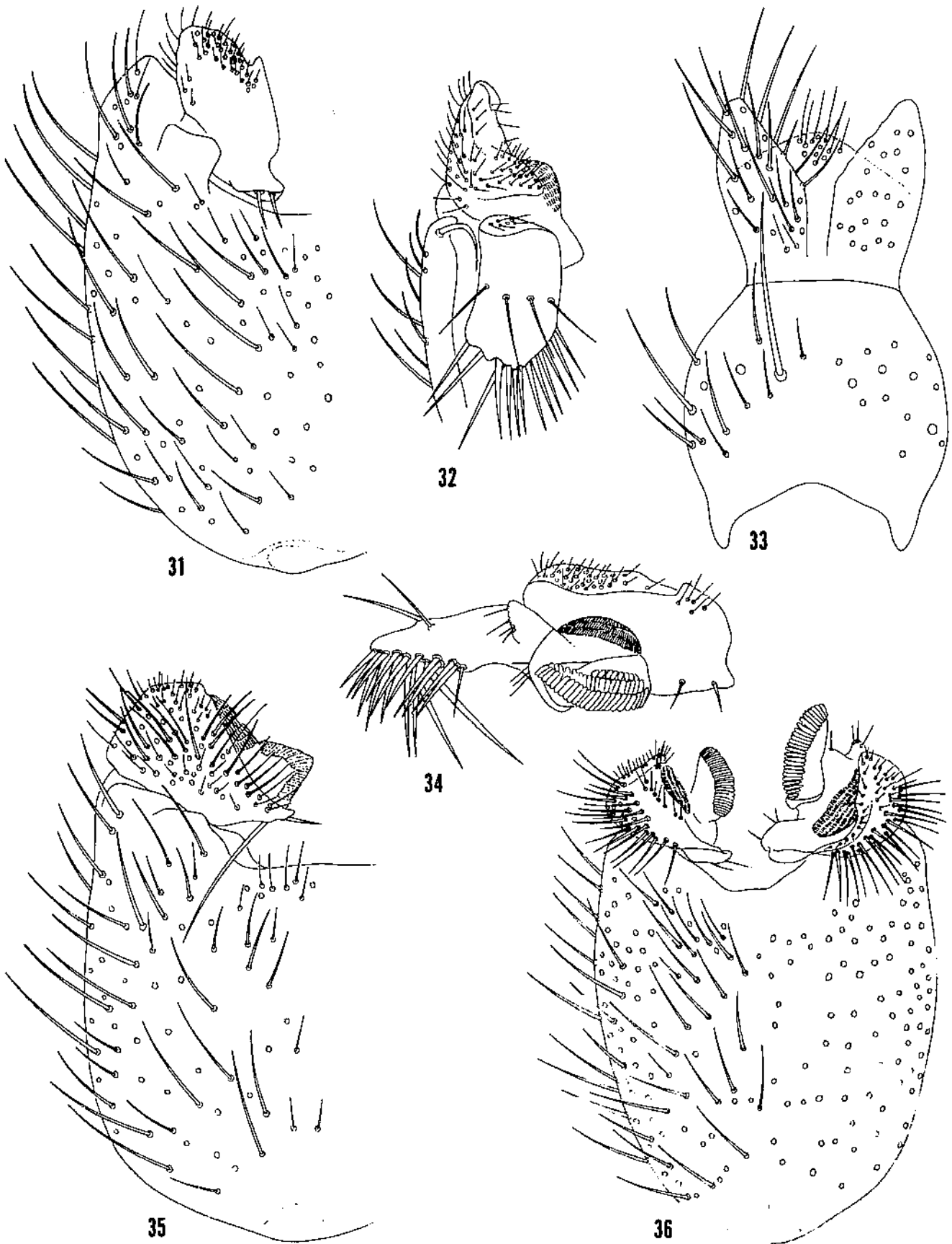


29



30

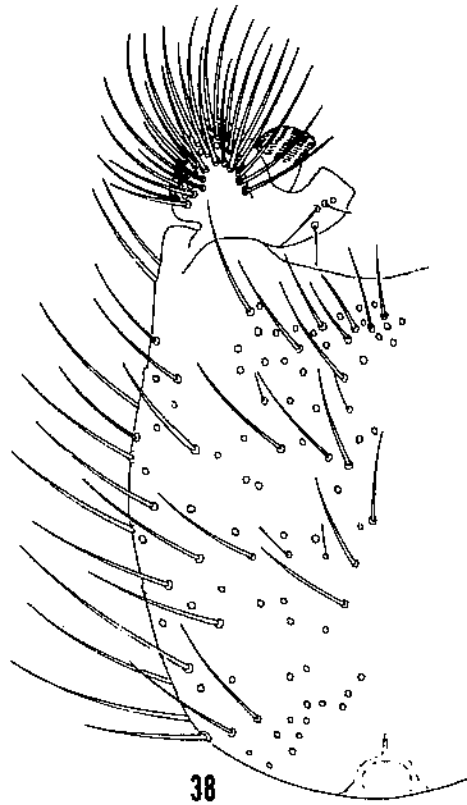
FIGURES 25-30.—Male terminalia. *T. clavigera* (Brockenhurst, England): 25, Gonopod; 26, gonostylus; 27, tergites IX-X. *T. beata* (Redding, Conn.): 28, Gonopod; 29, gonostylus; 30, tergites IX-X.



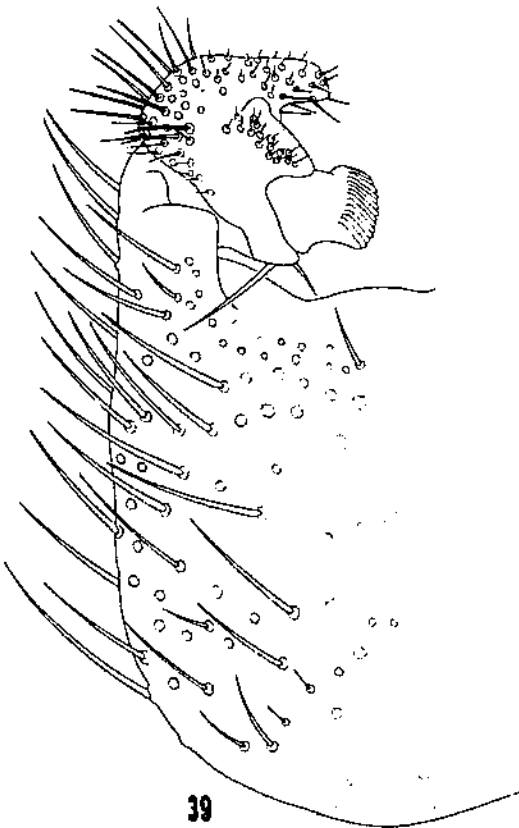
FIGURES 31-36.—Male terminalia. *T. vulgaris* (Montgomery Co., Md.): 31, Gonopod; 32, gonostylus; 33, tergites IX-X; 34, gonostylus (medial view). *T. brevicauda* (Taos, N. Mex.): 35, Gonostylus. *T. arnica* (Abbotsford, Quebec): 36, Gonostylus.



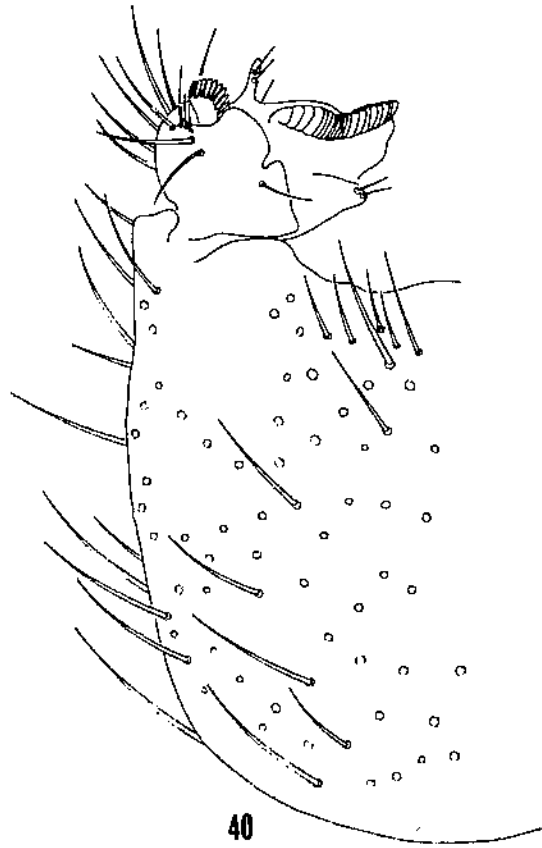
37



38

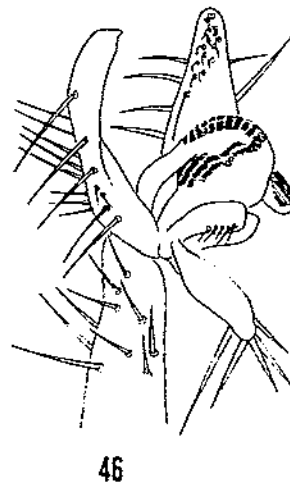
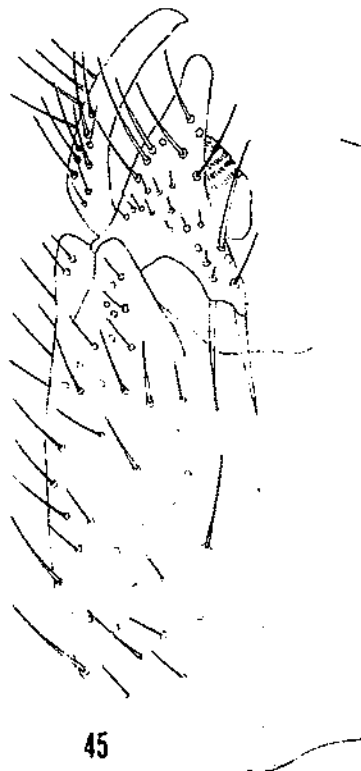
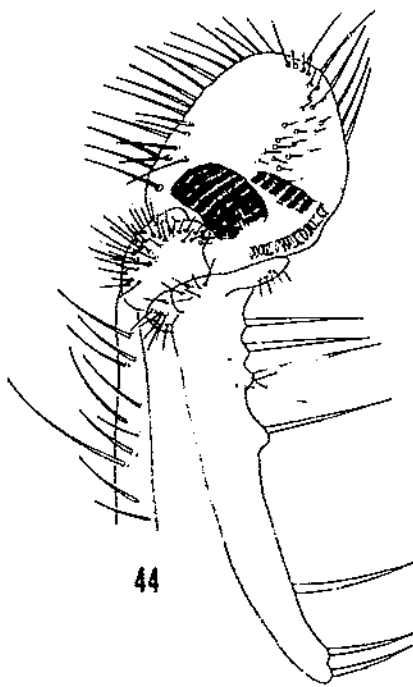
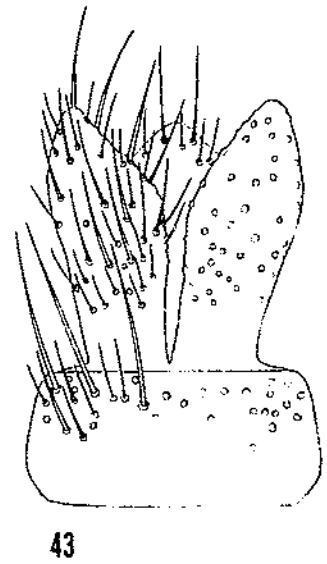
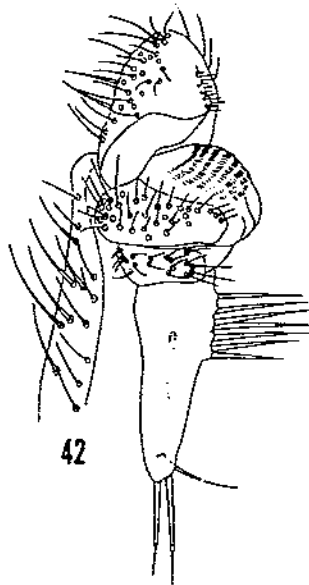


39

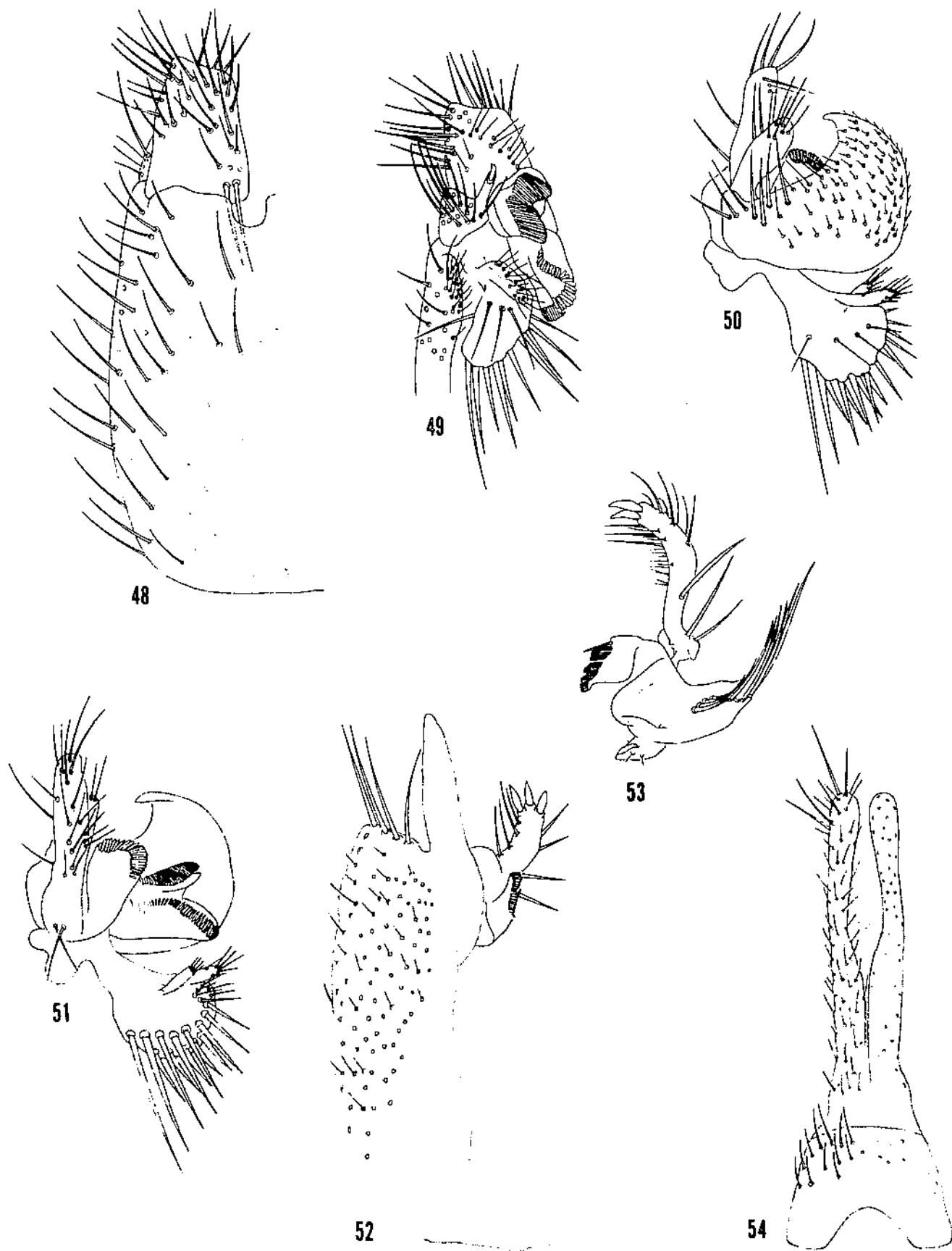


40

FIGURES 37-40.—Male terminalia. *T. generosa* (Isabel Pass, Alaska): 37, Gonopod. *T. merita* (North Fork Pass, Yukon): 38, Gonopod. *T. clemens* (Roaring River, Colo.): 39, Gonopod. *T. bifida* (Kuustö, Finland): 40, Gonopod.



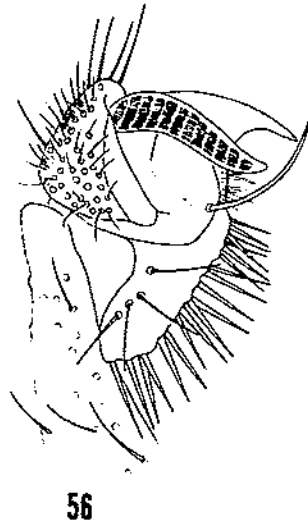
FIGURES 41-47.—Male terminalia. *T. placida* (Sinaloa, N. Mex.): 41, Gonopod; 42, gonostylus; 43, tergites IX-X. *T. superba* (Nepal): 44, Gonostylus. *T. justa* (Marin Co., Calif.): 45, Gonopod; 46, gonostylus; 47, tergites IX-X.



FIGURES 48-54.—Male terminalia. *T. bicolor* (Candlewood Lake, Conn.): 48, Gonopod; 49, gonostylus. *T. canora* (Kitee, Finland): 50, Gonostylus (ventral view); 51, same (dorsal view). *T. fissicauda* (Mt. Rainier, Wash.): 52, Gonopod (dorsal view); 53, gonostylus (caudal view); 54, tergites IX-X.



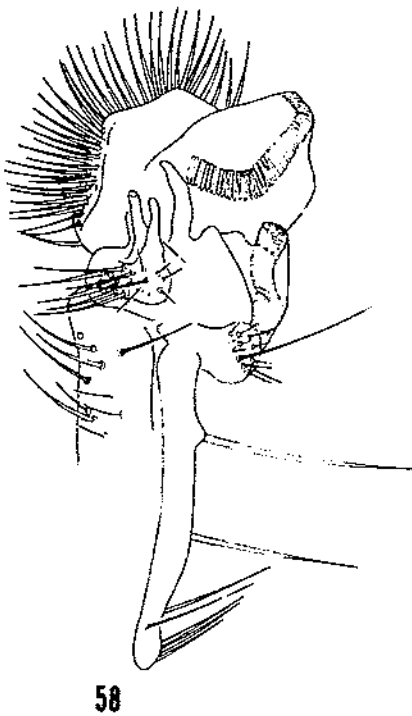
55



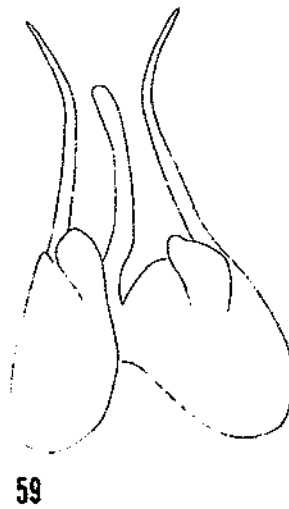
56



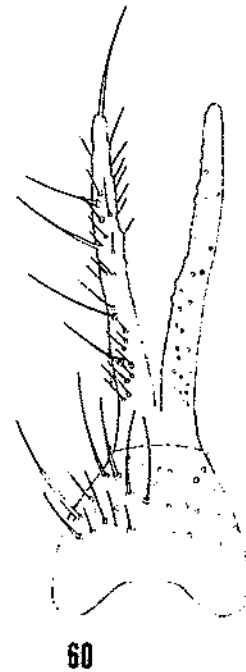
57



58

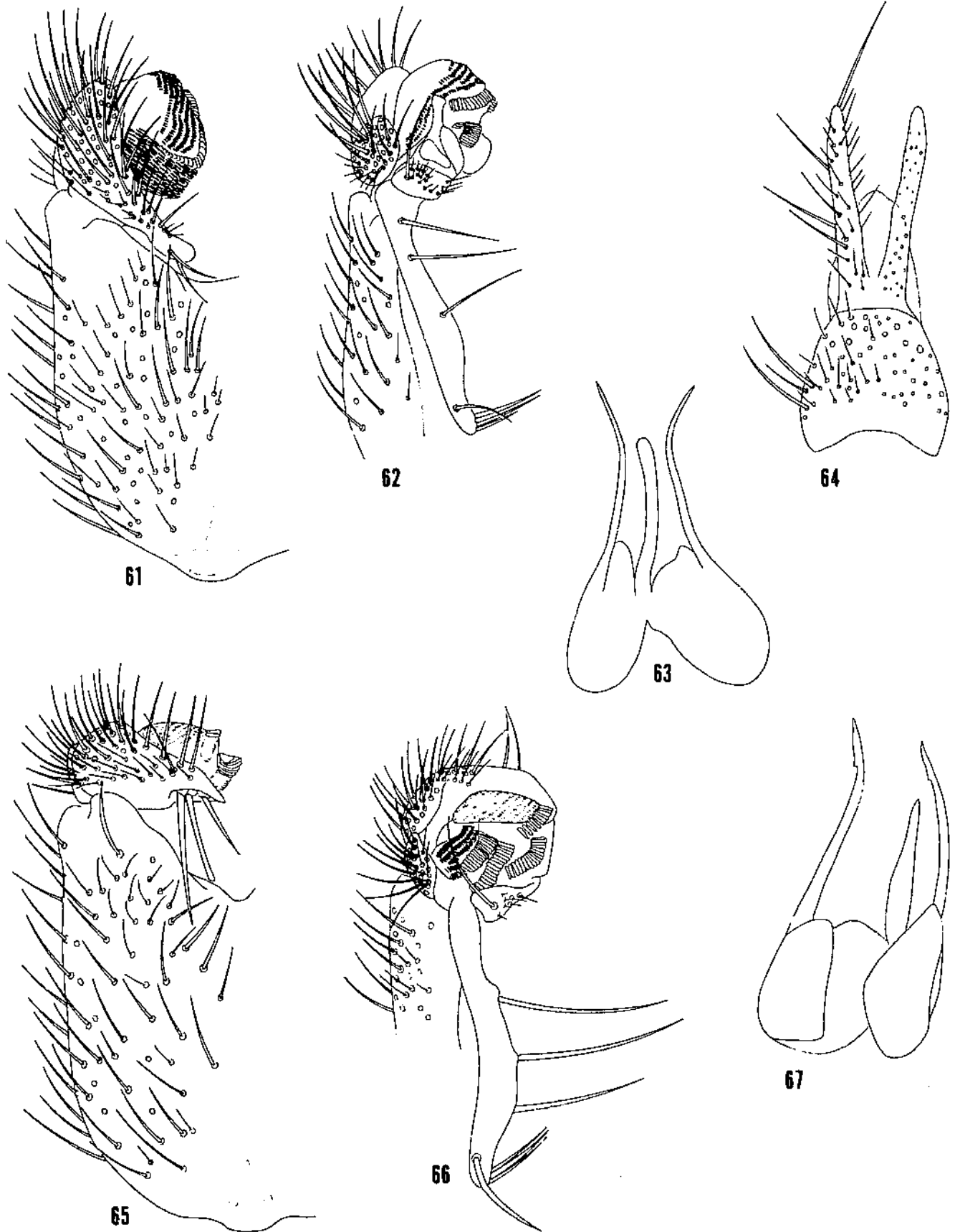


59

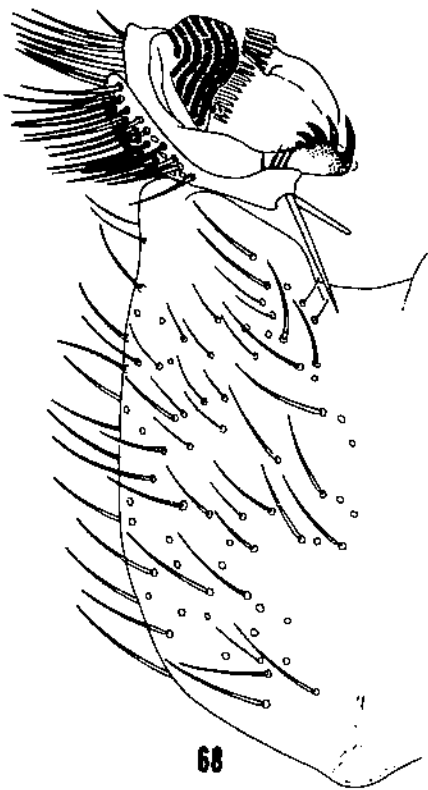


60

FIGURES 55-60.—Male terminalia. *T. salva* (Alpine Lake, Calif.): 55, Gonopod; 56, gonostylus. *T. melanura* (Moscow, Idaho): 57, Gonopod; 58, gonostylus; 59, aedeagus; 60, tergites IX-X.



FIGURES 61-67.—Male terminalia. *T. atricauda* (Mt. Orford, Quebec): 61, Gonopod; 62, gonostylus; 63, aedeagus; 64, tergites IX-X. *T. eximia* (Priest Lake, Idaho): 65, Gonopod; 66, gonostylius; 67, aedeagus.



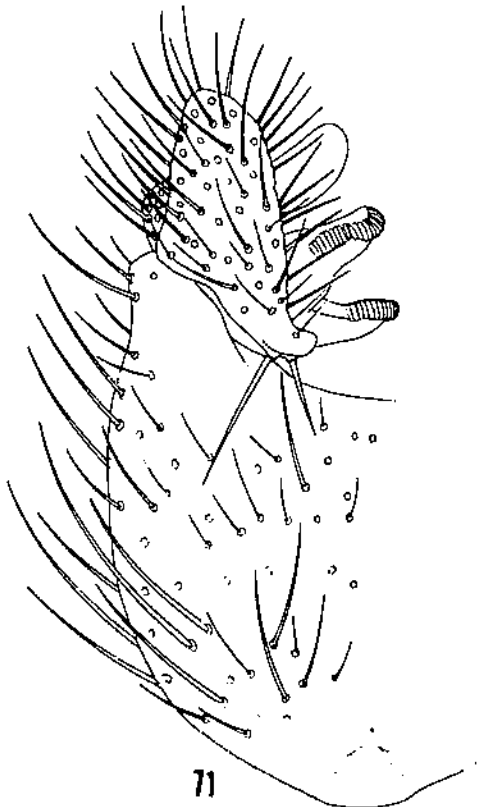
68



69



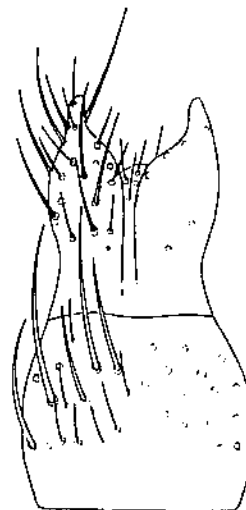
70



71



72

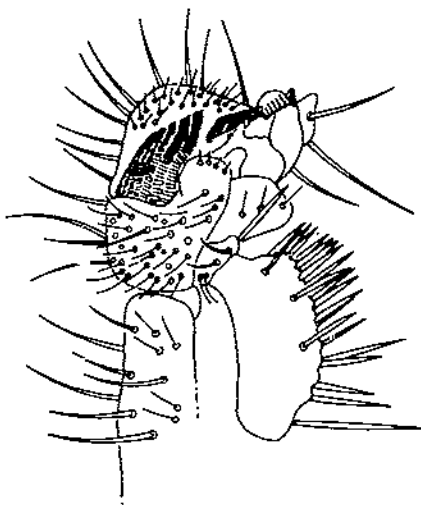


73

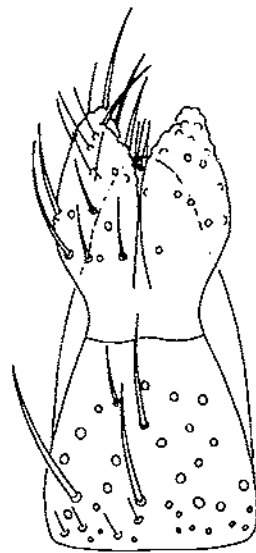
FIGURES 68-73.—Male terminalia. *T. delicata* (Glacier Park, Mont.): 68, Gonopod. *T. patens* (Slade Park, Colo.): 69, Gonopod; 70, gonostylus (lateral view). *T. comica* (Berkeley, Calif.): 71, Gonopod; 72, gonostylus; 73, tergites IX-X.



74



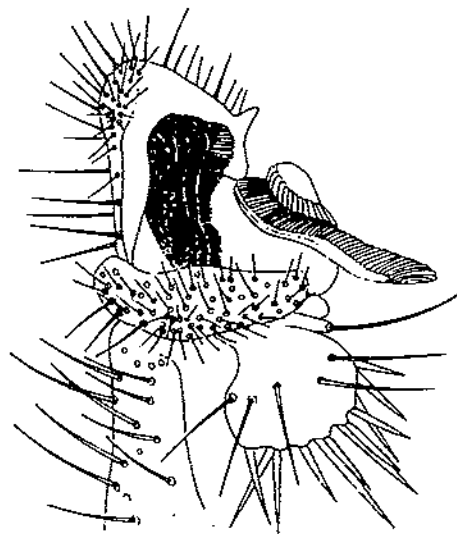
75



76

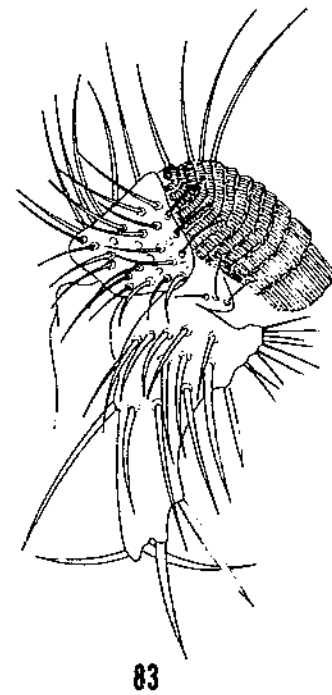
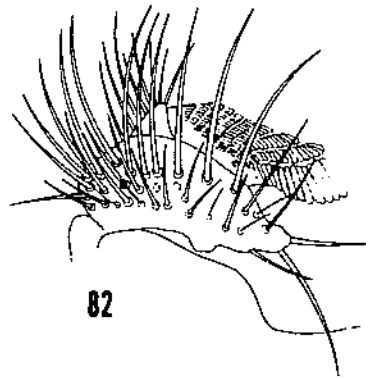
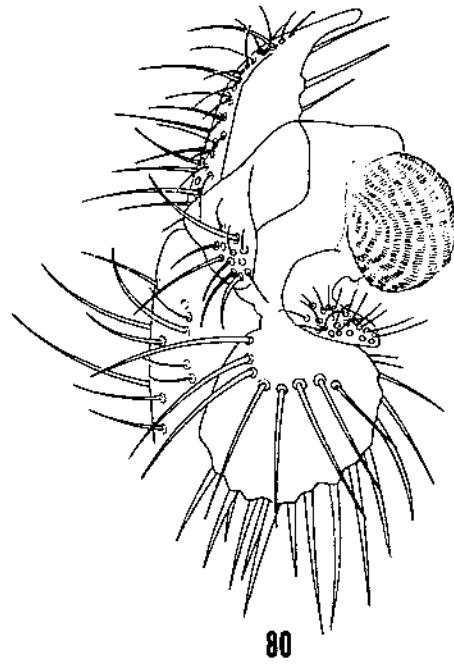
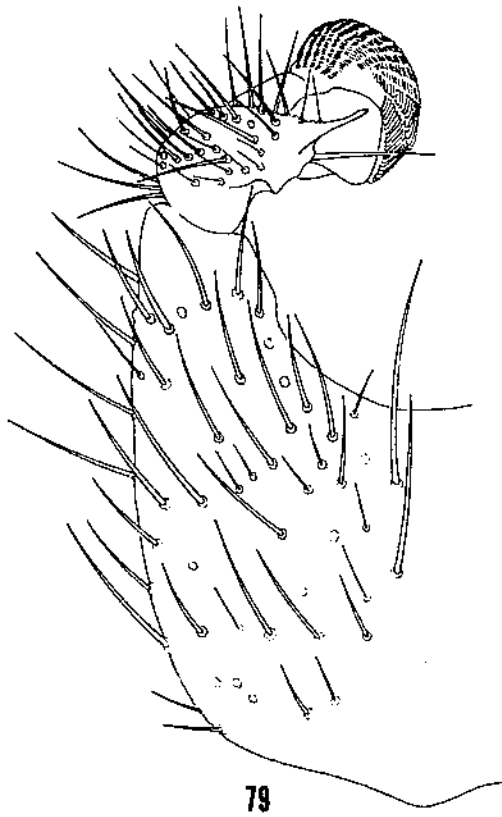


77

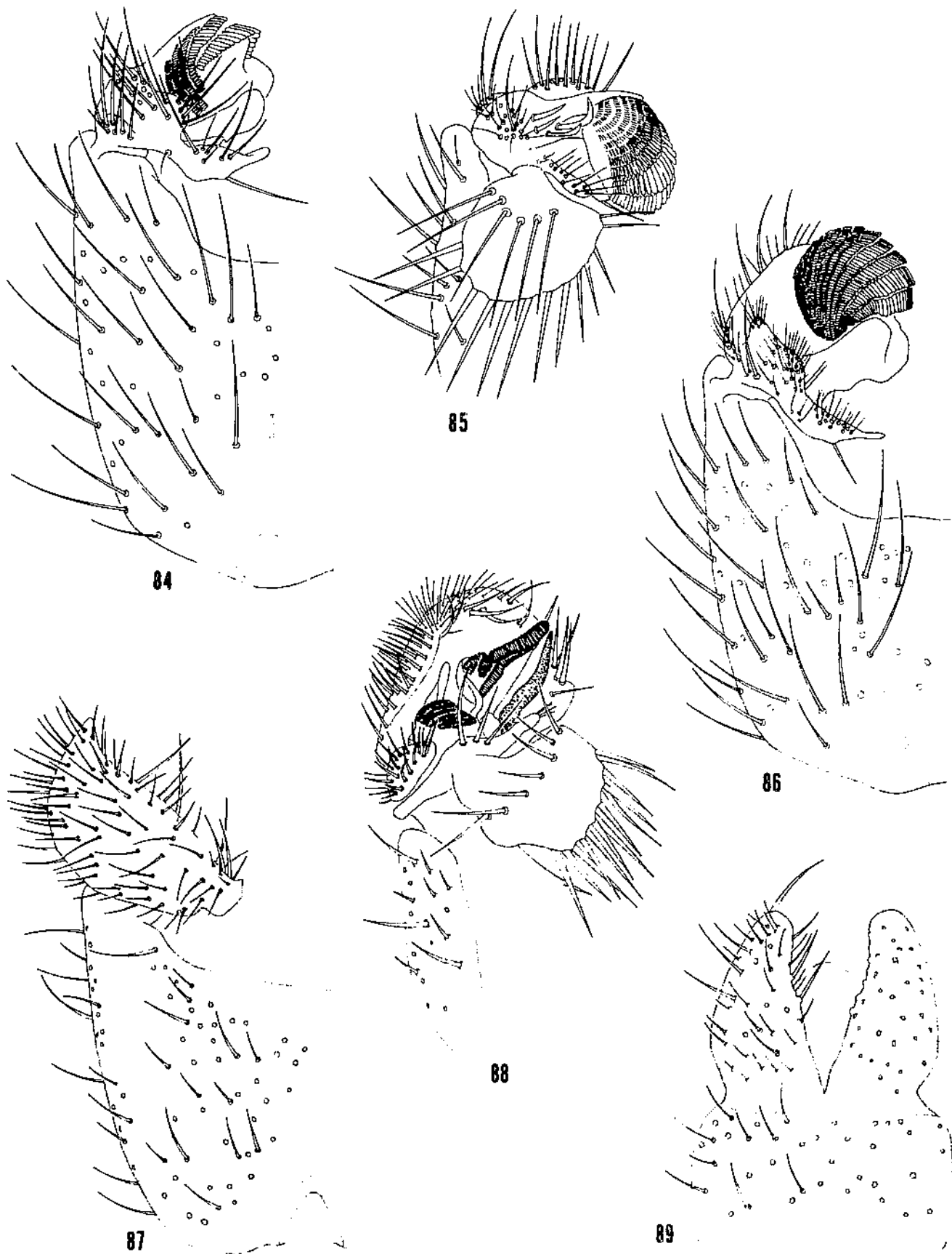


78

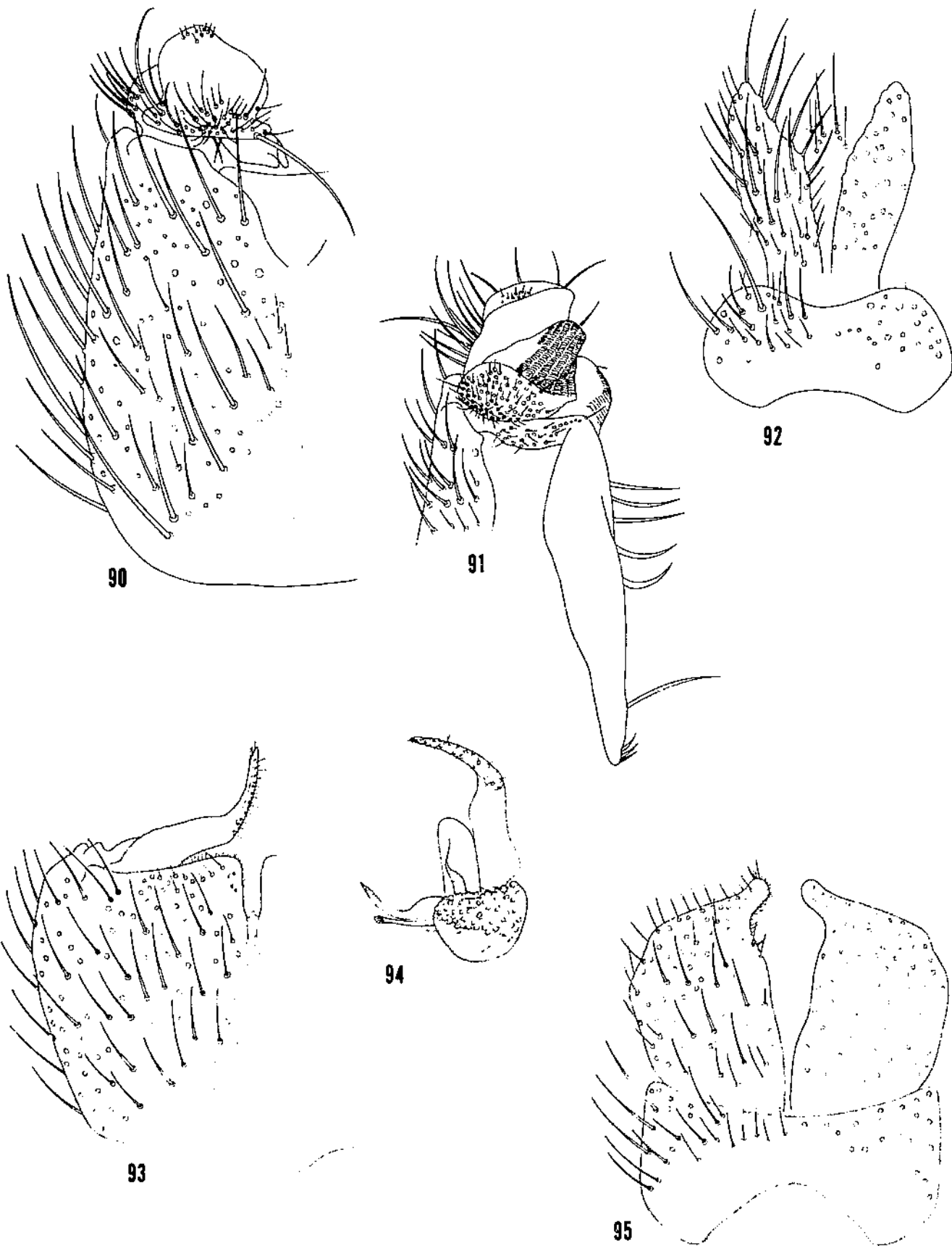
FIGURES 74-78.—Male terminalia. *T. concinna* (Oltenia, Rumania): 74, Gonopod; 75, gonostylus; 76, tergites IX-X. *T. contenta* (Nepal): 77, Gonopod; 78, gonostylus.



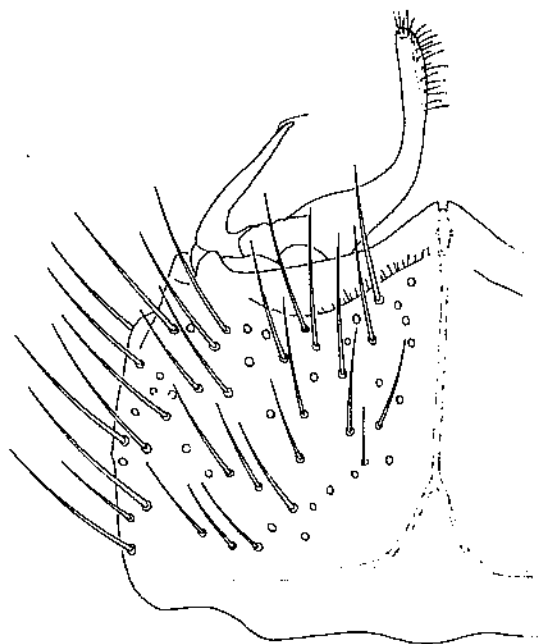
FIGURES 79-83.—Male terminalia. *T. sedula* (Itasca State Park, Minn.): 79, Gonopod; 80, gonostylus. *T. festa* (Tacoma, Wash.): 81, Gonopod. *T. fidelis* (Nepal): 82, Gonostylus (ventral view); 83, same (dorsal view).



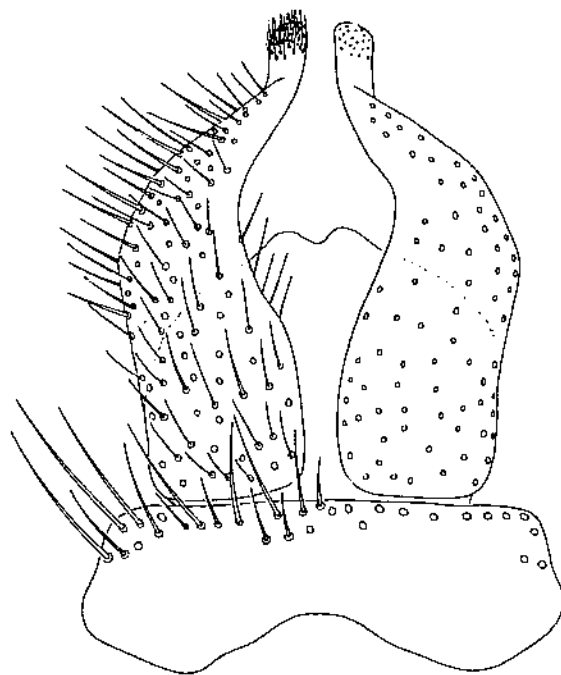
FIGURES 84-89.—Male terminalia. *T. flebilis* (Nepal): 84, Gonopod; 85, gonostylus. *T. conjungens* (Pojo, Finland): 86, Gonopod. *T. fusciventris* (Sonoma Co., Calif.): 87, Gonopod; 88, gonostylus; 89, tergites IX-X.



FIGURES 90-95.—Male terminalia. *T. perspicua* (Montgomery Co., Md.): 90, Gonopod; 91, gonostyliis; 92, lergites IX-X. *T. terminalis* (Teller, Alaska): 93, Gonopod; 94, gonostyliis (caudal view); 95, lergites IX-X.



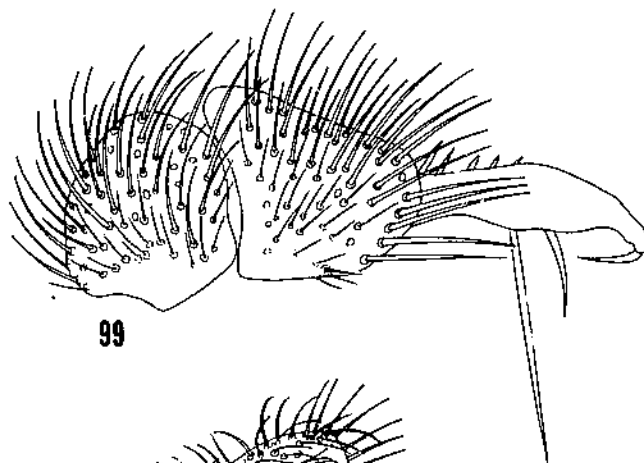
96



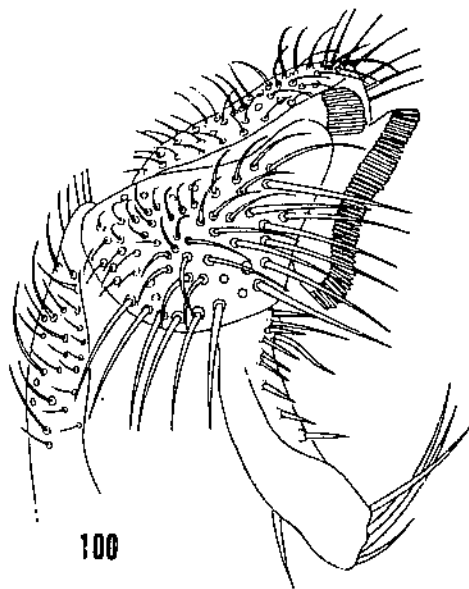
97



98



99

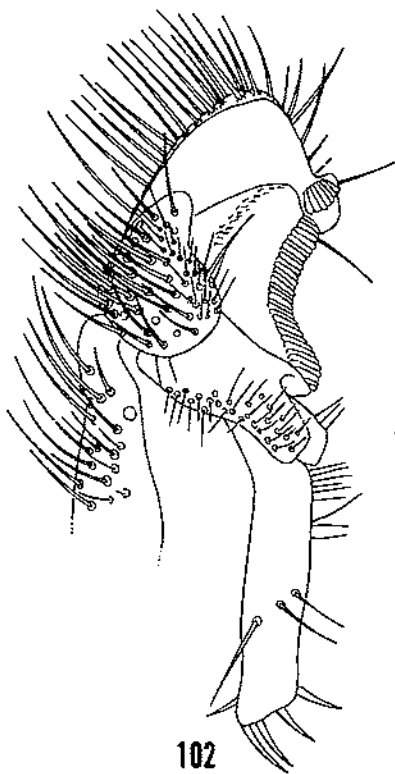


100

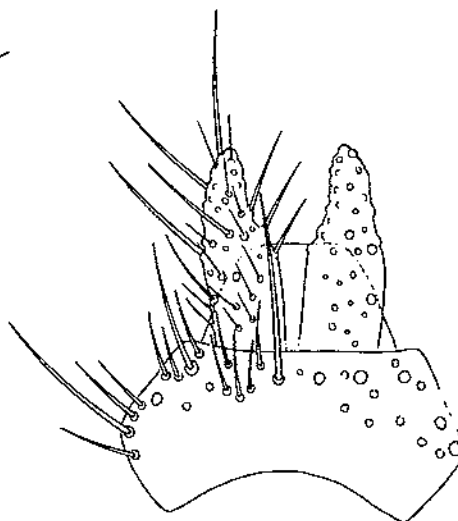
FIGURES 96-100.—Male terminalia. *T. facilis* (Ogilvie Mts., Yukon): 96, Gonopod; 97, tergites IX-X. *T. hamata* (Waha, Idaho): 98, Gonopod; 99, gonostylus (lateral view); 100, same (dorsal view).



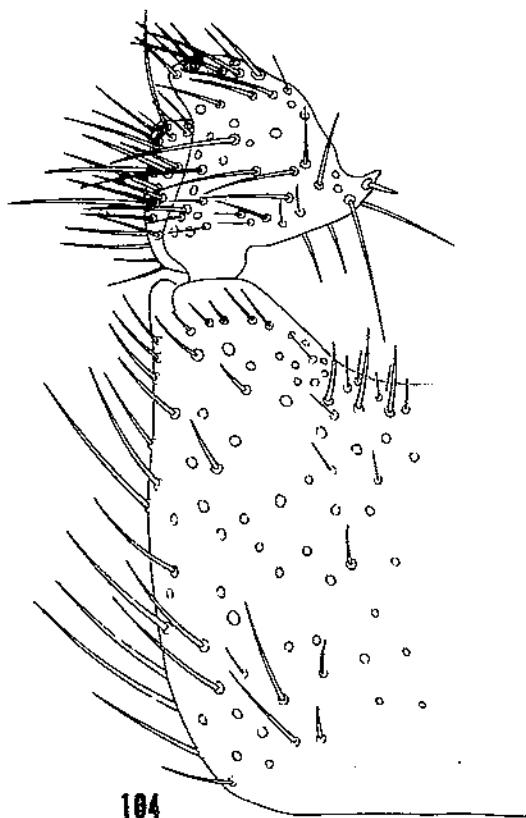
101



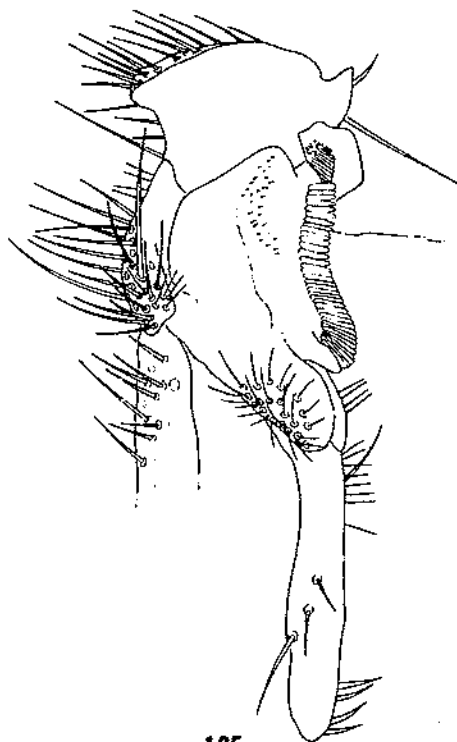
102



103

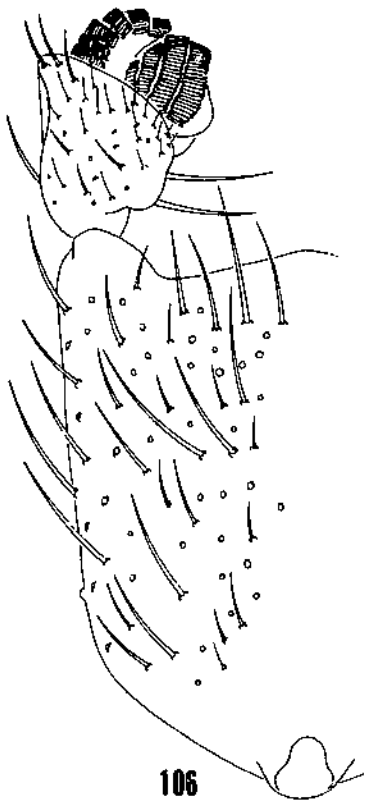


104

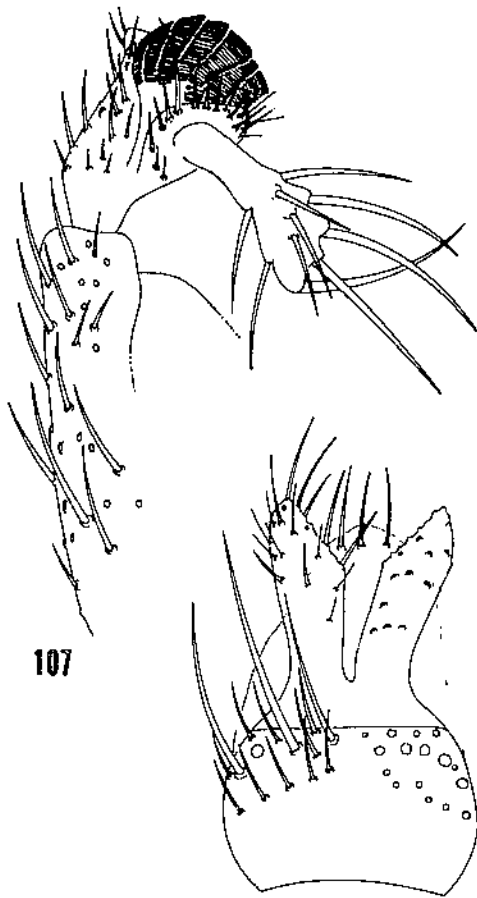


105

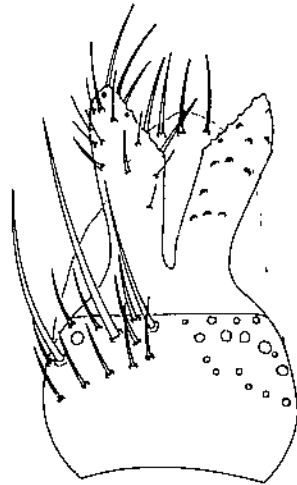
FIGURES 101-105.—Male terminalia. *T. gentilis* (Boone Co., Iowa): 101, Gonopod; 102, gonostylus; 103, tergites IX-X. *T. aberrans* (Oltenia, Rumania): 104, Gonopod; 105, gonostylus.



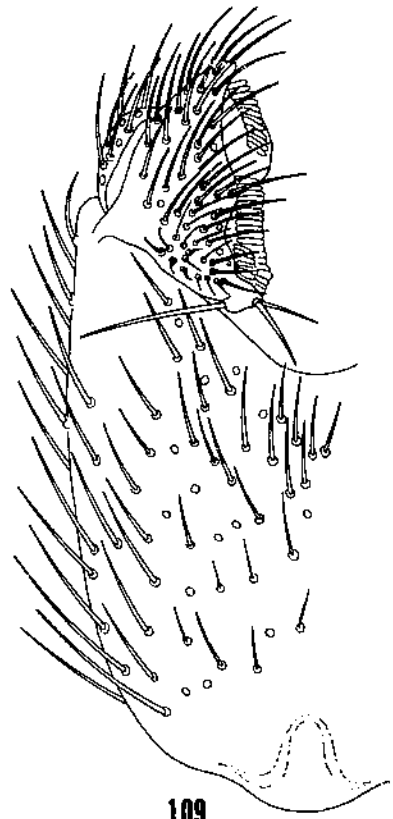
106



107



108



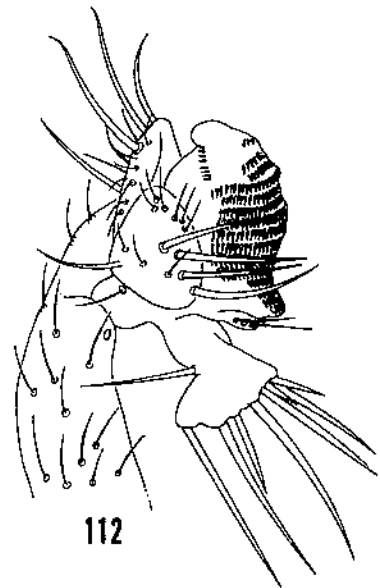
109



110

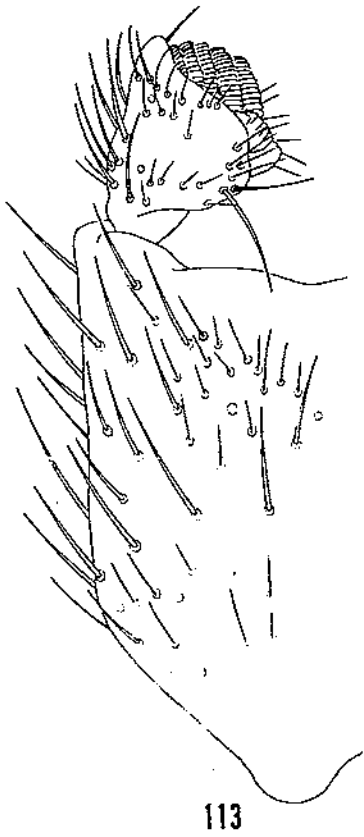


111

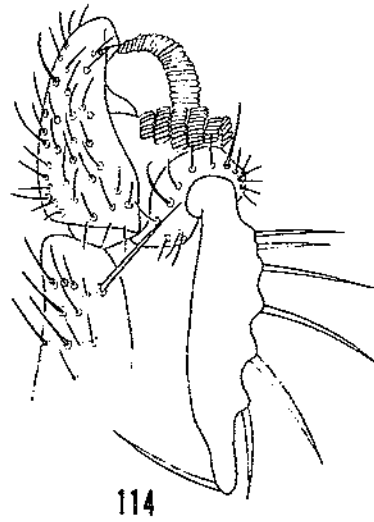


112

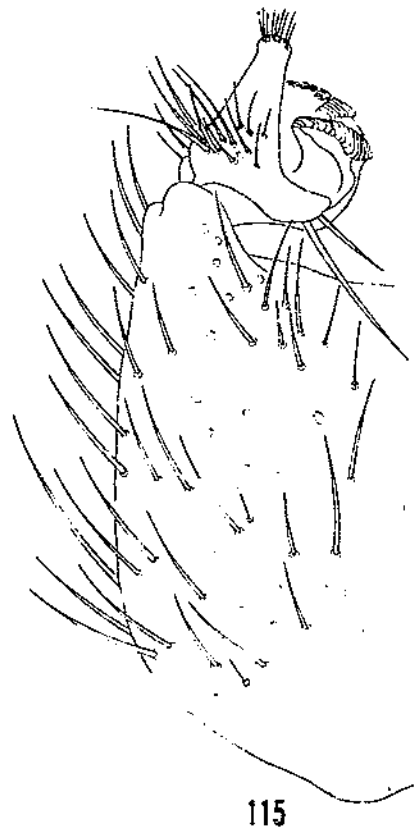
FIGURES 106-112.—Male terminalia. *T. vitta* (Allegheny State Park, Pa.): 106, Gonopod; 107, gonostylus; 108, tergites IX-X. *T. lyrica* (Bois de Cerfontaine, Belgium): 109, Gonopod; 110, gonostylus. *T. icenica* (Vihtijärvi, Finland): 111, Gonopod; 112, gonostylus.



113



114



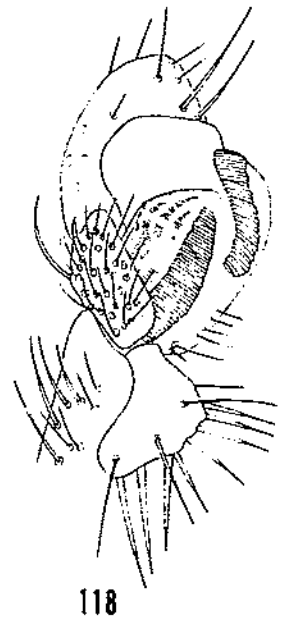
115



116

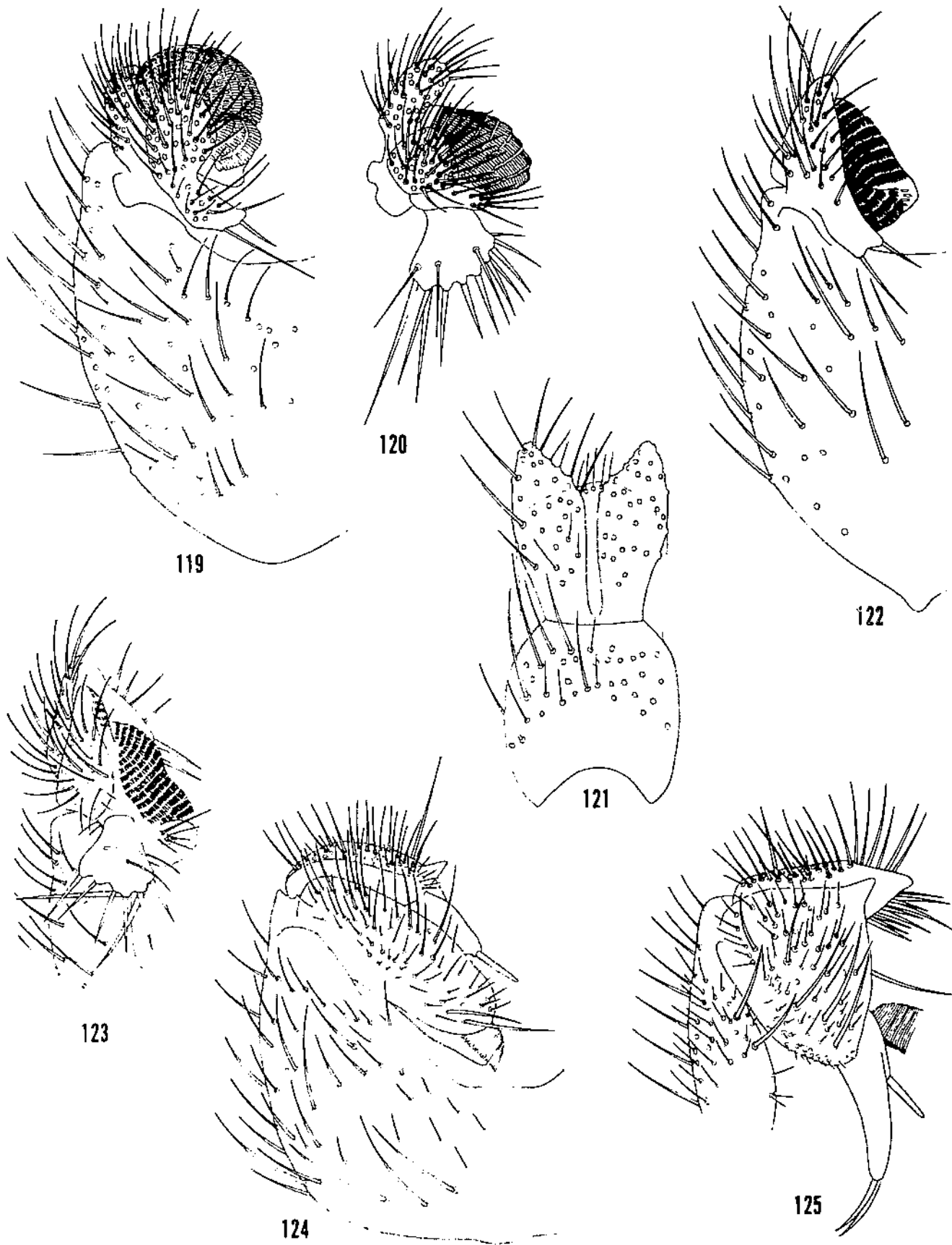


117



118

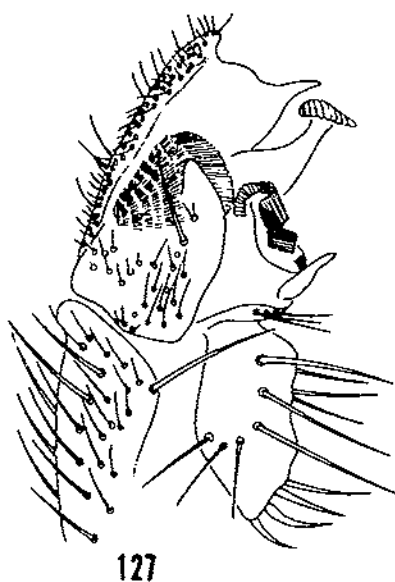
FIGURES 113-118.—Male terminalia. *T. submaculata* (Corsica): 113, Gonopod; 114, gonostylus. *T. sublusca* (Terrace, Brit. Col.): 115, Gonopod; 116, gonostylus. *T. sobria* (Nepal): 117, Gonopod; 118, gonostylus.



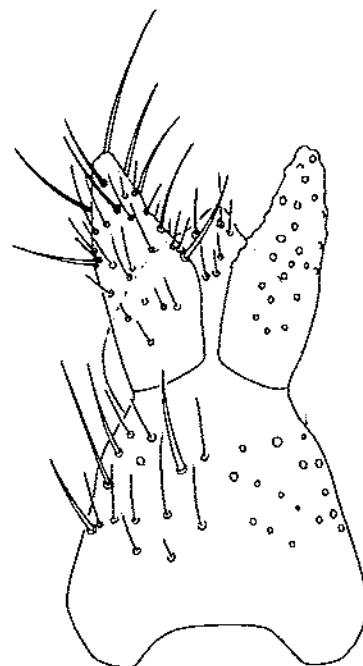
FIGURES 119-125.—Male terminalia. *T. pulchra* (Stiltville, Ontario): 119, Gonopod; 120, gonostylus; 121, Iergites IX-X. *T. valida* (Chiapas, Mexico): 122, Gonopod; 123, gonostylus. *T. foeda* (Falls Church, Va.): 124, Gonopod; 125, gonostylus.



126



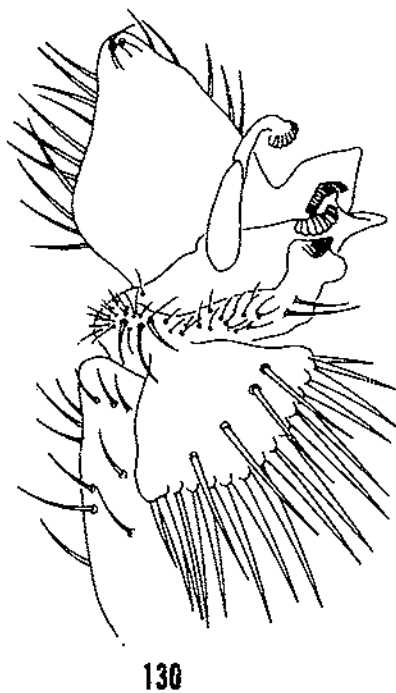
127



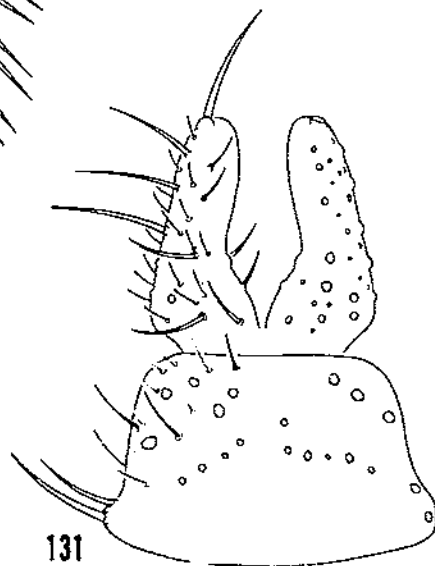
128



129

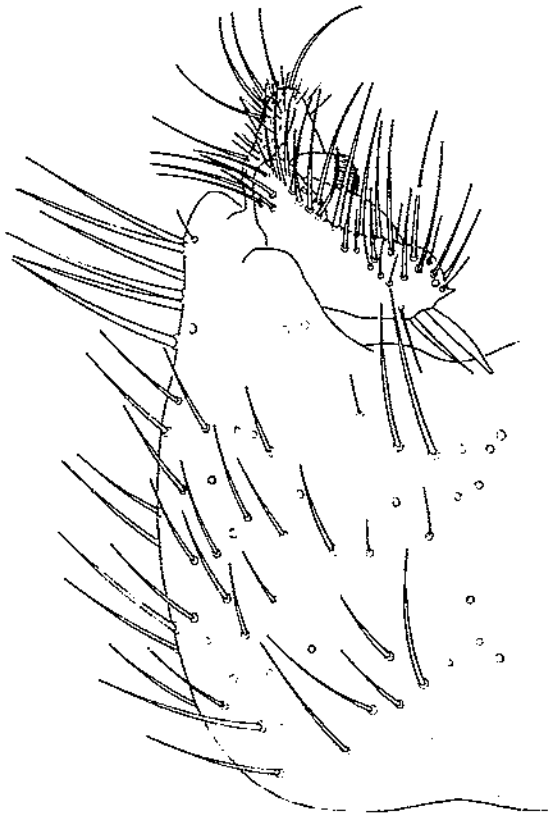


130

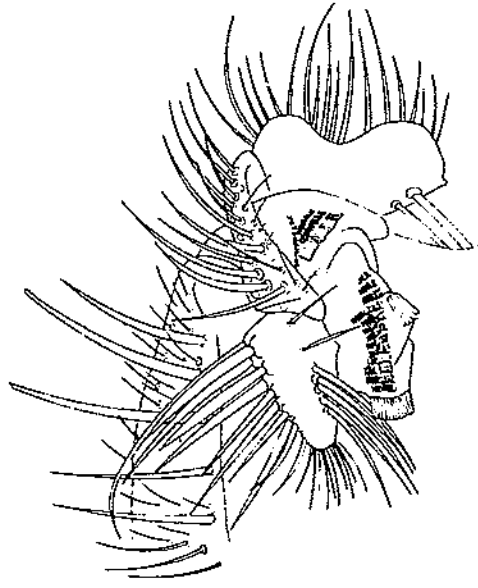


131

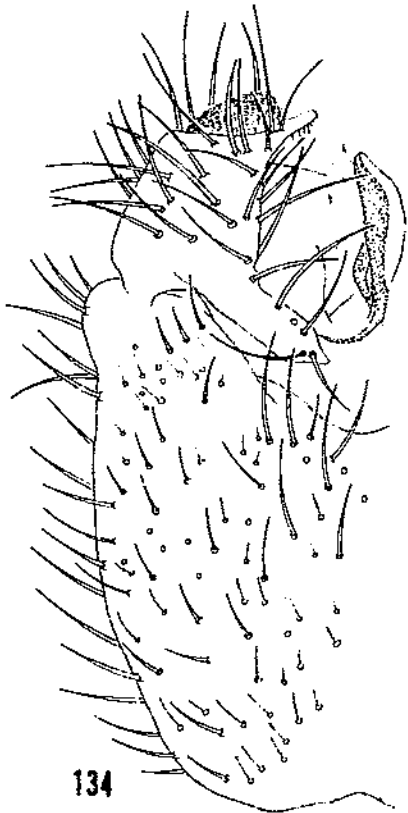
FIGURES 126-131.—Male terminalia. *T. comis* (Juuma, Finland): 126, Gonopod; 127, gonostylus; 128, tergites IX-X. *T. apicalis* (Laminière Seine-el-Oise, France): 129, Gonopod; 130, gonostylus; 131, tergites IX-X.



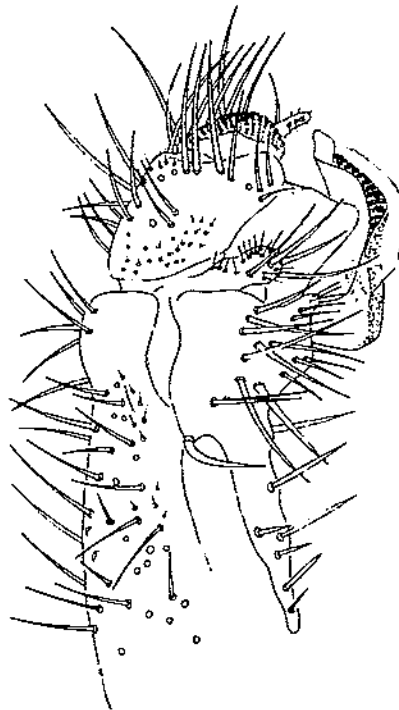
132



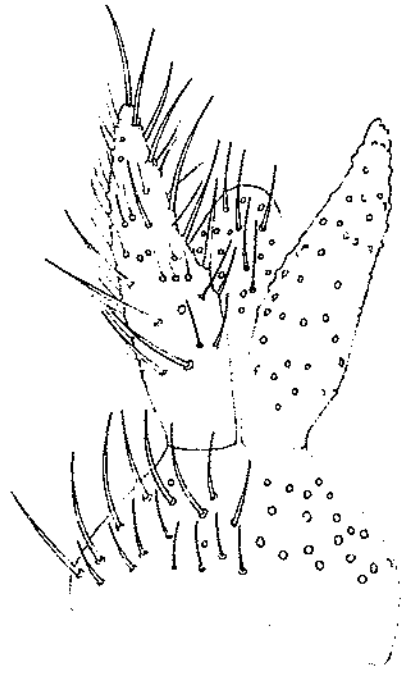
133



134

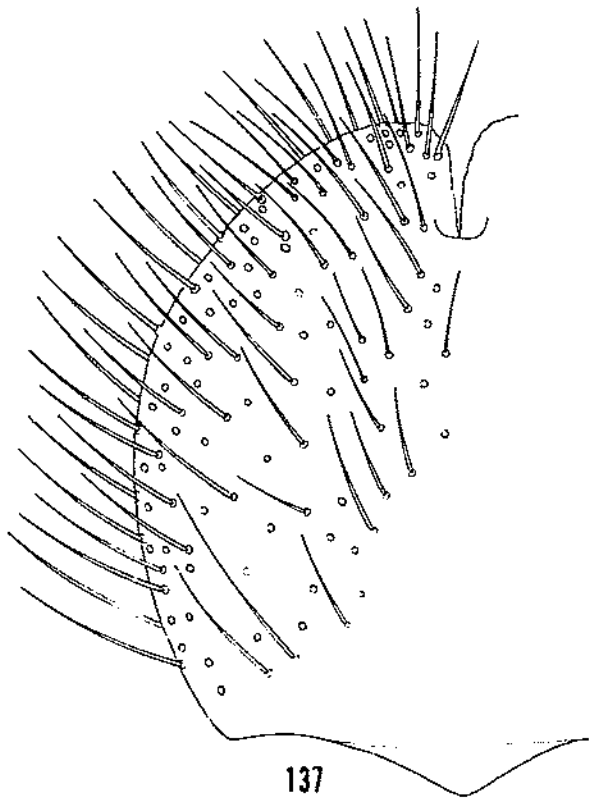


135

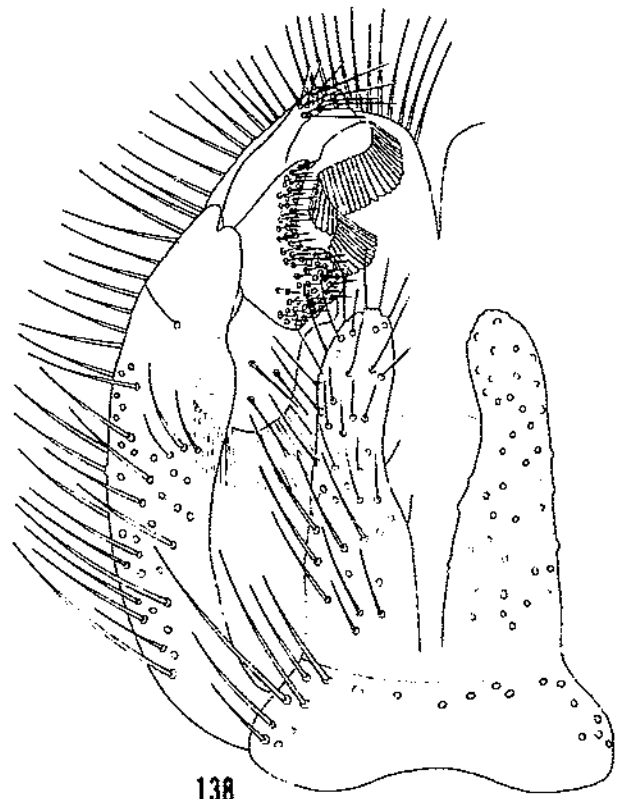


136

FIGURES 132-136.—Male terminalia. *T. fusca* (Vihtijärvi, Finland): 132, Gonopod; 133, gonostylus. *T. venosa* (Seal Harbor, Maine): 134, Gonopod; 135, gonostylus; 136, tergites IX-X.



137



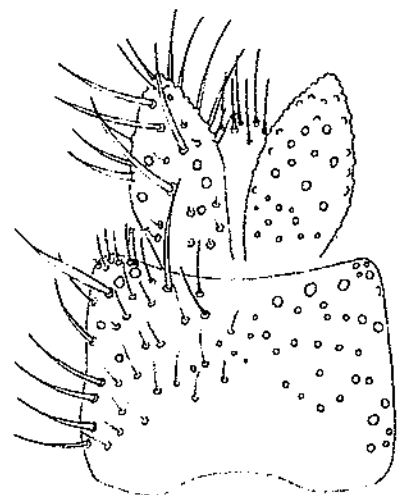
138



139

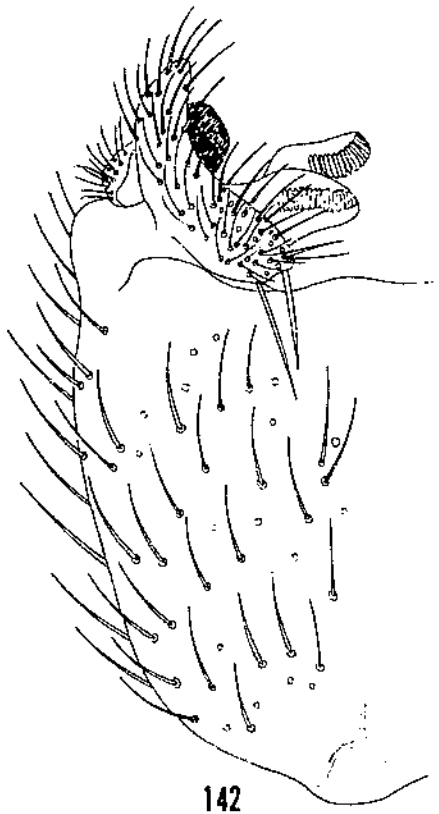


140

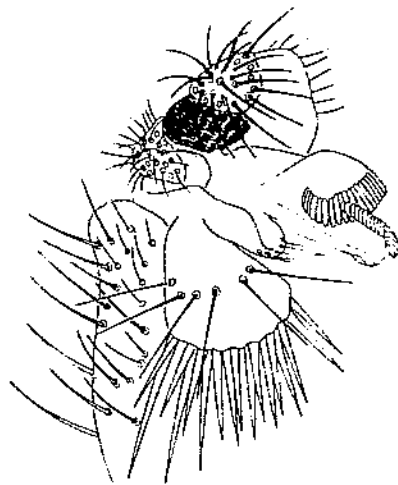


141

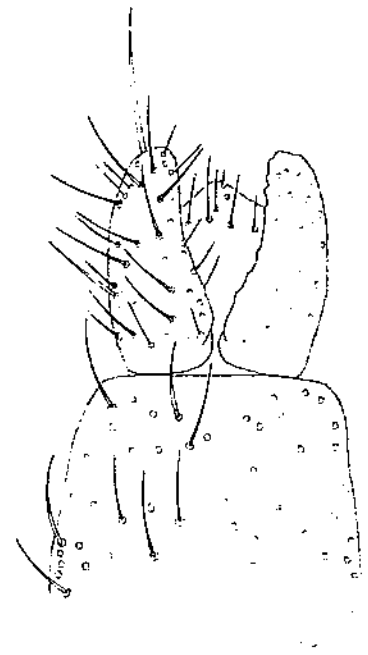
FIGURES 137-141.—Male terminalia. *T. serena* (Penticton, Brit. Col.): 137, Gonocoxite; 138, gonopod and tergites IX-X. *T. flavicauda* (Mt. Baker, Oreg.): 139, Gonopod; 140, gonostylius; 141, tergites IX-X.



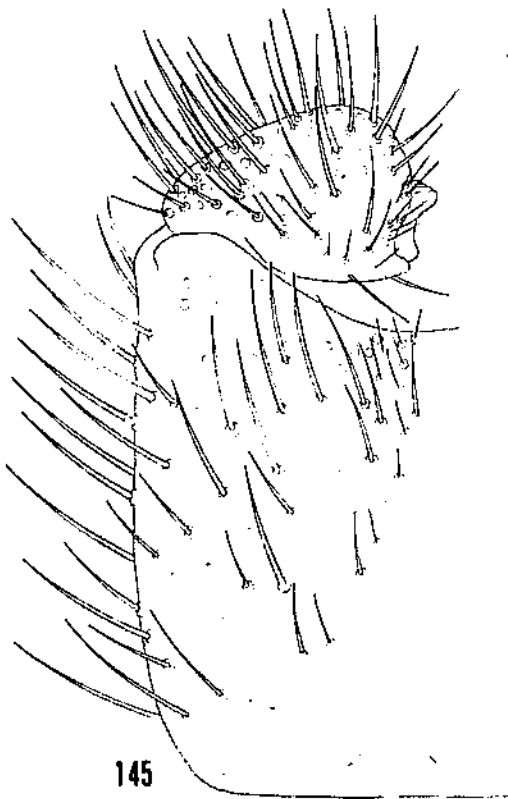
142



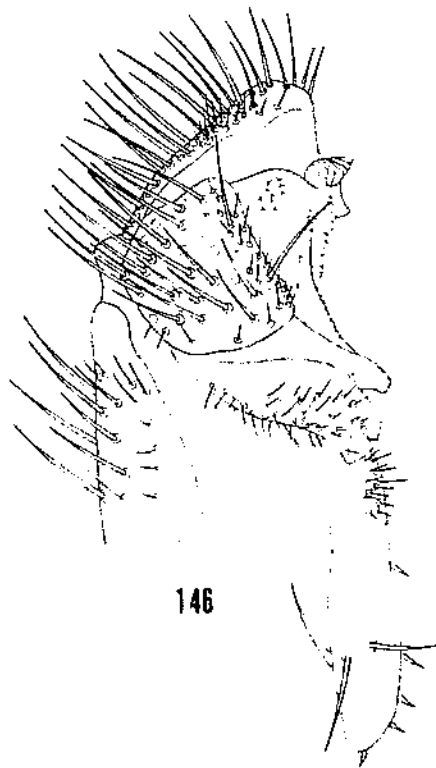
143



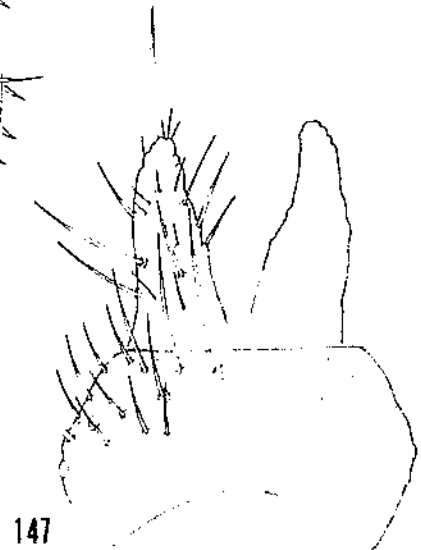
144



145

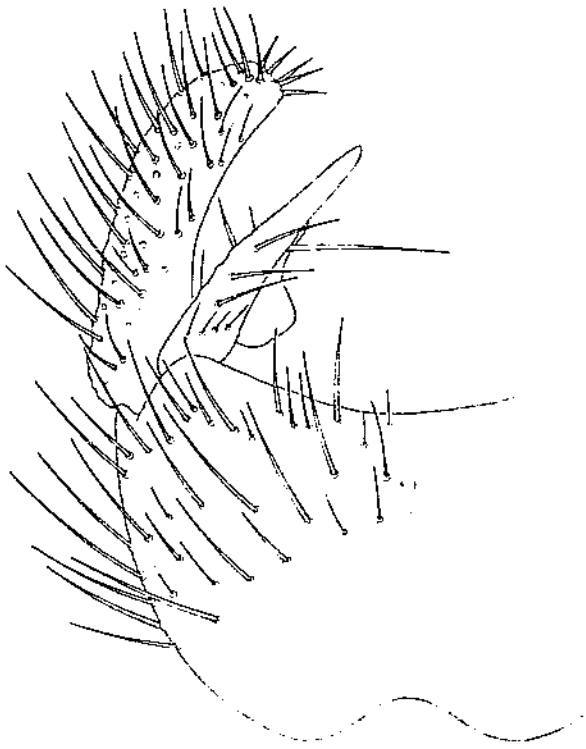


146

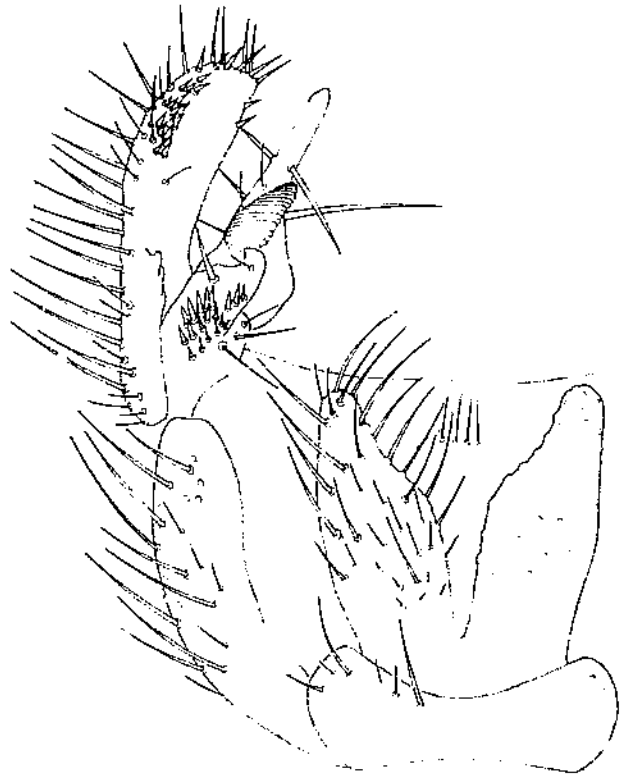


147

FIGURES 142-147.—Male terminalia. *T. excisa* (Durango, Mexico): 142, Gonopod; 143, gonostyli; 144, tergites IX-X. *T. chaoi* (Moscow Mt., Idaho): 145, Gonopod; 146, gonostyli; 147, tergites IX-X.



148



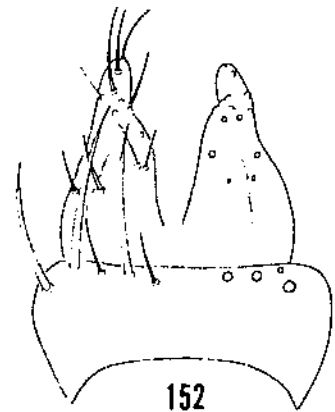
149



150



151



152

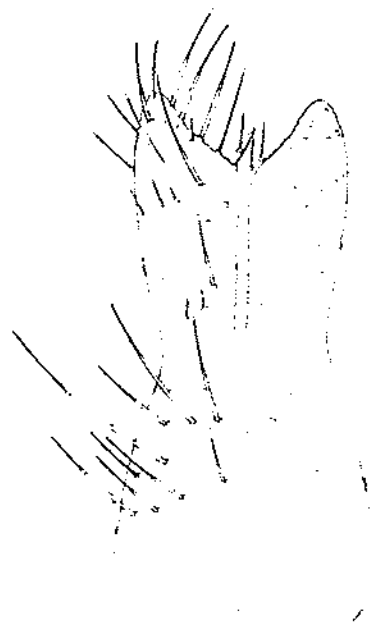
FIGURES 148-152.—Male terminalia. *T. secrea* (Horseshoe Bay, Brit. Col.): 148, Gonopod; 149, gonostylus and tergites IX-X. *T. sincera* (Central African Republic): 150, Gonopod; 151, gonostylus; 152, tergites IX-X.



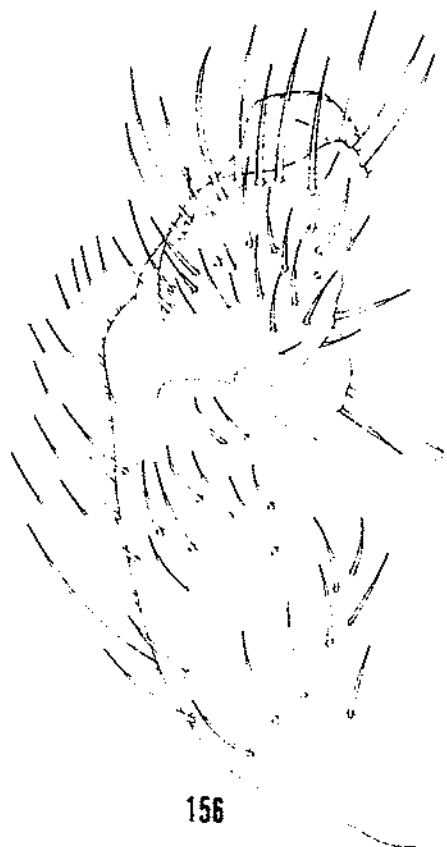
153



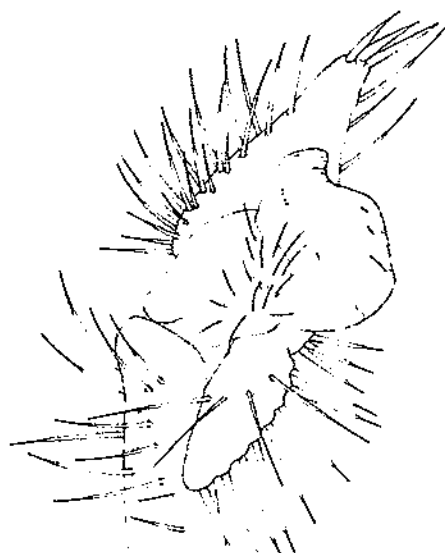
154



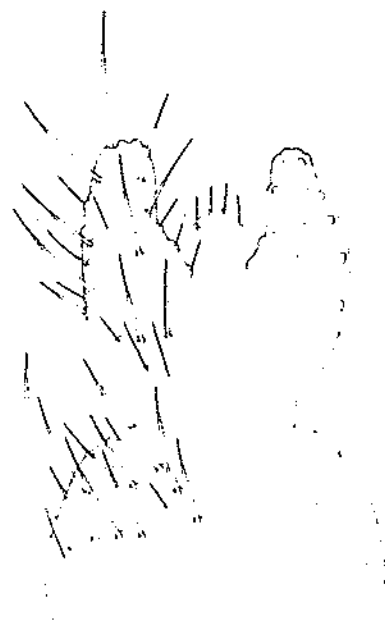
155



156

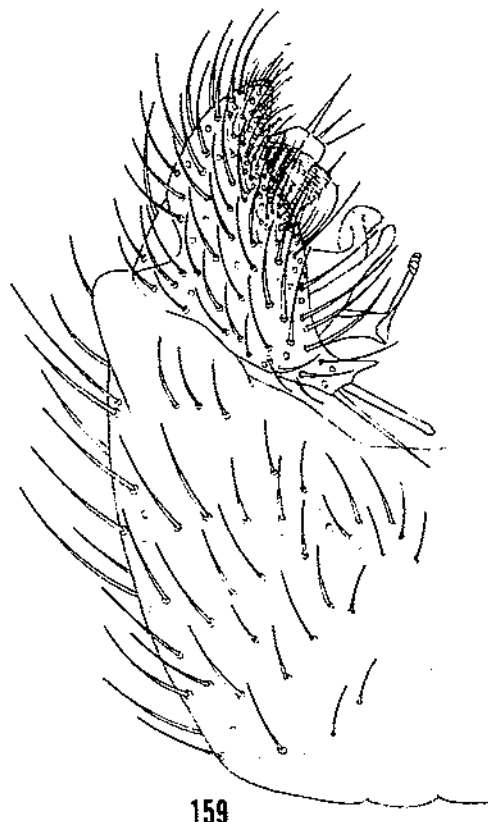


157

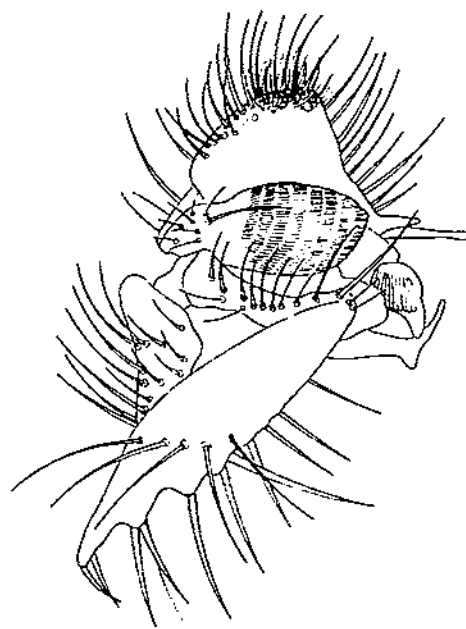


158

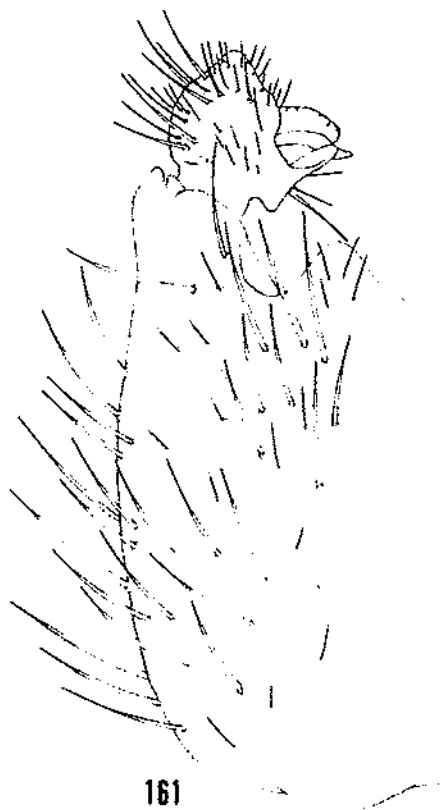
FIGURES 153-158.—Male terminalia. *T. sedata* (Osyoos, Brit. Col.): 153, Gonopod; 154, gonostylus; 155, tergites IX-X. *T. clara* (White Mts., N.H.): 156, Gonopod; 157, gonostylus; 158, tergites IX-X.



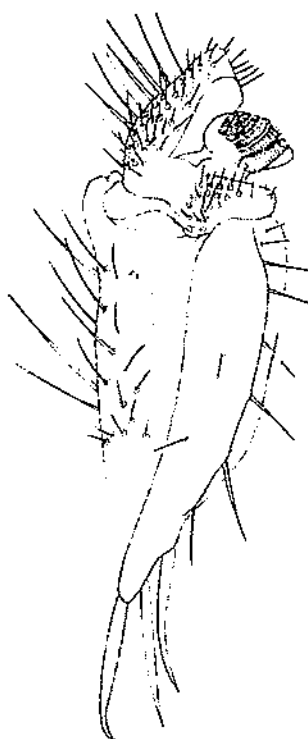
159



160



161



162

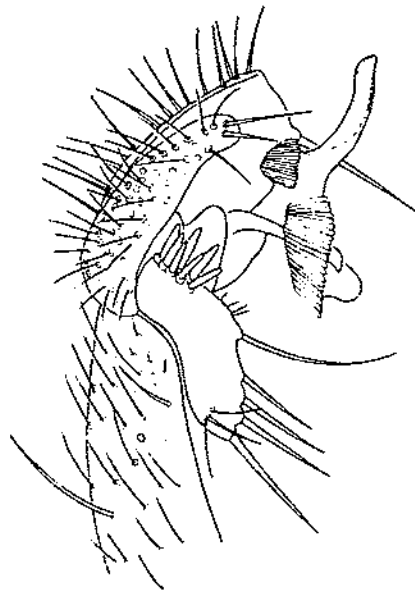


163

FIGURES 159-163.—Male terminalia. *T. bezzii* (Lockeport, Nova Scotia): 159, Gonopod; 160, gonostylus. *T. girschneri* (Glacier Park, Mont.): 161, Gonopod; 162, gonostylus; 163, tergites IX-X.



164



165



166

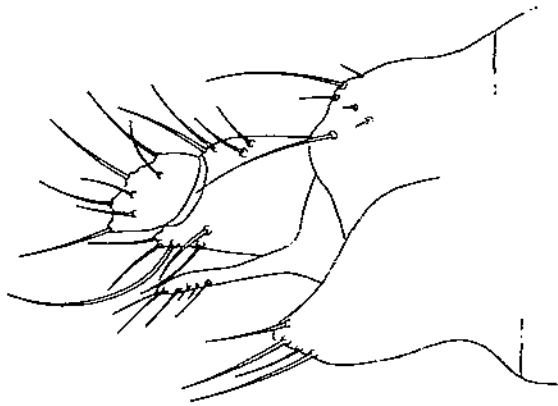


167



168

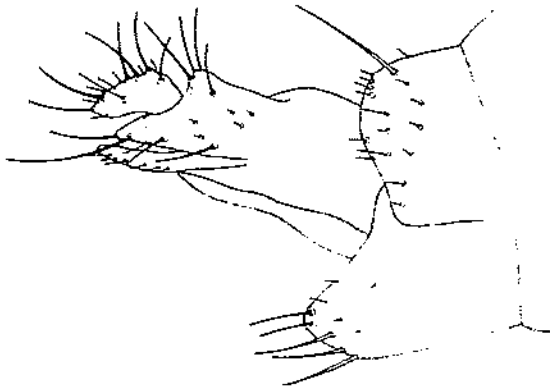
FIGURES 164-168.—Male terminalia. *T. falcata* (Boston, Mass.): 164, Gonopod; 165, gonostylus. *T. vulcani* (Tioga Co., Pa.): 166, Gonopod; 167, gonostylus; 168, tergites IX-X.



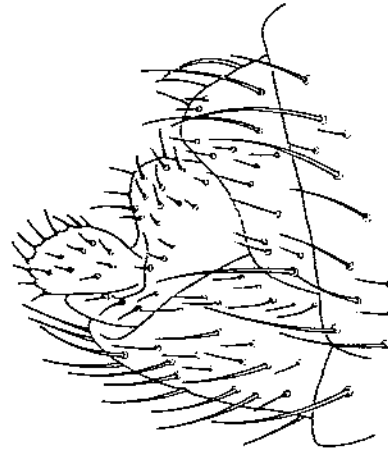
169



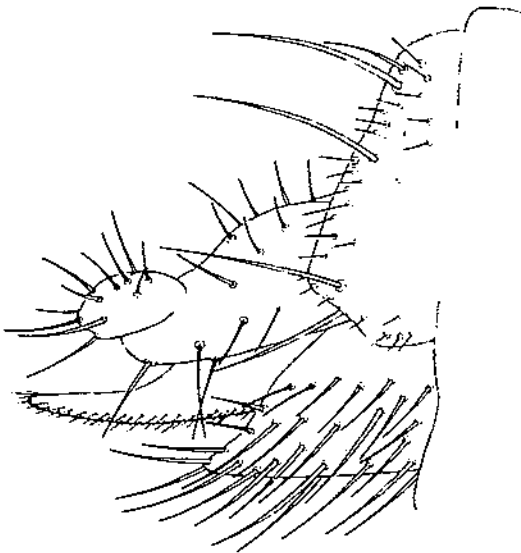
170



171



172

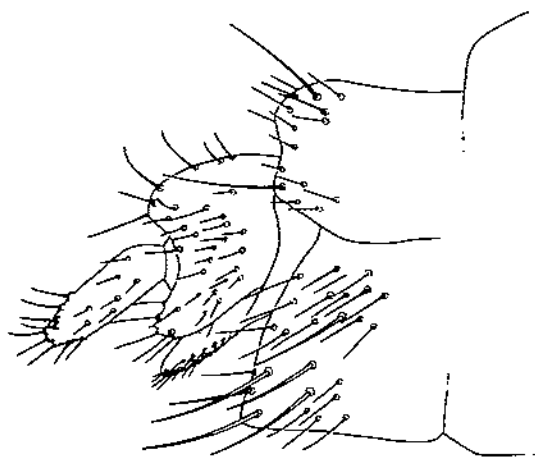


173

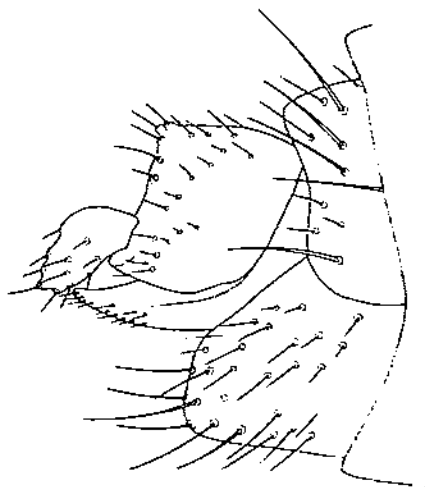


174

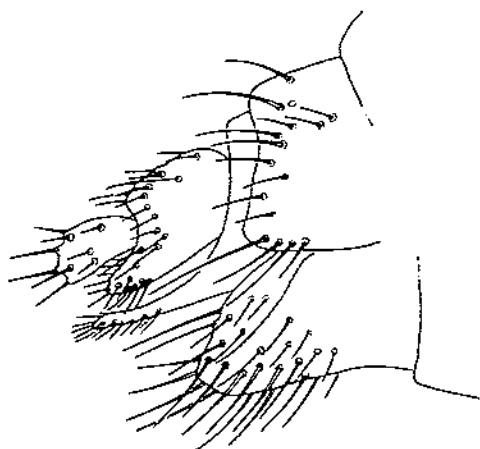
FIGURES 169-174.—Female terminalia: 169, *T. vitta* (Knowlton Landing, Quebec); 170, *T. subfusca* (Elkwater, Alberta); 171, *T. submaculata* (Lupsa Valley, Rumania); 172, *T. fusciventris* (Willamette Natl. Forest, Oreg.); 173, *T. fissicauda* (Terrace, Brit. Col.); 174, *T. chaoi* (Moscow Mt., Idaho).



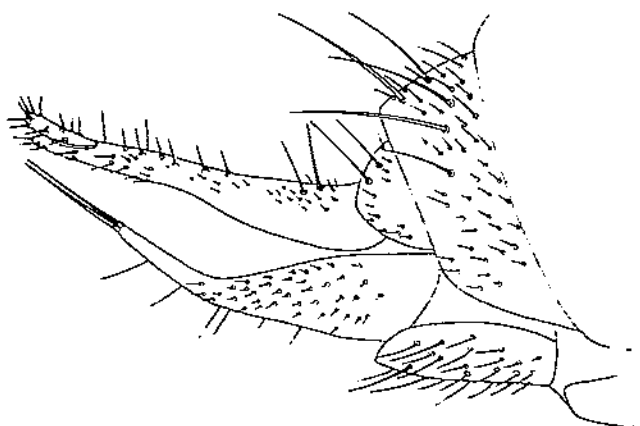
175



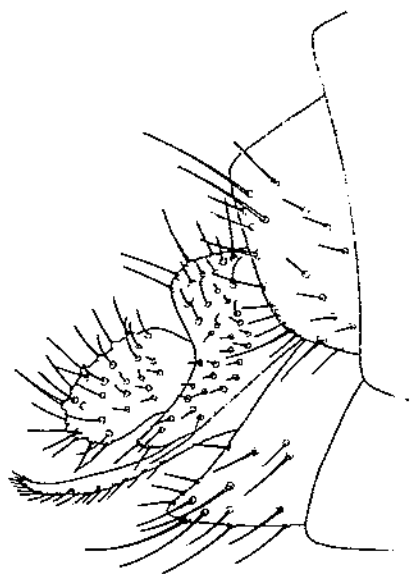
176



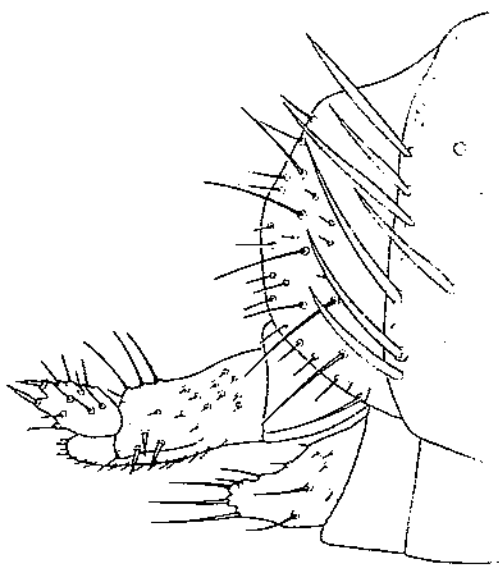
177



178

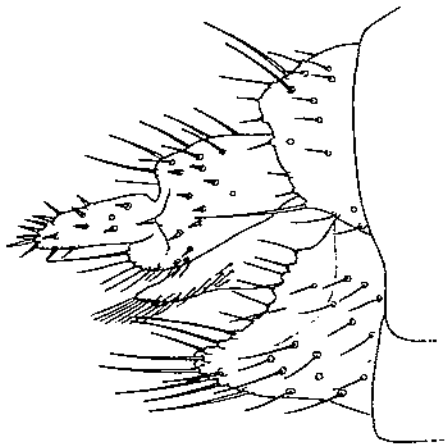


179

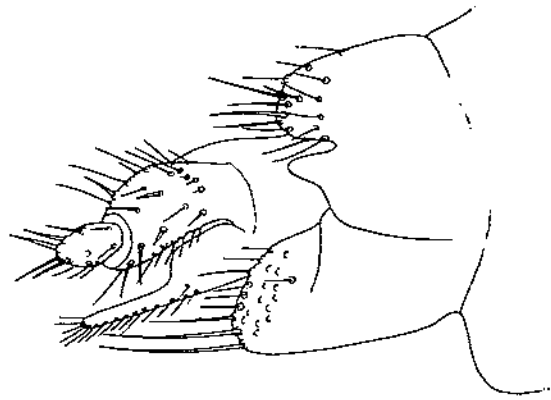


180

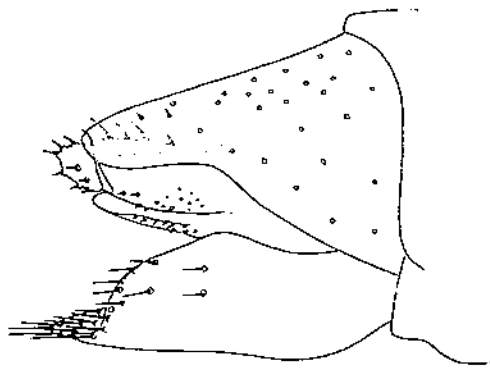
FIGURES 175-180.—Female terminalia: 175. *T. falcata* (Highlands, N.C.); 176. *T. foeda* (type, "Middle States"); 177. *T. clara* (Clear Creek, N.C.); 178. *T. girschneri* (Boone Co., Iowa); 179. *T. terminalis* (Ninette, Manitoba); 180. *T. festa* (Victoria, Brit. Col.).



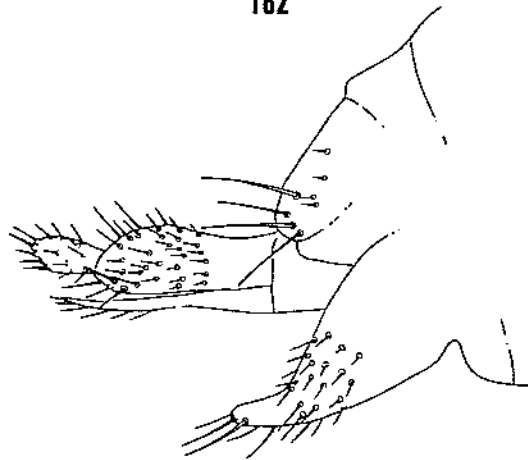
181



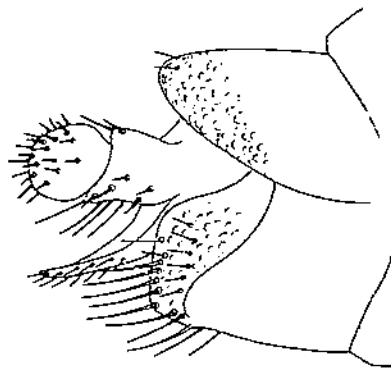
182



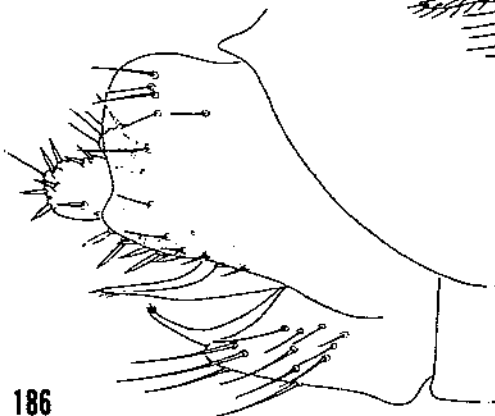
183



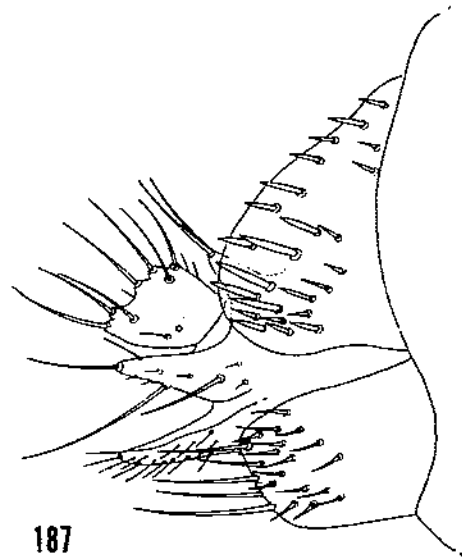
184



185



186



187

FIGURES 181-187.—Female terminalia: 181, *T. hamata* (San Juan Co., Wash.); 182, *T. vulgaris* (Needmore, Ind.); 183, *T. venosa* (Bear Lake, Brit. Col.); 184, *T. perspicua* (Summerfield, La.); 185, *T. justa* (Marin Co., Calif.); 186, *T. vulgari* (Boone Co., Iowa); 187, *T. melanura* (Douglas Lake, Mich.).

U.S. DEPARTMENT OF AGRICULTURE
SCIENCE AND EDUCATION ADMINISTRATION
WASHINGTON, D.C. 20250

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF
AGRICULTURE
AGR 101



END