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A REVIEW OF THE SPECIES OF CULEX OF THE SUBGENUS MELANOCONION

(Diptera, Culicidae)[1]

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INTRODUCTION

Few if any groups of mosquitoes present greater taxonomic confusion and difficulty than does the subgenus *Melanoconion*. At the present time the species can be recognized with certainty only by the structures of the male terminalia. The females of most species can not be separated from one another; they are usually small and dark-colored, only a few having a distinctive golden-scaled scutum or white-ringed tarsi. The larvae of many species are readily recognizable but for the most part they are insufficiently known to permit positive identification.

The confusion that exists in this group is attributable in part to the difficulty with which the characteristic structures of the terminalia can be made out in the very poor whole mounts of the type specimens made by the earlier workers; in part by the lack of appreciation among present day as well as by the older taxonomists of the necessity for properly mounted terminalia; and in part by the reliance on the inadequate literature by workers without access to the type material for the identification of their specimens. Many culicidologists have fallen and no doubt others will fall into the error of describing as new specimens which do not conform to Dyar's (1928) misleading descriptions, keys and figures. It is essential for proper description that the details of the form and position of the appendages of the lobes of the sidepiece be described and figured accurately. One common error seen in the earlier literature is the failure to note the presence of a distinct leaf among the filaments of the outer division of the lobe of the sidepiece. This leaf is difficult to see in preparations of the terminalia which have been macerated and cleared too thoroughly. Light staining of the parts increases their visibility greatly. Another obstacle to species identification is an inaccurate description of the lateral aspect of the inner plate

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of the mesosome which is one of the most useful structures for determination. In many groups of mosquitoes and even in some species of *Culex*, such as *C. pipiens* and *C. quinquefasciatus*, splitting the mesosome apart is unnecessary for, or even detrimental to, accurate identification. But in the species of *Melanoconion*, dissection and mounting of the inner plate of the mesosome in lateral aspect is absolutely essential to proper description. Vague references to the mesosome as being "cup-shaped furcate," and the like, are valueless. Even in those species with distinctive or bizarre specific characters the lobes of the sidepiece and the mesosome should be completely described in order that they may be properly placed in an adequate key. Prospective students of this group of mosquitoes are urged to consider seriously the recommendations made by the junior author (1942) concerning techniques for mounting the male terminalia.

We cannot refrain from disparaging the use of any of the many modifications of water-soluble chloral-gum arabic media (Berlese, Gater, de Faure, Langeron) for "permanent" mounts of the male terminalia. In our experience, particularly in the tropics, none of these various types of media have proved permanent. After several years the solvent water evaporates, even though the cover-glass has been ringed with a sealing agent, and the medium becomes brown and granular, or contains large air-spaces, often completely obscuring the parts mounted therein. For confirmation of these statements, we refer to the slide of the male terminalia of the type of *Anopheles* (*S.*) *thomasi* Shannon, 1931 (syn. *lewisi* Shannon, 1931) made in 1930, and the slide of the male terminalia of one of the type series of *Culex* (*M.*) *inhibitator* D. and K., 1906, mounted in 1936. The first slide, after 18 years (1948), is almost completely indecipherable, and the second slide, now (1948) shows large air-spaces under the coverslip, after only 12 years.

The use of polyvinyl alcohol, as advocated by Downs (1943), has not proved to be successful, as the junior author examined many terminalia mounted in this medium by this author, and found that in slides five years old the results were extremely variable, some mounts being excellent, and others almost indecipherable. The need is great for a really permanent water-soluble mounting medium, which will avoid the necessity for dehydration, clearing, and mounting in balsam (or its equivalent), but which to date is the only method which assures permanent mounts. Some of Root's slides of male terminalia, mounted in balsam in 1927, are apparently in almost as good condition after 21 years, as when first made.

The Bonnes (1925) state: "As a rule we think it would be better not to describe new species on hypopygial characters alone unless very distinct, and one should always try first to get the corresponding larvae. . . . It occurs however that larvae and adults do not show differences with related species while the hypopygium is distinct." Their advice is still good, but both of us have not hesitated to describe new species of *Melanoconion* from only a single male terminalia, for with an adequate technique it is entirely possible to make mounts which display all the parts of the terminalia, so that their forms and relationships can be made out. Most of the slide mounts of the Bonnes' types are very poor, and some are nearly indecipherable, as they lacked a good technique.

This has detracted greatly from the value of their pioneer work in South America.

The purpose of this paper is to present the results of a comparative study of the morphology of the male terminalia of the species of *Melanoconion*, and the consequent revision of some of the synonomy in accordance with the information obtained during our study. We worked primarily with the type specimens of the species in the United States National Museum, supplemented by extensive material collected by us in the American tropics. Many of our illustrations were made from dissected specimens in our collections, which were positively identified by comparison with the types. No reliance was placed on published descriptions, so far as possible. Unfortunately, a few species of the subgenus are not represented in the United States National Museum collection, and these had to be described and placed in our key from the often inadequate descriptions available.

Classification.—The *Melanoconion* species are small dark mosquitoes, of strictly neotropical and nearctic distribution. They are characterized as follows: male palpi longer than those of the female, and at least half the length of the proboscis; tenth sternites (paraprocts) of the male terminalia ending in a comb-like row of teeth; inner plates of the mesosome with curved "basal hooks," but without a recurved hook on the plate as in *Microculex*. These species have been classified quite differently by Dyar and by Edwards. The latter (1932) rejected Dyar's several subgenera, which were based mainly on the shape of the male clasper (style). Edwards arranged the many species in three groups on external characters only, but we believe that this grouping is artificial and erroneous, as many entirely unrelated species are thus placed together, such as in Edwards' Group A, *mychonde* and *taeniopus;* in his Group B, *chrysonotum* and *commevynensis*: and in his Group C, such widely diverse forms as *aikenii* and *egcymon*. Although Dyar's subgeneric grouping is not altogether satisfactory, we think it gives a more nearly accurate picture of the relationships within the subgenus. Dyar (1928) divided the species into two subgenera, *Mochlostyrax* and *Melanoconion*. The first he further subdivided into "sections," such as *Dinoporpa, Helcoporpa, Mochlostyrax*, and *Choeroporpa;* and the second into sections *Tinolestes, Gnophodeomyia, Melanoconion* and *Anoedioporpa*. All these sections are based on the form of the male clasper. We have followed Dyar's classification with one exception, in that we call the whole subgenus, as characterized above, *Melanoconion* (Theobald, 1903) as Edwards (1932) does, but retain Dyar's sections here listed. We have here mentioned all the species included in these sections with the exception of the four valid and one doubtful species placed by Dyar in section *Anoedioporpa*, and the single species *americanus* Neveu-Lemaire 1902 (=*antillum-magnorum* Dyar 1928), which Edwards (1932) transferred to subgenus *Micraedes* Coq. 1905.

KEY TO THE SPECIES OF THE SUBGENUS MELANOCONION

The separations made in this key are based primarily on the following structures of the terminalia: the shape of the clasper; the shape of the inner plate of the mesosome; the shape of the lobes of the ninth tergites; and the form and arrangement of the filaments and leaves on the outer

division of the lobe of the sidepiece. The key might have been constructed in such a way that any one of these characters might have been given primary place, but we have followed to a large extent the original separation made by Dyar, based on the shape of the clasper.

A difficulty arises in the use of this key, in couplet 12, "Outer division of lobe of sidepiece with a leaf," and its opposite. Sometimes the leaf, although present, is difficult to see, because of its orientation. If viewed edge on, it may appear as a filament. In using this key, it is suggested that, if the specimen does not key out among the species noted as "with a leaf," it be run through again, using the alternative, "without a leaf." The same situation applies to the couplets dealing with the shape of the mesosome, which is often difficult to discern in undissected terminalia. If the identification cannot be made by using one method of separation, it is well to try another character on which separation is based, and thus exhaust the possibilities. It is hoped that the figures will assist in identifying the species, when used in connection with the characters given in the key.

1. Clasper simple, without special modifications (fig. 26). Section *Melanoconion* 2
   Clasper with the distal portion divided, expanded, or snout-shaped 8
2. Clasper thick, evenly broad to about one-fifth the distance from the tip, then tapering to a point (fig. 2) 3
   Clasper slender, tapering rather evenly from base to tip (figs. 4, 26) 4
3. Lobe of sidepiece short, stout; a patch of setae below it; inner division with two short, stout, truncate-tipped rods and a third pointed rod; outer division reduced to a prominence with one long, slender seta and several smaller ones (fig. 46). Section *Tinolestes* ..... **latisquama**
   Inner and outer divisions of lobe widely separated; inner division long, columnar, with two stout rods at apex; outer division long, columnar, with a long stout curved filament at tip; a stemmed ,expanded, striate leaf near base of column; a broad filamentous leaflike seta on sidepiece distal to outer division (fig. 2). Section *Gnophodeomyia* ..... **aikenii**
4. Sidepiece with a distinct striate leaf distal to outer division of lobe 5
   Sidepiece without a leaf in this position; outer division of lobe sessile, with a triangular leaf and expanded, hooked filament; inner division columnar, with an apical rod and one at base of column; one to six or more broad, curved filaments on sidepiece above and at the same level as inner division; lobes of ninth tergite pear-shaped, the outer angle much produced and pointed (fig. 9) ..... **atratus**
5. Lobes of sidepiece distinct, the outer division long, columnar; the leaf distal to outer division long, striate 6
   Lobes of sidepiece sessile, the outer division with a stemmed, expanded, striate leaf and a seta; inner division with three long and one shorter filaments, the latter flattened (fig. 78) ..... **spissipes**[2]
6. Inner plate of mesosome smooth on dorsal margin 7
   Inner plate of mesosome spicular on dorsal margin; outer division of lobe of sidepiece with an expanded, striate leaf inserted below apex; and four or five widely spread setae, one with hooked tip, at apex; inner division of lobe with one long, stout, and two more slender filaments (fig. 26) ..... **dunni**
7. Inner division of lobe of sidepiece with two stout, semicylindrical filaments, one from apex and the other from the column below; a third much smaller, setiform filament more basad on column (fig. 91) ..... **zeteki**[3]
   Inner division of lobe of sidepiece with a single stout filament and a seta at base (fig. 19) ..... **commevynensis**
8. Clasper with three erect arms at apex (fig. 86). Section *Dinoporpa* ... **trifidus**
   Clasper unbranched 9

[2]See discussion of this species in alphabetical list of species.

[3]See alphabetical list for emended spelling.

9. Clasper widened and obliquely excavated at tip; a large revolute leaf on outer division of lobe of sidepiece (fig. 52). Section *Helcoporpa* . . . **menytes**
Clasper widened beyond middle, then tapering to apex, forming a snout-shaped tip; or with apex roundly expanded; or with apex foot-shaped in outline . . . 10
10. Clasper with distal portion widened, proximally, then narrowed to an upturned, truncate, snout-shaped tip (figs. 1, 3, 4); or snout greatly attenuated (fig. 31). Section *Choeroporpa* . . . 11
Clasper with slender stem, the distal third abruptly and roundly expanded (fig. 66); or the distal third of clasper roundly tapering to its tip, foot-shaped in outline, without an upturned truncate snout at tip (fig. 5); inner plate of mesosome (except in *rooti* and *unicornis*) of characteristic shape, with a narrow stem above a sharp ventro-basal horn, and terminating in three sharp, radiating points (figs. 5, 16, 66, 88). Section *Mochlostyrax* . . . 80
11. Inner division of lobe of sidepiece divided, the filaments divaricate (figs. 3, 4, 28, 34, 55); or this division cleft to base, with the filaments more or less parallel (fig. 10); or with the lower arm arising as a short offset near middle of column (fig. 1) . . . 12
Inner division of lobe not divided, arising as a long column; the filaments close together and usually parallel, not separated all the way to their bases (figs. 12, 89, 22) . . . 13
12. Outer division of lobe of sidepiece with a leaf . . . 14
Outer division of lobe of sidepiece without a leaf . . . 44
13. Outer division of lobe of sidepiece with a leaf . . . 58
Outer division of lobe of sidepiece without a leaf . . . 73
14. Clasper very broad, somewhat narrowed before middle, sharply angled at middle; distal half quadrately widened, the apex with an upturned point; upper margin hirsute; a crest of modified setae or spines distal to hirsute area . . . 15
Clasper otherwise, the apical portion more gradually tapered, and without a crest . . . 17
15. Crest of clasper composed of thickened spines . . . 16
Crest of clasper composed of fine hairs (fig. 8) . . . **anips**
16. Sidepiece with a patch of fine hairs on the inner surface; crest of clasper broader, the spines somewhat separated; lower angle of apex of clasper produced downward into an acute angle; outer division of lobe of sidepiece with a long broad leaf and three widely separated filaments (fig. 63) . . . **peccator**
Sidepiece with scattered large hairs; crest of clasper composed of spines fused into a solid horn; lower angle of apex of clasper rounded; outer division of lobe with a large distorted leaf and four or five filaments (fig. 1) . . . **abominator**
17. Inner plate of mesosome with a broad upper arm, serrate or denticulate along upper margin; or serrate along edge of a laterally curved fold; or at least with two or three separated teeth near the dorsal angle . . . 18
Inner plate of mesosome ending in two or three points, the margin of the plate between these points concave; or this plate like an inverted L, the upper arm of the L terminating in two subequal points; the upper point sometimes with several closely spaced denticles . . . 28
18. Inner plate of mesosome with a single long subapical point, in addition to the rounded denticulate upper arm . . . 19
Inner plate with two subapical points or arms . . . 20
19. Clasper with a deep, parallel-sided transverse sulcus on dorsal curvature at middle; outer division of lobe of sidepiece with a leaf and two stout flattened filaments (fig. 49) . . . **madininensis**
Clasper normal, without sulcus; outer division of lobe with a lower arm bearing the usual hook-tipped filament and the shorter lanceolate filament; upper arm with a leaf and four slender filaments (fig. 32) . . . **elevator**
20. Lobe of ninth tergite with an outer conical projection; a group of setae at apex and along inner slope of this projection, and another group of setae along the rounded inner margin; outer division of lobe of sidepiece with a long, obovate, striate leaf inserted at extreme base; clasper greatly dilated beyond middle into a prominent hump, tapering abruptly from the hump to tip (fig. 53) . . . **mulrennani**

Lobe of ninth tergite otherwise; leaf of different shape or inserted elsewhere; clasper not markedly humped....21

21. Outer division of lobe of sidepiece with a slender-stemmed, fan-shaped leaf arising at the base of the inner arm; mesosome with two or three small denticles on the upper dorsal angle of the upper arm; lobe of ninth tergite somewhat conical, with a few short setae on basal half (fig. 23)..**corentynensis**

Leaf of different shape, or inserted elsewhere; mesosome with margin of upper arm serrate; lobe of ninth tergite not as above....22

22. Upper arm of mesosome semicircularly curved laterally, the free margin coarsely serrate; the two subapical arms both arising from the dorsal margin of the plate (fig. 48)....**lucifugus**

Mesosome of different structure, the subapical arms on opposite sides of the mesosome....23

23. Upper arm of mesosome narrow, roundly rapering to apex, with only a few rather broad and shallow serrations (fig. 35)....**evanse**

Upper arm of mesosome wide, straight, not tapering; upper portion expanded, or as wide as the base, the margin with many fine serrations....24

24. Lobes of ninth tergite subquadrate, the inner angle produced into a short upward projection; the upper denticulate margin of the inner plate of the mesosome concave; outer division of lobe of sidepiece with a leaf inserted with the middle filament, along the distal margin; the tubercle of this leaf small (fig. 6)....**amitis**

Lobes of ninth tergite ovate or elliptical in outline; the denticulate upper margin of the mesosome straight or convex; outer division of the lobe of sidepiece with the leaf inserted in a very large tubercle situated towards the base....25

25. Clasper with a triangular or rounded expansion on the upper surface before the apex....26

Clasper normal, the head tapering evenly to the apex....27

26. Clasper with a triangular expansion on dorsal margin before tip (fig. 67), **plectoporpe**

Clasper with a rounded protuberance on the dorsal margin before tip; an unusually large eye-seta inserted within this protuberance (fig. 14), **carcinophilus**

27. Lobes of ninth tergite ovoid, with a long hairless basal projection; the long setae on upper two-thirds only (fig. 65)....**phlogistus**

Lobes of ninth tergite elliptical in outline, without a long bare basal projection; the long setae on the lobes scattered rather evenly over the surface (fig. 41)....**inhibitator**

28. Inner plate of mesosome without a third point or arm; both apical points of mesosome sharp, directed at a right angle to body of the plate, the space between points concave; upper margin of plate more heavily sclerotized and striate (fig. 21)....**conspirator**

Inner plate of mesosome with a third subapical point or arm, or with a third point or arm at or below mid-stem....29

29. Outer division of lobe of sidepiece with a large, flattened, striate filament or a long prominent seta arising from the base....30

Outer division without such a filament or seta at base....32

30. Inner plate of mesosome with a narrow, erect upper point, and two subapical points; outer division of lobe of sidepiece with a long filiform seta from base (fig. 55)....**mutator**

Inner plate of mesosome with two subequal apical points, the third point long, midway on the stem; basal filament of the outer division of the lobe ribbon-like, striate (in *alcocci*, at least)....31

31. Teeth of tenth sternites with fine, hairlike tips (fig. 4)....**alcocci**

Teeth of tenth sternites presumably blunt (fig. 56)....**niceriensis**

32. Lobes of ninth tergite elongate, finger-shaped (fig. 81)....**tecmarsis**

These lobes normal, ovoid or rounded; or elliptical, triangular, or subquadrate in outline....33

33. Inner plate of mesosome angled near middle into an inverted L; the third point on the upper margin produced from the angle, and thus placed at mid-stem or near the base....34

Inner plate of mesosome not angled, erect; with an upper arm and two subapical points on each side below....40

34. Outer division of lobe of sidepiece with an upper group of filaments inserted at the apex of a short but distinct arm (fig. 64) ..... **phlabistus**
Outer filaments not inserted on an arm 35
35. Hook-tipped filament of inner arm of outer division of lobe markedly dilated basally; two large middle filaments present; inner division of lobe of sidepiece with arms stout, appressed, the rods short and stout (fig. 75), **rorotaensis**
Hook-tipped filament normal; only one middle filament between the inner hook-tipped filament and the outer group of appressed filaments; inner division of lobe with arms more slender, divaricate; the rods long and slender 36
36. Lobes of ninth tergite triangular in outline, the upper outer angle produced, bare; some long setae at base and middle of lobe; a group of dense setae from closely-packed tubercles at inner basal angle; inner division of lobe of sidepiece with arms very widely divaricate (fig. 20) ..... **comminutor**
Lobes of ninth tergite ovate, or elliptical in outline; inner division of lobe of sidepiece with arms not so markedly divaricate 37
37. Lobes of ninth tergite somewhat crescent-shaped in outline, with the apex shortly produced upward and inward (fig. 25) ..... **distinguendus**
Lobes of ninth tergite without these upward-curving projections 38
38. Outer division of lobe of sidepiece with a large broad leaf, inserted with the outer group of filaments; mesosome with the two arms of the inverted L about equal, the margin of the plate between the median and upper points convexly rounded (fig. 34) ..... **erraticus**
Outer division of lobe of sidepiece with a narrow leaf, inserted nearer the middle filament; margin of the mesosome between the median and upper points concave 39
39. Distance between the median point of the mesosome and the origin of the basal hook distinctly less than the distance between the median point and the apex of the upper point; margin of the plate between the median point and the apex less concave, almost straight; the median point short (fig. 17); (anterior half of scutum conspicuously golden-scaled), **chrysonotum**
Distance between the median point of the mesosome and the origin of the basal hook about the same as the distance between the median point and the apex of the upper point; margin between the median point and the tip strongly concave; the median point represented by a long curved horn; upper terminal point with several closely-appressed lamellae (figs. 83 and 29) ..... **theobaldi, educator**[4]
40. Lobes of ninth tergite elongate-elliptical in outline, with a long tongue-like basal projection, usually bare; upper arm of mesosome broader than long; inner division of lobe of sidepiece with arms split from base, but closely appressed and parallel (fig. 10) ..... **bastagarius**
Lobes of ninth tergite subquadrate or ovate in outline, without a long basal projection; upper arm of mesosome as long or longer than wide 41
41. Outer division of lobe of sidepiece divided into three arms, the inner arm bearing the usual long hook-tipped and short filaments; the middle filament and a large leaf situated basally on a large tubercle; outer arm with three or four broad filaments; arms of inner division of lobe not divaricate, but divided to base (fig. 73) ..... **rabanicolus**
Outer division of lobe of sidepiece not divided into three distinct arms; the leaf inserted near the middle filament from a small tubercle; arms of the inner division of lobe divaricate 42
42. Outer division of lobe of sidepiece long-columnar; at its apex an inner hooked filament and a broad, distorted, striate leaf, near which are inserted two median filaments; and an outer group of three closely appressed filaments, which may appear as a single truncate filament; the filaments relatively short (fig. 28) ..... **eastor**
Outer division of lobe of sidepiece shorter, the filaments large, longer than the column, being the usual long hook-tipped and short curved filaments

[4]The terminalia of these two species are practically identical. The adults may be separated by the coloration of the scutum; in *theobaldi* the anterior half is conspicuously golden-scaled; in *educator* it is unicolorous.

arising from an inner arm; a middle filament near which is inserted the leaf, and an outer group of three long curved filaments.....43

43. Outer division of lobe with sidepiece with an expanded, smooth leaf; clasper with "snout" tapering gradually; a dense patch of setae on outer curvature of sidepiece, and a sclerotized area at its apex; inner division of lobe wide and thick, the lower arm almost sessile, the rod inserted at base of arm (fig. 43).....**intrincatus**

Outer division of lobe of sidepiece with a narrow, striate leaf; head of clasper broad, very abruptly narrowing to tip; inner arm of inner division of lobe about as long as outer arm; the lower rod with a kink at distal two-thirds (fig. 79).....**sursumptor**

44. Upper arm of mesosome serrate or denticulate.....45

Upper arm of mesosome not serrate or denticulate.....53

45. Upper arm of mesosome with serrations along upper margin, the dorsal and ventral margins smooth.....46

Upper arm of mesosome with some serrations or denticulations on dorsal or ventral margins, but not along free upper margin.....51

46. Lobes of ninth tergite very large, the outer upper angle quadrately expanded, densely clothed with long hairs (fig. 77).....**serratimarge**

Lobes of ninth tergite ovate, rounded, or quadrate in outline.....47

47. Mesosome with an upper serrate arm, and a single subapical point.....48

Mesosome with two subapical points.....49

48. Outer division of lobe of sidepiece with a long, broad filament inserted near middle filament (fig. 82).....**terebor**

Outer division of lobe with a slender seta inserted near middle filament (fig. 27).....**dyius**

49. Upper arm of mesosome small, with a few shallow serrations (fig. 11)....**batesi**

Upper arm of mesosome large, expanded distally, with many small, closely spaced denticulations.....50

50. Inner division of lobe of sidepiece with upper arm swollen apically; lobes of ninth tergite small, rounded (fig. 60).....**oedipus**

Inner division of lobe of sidepiece with upper arm normal, not swollen at apex; lobes of ninth tergite large, ovate (fig. 3).....**albinensis**

51. Outer division of lobe of sidepiece very short, nearly sessile; just distal to the lobe, but on the sidepiece itself, is a large fanlike leaf inserted in a prominent tubercle; upper arm of mesosome with a rounded and hooded upper margin, with a few small denticles on the ventral margin; upper edge of the hooded margin with faint, closely appressed lamellae (fig. 36).....**flabellifer**

Outer division of lobe of sidepiece long-columnar; sidepiece without leaf; mesosome not as above.....52

52. Lobes of ninth tergite with inner, upper angle produced into a slender digit with one apical and one subapical seta; three or four setae on the body of the lobe; upper arm of mesosome with upper dorsal angle coarsely denticulate (fig. 47).....**limacifer**

Lobes of ninth tergite small, rounded, with about ten to twelve slender setae on surface; upper arm of mesosome with two or three small denticles at upper distal angle (fig. 44).....**iolambdis**

53. Mesosome without a third point or arm; "one limb of mesosomal plate broad, shoulder-shaped"[5] (fig. 76).....**saramaccensis**

Mesosome with a third point or arm.....54

54. Plate of mesosome angled near middle into an inverted L, the third point on the outer margin medially at the angle of the L; lobes of ninth tergite angularly produced upward, almost as in *C. distinguendus* Dyar (q. v.) (fig. 51).....**maxinocca**

Mesosome erect, the third point subapical; lobes of ninth tergite otherwise..55

55. Outer division of lobe of sidepiece with a broad, hooked filament inserted at the outer angle (fig. 38).....**idottus**

Outer division of lobe of sidepiece without such a hooked filament.....56

56. Outer division of lobe of sidepiece with two small filaments between the inner hook-tipped filament and the broad middle filament; without a long broad filament midway on the column.....57

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[5]From Bonne and Bonne-Wepster, 1925.

Outer division of lobe with only the usual single slender setaform filament between the middle filament and the inner hook-tipped filament; a long, broad filament inserted about midway on the column of the outer division (fig. 72) ..... **quadrifoliatus**

57. Lobes of ninth tergite with the inner angle produced upward into a small point (fig. 33) ..... **equinoxialis**

Lobes of ninth tergite with the outer upper angle roundly produced; this outer portion without setae (fig. 7) ..... **andricus**

58. Mesosome simple, tapering from base to apex, and ending in a single point, without a point or arm on the stem (fig. 52, 59) 59

Mesosome furcate at apex, or with either a subapical point, or a point or arm on the stem; or T-shaped (figs. 12, 13, 15, 89) 62

59. Mesosome with apex curved into a beaklike hook; outer division of lobe of sidepiece with the outer group of filaments and the leaf from the apex of a long arm; the outer rod of inner division of lobe with an expanded membrane at base; lobes of ninth tergite thumb-shaped, rounded at apex; (scutum of adult without a dark spot before wing-base; (fig. 62) .. **paracrybda**

Mesosome tapering evenly to a point; outer group of filaments of the outer division of the lobe not from a long arm; the upper rod of inner division without an expanded membrane; lobes of ninth tergite short, triangular in outline, or moundlike; (scutum of adult with a large black spot before wing-base) 60

60. Outer division of lobe of sidepiece with an inner arm bearing three filaments; no middle filament; a small leaf inserted about midway on the stem of the outer division of lobe (fig. 58) ..... **nigrimacula**

Outer division of lobe of sidepiece with inner arm bearing the usual long, hook-tipped filament and short curved filament; middle filament present 61

61. Outer division of lobe of sidepiece with a narrow leaf inserted at outer angle; the short curved filaments accompanying the hook-tipped filament of the inner arm of the outer division of lobe broad; outer curvature of sidepiece without a dense patch of long, fine setae; lobes of ninth tergite rounded; outer division of lobe of sidepiece with a seta near base (fig. 59) ..... **ocellatus**

Outer division of lobe of sidepiece with a broad, striate leaf, inserted in a large tubercle basal to the other filaments of the lobe; the short curved filament accompanying the hook-tipped filament of the inner arm of the outer division slender, seta-like; outer curvature of sidepiece with a dense patch of long, fine setae; lobes of ninth tergite conical; outer division of lobe of sidepiece without a seta at base (fig. 70) .. **punctiscapularis**

62. Mesosome with a simple, digitiform upper arm and a single point or arm about midway on the stem (figs. 13, 15) 63

Mesosome furcate at apex; or with a short upper arm and two subapical points; or T-shaped 65

63. Clasper with a triangular, membranous dorsal expansion at middle; leaf of outer division of lobe with a heavy lower supporting arm; lobes of ninth tergite conical, clothed evenly with long hairs (fig. 68) ..... **portesi**

Clasper without a membranous expansion at middle; leaf without lower supporting arm; lobes of ninth tergite low, mound-like 64

64. Snout of clasper strongly humped, excavated beneath, with deep lamellae; outer division of lobe of sidepiece with a very large leaf, mushroom-shaped in outline; inner hook-tipped filament greatly dilated, the associated seta enlarged and inserted in a separate arm; middle filament and outer group of filaments on separate arms; lobes of ninth tergite very small, each with about a dozen long hairs; median point of mesosome short (fig. 15) ..... **cauchensis**

Snout of clasper not strongly humped and without deep lamellae; outer division of lobe of sidepiece with a narrow leaf; inner hook-tipped filament not enlarged; inner division of lobe with a long stout spine from the base below; lobes of ninth tergite longer, the hairs shorter; mesosome with a long, curved, median arm (fig. 13) ..... **breviculus**

65. Mesosome T-shaped; clasper with a dorsal membranous expansion at middle; leaf of outer division of lobe of sidepiece with a thick, sclerotized lower arm, from which the membranous dorsal portion arises (fig. 89), **vomerifer**

Mesosome furcate, or with an upper arm and two subapical points; clasper without a dorsal expansion; leaf of outer division of lobe without a heavy lower supporting arm 66

66. Leaf of outer division of lobe of sidepiece at apex of a very long upper arm; clasper with a dense group of fine setae on under side at middle third (fig. 22) ..... **coppenamensis**

Leaf of outer division of lobe not at apex of a long upper arm; clasper without setae on inner curvature 67

67. Inner division of lobe of sidepiece with outer arm greatly expanded at apex; a membrane extending from this expanded portion to the inserted rod; outer division of lobe with an outer group of three broad sinuate filaments, inserted at apex of a distinct arm; lobes of ninth tergite ovoid, with slender setae scattered evenly over upper three-fourths (fig. 71), **putumayensis**

Inner division of lobe with arms normal, not expanded, and without the membrane extending to the rods 68

68. Clasper broad distally, and narrowing abruptly to apex; head of clasper with fine striations near the lower seta (fig. 85) ..... **tournieri**

Snout of clasper narrowly tapering to apex; head without such striations ... 69

69. Clasper with a triangular flaplike membrane on the inner surface before the apex; outer division of lobe of sidepiece without the usual group of appressed outer filaments, but with four subequal, evenly spaced filaments above the inner hook-tipped filament; lobes of ninth tergite triangular in outline, with long slender hairs scattered evenly over the surface (fig. 12) ..... **bequaerti**

Clasper without a membranous expansion; outer division of lobe of sidepiece with the usual group of three or four closely appressed outer filaments; lobes of ninth tergite not as above 70

70. Snout of clasper smooth, without the usual lamellae or small spines on upper surface; median point of mesosome a long, curved arm; upper point with several closely appressed lamellae 71

Snout of clasper with small spines on upper surface; median point of mesosome small; upper point without lamellae 72

71. Lobes of ninth tergite subquadrate; outer division of lobe of sidepiece with outer group of filaments not inserted on an arm; lower rod of inner division of lobe inserted basad of the upper rod (fig. 39) ..... **implicatus**

Lobes of ninth tergite subquadrate, but with the outer upper angle produced, bare; outer division of lobe of sidepiece with outer group of filaments from a short arm; upper rod of inner division of lobe inserted basad of the lower rod (fig. 40) ..... **inadmirabilis**

72. Outer division of lobe of sidepiece long, columnar, bearing an apically expanded leaf; the filaments relatively short, shorter or about the length of the column; a long seta at middle of column; the small filament associated with the inner hook-tipped filament short and curved (fig. 57), **nigrescens**

Outer division of lobe of sidepiece short, shorter than the filaments, with a distinct inner arm bearing the usual hook-tipped filament; the seta associated with this long and slender; leaf long, elliptical (fig. 84) ... **thomasi**

73. Lobes of ninth tergite large, the outer half of the lobe elbowed upward; the apex expanded and clothed with very long, erect hairs; upper arm of mesosome serrate on upper margin 74

Lobes of ninth tergite smaller, digitiform, elliptical, ovoid, or conical; mesosome without serrations 75

74. Snout of clasper very long, half the length of the clasper, with a terminal appendicle; upper arm of mesosome quadrate, the serrations even and numerous; inner division of lobe of side-piece long, columnar (fig. 30), **egcymon**

Snout of clasper greatly attenuated and tapering evenly to a slender, pointed tip, without terminal appendicle; upper arm of mesosome narrowed to dorsal margin, the serrations few and irregular; inner division of lobe of sidepiece and the two inserted rods short and stout (fig. 31), **elephas**

75. Mesosome T-shaped 76

Mesosome furcate at apex, or with a upper arm and two subapical points; or L-shaped, with a third point at the angle 77

76. Clasper roundly humped dorsally before the snout, upper margin with long hairs, forming a small crest behind the hump; a fanshaped, stemmed leaf on sidepiece distal to the outer division of lobe; upper rod of inner division of lobe of sidepiece without a membranous expansion; apex of sidepiece with many long setae from sclerotized tubercles; lobes of ninth tergite digitiform, the setae directed basad (fig. 45) ..... **jubifer**
Clasper without hump, the upper margin of snout with small spines; sidepiece without leaf; upper rod of inner division of lobe of sidepiece with a membranous expansion; lobes of ninth tergite small, conical (fig. 80), **taeniopus, crybda**
77. Clasper with a "beard" of long hairs from tubercles on under side (fig. 18) ..... **comatus**
Clasper without this structure 78
78. Lobes of ninth tergite digitiform, wrinkled; inner division of lobe of sidepiece with lower rod expanded at middle; mesosome with two small, rounded, subapical points; the upper arm above these points broad, the dorsal margin scarcely concave (fig. 61) ..... **opisthopus**
Lobes of ninth tergite elliptical in outline; inner division of lobe of sidepiece with lower rod normal; mesosome furcate, the third median or ventral subapical point long and sharp-pointed 79
79. Snout of clasper evenly tapering to tip, with deep lamellae on upper margin; inner division of lobe of sidepiece with several sharp creases at apex before insertion of rods; middle filament of outer division of lobe long and not swollen; mesosome bent at middle into an inverted L, the median point at the angle (fig. 69) ..... **psatharus**
Clasper humped before snout, with small hairs on upper margin of snout; inner division of lobe of sidepiece normal, without creases at apex; middle filament of outer division of lobe widely expanded, three or four widened appressed filaments above this; mesosome erect, with a narrow pointed upper arm and two subapical points; hook-tipped filament arising abnormally near base of outer division of lobe (fig. 90) ..... **ybarmis**
80. Lobes of ninth tergite large, the outer upper angle produced upward, and clothed with long hairs; terminal expansion of clasper foot-shaped in outline 81
Lobes of ninth tergite smaller, digitiform; terminal expansion of clasper rounded in outline; sidepiece with a dense patch of fine hairs on outer curvature 84
81. Upper ventral point of mesosome much longer than the apical and subapical dorsal points; lobes of ninth tergite large, constricted at middle; inner dorsal projection triangular, hyaline; the terminal portion almost globular, with long hairs (fig. 16) ..... **caudelli**
Upper ventral point of mesosome about equal to two dorsal points; lobes of ninth tergite constricted at middle, but terminal portion not globular 82
82. A large obovate leaf on outer division of lobe of sidepiece proximal to insertion of the long, hook-tipped filament; lobes of ninth tergite large, constricted at middle, the inner dorsal margin with a long, spatulate, hyaline projection, nearly as long as the outer hairy portion (fig. 54), **species A**[6]
Leaf absent in this position 83
83. Lobes of ninth tergite with inner dorsal hyaline projection nearly as long as outer hairy portion; a long striate leaf inserted equally with the filaments of the outer arm of outer division of the lobe of the sidepiece; inner division of lobe of sidepiece with lower arm short (fig. 5) ..... **alogistus**
Lobes of ninth tergite with inner dorsal hyaline projection very short; outer division of lobe of sidepiece without a leaf among the filaments; inner division of lobe of sidepiece with lower arm nearly as long as upper arm (fig. 88) ..... **vexillifer**
84. Sidepiece with one or more long, spatulate filaments near the inner division of the lobe 85
Sidepiece without such filaments 87
85. Mesosome of typical *Mochlostyrax* structure, with three short sharp apical points; sidepiece with one to three clubshaped filaments situated below

[6]See discussion of this species in alphabetical list.

the inner division of the lobe; lobes of ninth tergite with long upward-projecting processes 86

Mesosome with two narrow, divergent, apical arms; the dorsal arm ending in two points, the ventral arm long, pointed; a shorter pointed ventral arm just above the base of the plate; sidepiece with two spatulate filaments situated at the same level with, or above the lower arm of the inner division of the lobe (fig. 74) ..... **rooti**

86. Sidepiece with three spatulate filaments below the inner division of the lobe; lobes of ninth tergite with several subapical setae on inner margin (fig. 42) ..... **innovator**

Sidepiece with a single clubshaped filament arising between the arms of the inner division of the lobe; lobes of ninth tergite with a single long seta below apex on inner margin (fig. 87) ..... **unicornis**

87. Lobes of ninth tergite columnar, curving inwards, clothed with many setae (fig. 37) ..... **hesitator**

Lobes of ninth tergite flattened, almost bare on projecting tips, with only one to four setae (fig. 66) ..... **pilosus**

ALPHABETICAL LIST OF THE SPECIES OF THE SUBGENUS MELANOCONION THEOBALD[7]

We do not give a complete synonymy. For this the reader is referred to Edwards (1932), Komp (1935), Lane (1939), and King and Bradley (1937). The changes in synonymy resulting from the present study are noted. It is, unfortunately, also necessary to synonymize several names that have appeared subsequent to Lane's catalogue (1939). The figure numbers correspond with the numbers in the following list.

1. **abominator** Dyar and Knab, 1909. Smiths. Misc. Colls., Quart. Iss. 52:257. Plano, Texas, U.S.A. Nearctic. See King & Bradley for revalidation of this species, earlier known as *erraticus* D. & K., 1905, in part.

2. **aikenii** (Aiken), 1906 (*Gnophodeomyia*). Brit. Guiana Med. Annual 1906, 60. New Amsterdam, British Guiana.

3. **albinensis** Bonne-Wepster and Bonne, 1920. Ins. Ins. Mens. 7:173. Parimaribo, Surinam. *C. gordoni* Evans, 1924, may be this species, but her figure of the lobes of the ninth tergite is unlike those of *albinensis*, and the latter has more filaments on the outer division of the lobe of the sidepiece than are shown for *gordoni*. The Bonnes' figure 43 (1925) of *albinensis* conveys no idea of the actual appearance of the terminalia of the type male, nor does that of Dyar (1928, fig. 259).

4. **alcocci** Bonne-Wepster and Bonne, 1920. Ins. Ins. Mens. 7:171. Zanderij, Surinam. This species is readily recognized by the long, ribbonlike, striate filament arising from the base of the outer division of the lobe of the sidepiece, and by the fine, hairlike tips of the comb-like teeth of the 10th sternites. The mount of the terminalia of the type male is in unusually poor condition, even for an early Bonne slide, and the exact shape of the mesosome cannot be determined. The dotted line in fig. 4 indicates the probable outline of a portion of one of the inner plates of the mesosome which cannot be seen in its entirety in the type slide. A third point is present at mid-stem, for this can be seen on the other inner plate, which is visible in a vertical view in the type slide.

[7]Recognized as valid, with the commoner synonyms, and notes on the species.

5. **alogistus** Dyar, 1918. Ins. Mens. Mens. 6:126. Surinam. Lectotype here selected: slide 972, #F, U.S.N.M. Synonym: *megapus* Root, 1927. Described from a series of four males and one female, with associated larval skins, taken by the Bonnes in Surinam. The larval skins are labeled C, E, F and G. The terminalia of the corresponding male of E cannot be found in the United States National Museum collection, although the remainder of the specimen is present; male G is intact. The male F was apparently selected as the lectotype by Dyar; its associated larval skin, also labeled F, is that of a typical *Mochlostyrax*, with the scales on the 8th abdominal segment in a row. But the larval skin labeled C, supposedly that of the single female of the type series, is actually that of a species of *Culex*, subgenus *Culex*. The female specimen is so mouldy that characters are difficult to see, but it appears to be a *Mochlostyrax*, so that we suspect an error has been made in associating it with the larva labeled C.

The type male is associated with a larval skin in which the eighth abdominal segment has a few comb-scales in a row. We have a male from Colombia, definitely *alogistus*, with a leaf on the outer division of the lobe of the sidepiece, with an associated larval skin in which the comb-scales are in a patch, as in *vexillifer*. Further confusion results from the examination of the junior author's larvae from Almirante, Panama (which, however, are not definitely associated with males), but which have the comb-scales in a row. The possibility exists that there are two closely similar species, differing only in the larva; future investigations must be made to settle the question.

6. **amitis** Komp, 1936. Ann. Ent. Soc. Amer. 29:333. Quiriquire (near Maturin), Venezuela.

7. **andricus** Root, 1927. Amer. Jour. Hyg. 7:592. Lassance (Minas Geraes) Brazil.

8. **anips** Dyar, 1916. Ins. Ins. Mens. 4:48. San Diego, California, U.S.A. Nearctic (Southern California). Recently recovered in southern California. Hitherto known only from a single male.

9. **atratus** Theobald, 1901. Mon. Culic. 2:55. Jamaica and Trinidad, B.W.I. Synonym: *advieri* Senevet, 1938. This widespread West Indian species should be readily recognized by the characteristic filaments on the sidepiece, basad of the inner division of the lobe, and by the narrowly produced apices of the lobes of the ninth tergite.

10. **bastagarius** Dyar and Knab, 1906. Proc. Biol. Soc. Wash. 19:170. Laventille, Trinidad, B.W.I. This species has been redescribed under a multitude of synonyms, including *vapulans* Dyar, 1920; *alfaroi* Dyar, 1921; *innominatus* Evans, 1924; *cuclyx* Dyar and Shannon, 1924. The mesosome presents considerable variation in shape according to its orientation in the mount. The closely appressed, parallel arms and rods of the inner division of the lobe of this sidepiece, and the basally produced ninth tergite lobes, are especially diagnostic. Occasionally the basal prolongation of the tergite lobe may have several setae on it; usually this portion is bare.

Vapulans Dyar, 1920, was synonymized under *bastagarius* by the junior author (1935). The types are two males from Surinam, "from larvae in a pool near Parimaribo." One of these cotypes is labeled

"Surinam BB 330, Mrs. J. Bonne-Wepster." This slide corresponds with Dyar's original description (Ins. Ins. Mens. 8:69), and is herewith selected as the lectotype of the species. The other cotype of "*vapulans*," labeled. "J. Bonne-Wepster, Surinam, M 94 (P 2)," is, we think, an undescribed species, determined as such by the junior author during this study. We hope to describe this and several other new species which have come to light during the course of this work, in a subsequent paper.

11. **batesi** Rozeboom and Komp, 1948. Jour. Parasit. 34:403. Villavicencio (Meta), Colombia. The adult has a small patch of setae on the postnotum, as in the sabethine mosquitoes, and in some *Deinocerites* species.

12. **bequaerti** Dyar and Shannon, 1925. Jour. Wash. Acad. Sci. 15:40. Rio Branco, Amazonas, Brazil. The true shape of the mesosome is probably more nearly like that of *theobaldi* (q.v.), rather than as illustrated from the undissected type slide.

13. **breviculus** Senevet and Abonnenc, 1939. Arch. Inst. Past. d'Algerie 17:110. Saut-Tigre, French Guiana.

14. **carcinophilus** Dyar and Knab, 1906. Jour. N. Y. Ent. Soc. 14:220. Trujillo, Santo Domingo, W.I. This species is closely related to *plectoporpe*, *phlogistus*, and *inhibitator*. All four species have a large leaf inserted on the outer division of the lobe, basal to the filaments, from a very large tubercle. The shape of the mesosome is apparently identical in the last three species, but the mount of the type male (reared from the larva, which is the designated type) of *carcinophilus* is in such extremely poor condition that it is impossible to determine the actual shape of the inner plate. The portion that can be seen resembles somewhat the mesosome of the three other species, but no subapical dorsal point is visible. For this reason *carcinophilus* may be misplaced in the key, and additional material from the type locality will be required to establish its true position. The rounded prominence on the clasper, with the stout eye-seta, will easily separate it from the three species mentioned above.

15. **cauchensis** Floch and Abonnenc, 1945. Inst. Past. Guyane Francaise, Publ. 112:1. Caux, French Guiana. A very bizarre species, easily separated.

16. **caudelli** (Dyar and Knab), 1906 (*Mochlostyrax*). Jour. N. Y. Ent. Soc. 14:224. Arima, Trinidad. A common species of wide distribution.

17. **chrysonotum** Dyar and Knab, 1908. Proc. U. S. Nat. Mus. 25:57. Panama Canal Zone. Lectotype here selected: Slide 335, No. 417, Jennings' notes. Synonym: *aurilatus* Senevet and Abonnenc, 1939. Dyar (1928) states that in *chrysonotum* the outer division of the lobe of the sidepiece is without a leaf, which led Senevet and Abonnenc to redescribe the species. All of the authors' specimens from Panama show a narrow, striate leaf, as does the lectotype male from Panama. A very common species in Panama.

18. **comatus** Senevet and Abonnenc, 1939. Arch. Inst. Past. d'Algerie 17:103. Saut-Tigre, French Guiana. This interesting species

is readily recognized by the "beard" on the inner curvature of the head of the clasper. We have recently received a specimen collected at Villavicencio, Colombia, by the staff of the Rockefeller Foundation.

19. **commevynensis** Bonne-Wepster and Bonne, 1920. Ins. Ins. Mens. 7:176. Alkmaar, Surinam. No specimens of this are in the United States National Museum. The junior author (1935) suspected that this might be *dunni* Dyar, but the Bonnes (1925, fig. 37) show a hair-like lower spine on the inner division of the lobe of the sidepiece, while *dunni* has several spines in this position. This species has recently been taken in Panama by Dr. Pedro Galindo, and the specimen seen by the junior author. Dr. Galindo kindly sent us a camera lucida drawing of the sidepiece and ninth tergite lobes, with other information. Later the senior author found a specimen in his collection from Colombia, which agrees with Galindo's drawings, with one exception, in that the leaf between the outer division of the lobe and the apex of the sidepiece is not so expanded and truncate as is shown in Galindo's drawing and in the Bonne's figure (No. 37).

20. **comminutor** Dyar, 1920. Ins. Ins. Mens. 8:70. Surinam. Synonym: *productus* Senevet and Abonnenc, 1939. The undissected terminalia of the type do not permit a lateral view of the mesosome (fig. 20), but the inner plate is obviously L-shaped, with a third median point at the angle. The characteristic ninth tergite lobes and the widely divaricate arms of the inner division of the lobe of the sidepiece are illustrated for *productus* by Senevet & Abonnenc (1939), and a specimen received from the Institut Pasteur in French Guiana can not be separated from the type of *comminutor*.

21. **conspirator** Dyar and Knab, 1906. Jour. N. Y. Ent. Soc. 14:127. Almoloya, Mexico. Synonyms: *holoneus* Dyar, 1921; *fatuator* Dyar, 1924; *inducens* Root, 1928; *macaronensis* Dyar and Núñez-Tovar, 1927. Very common in Panama.

22. **coppenamensis** Bonne-Wepster and Bonne, 1920. Ins. Ins. Mens. 7:173. Kabelstation, Surinam. Apparently rare.

23. **corentynensis** Dyar, 1920. Ins. Ins. Mens. 8:65. Surinam. Lectotype here selected: Slide BB 643, U.S.N.M. Apparently rare.

24. **crybda** Dyar, 1924. Ins. Ins. Mens. 12:184. Murindo, Colombia. This species was formerly considered a synonym of *taeniopus*, but the junior author, and later his friend Dr. Pedro Galindo, obtained reared material of both species in Panama. The larva of the species here described as *taeniopus* is apparently indistinguishable from that of *crybda*, but the pupal trumpet of *taeniopus* is aberrant for a *Melanoconion*, as it is widened and flattened at the tip, with a peculiar transverse cleft; that of *crybda* is normal, long and funnel-shaped. The terminalia of the two species are apparently indistinguishable. The adults of *taeniopus* have white-ringed tarsi, but those of *crybda* have black tarsi.

25. **distinguendus** Dyar, 1928. Mosq. Amer.:305. Mojingo Swamp (Atlantic side), Panama Canal Zone. Lectotype here selected: Slide 2327, U.S.N.M.

26. **dunni** Dyar, 1918. Ins. Ins. Mens. 6:123. Mandingo River, Panama Canal Zone. Synonyms: *ruffinis* D. & S., 1924; *exedrus* Root,

1927. Very common. The type locality as given in the original description is "Mandingo River, Panama." There are at least *two* Mandingo Rivers in Panama. One is a large river flowing northeast and emptying into the Gulf of San Blas on the Atlantic Coast at approximately 9° 35′ N. latitude and 79° W. longitude; the other is in the Panama Canal Zone, and flows east, emptying into the Panama Canal on the west bank, nearly opposite the railroad bridge across the Chagres River, opposite the town of Gamboa. It is reasonably certain that this latter river in the Panama Canal Zone, not the Republic of Panama, is the type locality. The river in the Republic is in rather inaccessible Indian country, and probably was never visited by Lawrence Dunn, the collector. We would like to make a plea for better and more specific localities for type material, and for collections in general. During the course of this tudy we have encountered several other instances of incomplete information regarding localities, which we have noted in their proper places, and which we have unraveled with fair certainty.

27. **dyius** Root, 1927. Amer. Jour. Hyg. 7:587. Brazil. Lectotype here selected: Slide No. 11, F. M. Root, 1925, U.S.N.M. Root, in his original description says: "The male specimen from which the type slide was made has unfortunately been lost, and no record remains of the locality and date. It was probably obtained in the coastal lowlands of the state of Rio de Janeiro in May or June, 1925." However, a slide labeled in Root's handwriting is in the United States National Museum collection as the type of *dyius*, labeled "*dyius* Root. Brazil 1925, F. M. Root, No. 11." A search of the correspondence between Root and Dyar reveals that Root took this specimen to the United States National Museum in February, 1927, to discuss it with Dyar, under the number 11. This specimen is undoubtedly the type male of *dyius*, as it corresponds with Root's figure (1927, Plate 10, fig. 14), and is herewith selected as the lectotype, if such selection seems necessary. Dyar (1928) listed *dyius* as a synonym of *elevator*, and described the latter as being without a leaf on the outer division of the lobe. However, *elevator* does possess a leaf, whereas *dyius*, as described by Root, has a small seta instead. We therefore are establishing *dyius* as a valid species.

28. **eastor** Dyar, 1920. Ins. Ins. Mens. 8:71. Surinam. Synonym: *manaosensis* Evans. This synonymy was verified by Miss Evans to the junior author. Lane (1939) continues to list *manaosensis* as a valid species. See Komp (1935). Apparently a widespread and common species.

29. **educator** Dyar and Knab, 1906. Jour. N. Y. Ent. Soc. 14:217. Rio Aranjuez, Puntarenas, Costa Rica. Synonyms: *vaxus* Dyar, 1920; *bibulus* Dyar, 1920; *aneles* Dyar & Ludlow, 1922. Dyar (1928) says there is no leaf on the outer division of the lobe of the sidepiece; actually a narrow striate leaf is present, inserted near the middle filament. A very common species.

30. **egcymon** Dyar, 1923. Ins. Ins. Mens. 11:67. Tabernilla, Panama Canal Zone. Common in Panama.

31. **elephas** Komp, 1936. Ann. Ent. Soc. Amer. 29:328. Juan Diaz (E. of Panama City), Panama. Rare, but collected by the junior

author some years ago, and recently by Dr. Pedro Galindo, both in Panama.

32. **elevator** Dyar and Knab, 1906. Jour. N. Y. Ent. Soc. 14:217. Limon, Costa Rica. Synonyms: *dornarum* D. & S., 1924; *curryi* Dyar, 1926; *bonneti* Senevet, 1938. Dyar (1928) states that there is no leaf on the outer division of the lobe of the sidepiece, but one is present. Senevet (1938) correctly describes this in *bonneti*. Lane (1939) does not list *curryi* Dyar, either as a species or as a synonym. A very common species.

33. **equinoxialis** Floch & Abonnenc, 1945. Inst. Past. Guyane Francaise, Publ. 114:3. Camp Rochambeau (S. of Cayenne), French Guiana. Apparently rare.

34. **erraticus** (Dyar and Knab), 1905 (*Mochlostyrax*). Jour. N. Y. Ent. Soc. 14:224. Baton Rouge, Louisiana, U.S.A. Synonyms: *leprincei* D. & K., 1907; *egberti* D. & K., 1907; *trachycampa* D. & K., 1909; *peribleptus* D. & K., 1917; *homoeopas* Dyar and Ludlow, 1921; *tovari* Evans, 1924; see King and Bradley (1937). A very common species, of wide nearctic and neotropical distribution.

35. **evansae** Root, 1927. Amer. Jour. Hyg. 7:593. Mage, [State of Rio de Janeiro] Brazil; lectotype here selected: Slide No. 30–1, Mage, Brazil, N. C. Davis, II–26–25. Root fails to mention the State of Brazil in which Mage is located. We have inserted this in brackets.

36. **flabellifer** Komp, 1936. Ann. Ent. Soc. Amer. 29:323. Santa Rosa, Colon Province, Panama. A rare species, recently found in Mexico by the late Alfonso Dampf.

37. **hesitator** Dyar and Knab, 1907. Jour. N. Y. Ent. Soc. 15:205. Las Cascadas, Panama Canal Zone. Synonym: *colombiensis* Dyar, 1924. There is some evidence that *hesitator* and *pilosus* (q.v.) are intergrades of one species, varying in form and vestiture of the lobes of the ninth tergite. The *hesitator* form seems to be neotropical, and much less common than the ubiquitous *pilosus* form.

38. **idottus** Dyar, 1920. Ins. Ins. Mens. 8:77. Surinam. Apparently rare.

39. **implicatus** Senevet and Abonnenc, 1939. Arch. Inst. Past. d'Algerie 17:99. "Le petit Saut," Sinnamary River, French Guiana. We have seen no material of this species; its position in the key is based on the original description. Figure 39 was redrawn from Senevet and Abonnenc.

40. **inadmirabilis** Dyar, 1928 (new name). Mosq. Amer.:297. São Paulo, Brazil. A leaf is present on the outer division of the lobe of the sidepiece, which is not mentioned by Dyar (1928). The leaf, as illustrated from the type slide (fig. 40) may have been broken, which would account for its peculiar truncated appearance. The type terminalia have no seta at midstem on the inner division of the lobe of the sidepiece (as in *taeniopus*), a character which Dyar (1928, key, p. 275, couplet 62) used to key out this species. Actually, a seta is at the base of the outer division of the lobe, which, in one of the sidepieces of the type, is superimposed on the inner division of the lobe.

41. **inhibitator** Dyar and Knab, 1906. Jour. N. Y. Ent. Soc. 14:216. San Francisco Mountains, Santo Domingo, W. I. Formerly

confused with *erraticus* D. & K., but separated by King and Bradley (1937). In all but his first three references to this species, Lane (1939) follows the old incorrect synonymy.

42. **innovator** Evans, 1924. Ann. Trop. Med. and Parasit. 18:373. Amazon River, Brazil.

43. **intrincatus** Brèthes, 1916. Ann. Mus. Nac. Hist. Nat., Buenos Aires 28:214. San Isidro (8 miles north of the city of Buenos Aires), Argentina. Synonyms: *cenus* Root, 1937; *xivylis* Dyar, 1920. The type is not in the United States National Museum. We have compared Brèthes' original figure, and find it corresponds, so far as the sidepiece is concerned, almost exactly with Root's type slide of *cenus* from Brazil. From a study of the type slide of *xivylis* (we have retained the original spelling) in the United States National Museum, labeled "BB 714a, Surinam, J. Bonne-Wepster," the junior author determined during the course of this work that it is *intrincatus*. The description of *xivylis* in Dyar (1928, p. 331) is actually that of *cuclyx* D. & S., 1924, which is a synonym of *bastagarius* D. & K., 1906, as determined by the junior author (1935), and not of *xivylis*, as Dyar (1928) has it. Figure 286 in Dyar (1928) was also drawn from the type slide of the male of *cuclyx*. Apparently *intrincatus* is widespread but rare.

44. **iolanbdis** Dyar, 1918. Ins. Ins. Mens. 6:106. Panama. Locally common in Panama.

45. **jubifer** Komp and Brown, 1935. Ann. Ent. Soc. Amer. 28:254. Mojingo Swamp, (Atlantic side) Panama Canal Zone. Found to be locally common east of Panama City by Dr. Pedro Galindo, who discovered the larva in ground-pools.

46. **latisquama** (Coquillett), 1906 (*Tinolestes*). Proc. Ent. Soc. Wash. 7: 185. Limon, Costa Rica. Lectotype here selected: intact male, No. 344 c, U.S.N.M. Very common.

47. **limacifer** Komp, 1936. Ann. Ent. Soc. Amer. 29: 325. Chase, Limon Province, Costa Rica. Apparently rare; has been found in the Canal Zone.

48. **lucifugus** Komp, 1936. Ann. Ent. Soc. Amer. 29: 331. Quiriquire (near Maturin), Venezuela. Locally common in northeastern Trinidad, B.W.I.

49. **madiminensis** Senevet, 1936. Arch. Inst. Past. d'Algerie 14: 129. Trinite, Martinique, French West Indies. No material was available for study; figure 49 was redrawn from Senevet. From Senevet's description it appears that the mesosome is identical with that of *elevator*. The species should be easily identifiable, as the sulcus in the clasper is unusual, and the filaments of the lobe of the sidepiece differ from those of *elevator*.

50. **maroniensis** Bonne-Wepster and Bonne, 1919. Ins. Ins. Mens. 7: 175. No material of *marioniensis* was available for study, but the separation of this species from *albinensis* by the Bonnes does not seem warranted, judging by the characters of the male type of *albinensis*, which we examined, and by their figure of *maroniensis* (no. 46, 1925).

51. **maxinocca** Dyar, 1920. Ins. Ins. Mens. 8: 71. Surinam. Lectotype here selected: slide BB 971, U.S.N.M. Closely related to *C. distinguendus*, but apparently rarer.

52. **menytes** Dyar, 1918. Ins. Ins. Mens. 6: 125. Trinidad River, Panama.[8] Synonym: *haynei* Komp & Curry, 1936. These authors were misled by Dyar's inaccurate figure (224, 1928), and correctly figured the terminalia under this name. Floch was about to publish a new name, being similarly misled, but the junior author identified his material as *menytes*.

53. **mulrennani** Basham 1948. Ann. Ent. Soc. Amer. 41: 1. Big Pine Key, Monroe County, Florida, U.S.A. A rare nearctic species, overlooked by many. We note that the slide labeled "Slide C5X, 24 July 1947" is in much better condition than the designated holotype slide, and we have drawn our figure from this specimen in the United States National Museum.

54. **Species A.** The species here considered is actually a new and hitherto undescribed species. The information leading to this conclusion was obtained too late to make the necessary changes in the present paper. We hope to describe the new species in a subsequent publication.

55. **mutator** Dyar and Knab, 1906. Jour. N. Y. Ent. Soc. 14: 216. Cordoba, Mexico. Lectotype here selected: slide 1811, Knab 259b, U.S.N.M. The junior author (1935) showed that *alfaroi* Dyar, 1921, given by Dyar (1928) as a synonym of *mutator*, is *bastagarius* D. & K. Apparently rare.

56. **nicceriensis** Bonne-Wepster and Bonne, 1920. Ins. Ins. Mens. 7: 174. Kabelstation, Surinam. No material is available for study, and we have placed the species in our key for the characters given in the original description, and are assuming that the inner plate of the mesosome is L-shaped, with a third point at the angle. Figure 56 was redrawn from Bonne and Bonne-Wepster, 1925.

57. **nigrescens** (Theobald) 1907 (*Danielsia*). Mon. Culic. 4: 248. Sto. Amaro (a small town due southwest of the city of São Paulo) Brazil.[9] Synonym: *clarki* Evans, 1924. There is no material in the United States National Museum. Our figure is drawn from a specimen taken by Root in Brazil, which agrees with Evans' description and figure of *clarki*.

58. **nigrimacula** Lane and Whitman, 1943. Rev. Ent. 14: 403. Federal District, Brazil. The adults of this species, and of *ocellatus* (=*automartus*), *punctiscalpularis*, and *C.* (*Microculex*) *stonei*, resemble

[8]Another instance of incomplete information as to locality of a type. There are two Trinidad Rivers in Panama, one emptying into an arm of Gatum Lake in the Panama Canal Zone, but with almost all of its course in the Republic of Panama. The mouth of this river is almost due south of the town of Escobal, west of Gatum. The second Trinidad River empties into the Bay of Panama, some distance southeast of the town of Chiman, in approximately 8° 30′ N. latitude and 78° 30′ W. longitude. The first Trinidad River is undoubtedly the type locality for *menytes*, as the junior author worked for many years with Dr. D. P. Curry in the Panama Canal Zone, and received this information at first hand from the collector.

[9]In the index to the Millionth Map of Hispanic America, of the American Geographical Society, we note that 23 localities bearing the name "Sto. Amaro" appear. We believe that the type locality of *nigrescens* is the town nearest the city of São Paulo bearing this name. Again we plead for better recording of localities.

each other in having a large dark spot on the scutum before the wing-base. Figure 58 was redrawn from Lane and Whitman.

59. **ocellatus** Theobald, 1903. Mon. Culic. 3:222. São Paulo, Brazil. Synonym: *automartus* Root, 1927. Lane and Whitman (1943) have shown that Theobald's mosquito is a *Melanoconion*, later described by Root (1927) as *automartus*; they described the true *Microculex*, which had been confused with *ocellatus*, as *C. stonei*. *Ocellatus* is very close to *punctiscapularis* F. & A., 1946.

60. **oedipus** Root, 1927. Amer. Jour. Hyg. 7:588. Lectotype here selected: slide no. 8-1, F. M. Root, 11-4-15, Mage, Brazil.[10] Dyar (1928) synonymized this species with *phlogistus* Dyar. However, *oedipus* is valid, and differs extensively from *phlogistus*. *Oedipus* has no leaf on the outer division of the lobe of the sidepiece, and the apical portion of the upper arm of the inner division of the lobe is notably swollen. Lane (1939) also incorrectly synonymized *oedipus* under *phlogistus* Dyar.

61. **opisthopus** Komp, 1926. Ins. Ins. Mens. 14:44. Puerto Castilla, Honduras. Synonym: *mychonde* Komp, 1928.

62. **paracrybda** Komp, 1936. Ann. Ent. Soc. Amer. 29:330. Juan Diaz (E. of Panama City), Panama. Rare.

63. **peccator** Dyar & Knab, 1909. Smiths. Misc. Colls., Quart. Iss. 52:256. Scott, Arkansas, U.S.A. Lectotype here selected: slide 396, J. K. Thibault, Scott, Ark. U.S.N.M. This species is nearctic in distribution. See King and Bradley, 1937.

64. **phlabistus** Dyar, 1920. Ins. Ins. Mens. 8:63. Surinam. Our illustration of the mesosome of the type is not entirely accurate, because it cannot be seen in lateral view in the type slide; no other material is available. It is probably L-shaped, similar to that of *chrysonotum*.

65. **phlogistus** Dyar, 1920. Ins. Ins. Mens. 8:61. Surinam. Dyar (1928) synonymized *oedipus* Root with this species, and described the terminalia, not from the type slide of *phlogistus*, but from Root's slide of *oedipus*. Therefore the terminalia of *phlogistus* are first described correctly in the present paper. *Phlogistus* has a large leaf from a prominent tubercle on the outer division of the lobe of the sidepiece, which is absent in *oedipus*. Dyar also believed that *marioniensis* B.-W. & B. might be a synonym of *phlogistus*, but the presence of a leaf in *phlogistus* makes it seem more likely that *maroniensis* is *albinensis* B.-W. & B.

66. **pilosus** Dyar and Knab, 1906. Jour. N. Y. Ent. Soc. 14:224. Santa Lucrecia, (State of Vera Cruz, S. W. of Coatzacoalcos, longitude 95° W.) Mexico. Synonyms: *floridanus* D. & K., 1906; *curopinensis* B.-W. & B., 1920; *radiatus* Senevet & Abonnenc, 1939. These latter authors separated *radiatus* from *pilosus* by the presence in the former of a basal horn on the mesosomal plate above the basal hook, and the presence of a leaflike filament on the under side of the outer division of the lobe of the sidepiece. These structures are actually present in

[10]Mage is a town in the State of Rio de Janeiro, a short distance northeast of the city of Rio de Janeiro.

pilosus, but were not mentioned in Dyar's (1928) description. Exceedingly common. Nearctic and neotropical.

67. **plectoporpe** Root, 1927. Amer. Jour. Hyg. 7: 589. Bangu, Brazil.[11] We believe that the mesosome is more like that of *inhibitator* or of *phlogistus* rather than as illustrated by Root. Fairly common locally in northern Panama.

68. **portesi** Senevet and Abonnenc, 1941. Arch. Inst. Past. d'Algerie 19: 41. French Guiana. Synonym: *cayennensis* Floch and Abonnenc, 1945. *C. portesi* is remarkable in that a broad leaf is inserted at the lower angle of the outer division of the lobe of the sidepiece. The hook-tipped filament is absent from the specimen in the United States National Museum; however, the insertion is present and Floch and Abonnenc illustrate this filament in their figure of *cayennensis*. Other distinctive features are the membranous triangular projection at the middle of the clasper, and the conical ninth tergite lobes, with their long setae. Apparently the inner plates of the mesosome had been lost in the specimen from which *portesi* was described, but they are illustrated in the later paper on *cayennensis*, from which our illustration of the mesosome was taken. Floch and Abonnenc (1947) note that *cayennensis* is the same as *portesi*, and compare the former with *bequaerti*, which it in no wise resembles, but do not mention *vomerifer*, which is very closely allied to *portesi*, differing in minor details.

69. **psatharus** Dyar, 1920. Ins. Ins. Mens. 8: 173. Cólon, Panama. Lectotype here selected; specimen labeled "Type, Cólon, Panama July 28, 1920, W. S. Chidester. No. 1318." U.S.N.M. To date known only from the Atlantic side of the Panama Canal Zone, where it is locally common.

70. **punctiscapularis** Floch & Abonnenc, 1946. Inst. Past. Guyane Francaise, Publ. 122: 1. Crique Anguille (?), French Guiana. This species resembles *ocellatus* Theobald very closely. We suspect that Lane and Whitman (1943) may have had *punctiscapularis* before them when they mention *ocellatus* (p. 402), as they say, "Peca lateral com o contorno arredondado e cerdas longas. . . . " Such long hairs (cerdas longas) are present on the outer curvature of the sidepiece of *punctiscapularis*, and not present in *ocellatus*. We have examined material of *punctiscapularis* received from Dr. Floch, and of *automartus* (= *ocellatus*) in the United States National Museum collection.

71. **putumayensis** Matheson, 1934. Proc. Ent. Soc. Amer. 36: 120. Amazon River, Brazil. Synonym: *cavernicolus* Floch and Abonnenc, 9145. The junior author has this from Brazil, nearer the mouth of the Amazon than the probable place of capture of the type. Specimens in the United States National Museum of both *putumayensis* and *cavernicolus* show a leaf inserted in a large tubercle at the base of the outer arm of the outer division of the lobe of the sidepiece. There is no dissected material, so that the mesosome cannot be seen in lateral view; however, the third curved point can be made out, and it is probable that the actual shape of this plate is that of an inverted L, with the upper arm, bearing the terminal points, longer than the lower arm. Apparently rare.

[11]Bangu is a small suburb across the bay from the city of Rio de Janeiro.

72. **quadrifoliatus** Komp, 1936. Ann. Ent. Soc. Amer. 29: 322. Mojingo Swamp (Atlantic side), Panama Canal Zone. Apparently rare. The junior author has one other male from the Panama Canal Zone.

73. **rabanicolus** Floch and Abonnenc, 1946. Inst. Past. Guyane Francaise, Publ. 120: 1. Raban (?), French Guiana. Apparently rare.

74. **rooti** Rozeboom, 1935. Ann. Ent. Soc. Amer. 28: 251. Panama City, Panama. It is a mystery why this seasonally very common *Mocholstyrax* escaped all previous collectors in Panama. The junior author obtained large numbers of larvae in temporary pools along the road to Chepo in Panama, some years after its discovery.

75. **rorotaensis** Floch and Abonnenc, 1946. Inst. Past. Guyane Francaise, Publ. 120:3. Rorota, French Guiana. The dotted line in our illustration of the mesosome represents the probable outline of a portion that cannot be seen in the specimen presented to the U. S. National Museum by Dr. Floch. Apparently very rare.

76. **saramaccensis** Bonne-Wepster & Bonne, 1920. Ins. Ins. Mens. 7: 172. Kabelstation, Surinam. No material was available for study, so we have had to depend upon Bonne and Bonne-Wepster (1925) for the placement of this species in our key. The mesosome was redrawn from Bonne and Bonne-Wepster (1925). Apparently very rare.

77. **serratimarge** Root, 1927. Amer. Jour. Hyg. 7: 589. Sant' Anna, State of Rio de Janeiro, Brazil. (Sant' Anna de Japin.) We have retained the spelling of the original description. Locally common in northern Panama.

78. **spissipes** (Theobald), 1903 (*Melanoconion*). Mon Culic. 3: 242. Trinidad, B.W.I. No material was available for examination. The species, as defined by the Bonnes, is allied to *dunni* and *zeteki*. The characters identifying it and fig. 78 were taken from Bonne and Bonne-Wepster (1925), who arbitrarily assigned to *spissipes* a male with the anterior half of the scutum clothed with golden scales, as Theobald describes for the female type of *spissipes*. There is no passible assurance that the Bonne's male is correctly associated with Theobald's female.

(**surukumensis** Anduze, 1941. Rev. Sanid. y Asist. Social (Venez.) 6: 812. This species was listed by the author as a *Melanoconion*, but later he placed it properly in *Isostomyia*. It is a synonym of *Conservator* Dyar and Knab.)

79. **sursumptor** Dyar, 1924. Ins. Ins. Mens. 12: 123. Barranquilla, Colombia. Dyar (1928) keys out this species with those lacking a leaf on the outer division of the lobe of the sidepiece. The type has a narrow, striate leaf, inserted near the middle filament.

80. **taeniopus** Dyar and Knab, 1907. Jour. N. Y. Ent. Soc. 15: 100. Bluefields, Nicarauga. Synonym: *epanastasis* Dyar, 1922. *C. taeniopus* was described from a single female from Bluefields, Nicaragua. We have followed Dyar in ascribing to this female a male with the characters of the terminalia as described by Dyar (1928, p. 293). We hereby arbitrarily assign as the male of *taeniopus* D. & K., the specimen of which the male terminalia are mounted on a slide labeled "Mojingo Swamp, Atlantic Side, C. Z. 21.VI.34. W. H. W. Komp." We are aware that the female of *taeniopus* from Nicaragua may be the

same as *opisthopus* Komp from Honduras, and consider this very probable on locality. If this is so, *opisthopus* becomes a synonym of *taeniopus*, and the species now known by this latter name must be called *epanastasis* Dyar. It is likewise probable that *annulipes* Theobald, 1907, from Jamaica, B.W.I., may be the same as *opisthopus*, as the latter has been taken in Puerto Rico by H. D. Pratt.

81. **tecmarsis** Dyar, 1918. Ins. Ins. Mens. 6:124. Trinidad River, Panama. Lectotype here selected: slide labeled "Type 1. Trinidad River, Panama. A. Busck. No. 925." See discussion of locality under *menytes*.

82. **terebor** Dyar, 1920. Ins. Ins. Mens. 8:56. Surinam. The type slide is in very poor condition. Nevertheless, we have included it in the key, in which in runs out with *dyius*.

83. **theobaldi** (Lutz), 1905 (*Melanoconion*). Imp. Med. Feb. 10, 1905. Brazil. Synonym: *chrysothorax* Newstead and Thomas, 1910 (not Peryassú). The scutum of this species, like that of *chrysonotum*, is golden-scaled on the anterior half. The mesosome differs from that of *chrosonotum*, according to the characters given in our key. The terminalia appear to be identical with those of *educator*, so that these two species can only be separated from one another by the coloration of the scutum.

84. **thomasi** Evans, 1924. Ann. Trop. Med. Parasit. 18:371. Manaos, Brazil. No material of this species was available, and its position in our key and figure 84 are based on Evans's description (1924).

85. **tournieri** Senevet and Abonnenc, 1939. Arch. Inst. Past. d'Algerie 17:105. Crique Mangue, Saut-Tigre, French Guiana. No material was available for study, so we had to depend upon the original description for the characters in our key, and illustration.

86. **trifidus** Dyar, 1921. Ins. Ins. Mens. 9:115. Tiribi, Costa Rica. Lectotype here selected: slide 1436, U.S.N.M. Recently found in both Mexico and Panama, by Dampf and Galindo, respectively.

87. **unicornis** Root, 1928. Mosq. Amer.:291. Maracay, Venezuela. Lectotype here selected: specimen no. 1 (on left); slide labeled "Maracay, Venezuela, June 27, 1927. Nos. 92–1, 2, 3."[12] U.S.N.M.

88. **vexillifer** Komp, 1936. Ann. Ent. Soc. Amer. 29:320. Barro Colorado Island, Panama Canal Zone. Lectotype here selected: the slide of the male terminalia so labeled in the United States National Museum collection. It is the only *Mochlostyrax* larva described with the comb-scales of the eighth abdominal segment in a patch. Lane (1939) lists this under *Melanoconion*.

89. **vomerifer** Komp, 1932. Psyche 39:79. Almirante, Bocas del Toro Province, Panama. This species resembles *portesi* S. & A. very closely, but it is not mentioned in the description of the latter. *Vomerifer* seems to be locally very common in Panama, near the type locality.

90. **ybarmis** Dyar, 1920. Ins. Ins. Mens. 8:57. Parimaribo, Surinam. Synonym: *jonistes* Dyar, 1920.

[12]Three male terminalia of *unicornis* are mounted under one coverglass on the type slide. No. 1 is assumed to be the specimen farthest from the red cotype label.

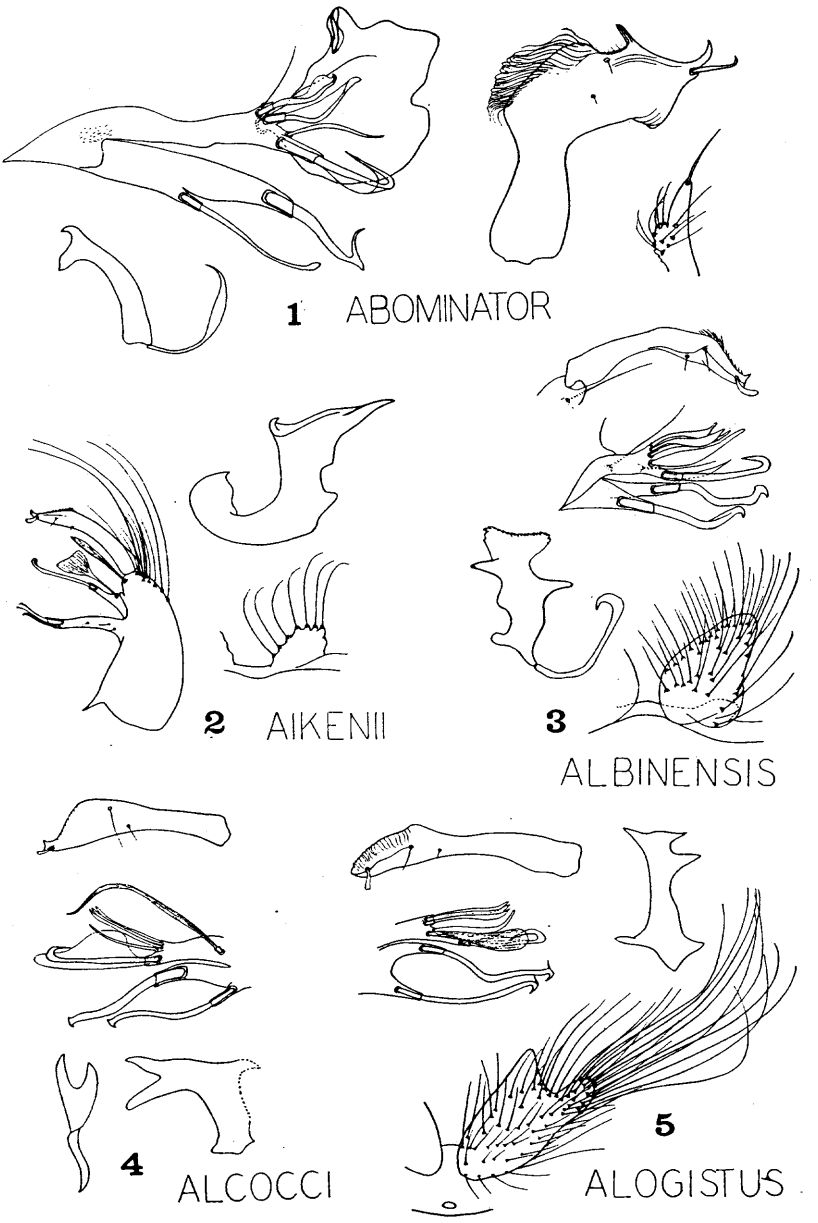
91. **zeteki** Dyar, 1918. Ins. Ins. Mens. 6:122. Gatum, Panama Canal Zone. Synonyms: *loturus* Dyar, 1925; *ensiformis* Bonne and Bonne-Wepster, 1919. Dyar (1928) describes *zeteki* as having a large leaf and two small setae on the outer division of the lobe of the sidepiece. Actually there are four or five setae, in addition to the leaf. The inner division of the lobe bears two stout semi-cylindrical filaments, and a third more slender filament arising basal to these filaments. It is possible that, in their attempt to revive the name *ensiformis*, Senevet and Abonnenc (1939) were dealing with *zeteki*. The slide of the type male terminalia of *ensiformis* is in extremely poor condition, but they are apparently the same as those of *zeteki* Dyar. The pinned adult male does not show a more extensive development of the "creamy golden, narrow curved scales" (Bonne & Bonne-Wepster, 1925) on the scutum as does *zeteki*. The junior author has noted that the pattern of golden scales on the scutum of *zeteki* is present in recently emerged adults, but that it fades rapidly.

We have revised Dyar's spelling of the specific name, as the species was named for Mr. James Zetek, who sent Dyar the original material (see Ins. Ins. Mens. 6:122, 1918). According to the international rules of nomenclature, article 14, "If the name is a modern patronymic, the genitive is always formed by adding, to the exact and complete name, an i if the person is a man. . . . " We do not know why Dyar did not follow this rule, except that the letter K was not in the Latin alphabet.

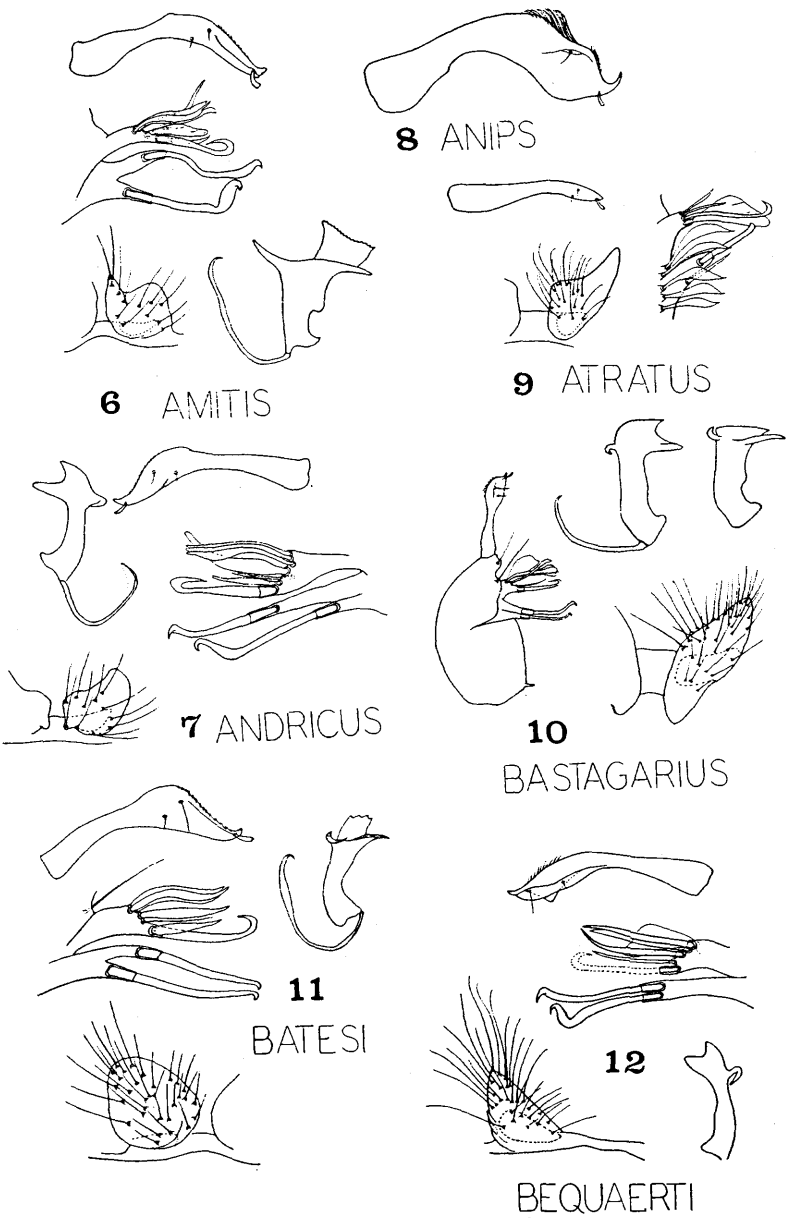
SPECIES OF UNCERTAIN POSITION OR VALIDITY

The species of *Melanoconion* of which the males are unknown, or of which the male terminalia have not been described, are listed below. Their position and validity will remain unknown until the male terminalia have been described.

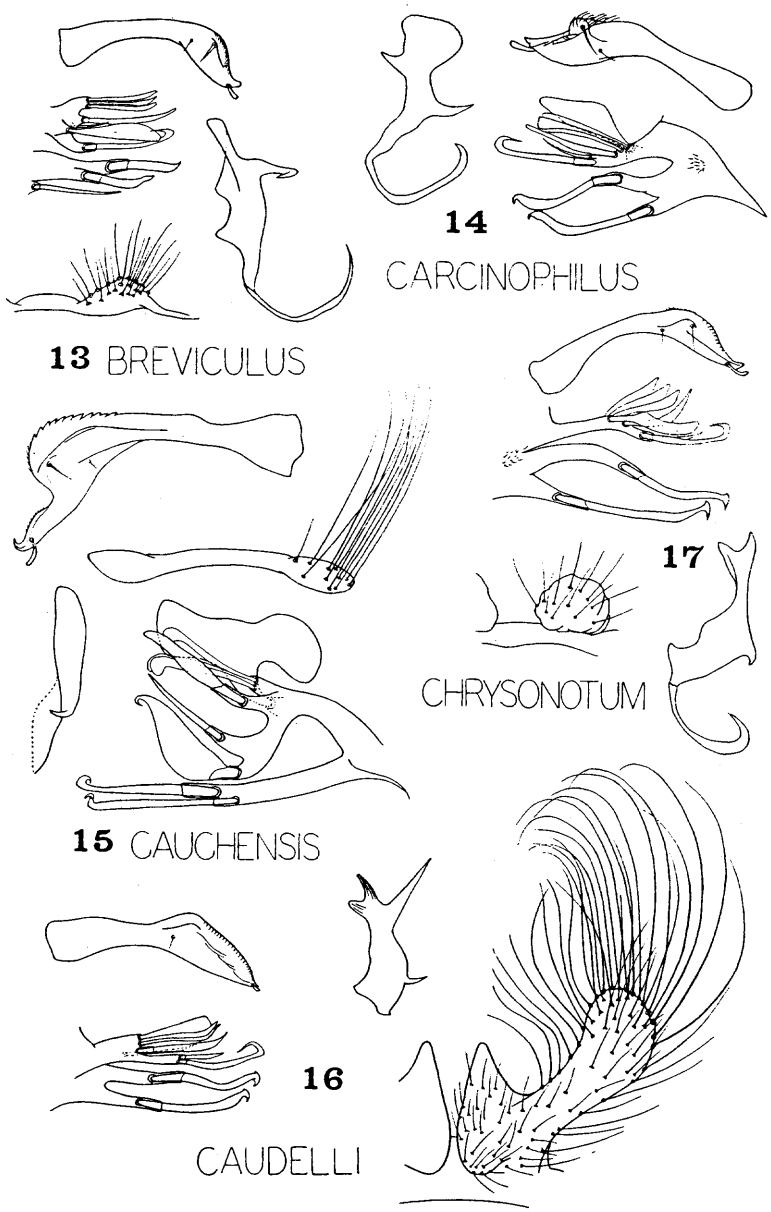
1. **chrysothorax** Peryassú, 1908. (Note Newstead and Thomas, 1910 (=*theobaldi* Lutz, 1905).) The male has white-ringed tarsi. The terminalia have not been described. Brazil.
2. **decorator** Dyar and Knab, 1906. Described from larvae in bamboo, the male unknown. The junior author suggests that this may be *distinguendus* Dyar.
3. **epirus** Aiken, 1909. Female only known. British Guiana.
4. **fasciolatus** Lutz, 1905. Female only known. Brazil.
5. **gravitator** Dyar and Knab, 1906. Described from larvae in bromeliads. Mexico.
6. **humilis** Theobald, 1901. The male is known, but apparently the terminalia have not yet been described. Brazil.
7. **indecorabilis** Theobald, 1903 (not Dyar, 1921). The male is known, but the terminalia apparently have not been described. Brazil.
8. **lugens** Peryassú, 1908. The male is known, but the terminalia apparently have not been described. Brazil.
9. **luteopleurus** Theobald, 1903. Female only known. Brazil.
10. **nigricorpus** Theobald, 1901. Female only known. Brazil.
11. **simulator** Dyar and Knab, 1906. Described from larvae in a ground-pool. Trinidad, B.W.I.



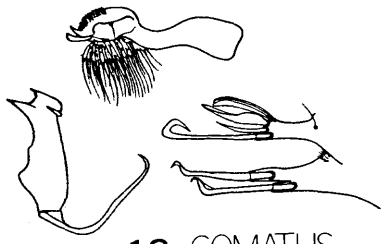
Male genitalia of *Culex*. Fig. 1, *C. abominator* Dyar and Knab. Fig. 2, *C. aikenii* (Aiken). Fig. 3, *C. albinensis* Bonne-Wepster and Bonne. Fig. 4, *C. alcocci* Bonne-Wepster and Bonne. Fig. 5, *C. alogistus* Dyar.



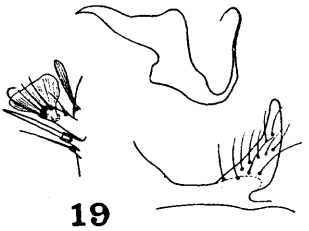
Male genitalia of *Culex*. Fig. 6, *C. amitis* Komp. Fig. 7, *C. andricus* Root. Fig. 8, *C. anips* Dyar. Fig. 9, *C. atratus* Theobald. Fig. 10, *C. bastagarius* Dyar and Knab. Fig. 11, *C. batesi* Rozeboom and Komp. Fig. 12, *C. bequaerti* Dyar and Shannon.



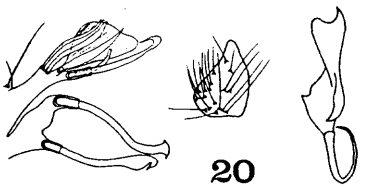
Male genitalia of *Culex*. Fig. 13, *C. breviculus* Senevet and Abonnenc. Fig. 14, *C. carcinophilus* Dyar and Knab. Fig. 15, *C. cauchensis* Floch and Abonnenc. Fig. 16, *C. caudelli* (Dyar and Knab). Fig. 17, *C. chrysonotum* Dyar and Knab.



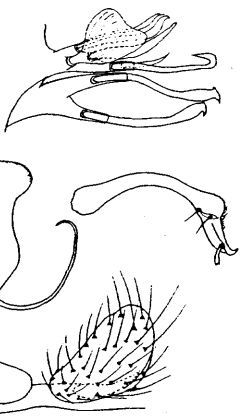
18 COMATUS



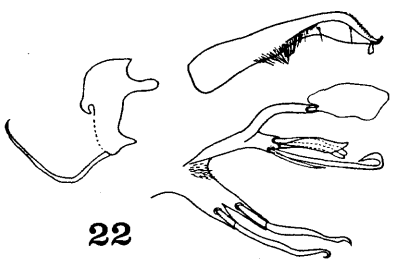
19
COMMEVYNENSIS



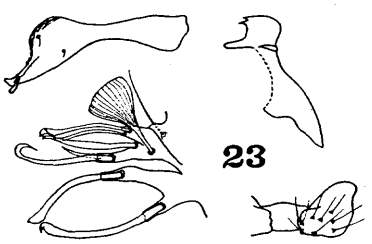
20
COMMINUTOR



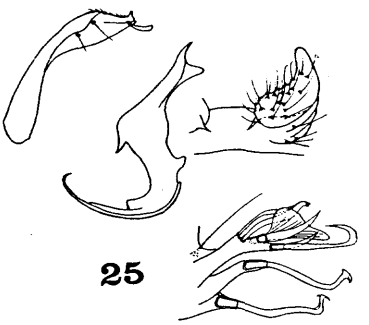
21 CONSPIRATOR



22
COPPENAMENSIS

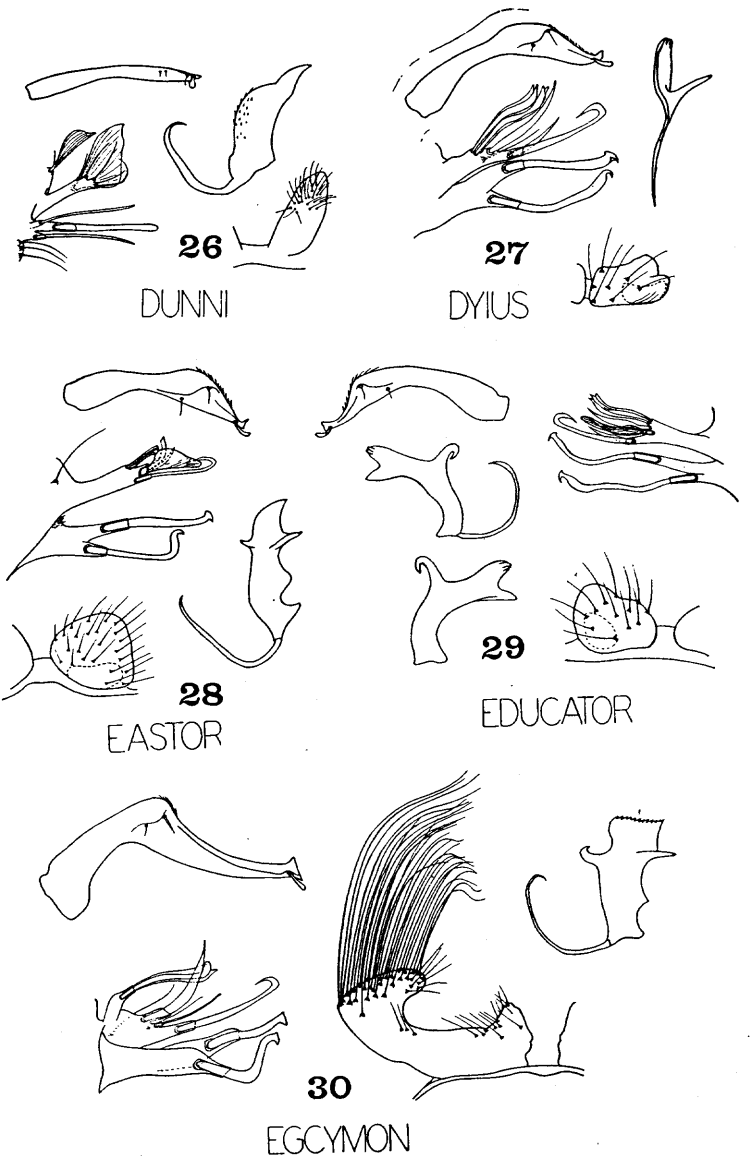


23
CORENTYNENSIS



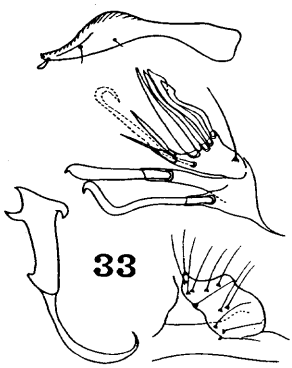
25
DISTINGUENDUS

Male genitalia of *Culex*. Fig. 18, *C. comatus* Senevet and Abonnenc. Fig. 19, *C. commevynensis* Bonne-Wepster and Bonne. Fig. 20, *C. comminutor* Dyar. Fig. 21, *C. conspirator* Dyar and Knab. Fig. 22, *C. coppenamensis* Bonne-Wepster and Bonne. Fig. 23, *C. corentynensis* Dyar. Fig. 24, omitted. Fig. 25, *C. distinguendus* Dyar.

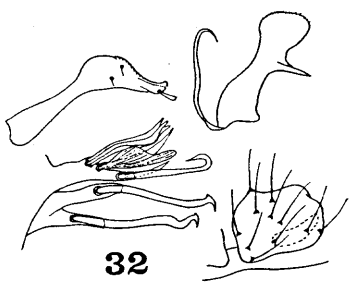


Male genitalia of *Culex*. Fig. 26, *C. dunni* Dyar. Fig. 27, *C. dyius* Root. Fig. 28, *C. eastor* Dyar. Fig. 29, *C. educator* Dyar and Knab. Fig. 30, *C. egcymon* Dyar.

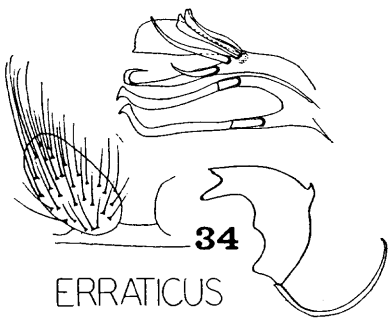
31 ELEPHAS



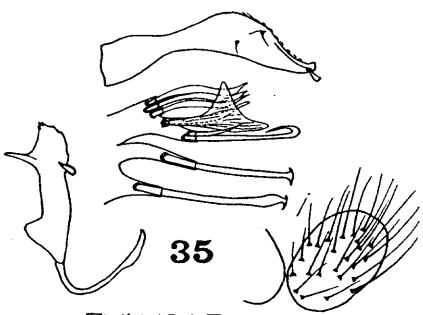
EQUINOXIALIS



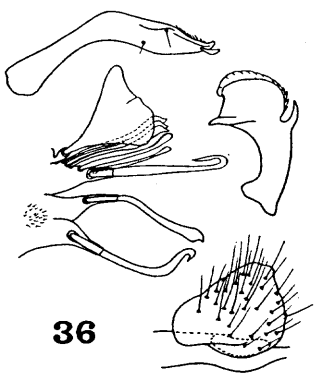
ELEVATOR



ERRATICUS

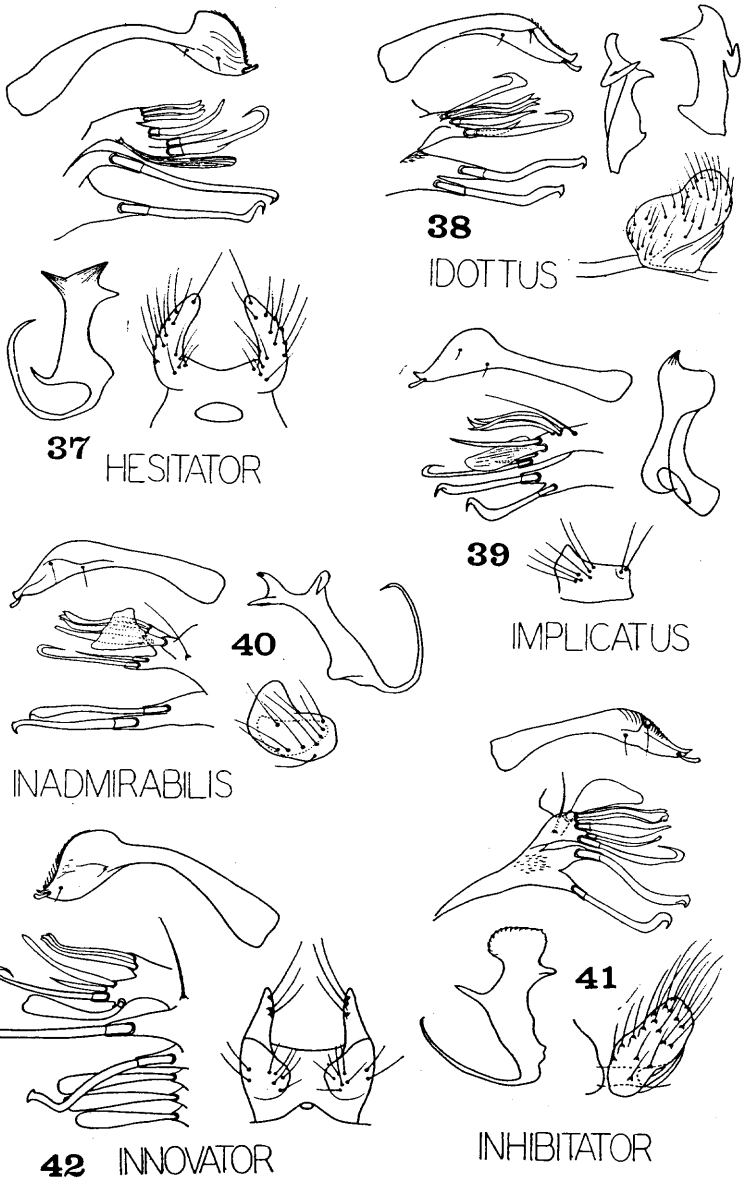


EVANSAE

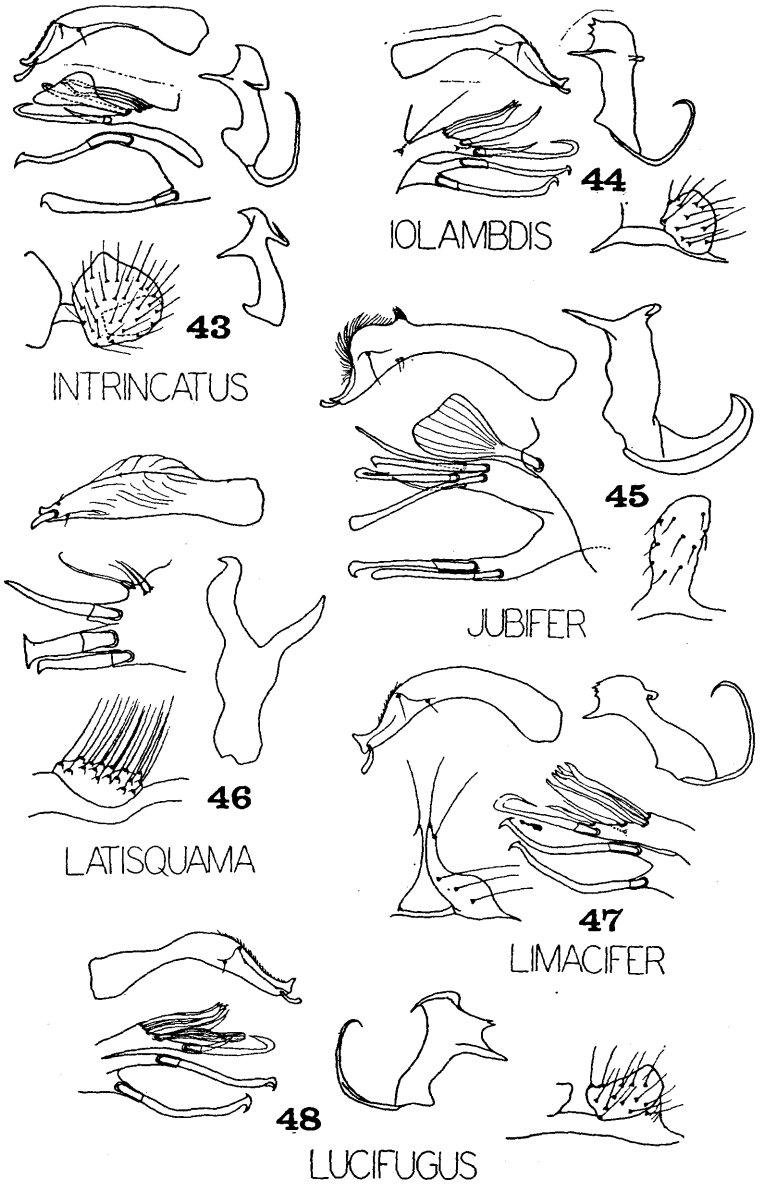


FLABELLIFER

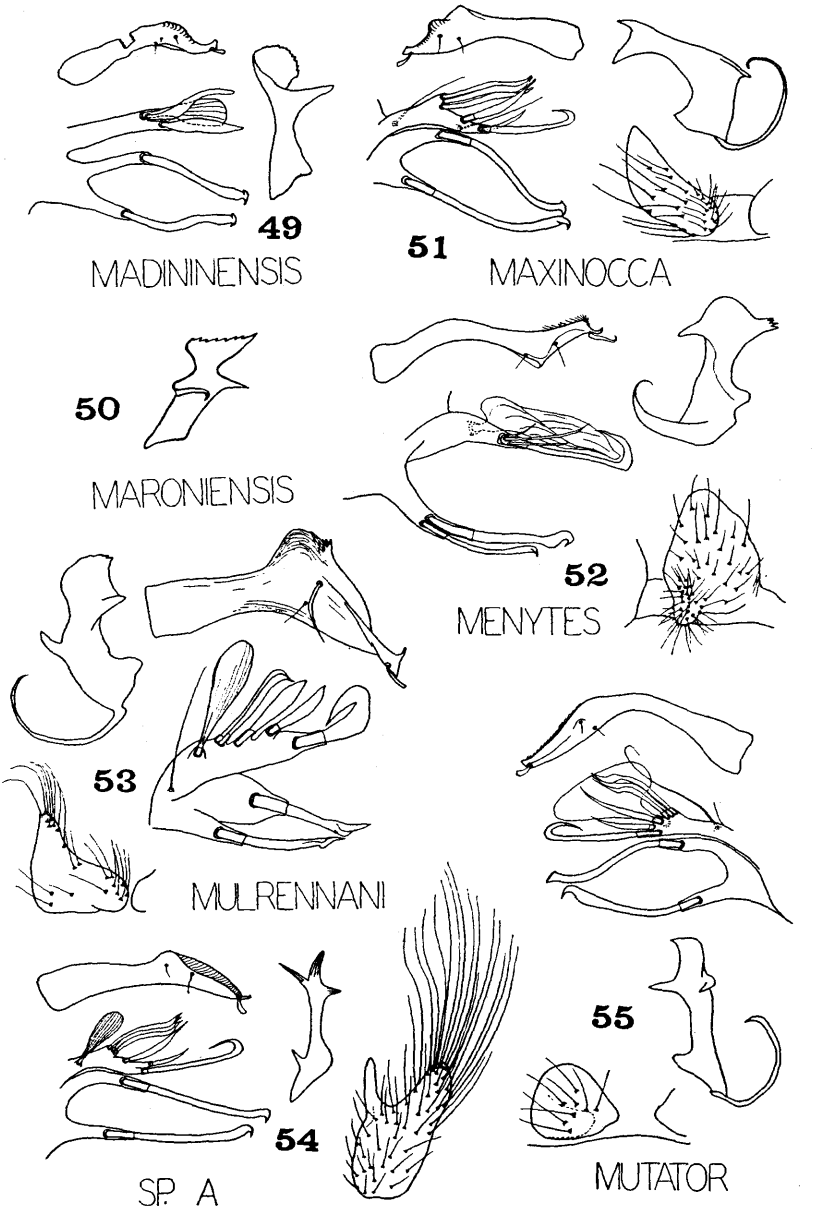
Male genitalia of *Culex*. Fig. 31, *C. elephas* Komp. Fig. 32, *C. elevator* Dyar and Knab. Fig. 33, *C. equinoxialis* Floch and Abonnenc. Fig. 34, *C. erraticus* (Dyar and Knab). Fig. 35, *C. evansae* Root. Fig. 36, *C. flabellifer* Komp.



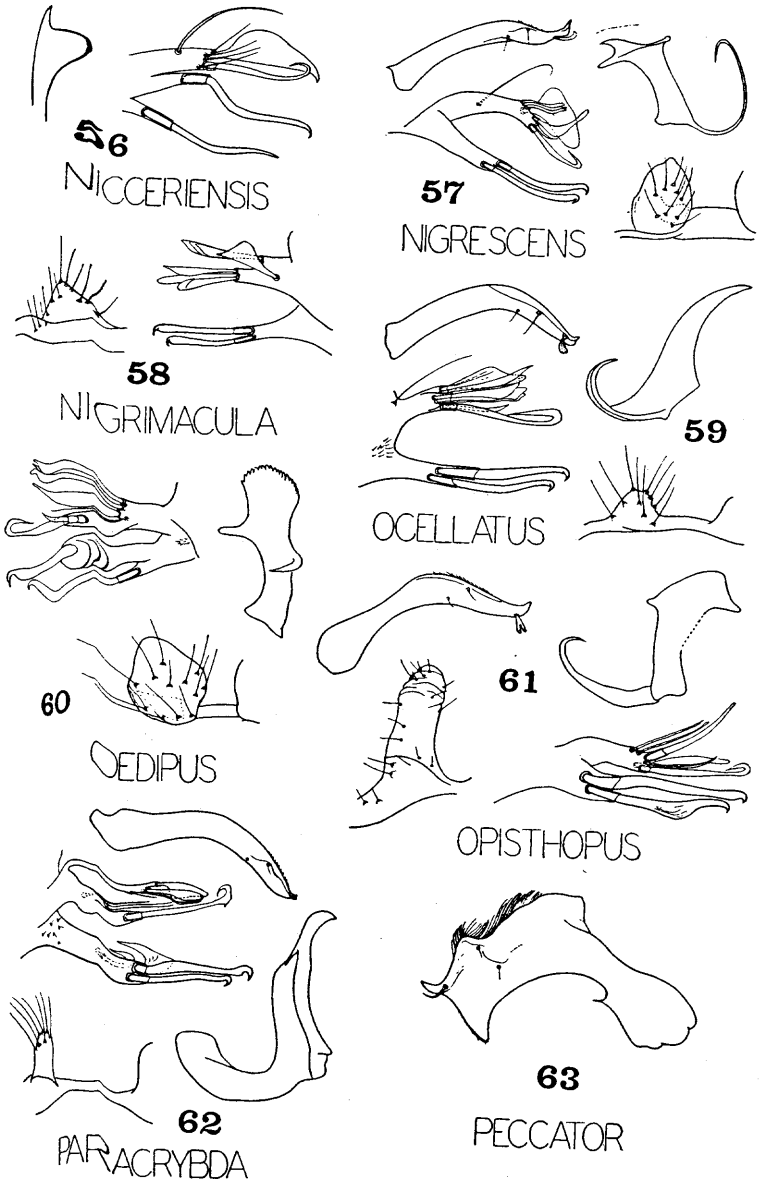
Male genitalia of *Culex*. Fig. 37, *C. hesitator* Dyar and Knab. Fig. 38, *C. idottus* Dyar. Fig. 39, *C. implicatus* Senevet and Abonnenc. Fig. 40, *C. inadmirabilis* Dyar. Fig. 41, *C. inhibitator* Dyar and Knab. Fig. 42, *C. innovator* Evans.



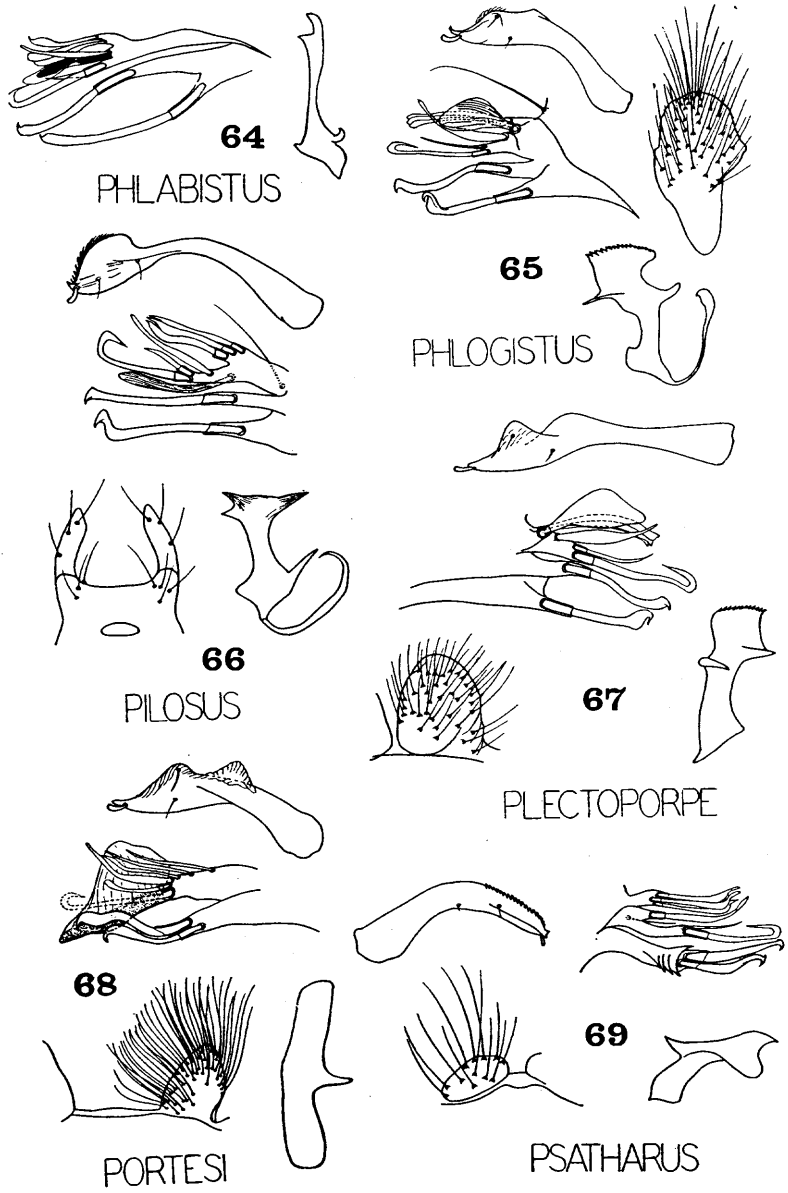
Male genitalia of *Culex*. Fig. 43, *C. intrincatus* Brèthes. Fig. 44, *C. iolambdis* Dyar. Fig. 45, *C. jubifer* Komp and Brown. Fig. 46, *C. latisquama* (Coquillett). Fig. 47, *C. limacifer* Komp. Fig. 48, *C. lucifugus* Komp.



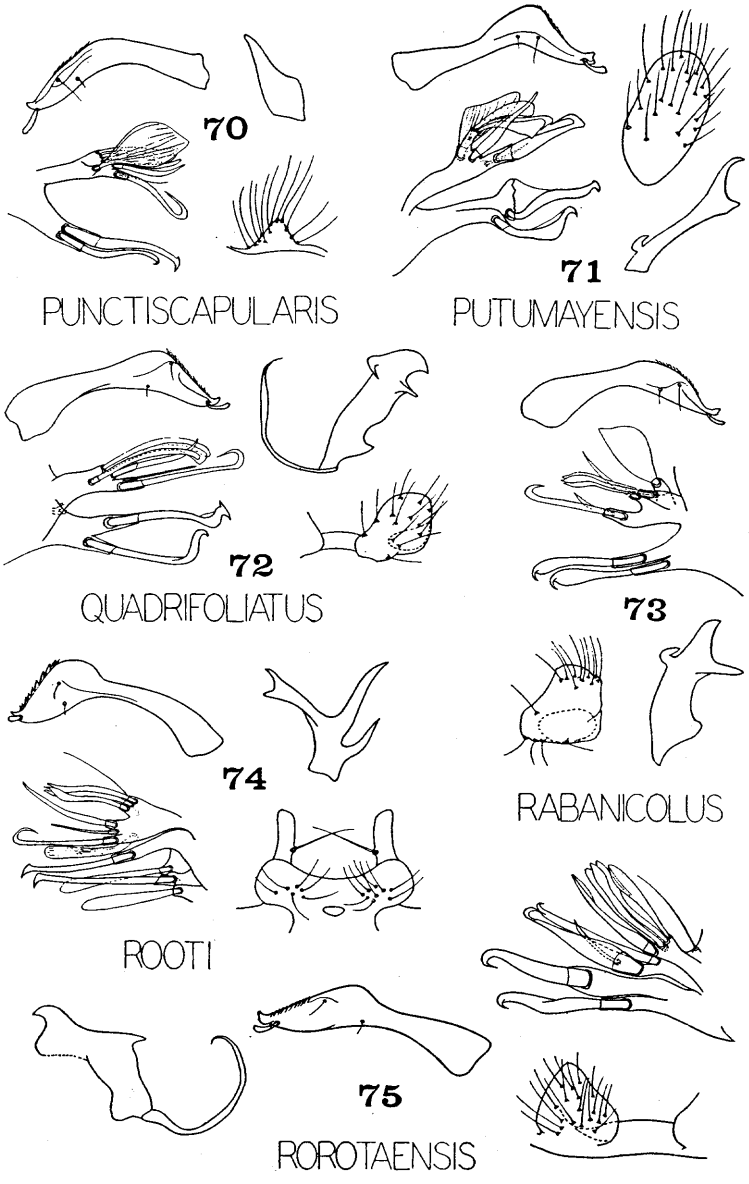
Male genitalia of *Culex*. Fig. 49, *C. madininensis* Senevet. Fig. 50, *C. maroniensis* Bonne-Wepster and Bonne. Fig. 51, *C. maxinocca* Dyar. Fig. 52, *C. menytes* Dyar. Fig. 53, *C. mulrennani* Basham. Fig. 54, MS. Species A. Fig. 55, *C. mutator* Dyar and Knab.



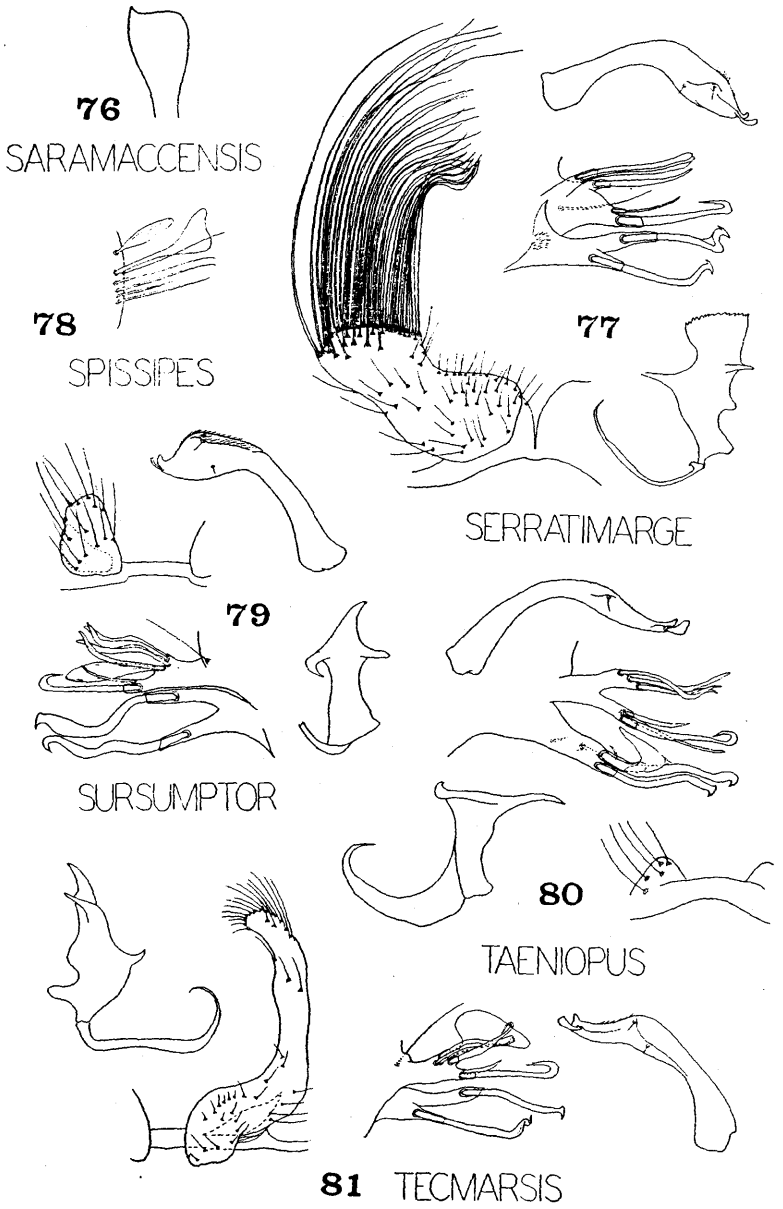
Male genitalia of *Culex*. Fig. 56, *C. niccériensis* Bonne-Wepster and Bonne. Fig. 57, *C. nigrescens* (Theobald). Fig. 58, *C. nigrimacula* Lane and Whitman. Fig. 59, *C. ocellatus* Theobald. Fig. 60, *C. oedipus* Root. Fig. 61, *C. opisthopus* Komp. Fig. 62, *C. paracrybda* Komp. Fig. 63, *C. peccator* Dyar and Knab.



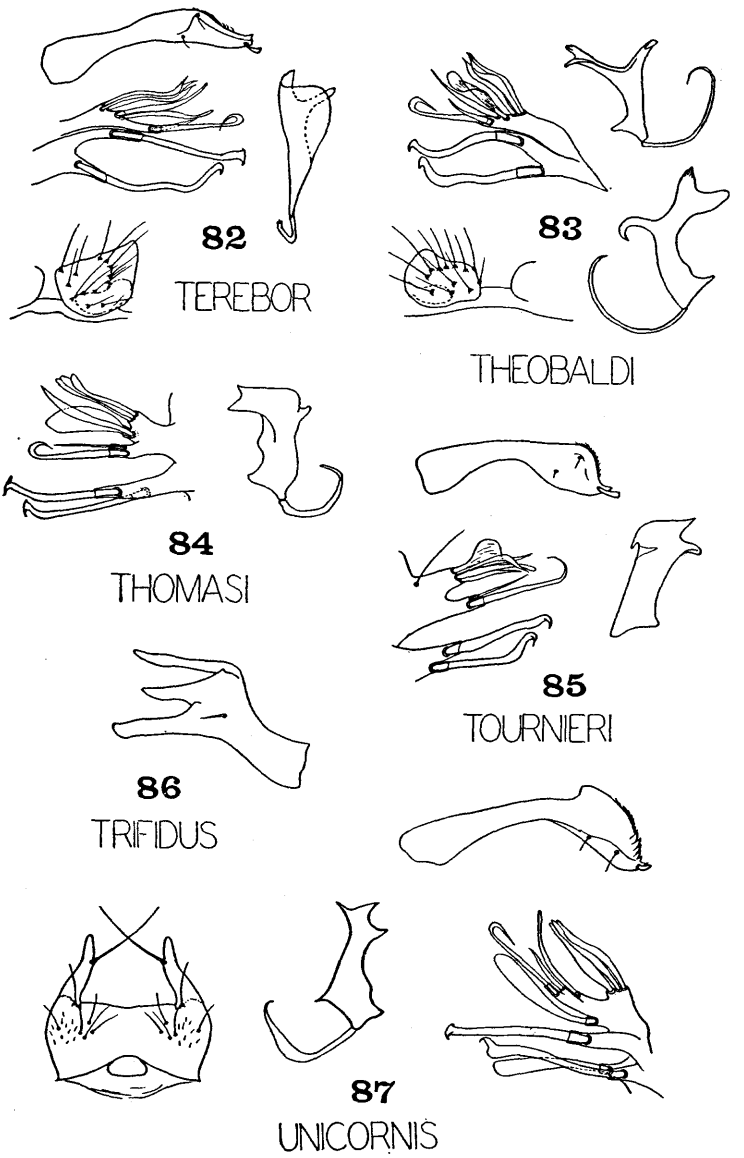
Male genitalia of *Culex*. Fig. 64, *C. phlabistus* Dyar. Fig. 65, *C. phlogistus* Dyar. Fig. 66, *C. pilosus* Dyar and Knab. Fig. 67, *C. plectoporpe* Root. Fig. 68, *C. portesi* Senevet and Abonnenc. Fig. 69, *C. psatharus* Dyar.



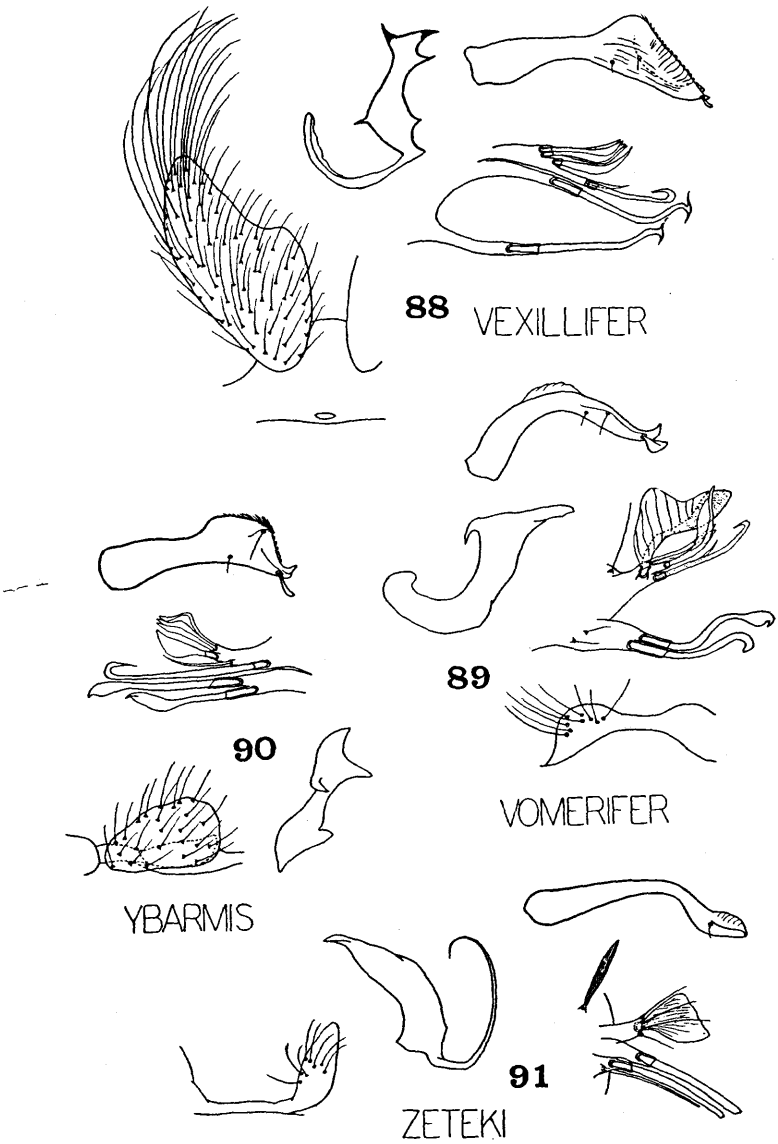
Male genitalia of *Culex*. Fig. 70, *C. punctiscapularis* Floch and Abonnenc. Fig. 71, *C. putumayensis* Matheson. Fig. 72, *C. quadrifoliatus* Komp. Fig. 73, *C. rabanicolus* Floch and Abonnenc. Fig. 74 *C. rooti* Rozeboom. Fig. 75, *C. rorotaensis* Floch and Abonnenc.



Male genitalia of *Culex*. Fig. 76, *C. saramaccensis* Bonne-Wepster and Bonne. Fig. 77, *C. serratimarge* Root. Fig. 78, *C. spissipes* (Theobald). Fig. 79, *C. sursumptor* Dyar. Fig. 80, *C. taeniopus* Dyar and Knab. Fig. 81, *C. tecmarsis* Dyar.



Male genitalia of *Culex*. Fig. 82, *C. terebor* Dyar. Fig. 83, *C. theobaldi* (Lutz). Fig. 84, *C. thomasi* Evans. Fig. 85, *C. tournieri* Senevet and Abonnenc. Fig. 86, *C. trifidus* Dyar. Fig. 87, *C. unicornis* Root.



Male genitalia of *Culex*. Fig. 88, *C. vexillifer* Komp. Fig. 89, *C. vomerifer* Komp. Fig. 90, *C. ybarmis* Dyar. Fig. 91, *C. zeteki* Dyar.

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