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**COMPARATIVE ANATOMY OF THE FEMALE GENITALIA
OF GENERA AND SUBGENERA IN TRIBE AEDINI
(DIPTERA: CULICIDAE).
PART V. GENUS *Aedes* MEIGEN**

by

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Abstract. A comparative, morphological analysis of the female genitalia of the subgenera of genus *Aedes* Meigen was conducted. Based on the analysis, the female genitalia of the genus are characterized and a key to the included subgenera is provided. The female genitalia of all 22 currently recognized subgenera are described. This study is the first time the female genitalia of all subgenera of *Aedes* have been evaluated together and it provides valuable characters for distinguishing each subgenus. Treatment of the genital morphology of each subgenus includes a detailed composite description, description and illustration of the type species (except for one subgenus for which an alternate species is described), description of subcategories of the subgenus, list of species examined, list of published illustrations of species and their citations, and a discussion. The discussion section contains a list of the most distinctive features of the subgenus, a comparison with other subgenera, and other pertinent information.

TABLE OF CONTENTS

ABSTRACT.....	1
INTRODUCTION.....	2
MATERIALS AND METHODS.....	2
FEMALE GENITALIA OF GENUS <i>Aedes</i> MEIGEN.....	3
KEY TO SUBGENERA BASED ON FEMALE GENITALIA.....	4
FEMALE GENITALIA OF SUBGENERA OF <i>Aedes</i>	8
SUBGENUS <i>Aedes</i> MEIGEN.....	8
SUBGENUS <i>Aedimorphus</i> THEOBALD.....	10
SUBGENUS <i>Alanstonea</i> MATTINGLY.....	14
SUBGENUS <i>Albuginosus</i> REINERT.....	15
SUBGENUS <i>Belkinus</i> REINERT.....	17
SUBGENUS <i>Bothaella</i> REINERT.....	18
SUBGENUS <i>Cancraedes</i> EDWARDS.....	20
SUBGENUS <i>Christophersomyia</i> BARRAUD.....	21
SUBGENUS <i>Diceromyia</i> THEOBALD.....	23
SUBGENUS <i>Edwardsaedes</i> BELKIN.....	25
SUBGENUS <i>Fredwardsius</i> REINERT.....	27
SUBGENUS <i>Huaedes</i> HUANG.....	28
SUBGENUS <i>Indusius</i> EDWARDS.....	30
SUBGENUS <i>Isoaedes</i> REINERT.....	31

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SUBGENUS <i>LEPTOSOMATOMYIA</i> THEOBALD.....	32
SUBGENUS <i>LORRAINEA</i> BELKIN.....	33
SUBGENUS <i>NEOMELANICONION</i> NEWSTEAD.....	35
SUBGENUS <i>PARAEDES</i> EDWARDS.....	37
SUBGENUS <i>PSEUDARMIGERES</i> STONE AND KNIGHT.....	39
SUBGENUS <i>SCUTOMYIA</i> THEOBALD.....	40
SUBGENUS <i>SKUSEA</i> THEOBALD.....	42
SUBGENUS <i>STEGOMYIA</i> THEOBALD.....	43
ACKNOWLEDGMENTS.....	48
LITERATURE CITED.....	48
LIST OF FIGURES.....	54
LIST OF ABBREVIATIONS USED IN THE TEXT AND/OR FIGURES.....	55
FIGURES.....	56
SYSTEMATIC INDEX.....	97

INTRODUCTION

The composite genus *Aedes* Meigen was divided by Reinert (2000c) into two genera, *Aedes* and *Ochlerotatus* Lynch Arribalzaga, based on consistent primary characters of the female and male genitalia and several supplemental characters of the female and male genitalia, pupae, and fourth-instar larvae. Reinert (1999, 2000b) previously removed subgenera *Verrallina* Theobald and *Ayurakitia* Thurman from *Aedes* and restored them to generic rank. Twenty-two subgenera are currently recognized in genus *Aedes* and their female genitalia are treated here. This study is the first time that the female genitalia of all subgenera of the genus have been evaluated together and it provides valuable characters for distinguishing each subgenus.

This is the fifth in a series of papers by the author that describes the female genitalia of the genera and subgenera included in tribe Aedini of family Culicidae. Part I of the series (Reinert 2000d) included a brief historical background of published papers dealing with the subject and provided an introduction to the series. Part II (Reinert 2000e) dealt with genus *Psorophora* Robineau-Devoidy, part III (Reinert 2000f) with genus *Udaya* Thurman, and part IV (Reinert 2000g) with genus *Zeugomyia* Leicester.

MATERIALS AND METHODS

A comparative, morphological analysis of the female genitalia of the subgenera of genus *Aedes* was conducted. Based on the analysis, a characterization of the female genitalia of the genus is given and a key to the included subgenera is provided. The female genitalia of all 22 currently recognized subgenera of the genus are described in detail. The format for each subgenus includes a composite description, a description and illustration of the type species, a description of included Assemblages and Subassemblages, a list of the species examined, a list of published illustrations of species with their citations, and a discussion including a list of the most distinctive features, a comparison with other subgenera, and other items of note. Some published illustrations include the entire female genitalia whereas others provide only a few structures. For subgenus *Alanstonea* Mattingly, specimens of the type species were not available; therefore, the only other species of the

subgenus is described and illustrated. A number of the subgenera are described and illustrated for the first time.

Within some subgenera containing numerous species (e.g., *Aedimorphus* Theobald), the terms Assemblage and Subassemblage are used to avoid confusion with other reported informal categories (e.g., Group, Subgroup) because the published interpretations of these categories were found to be markedly different from author to author and paper to paper. Assemblage, as used here, refers to a collection of species with similar morphological features of the female genitalia. The term is not meant to be a designated taxon; however, the group of species is at a level comparable to subgenus or lower, but superior to a species, and sometimes correlates with the Species Group category of subgenera that contain large numbers of species. Generally, the designated Assemblages appear to represent natural groupings of species. Subassemblage is used to denote a smaller subordinate group of species with similar morphological features within an Assemblage. The Assemblage and Subassemblage groupings based on female genitalia provide valuable information on species associations, but should not be used in isolation to develop a classification of taxa. Structures of all life stages need to be considered for this purpose.

Female genitalia of genus *Aedes* are considered here to include all structures caudad of abdominal segment VII. Segment VIII is included because its tergum and sternum are often modified in development and shape, and possess specialized setae.

Terminology used in the descriptions and illustrations follow Reinert (2000d) and the abbreviations used are found in the "List of Abbreviations Used in the Text and/or Figures" that precedes the figures. Morphological descriptions are based on slide-mounted genitalia that were dissected from nonliving, dried females. Measurements and descriptions of genital structures are based on specimens that were cleared, dissected, arranged in a dorsoventrally flattened position, and mounted in Canada balsam under glass cover slips on microscope slides. The method of preparation of specimens follows Reinert (2000d). Ranges given in the key and descriptions are based on the species (listed under "species examined" section of each subgenus) and the specimens that I have examined, therefore for a specific subgenus some variation may occur in species not seen. A phase contrast microscope was used because this was usually necessary to adequately determine structures of the spermathecal eminence. Measurements of structures (e.g., length and width of tergum VIII, sternum VIII, cercus, etc.) include only the pigmented and sclerotized areas and were made at 400X magnification using an ocular micrometer with a linear scale of 100 divisions that had been calibrated using a stage micrometer. The scales shown in the illustrations are in millimeters.

FEMALE GENITALIA OF GENUS *AEDES* MEIGEN

Genus description. *Tergum VIII.* Shape varied but often trapezoidal; with extensive, continuous, sclerotized area lightly to very heavily pigmented; scales present or absent; basolateral seta when present inserted near lateral area of tergum (except seta more mesad in subgenus *Skusea* Theobald). *Sternum VIII.* Well developed; variously shaped; with extensive, continuous, sclerotized area lightly to very heavily pigmented; scales present or absent; intersegmental membrane between segments VII and VIII very short to very long. *Tergum IX.* Variously developed; setae normally present distally. *Insula.* Tonguelike; usually with small tuberculi each normally bearing minute or short spicule; setae absent. *Lower vaginal lip.* Narrow; without lower vaginal sclerite. *Upper vaginal lip.* Sclerite moderately to heavily pigmented, small to large in size (absent in subgenus *Skusea*). *Spermathecal eminence.* Membranous; without heavily

pigmented and strongly sclerotized structures. **Postgenital lobe.** Ventral length shorter than cercus length; ventral PGL/Ce index 0.31-0.83; with or without median, apical emargination; with short and/or moderately long to long setae distally, no setae on basal area. **Cercus.** Various shapes; short to very long; narrow to wide; longer than ventral postgenital lobe length; with or without scales. **Spermathecal capsules.** Normally one large and 2 medium, some taxa with one large and 2 rudimentary or only single large one; few to several spermathecal capsule pores near orifice.

Discussion. The following combination of features is most distinctive for genus *Aedes* and can be used to separate the genus from other genera of Aedini: insula is tongue-like and without setae; sternum VIII is well developed with an extensive, continuous, sclerotized area that is lightly to very heavily pigmented; tergum IX normally has a few to several setae present (absent in subgenera *Belkinus*, *Lorrainea*, and a few species of *Cancraedes*); postgenital lobe is without setae on the basal area; spermathecal eminence is membranous and without heavily pigmented and sclerotized structures; upper vaginal lip normally has a well developed, moderately to heavily pigmented, medium to large (occasionally small) sclerite (absent in subgenus *Skusea*); and lower vaginal lip is without a sclerite.

KEY TO SUBGENERA BASED ON FEMALE GENITALIA¹

(Footnotes at end of key)

1. Both lower and upper vaginal lips narrow, *wrinkled*, with twisted appearance; upper vaginal sclerite absent; postgenital lobe with apex broad, lateral margins moderately concave giving apex flared, angular appearance (Fig. 33).....*Skusea*
Without this combination of characters.....2
- 2 (1). Tergum IX very short, very wide and bandlike, without setae, index 0.20-0.30; postgenital lobe with total of 4-6 setae (Fig. 13).....*Belkinus*
Without this combination of characters.....3
- 3 (2). Postgenital lobe moderately long to long and dorsal surface evenly narrow throughout length, with elongate, *median* patch of setae on ventral surface (Fig. 21)...*Fredwardsius*
Without this combination of characters.....4
- 4 (3). Tergum IX short, noticeably wider than long, both basal and apical margins moderately concave, index 0.32-0.36, with 10-23 moderately long setae distally on each side of midline; both tergum VIII and sternum VIII nearly covered (including basolateral areas) with densely packed, broad scales; postgenital lobe with very deep (0.56-0.69 of dorsal length), median, apical emargination (Fig. 11).....*Alanstonea*
Without this combination of characters.....5
- 5 (4). Single large spermathecal capsule; tergum VIII with basolateral area wide and expanded laterally whereas remainder of tergum relatively narrow and terminates in

convex apex, *short* setae scattered over distal 0.95-0.99 including apical margin, without scales; tergum IX comprised of pair of long, narrow, moderately pigmented, lateral plates separated by lightly pigmented, median area, without or with 1-8 *very short* setae distally on each side of midline (Fig. 15).....*Cancraedes*

Without this combination of characters6

- 6 (5). Tergum IX comprised of 2 moderately pigmented, oblong, lateral plates each with both apical and basal margins heavily pigmented, plates connected mesally by lightly pigmented strip, without setae; cercus short, wide, apex truncate or bluntly rounded, scales usually absent (only 1-4 scales when present); tergum VIII with apical margin broadly rounded and bearing several long and moderately long, stout setae, and few short setae on *median* area in addition to several on distal and lateral areas, usually few to several broad scales distally (Fig. 26).....*Lorrainea*

Without this combination of characters.....7

- 7 (6). Sternum VIII longer than wide, index 1.02-1.10, moderately pigmented but with median, lightly pigmented area on distal 0.51-0.54, basal margin *slightly* concave, apical margin with very deep (0.30-0.34 of length), median emargination separating evenly and broadly rounded lobes, scales normally absent (only 1-4 scales when present), setae covering distal 0.97-0.99, setae 1,2-S in transverse line near base, seta 3-S laterad and only slightly distad of 1,2-S; cercus moderately long, moderately wide, setae covering distal 0.90-0.95 of dorsal surface, without scales; tergum IX comprised of 2 long, narrow, moderately pigmented, lateral plates connected mesally by membrane, 6-10 short, slender setae on *mesal* and apical areas (Fig. 23).....*Indusius*

Without this combination of characters.....8

- 8 (7). Both tergum VIII and sternum VIII with basal margin *deeply* and *sharply* concave mesally; tergum VIII with apex relatively broad and straight or slightly concave; intersegmental membrane between segments VII and VIII very long (Fig. 20).....9

Without this combination of characters.....10

- 9 (8). Apical margin of sternum VIII with very deep (0.22-0.26 of length) and narrow, median, emargination separating pair of small, narrow lobes, widest area of sternum at about 0.30 from apex; postgenital lobe with shallow to small (0.05-0.12 of dorsal length), median, apical emargination (Fig. 20).....*Edwardsaedes*

Apical margin of sternum VIII having apical margin with deep (0.11-0.18 of length) and broader, median emargination separating pair of broadly and evenly rounded lobes; postgenital lobe with deep to very deep (0.21-0.53 of dorsal length), median, apical emargination (Fig. 27).....*Neomelaniconion*

- 10 (8). Tergum IX slightly wider than long, with 10-17 short setae distally on each side of moderately deep, median emargination; postgenital lobe *wide* and moderately long, apical margin straight or with minute to small, median emargination, with 10-16 setae on each side of midline; sternum VIII wider than long, apical margin with numerous moderately long setae, several with curved tips, and moderately deep, median,

- emargination separating pair of short, broadly rounded, darker pigmented lobes, number of short and few moderately long setae on distal 0.70-0.78 but basal and large, laterobasal areas bare (Fig. 24).....*Isoaedes*
- Without this combination of characters 11
- 11 (10). Sternum VIII without scales or if scales present fewer than 28 (usually fewer than 10)²; tergum VIII without scales or only 1-8 (usually 1-4) scales at most³ (Fig. 31)..... 12
- Sternum VIII with most or much of surface covered with numerous broad scales; tergum VIII with numerous broad scales, at least on distal portion³ (Fig. 31)..... 14
- 12 (11). Sternum VIII moderately pigmented but with median, apical area *heavily pigmented*, apical margin broad and convex with moderately deep, median emargination; upper vaginal lip with sclerite large, moderately wide throughout length, and moderately pigmented except apical area very heavily pigmented; cercus relatively short, moderately wide, apex broadly rounded, basal area widest, and without scales (Fig. 12)*Albuginosus*
- Without this combination of characters..... 13
- 13 (12). Insula with 2-7 tuberculi located at about midlength; postgenital lobe with median, apical emargination 0.03-0.25 of dorsal length (rarely 0.23-0.25); sternum VIII with lateral margins straight, seta 1-S basomesad but displaced somewhat from basal margin; single large spermathecal capsule⁴ (Fig. 30).....*Paraedes*
- Insula with 2-9 tuberculi located on apical 0.20-0.25; postgenital lobe normally with median, apical emargination deeper, usually 0.26-0.73 (rarely 0.10-0.25) of dorsal length; sternum VIII normally with lateral margins curved, seta 1-S basomesad near basal margin; 3 spermathecal capsules (Figs. 8) (except single large one in *Argenteopunctatus* Assemblage, Fig. 10).....*Aedimorphus*
- 14 (11). Apical margin of sternum VIII broad with lateroapical corners most distal and sloping inward to pair of short, mesal lobes, lobes separated by small, median emargination, lateral margins nearly straight and sharply sloping inward to narrower base, index 0.55-0.62, without basolateral seta; insula with 4-9 tuberculi located on apical 0.55; cercus moderately long (0.21-0.30 mm), index 2.50-3.47, apex pointed, with few broad scales (Fig. 1).....*Aedes*
- Without this combination of characters..... 15
- 15 (14). Sternum VIII heavily pigmented, apical margin with lateral areas nearly straight and with small to moderately deep, median emargination, margin also with numerous *short* setae only and approximately 50 percent with curved tips; cercus short, wide, apex broadly rounded, scales usually absent (only 1-4 when present); postgenital lobe moderately long, narrow, normally with moderately deep, median, V-shaped emargination (Fig. 31).....*Pseudarmigeres*
- Without this combination of characters..... 16

- 16 (15). Intersegmental membrane between segments VII and VIII *long*; tergum VIII lightly to moderately pigmented, with apical setae short except for 2,3 moderately long ones; apical margin of sternum VIII with small to moderately deep, median emargination separating pair of broadly and evenly rounded lobes, basolateral seta on sclerotized area (Fig. 16).....*Christophersiomyia*
- Without this combination of characters.....17
- 17 (16). Sternum VIII with basal margin broadly and moderately concave, apical margin gently sloping from lateroapical corners to midline, seta 1-S inserted mesally near *basal* margin, alveoli of setae 1,2-S close together, seta 3-S widely separated distally from 1,2-S; postgenital lobe moderately long, moderately wide, with lateral margins gently and evenly tapering outward from relatively narrow apex to broader base; tergum VIII noticeably wider than long, apical margin with several short and few moderately long, stouter setae (Fig. 32).....*Scutomyia*
- Without this combination of characters.....18
- 18 (17). Tergum IX comprised of 2 moderately long, moderately wide, moderately pigmented, lateral plates bearing total of 10-17 short setae distally, plates connected mesally by lightly pigmented area, apical margin of each plate evenly rounded; tergum VIII and sternum VIII *both* with basolateral seta inserted on membrane outside sclerotized area; apical margin of sternum VIII with small, median emargination separating pair of small lobes, seta 1-S very long (Fig. 22).....*Huaedes*
- Without this combination of characters.....19
- 19 (18). Tergum IX uniformly moderately pigmented, basal margin strongly convex, apical margin with moderately deep, median emargination and bearing 5-9 total setae, lateral areas *wrinkled*; insula with 2-4 tuberculi atop slightly raised area on apical 0.25; cercus short, apical portion broader than width at midlength, apex bluntly rounded and bearing number of short setae with strongly curved tips and few moderately long and long, stout setae, only 1-4 scales; tergum VIII with basolateral setae on sclerotized area, but sternum VIII with basolateral seta inserted on membrane adjacent to sclerotized area (Fig. 25).....*Leptosomatomyia*
- Without this combination of characters.....20
- 20 (19). Cercus without scales, setae restricted to distal 0.41-0.56; tergum IX relatively short, wide, evenly pigmented throughout, median and/or lateral areas usually wrinkled, 2-11 total setae distally; apical margin of postgenital lobe with moderately deep (0.14-0.45 of dorsal length), median emargination (Fig. 14).....*Bothaella*
- Without this combination of characters.....21
- 21 (20). Apical margin of sternum VIII nearly straight or gently sloping from lateroapical corners to midline or apical margin straight with pair of very small, median lobes separated by very shallow (0.02-0.06 of length) emargination; tergum IX uniformly

moderately or heavily pigmented, comprised of caudally directed, winglike lobe on each side of midline, length 0.07-0.12 mm (usually 0.07-0.10 mm) (Fig. 17).....*Diceromyia*

Apical margin of sternum VIII with pair of broadly rounded lobes normally separated by moderately deep (range 0.05-0.22; usually 0.10-0.19 of length), median emargination or apical margin somewhat convex with pair of short, narrow, median lobes separated by moderately deep (0.11-0.13 of length) emargination; tergum IX moderately to very heavily pigmented, consisting of V-shaped structure or 2 somewhat elongate, lateral plates connected mesally by narrow, moderately pigmented band or lightly pigmented area, length 0.06-0.19 mm (usually 0.12-0.17 mm, except shorter and normally 0.06-0.11 mm in *Desmotes*, *Pandani*, and *W-albus* Assemblages) (Fig. 34).....*Stegomyia*

¹Refer to the discussion section of each subgenus for *all* of the most distinctive features; words italicized in the key are for emphasis; if the specimen being keyed does not have *all* characters of the first half of the couplet then proceed to the second half of the couplet.

²Only 3 species of *Albuginosus* with more than 8 scales on sternum VIII, remainder of species of *Albuginosus*, *Aedimorphus*, and *Paraedes* with 8 or fewer scales.

³Except 6 species of *Albuginosus* with numerous scales distally on tergum VIII; some specimens of *Ae. aegypti* with only 4-8 scales on tergum VIII.

⁴One large and 2 medium spermathecal capsules in *Ae. barraudi* Edwards (Fig. 29) and *Ae. menoni* Mattingly.

FEMALE GENITALIA OF SUBGENERA OF *AEDES*

SUBGENUS *AEDES* MEIGEN

(Fig. 1)

Subgenus description. *Tergum VIII.* Proximal 0.80-0.90 retracted into segment VII; covered with minute spicules; moderately to heavily pigmented; base nearly straight; apex straight or slightly concave; trapezoidal; number of broad scales on distal 0.46-0.80; number of short setae on distal 0.68-0.90; apical margin with few short and moderately long, slender setae; basolateral seta absent; VIII-Te index 0.57-0.67; VIII-Te/IX-Te index 1.89-2.27; length 0.23-0.26 mm; width 0.36-0.40 mm. *Sternum VIII.* Covered with minute spicules; heavily pigmented; base slightly concave; apex wide with lateroapical corners most distal and sloping inward to pair of short, mesal lobes, median emargination between lobes small (0.06-0.10 of VIII-S length); lateral margin nearly straight and sharply sloping outward from narrower base to apex; number of broad scales on lateral areas of distal 0.62-0.76; number of short to moderately long setae on distal 0.79-0.90; apical margin with numerous short stout and several moderately long, stout setae, mesal setae curved; setae 1-3-S in more or less diagonal line and spaced at approximately equal distance, 1-S inserted mesally some distance from base, 3-S inserted on apicolateral area; basolateral seta absent; apical, intersegmental membrane heavily pigmented; intersegmental membrane between segments VII and VIII moderately long; VIII-S index 0.55-0.62; length 0.21-0.26 mm; width 0.39-0.44 mm. *Tergum IX.* Covered with minute spicules; heavily pigmented; shieldlike; apex with moderately deep, median emargination; 8-16 short setae distally on each side of midline, 18-29 total setae; IX-Te index 0.63-0.76; length 0.11-0.12 mm; width 0.16-0.19 mm; dorsal spheres present. *Insula.* Covered with short spicules; heavily pigmented; tonguelike; 4-9 small tuberculi, each with

minute spicule, tuberculi located on apical 0.55. **Lower vaginal lip.** Covered with short spicules; moderately to heavily pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. **Upper vaginal lip.** Covered with short spicules; heavily pigmented; narrow with lateral areas moderately broad; upper vaginal sclerite heavily pigmented, comprised of narrow, mesally produced plate extending from lip and attached to base of spermathecal eminence. **Spermathecal eminence.** Membranous; consists of wrinkled, central, circular structure with basolateral arm on each side extending caudally. **Postgenital lobe.** Covered with short spicules; moderately long; moderately wide; apex rounded, flat or with very small (0.03-0.06 of dorsal length), median emargination; basal mesal apodeme moderately developed and circular in outline; 8-13 short to moderately long setae on each side of midline, 18-26 total setae; ventral PGL/Ce index 0.47-0.61; dorsal PGL index 1.00-1.28; ventral PGL index 1.75-2.03; ventral length 0.13-0.14 mm. **Proctiger.** With scattered small spicules; membranous. **Cercus.** Covered with short spicules; moderately long; moderately wide; apex pointed; dorsal surface with few scattered broad scales, with number of short and moderately long setae on distal 0.87-0.94; 2,3 long setae at apex; ventral surface with few short setae on outer margin; cercus index 2.50-3.47; Ce/dorsal PGL index 2.68-3.37; length 0.21-0.30 mm; width 0.08-0.09 mm. **Spermathecal capsules.** One large and 2 medium; heavily pigmented; spherical; several spermathecal capsule pores near orifice. **Accessory gland duct.** Basal area heavily pigmented.

Type species description (*Aedes cinereus* Meigen, Fig. 1). **Tergum VIII.** Heavily pigmented; apex slightly concave; number of scales on distal 0.63-0.80; number of setae on distal 0.70-0.90; VIII-Te index 0.57-0.66; VIII-Te/IX-Te index 1.89-2.27; length 0.23-0.26 mm; width 0.36-0.40 mm. **Sternum VIII.** With number of scales on lateral areas of distal 0.62-0.76; numerous setae on distal 0.84-0.90; VIII-S index 0.55-0.59; length 0.21-0.26 mm; width 0.39-0.44 mm. **Insula.** With 6-8 tuberculi. **Spermathecal eminence.** Wrinkled, central, circular structure with narrow, tubular arm extending from basolateral area caudally, arm sharply bent mesally at approximately 0.67 from base. **Postgenital lobe.** Apex usually with very small, median emargination, but occasionally rounded; 8-13 setae on each side of midline, 18-26 total setae; ventral PGL/Ce index 0.56-0.61; dorsal PGL index 1.00-1.28; ventral PGL index 1.77-2.03; ventral length 0.13-0.14 mm. **Cercus.** Dorsal surface with number of setae on distal 0.87-0.94; cercus index 2.50-2.64; Ce/dorsal PGL index 2.68-3.22; length 0.21-0.24 mm.

Species examined. *Aedes cinereus* and *Ae. esoensis* Yamada.

Discussion. The following combination of features is most distinctive for subgenus *Aedes*: sternum VIII has the apex wide and with the lateroapical corners most distal and sloping inward to a pair of short, mesal lobes that are separated by a small, median emargination, the base is gently concave, the lateral margin is nearly straight and sharply sloping outward from a narrower base to the wider apex, the index is 0.55-0.62, a number of broad scales are on the lateral areas of the distal 0.62-0.76, and setae 1-3-S are evenly spaced in a more or less diagonal line, seta 1-S is inserted mesally some distance from the base and seta 3-S is inserted on the apicolateral area; insula is tongue-like and has 4-9 small tuberculi on the distal 0.55; spermathecal eminence has a wrinkled, central, circular structure with a basolateral arm extending caudad on each side; and cercus is moderately long (0.21-0.30 mm) with a few scales, index is 2.50-3.47, and the apex is pointed.

Published illustrations of female genitalia. Brolemann (1920), *Ae. cinereus*; Gjullin (1937), *Ae. cinereus*; Marshall (1938), *Ae. cinereus*; Ross (1947), *Ae. cinereus*; LaCasse and Yamaguti (1950), *Ae. esoensis*; Yamaguti and LaCasse (1951), *Ae. cinereus*; Hara (1957b), *Ae. esoensis* and *Ae. yamadai* Sasa, Kano and Takahasi; Hara (1958), *Ae. esoensis rossicus* (figured as *Ae. rossicus* Dolbeskin, Goritshkaya and Mitrofanova); Kramar (1958), *Ae. cinereus*; Mohrig (1967), *Ae. cinereus*; Sicart and Larrouy (1968), *Ae. cinereus*; Mohrig (1969), *Ae. cinereus*; Ryazantseva (1970), *Ae. cinereus*; and Skierska (1977), *Ae. cinereus*.

SUBGENUS *AEDIMORPHUS* THEOBALD

(Figs. 2-10)

Subgenus description. *Tergum VIII.* Proximal 0.80-1.00 usually retracted into segment VII; covered with short spicules; moderately to heavily pigmented; more or less trapezoid-shaped; base with median area slightly to moderately concave; apex wide and slightly convex or flat, or narrow to moderately wide and broadly rounded or flat; usually without scales, however, number of species have some specimens with 1-8 (usually 1-3) scattered broad scales (especially members of *Argenteopunctatus* Assemblage and *Domesticus* Subassemblage); number of short setae scattered over distal 0.72-0.99 (usually distal 0.79-0.94); some species with few moderately long setae on lateral areas; apex with 2-4 moderately long, slender setae in addition to short setae; basolateral setae usually absent (often present in species of *Argenteopunctatus* Assemblage and *Pampangensis* Species Group of *Mediolineatus* Subassemblage); VIII-Te index 0.57-1.32 (usually 0.82-1.08, except *Argenteopunctatus* Assemblage which includes number of species in 0.65-0.95 range and *Ae. pubescens* Edwards); VIII-Te/IX-Te index 1.42-2.40; length 0.18-0.35 mm (usually 0.21-0.29 mm; 0.44 mm in *Ae. pubescens*); width 0.17-0.42 mm (usually 0.19-0.33 mm).

Sternum VIII. Covered with short spicules; moderately to heavily pigmented; base usually moderately wide and straight or slightly concave or slightly convex; apex with deep (some species with moderately deep) (0.11-0.24, usually 0.13-0.20 of VIII-S length), median emargination separating broadly rounded lobe on each side; normally lateral margins curved; most species without scales (some species with 1-4 or occasionally 6-8 broad scales); numerous short and in some species few moderately long setae on distal 0.80-0.99 (usually distal 0.89-0.98); apical margin with short setae and some species also with few moderately long setae; setae 1-4-S present in *Mediolineatus* and *Vexans* Subassemblages and *Alboscuteclatus* Assemblage, setae 1-2-S or 1-3-S present in *Domesticus* Subassemblage and *Argenteopunctatus* Assemblage, usually in more or less diagonal line from 1-S (basomesad) to 3- or 4-S (apicolaterad), when only 1-2-S present, 2-S is laterally at about midlength, 1,2-S longer than 3- or 4-S; basolateral seta absent; apical, intersegmental membrane nonpigmented; intersegmental membrane between segments VII and VIII very long, occasionally long; VIII-S index 0.71-1.03 (usually 0.75-0.98; 1.19 in *Ae. pubescens*); length 0.21-0.43 mm (usually 0.23-0.38 mm; 0.53 mm in *Ae. pubescens*); width 0.28-0.49 mm (usually 0.29-0.44 mm).

Tergum IX. Covered with small spicules; comprised of 2 moderately long, narrow, moderately pigmented, lateral plates separated by mesal, lightly pigmented area (*Alboscuteclatus* Assemblage and *Mediolineatus* Subassemblage) or moderately wide, moderately long, moderately pigmented plate with 2 apical lobes separated by moderately deep, median, apical emargination (*Domesticus* Subassemblage and *Argenteopunctatus* Assemblage) or moderately wide, moderately long, moderately pigmented plate (may have small, lightly pigmented, median apical and median, basal areas) with 2 apical lobes separated by shallow, median, apical emargination (*Vexans* Subassemblage); 2-16 (usually 4-8) apical or apicomesal, short setae on each lobe, 5-20 (usually 8-14; 32 in *Ae. ochraceus* (Theobald)) total setae; IX-Te index 0.80-1.67 (usually 1.02-1.24); length 0.09-0.20 mm (usually 0.11-0.16 mm); width 0.09-0.17 mm (usually 0.09-0.15 mm; 0.19 mm in *Ae. pubescens*); dorsal spheres present, usually dark.

Insula. Covered with short spicules; moderately pigmented; tongue-like; 2-9 small tuberculi located on apical 0.20-0.25, each usually with minute spicule.

Lower vaginal lip. Covered with short to moderately long spicules; moderately pigmented; narrow; lower vaginal sclerite absent; ventral tuft present.

Upper vaginal lip. Covered with short spicules (those nearer hinge moderately long); heavily pigmented; usually more or less stirrup-shaped; lateral areas narrow and bowed outward; caudal area straight or slightly convex; upper vaginal sclerite moderately large, moderately to heavily pigmented, distal portion pointed or blunt, caudal area with jagged margin.

Spermathecal eminence. Membranous; nonpigmented; more or less ovoid with narrow ridge surrounding lateral and posterior margins; patch of short, simple, spermathecal eminence

spicules mesally between apices of upper vaginal sclerites. **Postgenital lobe.** Covered with short spicules; moderately long; narrow to moderately wide; apex with deep to very deep (0.25-0.73, usually 0.25-0.52, of dorsal length), median emargination, few species with moderately deep (0.10-0.23 of dorsal length), median emargination (e.g., *Ae. bevisi* (Edwards), *Ae. cumminsii* (Theobald), *Ae. hirsutus* (Theobald), *Ae. mediolineatus* (Theobald)); basal mesal apodeme present; 3-14 (usually 5-9) setae on each side of midline, 7-27 (usually 11-16) total setae; ventral PGL/Ce index 0.37-0.69 (usually 0.42-0.56; 0.32 in *Ae. pubescens*); dorsal PGL index 0.69-1.37; ventral PGL index 1.22-2.88 (usually 1.50-2.47); ventral length 0.07-0.16 mm (usually 0.10-0.14 mm; 0.18 mm in *Ae. pubescens*). **Proctiger.** Minute spicules scattered over entire surface; membranous. **Cercus.** Usually 0.75-1.00 extended; covered with short spicules; moderately long to long; moderately wide; apex sharply rounded and with 2-4 long, stout setae; dorsal surface usually without scales (few species with 1-5 scales in Vexans Subassemblage and Domesticus Subassemblage; *Ae. dentatus* (Theobald) and *Ae. fowleri* (Charmoy) with 8-19 scales), with numerous short and few moderately long setae on distal 0.63-0.97 (usually 0.83-0.94); ventral surface often with few short setae on lateral margin from near middle to near apex; cercus index 2.13-4.74 (usually 2.45-3.95; 7.17 in *Ae. pubescens*); Ce/dorsal PGL index 2.03-5.33 (usually 3.12-4.88; 6.91 in *Ae. cumminsii*, 7.06 in *Ae. subdentatus* Edwards, and 8.27 in *Ae. pubescens*); length 0.17-0.33 mm (usually 0.19-0.28 mm; 0.55 mm in *Ae. pubescens*); width 0.05-0.10 mm (usually 0.05-0.09 mm). **Spermathecal capsules.** One large and 2 medium (Domesticus Assemblage) or one large and 2 rudimentary (Alboscutellatus Assemblage) or single large one (Argenteopunctatus Assemblage); heavily pigmented; spherical; several small, spermathecal capsule pores near orifice. **Accessory gland duct.** Basal area heavily pigmented, moderately long.

Type species description (*Aedes domesticus* (Theobald), Fig. 2). **Tergum VIII.** Proximal 0.95-1.00 retracted into segment VII; base with median area moderately concave; apex wide and flat; with 0-4 broad scales; setae on distal 0.85-0.93; basolateral seta absent; VIII-Te index 0.85-0.92; VIII-Te/IX-Te index 1.78-2.16; length 0.27-0.29 mm; width 0.30-0.33 mm. **Sternum VIII.** Base slightly concave; apex with broad, median emargination (0.14-0.17 of VIII-S length) separating broadly rounded lobes that have moderate slope to lateroapical angle; lateral margins nearly straight; setae on distal 0.98-0.99; setae 1-3-S present, 2-S longer than 1,3-S; VIII-S index 0.79-0.90; length 0.29-0.34 mm; width 0.36-0.39 mm. **Tergum IX.** Moderately long; moderately wide; comprised of moderately pigmented plate with 2 apical lobes separated by moderately deep, median, apical emargination; 4-8 (usually 5-7) setae distally on each side of midline, 9-14 (usually 11-13) total setae; IX-Te index 0.93-1.09; length 0.13-0.16 mm; width 0.14 mm. **Insula.** With 4-6 tuberculi. **Upper vaginal lip.** Upper vaginal sclerite tapered to long, pointed apex. **Postgenital lobe.** Apex with deep (0.31-0.38 of dorsal length), median emargination; basal mesal apodeme well developed; 6-11 (usually 7-10) setae on each side of midline, 13-21 (usually 15-18) total setae; ventral PGL/Ce index 0.42-0.50; dorsal PGL index 0.90-1.04; ventral PGL index 1.58-1.85; ventral length 0.25-0.31 mm. **Cercus.** Usually 0.95-1.00 extended; noticeably widest at approximately 0.77 (range 0.74-0.85) from apex; dorsal surface usually with 1-3 scales, with setae on distal 0.86-0.94; cercus index 3.20-3.94; Ce/dorsal PGL index 3.56-4.52; length 0.25-0.31 mm; width 0.08 mm. **Spermathecal capsules.** One large and 2 medium.

Species assemblages within the subgenus based on morphological characters of the female genitalia.

I. Domesticus Assemblage. **Spermathecal capsules.** One large and 2 medium.

Ia. Domesticus Subassemblage (*Aedes domesticus*, Fig. 2). **Tergum VIII.** Apex broad and flat; apical width usually 0.50 (range 0.48-0.58) of basal width. **Sternum VIII.** Apex with deep and broad, median emargination separating broadly rounded lobes that have moderate slope to lateroapical angles; lateral margins nearly straight. **Tergum IX.** Heavily

pigmented throughout. **Cercus.** Noticeably widest at approximately 0.77 (range 0.74-0.85) from apex.

Ib. Vexans Subassemblage (*Aedes vexans vexans* (Meigen), Fig. 3). **Tergum VIII.** Apex broad and flat; apical width usually 0.45-0.60 (range 0.41-0.69) of basal width. **Sternum VIII.** Apex with deep and moderately wide, median emargination separating broad, more or less evenly rounded lobes that extend to lateroapical angles; lateral margins gently convex. **Tergum IX.** Heavily pigmented throughout but may have small, lightly pigmented, median apical and median, basal areas. **Cercus.** Widest at approximately 0.65 (range 0.52-0.72) from apex.

Ic. Mediolineatus Subassemblage (*Aedes mediolineatus*, Fig. 4). **Tergum VIII.** Apex narrow and broadly rounded or flattened with apical width usually 0.25-0.35 (range 0.24-0.39) of basal width. **Sternum VIII.** Apex with deep and moderately wide, median emargination separating broadly rounded lobes, but with lobes slightly concave caudad of lateroapical angles; lateral margins more or less straight. **Tergum IX.** Comprised of 2 moderately long, narrow, heavily pigmented, lateral plates separated by mesal, lightly pigmented area. **Cercus.** Lateral margin bowed, widest at approximately 0.45-0.60 (range 0.41-0.63) from apex.

II. Alboscutellatus Assemblage (*Aedes alboscutellatus* (Theobald), Fig. 9). **Spermathecal capsules.** One large and 2 rudimentary.

III. Argenteopunctatus Assemblage (*Aedes argenteopunctatus* (Theobald), Fig. 10). **Spermathecal capsule.** Single large one.

Species examined.

I. Domesticus Assemblage. Listed under Subassemblages.

Ia. Domesticus Subassemblage. *Aedes domesticus* and *Ae. leptolabis* Edwards.

Ib. Vexans Subassemblage. *Aedes bevisi*, *Ae. cumminsii*, *Ae. dentatus*, *Ae. durbanensis* (Theobald), *Ae. fowleri*, *Ae. hirsutus*, *Ae. natronius* Edwards, *Ae. pubescens*, *Ae. stenoetrus* (Theobald), *Ae. subdentatus*, *Ae. syntheticus* Barraud, *Ae. vexans nipponii* (Theobald), and *Ae. vexans vexans*.

Ic. Mediolineatus Subassemblage. *Aedes caecus* (Theobald), *Ae. gouldi* Reinert, *Ae. mediolineatus*, *Ae. nigrostriatus* (Barraud), *Ae. ochraceus*, *Ae. orbitae* Edwards, *Ae. pallidostriatus* (Theobald), *Ae. pampangensis* (Ludlow), *Ae. pipersalatus* (Giles), *Ae. punctifemoris* (Ludlow), *Ae. taeniorhynchoides* (Christophers), and *Ae. trimaculatus* (Theobald).

II. Alboscutellatus Assemblage. *Aedes alboscutellatus*, *Ae. alboventralis* (Theobald), *Ae. congolensis* Edwards, *Ae. culicinus* Edwards, *Ae. dalzieli* (Theobald), *Ae. eritreae* Lewis, *Ae. jamesi* (Edwards), *Ae. lowisii* (Theobald), *Ae. mattinglyi* Hamon and Rickenbach, *Ae. oakleyi* Stone, *Ae. semlikiensis* van Someren, *Ae. senyavinensis* Knight and Hurlbut, *Ae. trukensis* Bohart, and *Ae. wigglesworthi* Edwards.

III. Argenteopunctatus Assemblage. *Aedes argenteopunctatus*, *Ae. filicis* Ingram and de Meillon, *Ae. insolens* Edwards, *Ae. irritans* (Theobald), *Ae. minutus* (Theobald), *Ae. mixtus* Edwards, *Ae. mutilus* Edwards, *Ae. nyounae* Hamon and Adam, *Ae. phyllolabis* Edwards, *Ae. pseudotarsalis* van Someren, *Ae. punctothoracis* (Theobald), and *Ae. tarsalis* (Newstead).

Discussion. Edwards (1932, 1941) divided the subgenus *Aedimorphus* into groups based primarily on the adult leg markings and the scutellar scaling, and to a lesser extent on the development of the male palpus, male genitalia (gonostylus and claspette) and a few other adult features. The present study suggests a better arrangement of species at the group and other levels below subgenus can be based primarily on the structural development of the female and male genitalia, and secondarily on the adult vestiture and other structures, and characters of the immature stages.

The above Assemblages and Subassemblages of species in *Aedimorphus* are based on the female genitalia, but are closely correlated with aggregations of species with similar features of the male genitalia. Examples are as follows: (1) *Argenteopunctatus* Assemblage has the female genitalia with a single large spermathecal capsule and the male genitalia have the proctiger

short, broad, with 2-6 cercal setae, without a basoventral arm, and the paraproct does not have a subapical thumblike lobe, the aedeagus is of type II (see Reinert 1973), the claspette is moderately long, narrow, and has the entire length (except distal tip) attached to the mesal membrane of the gonocoxite, has one or two moderately stout, short setae at the apex and usually 1-4 narrow, short setae along the claspette length, and the gonostylus has the apex bearing a single, large, foliform, gonostylar claw and usually a lateroapical projection bearing a minute seta apically, or if the projection is absent a minute seta is located at the area where the base of the projection would have been, and is without an apical patch of short, hooklike spicules; (2) *Alboscuteallatus* Assemblage has the female genitalia with one large and two rudimentary spermathecal capsules and the male genitalia have the proctiger short, narrow, without cercal setae, with a ventrobasal short, triangular arm, and the paraproct has a subapical, short, thumblike lobe, the aedeagus is of type I (see Reinert 1973), the claspette is short, has the entire length attached to the basal area of the mesal membrane of the gonocoxite, the apical area is narrow to moderately broad and bearing a few, short, narrow setae, and the gonostylus has one primary and usually several smaller, secondary, gonostylar claws and a lateroapical projection bearing a minute seta apically or the lateroapical projection is broad and without the minute seta, and without an apical patch of short, hooklike spicules; and (3) *Domesticus* Assemblage has the female genitalia with one large and two medium spermathecal capsules; *Domesticus* Subassemblage has the male genitalia with the proctiger, short, moderately broad, without cercal setae, without a ventrobasal arm, and the paraproct is without a noticeable subapical, thumblike lobe, the aedeagus is of type II, the claspette has the entire length (except distal tip) attached to the mesal membrane of the gonocoxite, is moderately long, narrow, with one or two moderately stout, short setae at the apex and usually 1-4 narrow, short setae along the claspette length, and the gonostylus bears a single, foliform, gonostylar claw and a lateroapical projection bearing a minute seta subapically, and is without an apical patch of short, hooklike spicules; *Vexans* Subassemblage has the male genitalia with the proctiger moderately long, narrow, without cercal setae, with a short, ventrobasal arm, and the paraproct is without a subapical, thumblike lobe, the aedeagus is of type II, the claspette is short (long in *Ae. natronius*) with the basal portion connected to the mesal membrane of the gonocoxite and with a free apical knob bearing several to numerous short to moderately long setae (setae stout and flattened in *Ae. syntheticus*), and the gonostylus bearing a single, moderately long spiniform subapically (apical in *Ae. natronius*) on the mesal margin or on a small projection from the mesal margin, and has an apical patch of short, hooklike spicules; and *Mediolineatus* Subassemblage has the male genitalia with the proctiger short, narrow, without cercal setae, with a ventrobasal short, triangular arm and the paraproct has a subapical, short, thumblike lobe, the aedeagus is of type I, the claspette is short, has the entire length attached to the basal area of the mesal membrane of the gonocoxite, the apical area is moderately broad and bearing a few to several short setae, and the gonostylus has one large curved gonostylar claw (additional 3-6 stout, apical setae in *Caecus* and *Punctifemoris* Groups) and a lateroapical projection bearing a minute seta apically, and is without an apical patch of short, hooklike spicules.

Female genitalia of the species of *Aedimorphus* examined easily fit the Assemblages and Subassemblages based on the development of the spermathecal capsules and other characteristics. The following, however, are similar: the shapes of sternum VIII and tergum VIII, and the development and pigmentation of tergum IX of the *Argenteopunctatus* Assemblage and *Domesticus* Subassemblage, and the shape of sternum VIII and pigmentation pattern of tergum IX of the *Alboscuteallatus* Assemblage and *Mediolineatus* Subassemblage.

Most of the Assemblages and Subassemblages contain several Species Groups, for example, the *Mediolineatus* Subassemblage consists of the *Mediolineatus* Group (*Ae. mediolineatus* (Fig. 4), *Ae. nigrostriatus*, *Ae. ochraceus*, *Ae. pallidostriatus*, and *Ae. trimaculatus*), the *Pampangensis* Group (*Ae. gouldi* and *Ae. pampangensis* (Fig. 5)), the *Caecus*

Group (*Ae. caecus* (Fig. 6) and *Ae. orbitae*), the Taeniorhynchoides Group (*Ae. pipersalatus* and *Ae. taeniorhynchoides* (Fig. 7)), and the Punctifemoris Group (*Ae. punctifemoris* (Fig. 8)).

Female genitalia of *Aedimorphus* species can be distinguished from those of most other *Aedes* by the following combination of features: sternum VIII has a well developed median, apical emargination separating broadly rounded lobes, and the lateral margins are normally curved; insula has the tuberculi on the apical 0.20-0.25; upper vaginal sclerite is moderately to heavily pigmented and moderately large; and cercus is moderately long to long, moderately wide, and usually without scales.

The female genitalia of *Neomelaniconion* and *Edwardsaedes* species show the closest morphological similarity to those of *Aedimorphus*, but both of these can be separated by the shape of sternum VIII and the development of the spermathecal eminence. Species of the former two subgenera also have tergum VIII and sternum VIII with the base deeply concave. The very long, slender cerci of *Ae. (Adm.) pubescens* is similar to those of *Ae. (Neo.) palpalis* (Newstead) (and the other species of the Palpalis Assemblage), but they are easily separated by the other characters listed. Adult female vestiture of many species of *Aedimorphus* and subgenus *Ochlerotatus* Lynch Arribalzaga (genus *Ochlerotatus*) display considerable similarity; however, the female genitalia of the two subgenera differ as follows: *Aedimorphus* species have the insula long, tongue-like and with tuberculi, sternum VIII has a moderately deep to deep, median, apical emargination, and tergum IX is without lateral projections; whereas *Ochlerotatus* species have the insula short, lip-like and with 3-7 long setae, sternum VIII has the apical margin broadly rounded, straight or with a minute to small, median emargination, and tergum IX is comprised of two elongate lateral plates each with a short, rounded, lightly pigmented projection on the upper lateral area.

Published illustrations of female genitalia. Theobald (1901), *Ae. vexans*; Giles (1902), *Ae. vexans*; Blanchard (1905), *Ae. vexans*; Edwards (1912), *Ae. cumminsii*; Macfie and Ingram (1922), *Ae. albocephalus* (Theobald) and *Ae. irritans*; Gjullin (1937), *Ae. vexans*; Ross (1947), *Ae. vexans*; LaCasse and Yamaguti (1950), *Ae. vexans nipponii*; Yamaguti and LaCasse (1951), *Ae. vexans*; Hara (1957a), *Ae. vexans nipponii*; Hara (1957b), *Ae. alboscuteclatus* and *Ae. vexans nipponii*; Mohrig (1965), *Ae. vexans*; Mohrig (1967), *Ae. alboscuteclatus* and *Ae. vexans*; Sicart and Larrouy (1968), *Ae. vexans*; Mohrig (1969), *Ae. vexans*; Ryazantseva (1970), *Ae. vexans*; Reinert (1972), *Ae. gouldi*; Reinert (1973a), *Ae. alboscuteclatus*, *Ae. caecus*, *Ae. culicinus*, *Ae. lowisii*, *Ae. mediolineatus*, *Ae. nigrostriatus*, *Ae. orbitae*, *Ae. pallidostriatus*, *Ae. pampangensis*, *Ae. pipersalatus*, *Ae. punctifemoris*, *Ae. stenoetrus*, *Ae. taeniorhynchoides*, *Ae. vexans nipponii*, and *Ae. vexans vexans*; Skierska (1977), *Ae. vexans*; Geoffroy (1987), *Ae. bambiotai* Geoffroy; and Reinert (2000c), *Ae. domesticus*.

SUBGENUS ALANSTONEA MATTINGLY

(Fig. 11)

Subgenus description. *Tergum VIII.* Entirely retracted into segment VII; covered with minute spicules; heavily pigmented; base and apex each slightly concave; numerous broad scales covering distal 0.90-0.93, scales densely packed, dark except for pale ones on lateral areas; numerous moderately long and several short setae on distal 0.67-0.73; apical margin with number of moderately long and few short, stout setae; basolateral seta well developed; VIII-Te index 0.44-0.55; VIII-Te/IX-Te index 3.29-4.32; length 0.31-0.39 mm; width 0.65-0.76 mm. *Sternum VIII.* Covered with minute spicules; heavily pigmented; base concave mesally; apex broadly rounded but with small (0.07-0.08 of VIII-S length), median emargination; numerous broad scales covering distal 0.87-0.92 (including basolateral areas), scales densely packed, dark except for few pale ones on lateral areas; numerous short and moderately long setae scattered over distal 0.80-0.89; apical margin with numerous short and moderately long setae; setae 1-3-S not

distinguished; basolateral seta present; apical, intersegmental membrane heavily pigmented and with short and few moderately long spicules; intersegmental membrane between segments VII and VIII very short; VIII-S index 0.87-0.96; length 0.47-0.51 mm; width 0.50-0.55 mm. **Tergum IX.** Covered with minute spicules; heavily pigmented; short; wide; base and apex moderately concave; 10-23 moderately long setae distally on each side of midline, 22-42 total setae; IX-Te index 0.32-0.36; length 0.09-0.10 mm; width 0.25-0.27 mm; dorsal spheres present. **Insula.** Covered with small spicules; tongue-like; 10-17 small tuberculi, each with minute spicule, tuberculi located on apical 0.34-0.48. **Lower vaginal lip.** Covered with short spicules; heavily pigmented; narrow but broad at hinge; lower vaginal sclerite absent; ventral tuft present. **Upper vaginal lip.** With short spicules; heavily pigmented; narrow but broad at hinge; upper vaginal sclerite heavily pigmented, usually fenestrated, medium in size, mesally attached with narrow bar to spermathecal eminence. **Spermathecal eminence.** Membranous; C-shaped with ends of "C" basal and bearing few lightly pigmented, short, simple, spermathecal eminence spicules. **Postgenital lobe.** Covered with short spicules; moderately long; moderately wide; apex with very deep (0.56-0.69 of dorsal length), median emargination; basal mesal apodeme well developed; 12-18 short, moderately long and long setae on each side of midline, 24-33 total setae; ventral PGL/Ce index 0.42-0.50; dorsal PGL index 0.59-0.69; ventral PGL index 0.96-1.16; ventral length 0.11-0.13 mm. **Proctiger.** Covered with minute spicules; membranous. **Cercus.** Covered with minute to short spicules; moderately long; moderately wide; apex bluntly rounded and with 2 long stout and several short, slender setae; dorsal surface without scales, with numerous short and moderately long setae on distal 0.65-0.77, most setae on outer and apical margins curved; ventral surface with few short setae on apical margin; cercus index 2.56-2.83; Ce/dorsal PGL index 3.42-4.10; length 0.26-0.29 mm; width 0.10-0.11 mm. **Spermathecal capsules.** One large and 2 slightly smaller; very heavily pigmented; spherical; numerous spermathecal capsule pores near orifice. **Accessory gland duct.** Basal area heavily pigmented.

Species examined. *Aedes brevitibia* (Edwards).

Discussion. Since no material of the type species, *Ae. treubi* (De Meijere), was available, the subgenus description is based on the genitalia of *Ae. brevitibia* (Fig. 11), the only other species in subgenus *Alanstonea*.

The following combination of features is most distinctive for subgenus *Alanstonea*: both tergum VIII and sternum VIII are nearly completely covered (including basolateral areas) with numerous, densely packed, broad scales, and they are mostly covered with numerous moderately long setae; tergum VIII is noticeably wider than long, both the base and apex are gently concave, and the basolateral setae are present; sternum VIII has the apical margin broadly rounded but with a small, median emargination; tergum IX is noticeably wider than long and has numerous moderately long setae on the distal area; upper vaginal sclerite is heavily pigmented, it is usually fenestrated, and it is attached mesally by a narrow bar to the spermathecal eminence; and postgenital lobe has a very deep, median, apical emargination.

SUBGENUS *ALBUGINOSUS* REINERT

(Fig. 12)

Subgenus description. **Tergum VIII.** Proximal 0.55-0.90 retracted into segment VII; covered with minute spicules; moderately pigmented; base wide and nearly straight or slightly concave; apex wide and straight or very slightly concave; moderately broad scales few (0-4 in *Ae. haworthi* Edwards and *Ae. kennethi* Muspratt) or numerous on distal 0.28-0.78 (*Ae. capensis* Edwards, *Ae. kapretwae* Edwards, *Ae. marshallii* (Theobald), *Ae. ngong* van Someren, *Ae. stokesi* Evans, and *Ae. teesdalei* van Someren); several short and very few moderately long setae on distal 0.45-0.87; apical margin with several short and few moderately long, slender setae; basolateral

seta absent (present on one side in one specimen of *Ae. kennethi*); VIII-Te index 0.62-0.81; VIII-Te/IX-Te index 1.86-2.27; length 0.20-0.29 mm; width 0.32-0.46 mm. **Sternum VIII.** Covered with minute spicules; moderately pigmented but with median, apical area more heavily pigmented; base moderately broad and slightly concave or nearly straight; apex broad and convex with moderately deep (0.07-0.15 of VIII-S length), median emargination and gently sloping to lateral margin; moderately broad scales few (0-8) or several (27 in *Ae. kapretvae*, 18-22 in *Ae. marshallii*, and 8-11 in *Ae. teesdalei*); several short and very few moderately long setae scattered over distal 0.84-0.98, setae absent from basolateral areas; apical margin with numerous short and very few moderately long, slender setae; setae 1-3-S moderately long and moderately stout, situated in more or less diagonal line on approximately basal 0.70, 1-S mesal and removed from base; basolateral seta absent; apical, intersegmental membrane moderately pigmented; intersegmental membrane between segments VII and VIII short; VIII-S index 0.62-0.79; length 0.24-0.32 mm; width 0.39-0.48 mm. **Tergum IX.** Covered with minute spicules; moderately to heavily pigmented, median area more lightly pigmented; moderately wide; moderately long; comprised of 2 elongate, lateral plates broadly connected mesally; apex with moderately deep, median emargination; 2-6 setae distally on each side of midline, 6-11 total setae; IX-Te index 0.68-0.97; length 0.07-0.15 mm (usually 0.12-0.14 mm); width 0.12-0.17 mm; dorsal spheres present. **Insula.** Covered with short spicules; moderately pigmented; long; tongue-like; 3-11 (usually 4-6) small tuberculi on apical 0.25-0.30, each usually with minute spicule. **Lower vaginal lip.** Covered with short to moderately long spicules; moderately to heavily pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. **Upper vaginal lip.** Covered with short to moderately long spicules; heavily pigmented, some species moderately pigmented; narrow; upper lateral area sharply convex; posterior margin flat with squared, lateral angles; upper vaginal sclerite moderately pigmented with apical area very heavily pigmented, large, moderately wide throughout length, fenestrated on mesal and caudal areas. **Spermathecal eminence.** Membranous; lightly pigmented; comprised of large median, more or less triangular structure with angles broadly rounded; basal 0.70 with numerous short to moderately long, simple, spermathecal eminence spicules; triangular structure with long, fingerlike lobe projected caudad from each basolateral angle. **Postgenital lobe.** Covered with short to moderately long spicules; moderately long; moderately wide to wide; apex with moderately deep to deep (0.14-0.44 of dorsal length), median emargination; basal mesal apodeme well developed; 5-14 (usually 6-10) setae on each side of midline, 11-27 (usually 14-20) total setae; ventral PGL/Ce index 0.62-0.73; dorsal PGL index 0.68-0.97; ventral PGL index 1.23-1.59; ventral length 0.10-0.13 mm. **Proctiger.** Small spicules scattered over surface; membranous. **Cercus.** Covered with short spicules; relatively short; moderately wide; apex broadly rounded; basal area widest; dorsal surface without scales, with 5-7 long or moderately long, stout setae on apical area, several moderately long and few short setae on distal 0.70-0.88; ventral surface with few short setae on lateroapical margin; cercus index 1.83-2.16; Ce/dorsal PGL index 2.24-3.24 (usually 2.45-2.73); length 0.15-0.18 mm; width 0.08-0.09 mm. **Spermathecal capsules.** One large and 2 medium; heavily pigmented; spherical; several small, spermathecal capsule pores near orifice. **Accessory gland duct.** Basal area heavily pigmented, short.

Type species description (*Aedes marshallii*, Fig. 12). **Tergum VIII.** Proximal 0.80-0.90 retracted into segment VII; apex straight; usually numerous scales on distal 0.38-0.78; setae on distal 0.46-0.76; VIII-Te index 0.64-0.66; VIII-Te/IX-Te index 1.92-2.24; length 0.26-0.29 mm; width 0.39-0.46 mm. **Sternum VIII.** Apex with moderately deep (0.07-0.08 of VIII-S length), median emargination; usually several scales on distal 0.71-0.83; setae on distal 0.85-0.98; VIII-S index 0.65-0.78; length 0.29-0.32 mm; width 0.45-0.48 mm. **Tergum IX.** With 5,6 setae apically on each side of midline, 10,11 total setae; IX-Te index 0.68-0.97; length 0.12-0.15 mm; width 0.16-0.17 mm. **Insula.** With 4-11 tuberculi. **Postgenital lobe.** Apex with moderately deep (0.20-0.44 of dorsal length), median emargination; 8,9 setae on each side of midline, 17 total setae; ventral PGL/Ce index 0.67-0.73; dorsal PGL index 0.72-0.83; ventral PGL index 1.41-1.55;

ventral length 0.11-0.12 mm. **Cercus.** Dorsal surface with setae on apical 0.77-0.85; cercus index 1.83-1.89; Ce/dorsal PGL index 2.44-2.78; length 0.16-0.17 mm; width 0.09 mm.

Species examined. *Aedes capensis*, *Ae. haworthi*, *Ae. kapretwae*, *Ae. kennethi*, *Ae. marshallii*, *Ae. ngong*, *Ae. stokesi*, and *Ae. teesdalei*.

Discussion. The following combination of features is most distinctive for subgenus *Albuginosus*: sternum VIII is moderately pigmented but has the median, apical area more heavily pigmented; upper vaginal sclerite is large and moderately wide throughout its length, it is moderately pigmented but has the apical area very heavily pigmented, and it is fenestrated on the mesal and caudal areas; cercus is relatively short, moderately wide, without scales, and has the apex broadly rounded; and spermathecal eminence is developed as a more or less triangular structure with the angles broadly rounded, the basal 0.70 has numerous short to moderately long, simple spicules, and the triangular structure has a fingerlike lobe projecting caudad from each basolateral angle.

Female genitalia of *Albuginosus* have some similarity to representatives of *Diceromyia* and *Stegomyia*, but they differ from these in the shape of sternum VIII, development of the spermathecal eminence, shape of the upper vaginal lip, and the size and shape of the cercus. The female genitalia of *Albuginosus* resemble those of *Ae. apicoannulatus* (Edwards) and *Ae. simulans* (Newstead and Carter), but differ in having one large and two medium spermathecal capsules while the latter two species each have a single large spermathecal capsule. Other differences from these two species are the shape of the upper vaginal lip, shape of tergum IX, and shape of the cercus. Female genitalia of *Albuginosus* are quite different from those of *Aedimorphus* in the development of tergum VIII, sternum VIII, upper vaginal lip, spermathecal eminence, and cercus.

Published illustration of female genitalia. Reinert (1986), *Ae. marshallii*.

SUBGENUS *BELKINIUS* REINERT

(Fig. 13)

Subgenus description. **Tergum VIII.** Proximal 0.75 retracted into segment VII; covered with minute spicules; moderately pigmented; moderately long; wide; base broadly concave mesally; apex broadly rounded; 1-6 broad scales on distal 0.30-0.34; few short setae on distal 0.27-0.35; apical margin with 2,3 long stout and 6-9 moderately long, stout setae; basolateral seta present; VIII-Te index 0.41-0.51; VIII-Te/IX-Te index 5.00-6.13; length 0.15-0.22 mm; width 0.42-0.46 mm. **Sternum VIII.** Covered with minute spicules; moderately pigmented; base slightly concave mesally; apex with moderately deep (0.11-0.12 of VIII-S length), median emargination; few broad scales on lateral areas; apical margin with short, moderately stout, curved setae; short and few moderately long setae scattered over distal 0.72-0.81, setae absent from large, basolateral areas; setae 1-3-S in more or less diagonal line, seta 1-S removed from basal margin and situated basomesad of seta 2-S, seta 3-S apicolaterad of seta 2-S; basolateral seta present; apical, intersegmental membrane moderately pigmented; intersegmental membrane between segments VII and VIII short; VIII-S index 0.70-0.83; length 0.27-0.32 mm; width 0.35-0.39 mm. **Tergum IX.** Covered with minute spicules; moderately pigmented; very short; very wide; bandlike; without setae; IX-Te index 0.20-0.30; length 0.03-0.04 mm; width 0.13-0.17 mm; dorsal spheres present. **Insula.** Covered with minute spicules; tongue-like; 4,5 very small tuberculi, each with minute spicule, tuberculi located on apical 0.25-0.35. **Lower vaginal lip.** Covered with minute to short spicules; moderately pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. **Upper vaginal lip.** Covered with short spicules; moderately pigmented; narrow; upper vaginal sclerite moderately pigmented, medium in size. **Spermathecal eminence.** Not distinguished in specimens available. **Postgenital lobe.** Covered with short to moderately long spicules; moderately long;

moderately wide; lateral margins concave and with long spicules; apex with moderately deep to deep (0.16-0.34 of dorsal length), median emargination; basal mesal apodeme not developed; 2,3 relatively long, stout setae distally on each side of midline, 4-6 total setae; ventral PGL/Ce index 0.52; dorsal PGL index 1.05-1.25; ventral PGL index 1.47-2.25; ventral length 0.07-0.11 mm. **Proctiger.** Short spicules scattered over entire surface; membranous. **Cercus.** Covered with short to moderately long spicules; moderately long; moderately wide; apex truncate and with 5-7 moderately long, stout setae; dorsal surface without scales, with few short setae on distal 0.46-0.52; ventral surface with 2-4 short setae on apical margin; cercus index 2.00-2.33; Ce/dorsal PGL index 2.60-3.18; length 0.13-0.16 mm; width 0.06-0.07 mm. **Spermathecal capsules.** One large and 2 medium; heavily pigmented; spherical; several small, spermathecal capsule pores near orifice. **Accessory gland duct.** Basal area moderately pigmented.

Type species description (*Aedes aurotaeniatus* Edwards, Fig. 13). The above description is that of the type species for this monotypic subgenus.

Species examined. *Aedes aurotaeniatus*.

Discussion. *Aedes aurotaeniatus* is a *nomen novum* proposed by Edwards (1922:256) for *Stegomyia aurostriata* Banks, 1906.

The following combination of features is most distinctive for subgenus *Belkinius*: tergum VIII is wide and moderately long, the apical margin is broadly rounded, the basal margin is broadly concave, and the scales and setae are restricted to the distal 0.35; sternum VIII has a large basolateral area on each side without setae; tergum IX is very short, very wide, bandlike, and it is without setae; postgenital lobe has the apex with a moderate to deep, median emargination, and it has only 2,3 relatively long setae on the distal area of each lobe; and cercus is moderately long, moderately wide, scales are absent, and setae are on only the distal 0.52 of the dorsal surface.

Published illustration of the female genitalia. Reinert (1982), *Ae. aurotaeniatus*.

SUBGENUS *BOTHAELLA* REINERT

(Fig. 14)

Subgenus description. **Tergum VIII.** Proximal 0.60-0.90 retracted into segment VII; covered with minute spicules; moderately pigmented; wide; base and apex slightly concave; numerous broad scales on distal 0.35-0.55; apical margin with several long, stout setae; moderately long, slender setae on distal 0.23-0.36; basolateral seta present; VIII-Te index 0.47-0.60; VIII-Te/IX-Te index 2.65-3.53; length 0.21-0.27 mm; width 0.37-0.49 mm. **Sternum VIII.** Covered with minute spicules; moderately pigmented; large and wide; base very slightly concave; apex with small (0.04-0.10 of VIII-S length), median emargination separating small lobe on each side of midline; lobes and median area of sternum covered with short setae, remainder of apical margin with longer and somewhat stouter setae; numerous broad scales on distal 0.74-0.85; numerous moderately long and long setae on distal 0.76-0.86 except large, basolateral areas without setae; setae 1-5-S in more or less diagonal line, 1-S somewhat removed from base; basolateral seta absent; apical, intersegmental membrane nonpigmented; intersegmental membrane between segments VII and VIII short; VIII-S index 0.63-0.73; length 0.25-0.31 mm; width 0.38-0.45 mm. **Tergum IX.** Covered with minute spicules; moderately pigmented throughout; wide; median and/or lateral areas usually wrinkled; apex with small, median emargination; 1-6 setae distally on each side of midline, 2-11 total setae; IX-Te index 0.42-0.64; length 0.07-0.08 mm; width 0.13-0.17 mm; dorsal spheres present. **Insula.** Covered with minute spicules; moderately pigmented; long; tongue-like; 2-5 tiny tuberculi on apical 0.20. **Lower vaginal lip.** Covered with short spicules; moderately pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. **Upper vaginal lip.** Covered with short spicules; moderately to heavily pigmented; narrow; posterior margin flattened; upper vaginal sclerite large, moderately to heavily pigmented

(*Ae. helenae* Reinert and *Ae. eldridgei* Reinert with sclerite lightly fenestrated apically). **Spermathecal eminence.** Membranous; ill-defined; with or without few very short, simple, spermathecal eminence spicules basally near apices of upper vaginal sclerites. **Postgenital lobe.** Covered with short spicules; moderately long; apex with a moderately deep to deep (0.14-0.45 of dorsal length), median emargination; basal mesal apodeme moderately developed; 7-14 setae on each side of midline, 14-24 total setae; ventral PGL/Ce index 0.54-0.69; dorsal PGL index 0.79-1.10; ventral PGL index 1.47-2.03; ventral length 0.10-0.14 mm. **Proctiger.** With short spicules scattered over entire surface; membranous. **Cercus.** Covered with minute spicules; short to moderately long; apex bluntly rounded; inner margin slightly concave; dorsal surface without scales, with several short and moderately long setae on apical 0.41-0.56; 4,5 long, stout setae at apex; ventral surface with 7-14 short setae on apical margin; cercus index 2.05-2.69; Ce/dorsal PGL index 2.58-3.64; length 0.17-0.20 mm; width 0.07-0.09 mm. **Spermathecal capsules.** One large and 2 slightly smaller; heavily pigmented; spherical; few small, spermathecal capsule pores near orifice. **Accessory gland duct.** Basal area heavily pigmented.

Type species description (*Aedes helenae*, Fig. 14). **Tergum VIII.** Proximal 0.60-0.80 retracted into segment VII; numerous broad, dark scales on distal 0.45-0.47, scales extending proximally along lateral margins; moderately long, slender setae on distal 0.23-0.34; VIII-Te index 0.51-0.60; VIII-Te/IX-Te index 3.03-3.53; length 0.23-0.27 mm; width 0.42-0.46 mm. **Sternum VIII.** Apex with small (0.04-0.07 of VIII-S length), median emargination and with small lobe on each side of midline; numerous setae and broad, dark scales on distal 0.72-0.86; VIII-S index 0.63-0.73; length 0.28-0.31 mm; width 0.42-0.45 mm. **Tergum IX.** With 3-6 setae on each side of midline, 7-11 total setae; IX-Te index 0.42-0.59; length 0.07-0.08 mm; width 0.14-0.17 mm. **Insula.** With 3-5 minute tuberculi on apical 0.20. **Spermathecal eminence.** With few very short, simple, spermathecal eminence spicules. **Postgenital lobe.** Apex with moderately deep to deep (0.25-0.45 of dorsal length), median emargination; 7-10 setae on each side of midline, 14-20 total setae; ventral PGL/Ce index 0.62-0.69; dorsal PGL index 0.92-1.10; ventral PGL index 1.83-2.03; ventral length 0.12-0.14 mm; width 0.08 mm. **Cercus.** Moderately long; dorsal surface with several moderately long and short setae on distal 0.41-0.45; apex with 4,5 long, stout setae; ventral surface with 8-12 short setae on apical margin; cercus index 2.34-2.58; Ce/dorsal PGL index 2.66-3.24; length 0.19-0.20 mm.

Species examined. *Aedes eldridgei*, *Ae. helenae*, and *Ae. kleini* Reinert.

Discussion. The following combination of features is most distinctive for subgenus *Bothaella*: tergum VIII is wide and has both the apical and basal margins slightly concave, numerous broad scales are on the distal 0.35-0.55, and setae are restricted to the distal 0.23-0.36; sternum VIII has the apex with a pair of small, median lobes that are separated by a small emargination, the lobes and median area of the sternum are covered with short setae and the remainder of the apical margin has most of the setae longer and stouter, the basal and large basolateral areas are without setae, and numerous broad scales are on much of the distal 0.85; tergum IX is relatively short, wide, and evenly pigmented throughout, the median and/or lateral areas are usually wrinkled, and it has a total of 2-11 setae distally; postgenital lobe has the apex with a moderately deep, median emargination; insula is long and the tuberculi are restricted to the apical 0.20; and cercus has setae restricted to the distal 0.41-0.56 and scales are absent.

Female genitalia of *Bothaella* have similarities to *Leptosomatomyia* and *Huaedes*, but differ in the development of tergum IX, absence of scales on the cercus, and in the latter subgenus by the number of tuberculi on the insula. Female genitalia of *Leptosomatomyia* also differ from those of both *Bothaella* and *Huaedes* by having the apical, intersegmental membrane of sternum VIII moderately to heavily pigmented.

Published illustrations of female genitalia. Reinert (1973b), *Ae. eldridgei*, *Ae. helenae*, and *Ae. kleini*.

SUBGENUS *CANCRAEDES* EDWARDS

(Fig. 15)

Subgenus description. *Tergum VIII.* Proximal 0.75-1.00 retracted into segment VII; covered with minute spicules; moderately to heavily pigmented; base slightly concave or straight; basolateral area wide and expanded laterally, remainder of length relatively narrow; apex narrow and sharply convex; scales absent; short setae scattered over distal 0.83-0.99; apical margin with setae short and slender; basolateral seta absent; VIII-Te index 0.74-1.11; VIII-Te/IX-Te index 1.48-2.09; length 0.22-0.31 mm; width 0.25-0.31 mm. *Sternum VIII.* Covered with minute spicules; moderately to heavily pigmented; base straight to concave mesally; apex with small to moderately deep (0.04-0.13 of VIII-S length), median emargination; scales absent (2,3 scales in one specimen of *Ae. palawanicus* Mattingly); short, slender setae at apex and scattered over distal 0.84-0.94; setae 1,2-S not widely separated, 3-S present only in *Ae. cancricomes*, located in more or less diagonal line on proximal 0.55, 1-S basomesad and near basal margin, 2-S (and 3-S when present) near lateral margin; basolateral seta absent; apical, intersegmental membrane moderately to heavily pigmented; intersegmental membrane between segments VII and VIII very long, covered with dense spicules; VIII-S index 0.76-0.93; length 0.29-0.38 mm; width 0.34-0.44 mm. *Tergum IX.* Covered with minute spicules; comprised of pair of long, narrow, moderately pigmented, lateral plates separated by lightly pigmented, median area; apex with small, median emargination and without or with 1-8 (usually 2-4) very short setae distally on each side of midline, 0-14 total setae; IX-Te index 1.35-2.13; length 0.12-0.19 mm; width 0.07-0.10 mm; dorsal spheres present. *Insula.* Covered with short spicules; long; tongue-like; 0-6 (usually 2-4) small tuberculi on apical 0.25. *Lower vaginal lip.* Covered with short spicules; moderately pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. *Upper vaginal lip.* Covered with short spicules; heavily pigmented; narrow; upper vaginal sclerite moderately large to large, moderately to heavily pigmented. *Spermathecal eminence.* Membranous; variously developed but usually with large, basal lobe attached to apex of upper vaginal sclerite and extending caudally to join with its mate; caudal lobes usually present; few to several very short, simple, spermathecal eminence spicules basally. *Postgenital lobe.* Covered with short spicules; moderately long; moderately wide; apex with very small to moderately deep (0.04-0.19 of dorsal length), median emargination; basal mesal apodeme not developed; 4-7 setae on each side of midline, 9-14 total setae; ventral PGL/Ce index 0.53-0.66; dorsal PGL index 0.66-1.25; ventral PGL index 1.50-1.92; ventral length 0.10-0.13 mm. *Proctiger.* With minute to short spicules scattered over entire surface; membranous. *Cercus.* Covered with short spicules; moderately long; narrow to moderately wide; apex pointed and with 2,3 long setae; dorsal surface without scales, with number of short and moderately long setae on distal 0.56-0.73; ventral surface with few short setae on outer margin; cercus index 2.40-3.79; Ce/dorsal PGL index 2.60-4.43; length 0.18-0.23 mm; width 0.05-0.08 mm. *Spermathecal capsule.* Single large one; heavily pigmented; spherical; several small, spermathecal capsule pores near orifice. *Accessory gland duct.* Basal area moderately pigmented.

Type species description (*Aedes cancricomes* Edwards, Fig. 15). *Tergum VIII.* Proximal 0.95-1.00 retracted into segment VII; short setae scattered over distal 0.95-0.99; apical margin with short, slender setae; VIII-Te index 1.08-1.11; VIII-Te/IX-Te index 1.77-1.78; length 0.29-0.31 mm; width 0.27-0.28 mm. *Sternum VIII.* Base slightly concave mesally; apex with small and wide (0.09-0.12 of VIII-S length), median emargination; short, slender setae scattered over distal 0.92-0.93; setae 1-3-S present; apical, intersegmental membrane moderately pigmented; VIII-S index 0.87-0.89; length 0.37-0.38 mm; width 0.43-0.44 mm. *Tergum IX.* Apex with small, median emargination; 1-3 very short setae distally on each side of midline, 3-5 total setae; IX-Te index 1.90-2.13; length 0.16-0.17 mm; width 0.07-0.08 mm. *Insula.* With 0-3 (usually 1,2) small tuberculi on apical 0.20. *Spermathecal eminence.* Membranous; with large, basal lobe

attached to apex of upper vaginal sclerite and extending caudally as short, blunt, caudal lobe, connected mesally with its mate; very few short, spermathecal eminence spicules on basal area. **Postgenital lobe.** Apex with moderately deep (0.08-0.14 of dorsal length), median emargination; 5-7 setae on each side of midline, 10-13 total setae; ventral PGL/Ce index 0.52-0.53; dorsal PGL index 0.90-1.11; ventral PGL index 1.58-1.75; ventral length 0.11-0.12 mm. **Cercus.** Dorsal surface with number of short and moderately long setae on distal 0.56-0.67; cercus index 3.58-3.79; Ce/dorsal PGL index 2.90-3.64; length 0.21-0.23 mm; width 0.06 mm.

Species examined. *Aedes cancricones*, *Ae. indonesiae* Mattingly, *Ae. kohkutensis* Mattingly, *Ae. mamodjoensis* Mattingly, *Ae. masculinus* Mattingly, *Ae. palawanicus*, *Ae. penghuensis* Lien, and *Ae. thurmanae* Mattingly.

Discussion. The following combination of features is most distinctive for subgenus *Cancraedes*: tergum VIII has the basolateral area wide and expanded laterally whereas the remainder of the tergum is relatively narrow and terminates in a convex apex, scales are absent, and nearly the entire surface is covered with short setae; sternum VIII has nearly the entire surface covered with relatively short, slender setae except for the moderately long to long setae 1-3-S that are located on the proximal 0.55 (3-S is absent in all species except *Ae. cancricones*); intersegmental membrane between segments VII and VIII is very long and densely covered with spicules; tergum IX is comprised of a pair of long, narrow, moderately pigmented, lateral plates that are separated by a lightly pigmented area, setae are absent or 1-8 very short setae are present distally on each side of the midline; insula is long and usually has 2-4 small tuberculi on the apical 0.25; and only a single large, spermathecal capsule is present.

Published illustrations of female genitalia. Mattingly (1958a), *Ae. curtipes*, *Ae. indonesiae*, *Ae. kohkutensis*, *Ae. mamodjoensis*, *Ae. masculinus*, *Ae. palawanicus*, and *Ae. thurmanae*; Mattingly (1958b), *Ae. cancricones*; Lien (1968), *Ae. penghuensis*; Basio (1971), *Ae. palawanicus*; and Lu (1997), *Ae. penghuensis*.

SUBGENUS *CHRISTOPHERSIOMYIA* BARRAUD

(Fig. 16)

Subgenus description. **Tergum VIII.** Proximal 0.75-0.95 retracted into segment VII; covered with minute spicules; lightly to moderately pigmented; base concave mesally; apex slightly convex or straight; number of broad scales on distal 0.73-0.90; numerous short setae on distal 0.74-0.85; apical margin with setae short and slender except for 2,3 moderately long ones; basolateral seta present or absent; VIII-Te index 0.69-0.86; VIII-Te/IX-Te index 1.61-2.14; length 0.19-0.25 mm; width 0.23-0.32 mm. **Sternum VIII.** Covered with minute spicules; lightly to moderately pigmented; large; base concave mesally; apex with small to moderately deep (0.08-0.15 of VIII-S length), median emargination separating broadly and evenly rounded lobes; numerous broad scales covering distal 0.81-0.94; numerous short and few moderately long setae on distal 0.79-0.93; setae 1-4-S widely separated, each separated by approximately equal distance, located in more or less diagonal line, 1-S very long, basomesad but some distance from base, 4-S apicolaterad; basolateral seta present; apical, intersegmental membrane unpigmented; intersegmental membrane between segments VII and VIII long; VIII-S index 0.70-0.86; length 0.23-0.32 mm width 0.30-0.33 mm. **Tergum IX.** Covered with minute spicules; moderately to heavily pigmented throughout; relatively large; apex with moderately deep to deep, median emargination; 3-11 setae distally on each side of midline, 9-19 total setae; IX-Te index 0.84-1.20; length 0.11-0.15 mm; width 0.10-0.15 mm; dorsal spheres present. **Insula.** Covered with short spicules; lightly to moderately pigmented; long; tonguelike; 3-7 small tuberculi on apical 0.35, each with very minute spicule. **Lower vaginal lip.** Covered with short spicules; lightly to moderately pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. **Upper vaginal**

lip. Covered with short spicules; moderately to heavily pigmented; narrow; posterior margin flat; upper vaginal sclerite large, moderately pigmented; apical margin broad. **Spermathecal eminence.** Membranous; basally attached to apices of upper vaginal sclerites and developed caudally into an expanded area; few very short, simple, spermathecal eminence spicules on basomesal areas. **Postgenital lobe.** Covered with short spicules; moderately long; moderately wide; apex with small to moderately deep (0.08-0.26 of dorsal length), median emargination; basal mesal apodeme not developed; 5-15 setae on each side of midline, 10-28 total setae; ventral PGL/Ce index 0.55-0.69; dorsal PGL index 0.64-0.91; ventral PGL index 1.19-1.65; ventral length 0.08-0.10 mm. **Proctiger.** Short spicules scattered over entire surface; membranous. **Cercus.** Covered with minute spicules; short; moderately wide; apex rounded; 2,3 long setae at apex; dorsal surface with 3-9 broad scales, with number of moderately long and few short setae on distal 0.66-0.90; ventral surface with few to several short setae on outer margin; cercus index 1.38-2.21; Ce/dorsal PGL index 2.67-3.57; length 0.13-0.17 mm; width 0.06-0.09 mm. **Spermathecal capsules.** One large and 2 medium; heavily pigmented; spherical; several small, spermathecal capsule pores near orifice. **Accessory gland duct.** Basal area moderately to heavily pigmented.

Type species description (*Aedes thomsoni* (Theobald), Fig. 16). **Tergum VIII.** Proximal 0.80-0.95 retracted into segment VII; moderately pigmented with basal and lateral areas more heavily pigmented; apex very slightly convex; numerous broad, pale scales on distal 0.75-0.90; numerous short setae on distal 0.75-0.85; basolateral seta present; VIII-Te index 0.69-0.79; VIII-Te/IX-Te index 1.61-1.77; length 0.21-0.25 mm; width 0.29-0.32 mm. **Sternum VIII.** Heavily pigmented with lateroapical areas moderately pigmented; apex with moderately deep (0.08-0.11 of VIII-S length), median emargination; numerous broad scales on apical 0.86-0.94; numerous short and few moderately long setae on apical 0.87-0.93; VIII-S index 0.80-0.86; length 0.30-0.32 mm; width 0.34-0.39 mm. **Tergum IX.** Heavily pigmented; long; apex with deep, median emargination; 4-9 setae apically on each side of midline, 9-15 total setae; IX-Te index 1.00-1.11; length 0.13-0.15 mm; width 0.14-0.15 mm. **Insula.** Moderately pigmented; 4-7 small tuberculi on apical 0.35. **Lower vaginal lip.** Moderately pigmented. **Upper vaginal lip.** Heavily pigmented. **Spermathecal eminence.** Membrane extended caudally to form more or less semicircular structure; very few short, simple, spermathecal eminence spicules along mesal margins for 0.50-0.70 of length. **Postgenital lobe.** Apex with small (0.08-0.13 of dorsal length), median emargination; 9-15 setae on each side of midline, 18-28 total setae; ventral PGL/Ce index 0.55-0.63; dorsal PGL index 0.72-0.86; ventral PGL index 1.26-1.46; ventral length 0.09-0.10 mm. **Cercus.** Dorsal surface with 3-9 (usually 3,4) broad scales, with number of moderately long and few short setae on distal 0.70-0.86; cercus index 1.92-2.21; Ce/dorsal PGL index 2.92-3.57; cercus length 0.17 mm; width 0.08-0.09 mm.

Species examined. *Aedes annulirostris* (Theobald), *Ae. brayi* Knight, *Ae. gombakensis* Mattingly, *Ae. ibis* Barraud, and *Ae. thomsoni*.

Discussion. The following combination of features is most distinctive for subgenus *Christophersiomyia*: tergum VIII is lightly to moderately pigmented and has short setae along the apical margin except for two or three moderately long ones; sternum VIII is large and has the apex with a small to moderately deep, median emargination that separates broadly and evenly rounded lobes, numerous broad scales are on most of the distal 0.81-0.94, and seta 1-S is very long and inserted some distance from the basal margin; tergum IX is relatively large, more or less V-shaped and moderately to heavily pigmented throughout, and has 3-11 setae distally on each lobe; upper vaginal sclerite is large, moderately pigmented, and has the apical margin broad; and cercus is short, moderately broad, and has a few (3-9) broad scales on the dorsal surface.

Female genitalia of *Christophersiomyia* share a number of features with those of members of subgenus *Stegomyia*; however, they can be separated by the characters mentioned above.

Published illustration of female genitalia. Mattingly (1959), *Ae. gombakensis*.

SUBGENUS *DICEROMYIA* THEOBALD

(Figs. 17-19)

Subgenus description. *Tergum VIII.* Proximal 0.20-0.80 retracted into segment VII; covered with minute spicules; heavily pigmented; base nearly straight or concave; apex straight or concave; numerous broad scales covering distal 0.30-0.82, both dark and pale scales present in some species; few short setae on distal 0.21-0.53, several long, stout setae on apical area and margin; basolateral seta present; VIII-Te index 0.44-0.61; VIII-Te/IX-Te index 1.70-3.46; length 0.16-0.29 mm; width 0.33-0.54 mm. *Sternum VIII.* Covered with minute spicules; heavily pigmented; base nearly straight or concave; apex wide and gently sloping from lateroapical corners to midline or apex nearly straight and with pair of very short lobes separated by very small (0.02-0.06 of VIII-S length), median emargination; numerous broad scales covering distal 0.77-0.94, both dark and pale scales present in some species; several short and few moderately long setae scattered over distal 0.80-0.94, setae more numerous mesally and absent from basolateral areas; apical margin with numerous short setae, several stout; few apicolateral setae moderately long; setae 1-4-S long and stout, 1,2-S basomesad and 3,4-S removed and often apicolaterad; basolateral seta present (except absent in *Pseudonummatus* Assemblage); apical, intersegmental membrane heavily pigmented; intersegmental membrane between segments VII and VIII very short to short; VIII-S index 0.58-0.72; length 0.22-0.35 mm; width 0.36-0.54 mm. *Tergum IX.* Covered with minute spicules; moderately or heavily pigmented throughout; comprised of caudally directed, winglike lobe on each side; 1-10 setae distally on each side of midline, 2-19 total setae; IX-Te index 0.55-0.96; length 0.07-0.12 mm; width 0.10-0.16 mm; dorsal spheres present. *Insula.* Covered with short spicules; heavily pigmented; long; tongue-like; 2-9 small tuberculi on apical 0.20-0.25, each with minute spicule. *Lower vaginal lip.* Covered with short spicules; moderately to heavily pigmented; relatively narrow; lower vaginal sclerite absent; ventral tuft present. *Upper vaginal lip.* Covered with short spicules; heavily pigmented; narrow; posterior margin flattened or broadly rounded; upper vaginal sclerite moderately to heavily pigmented, large, lightly to heavily fenestrated especially on caudal area (*Pseudonummatus* Assemblage without fenestration). *Spermathecal eminence.* Membranous; formed into somewhat circular structure (Oriental species with caudolateral lobe on each side); few to numerous short, simple, spermathecal eminence spicules on basomesal area between apices of upper vaginal sclerites. *Postgenital lobe.* Covered with short to moderately long, stout spicules; moderately long; moderately wide to wide; apex normally broadly and evenly rounded or occasionally with very small (0.03-0.09 of dorsal length), median emargination; basal mesal apodeme moderately developed, circular or ovoid in outline; 7-14 setae on each side of midline, 2,3 of these long and stout, 15-27 total setae; ventral PGL/Ce index 0.46-0.79; dorsal PGL index 0.62-0.94; ventral PGL index 1.05-1.65; ventral length 0.08-0.11 mm. *Proctiger.* With few small spicules scattered over surface; membranous. *Cercus.* Covered with short spicules; short; wide; apex truncate; dorsal surface with numerous broad scales covering distal 0.71-0.88 or scales absent, apical area with 6-8 long, stout setae, numerous short setae on distal 0.62-0.94 or only few setae on distal 0.28-0.38, several of short setae on apical margin strongly curved; ventral surface with few short setae on apical margin; cercus index 1.50-2.24; Ce/dorsal PGL index 1.57-3.46; length 0.11-0.21 mm; width 0.07-0.11 mm. *Spermathecal capsules.* One large and 2 medium; heavily pigmented; spherical; several small, spermathecal capsule pores near orifice. *Accessory gland duct.* Basal area heavily pigmented, long.

Type species description (*Aedes furcifer* (Edwards), Fig. 17). *Tergum VIII.* Proximal 0.20-0.55 retracted into segment VII; base nearly straight; apex straight or slightly concave; numerous broad scales covering apical 0.75-0.82, scales dark except medium patch of pale ones; setae on distal 0.36-0.43; VIII-Te index 0.53-0.58; VIII-Te/IX-Te index 3.36-3.46; length 0.28-0.29 mm; width 0.49-0.54 mm. *Sternum VIII.* Base slightly concave; apex very gently

sloping from lateroapical corners to midline; numerous broad scales covering distal 0.81-0.85, both dark and pale scales present; setae on distal 0.82-0.84; VIII-S index 0.60-0.67; length 0.33-0.34 mm; width 0.49-0.54 mm. **Tergum IX.** Heavily pigmented; 2-6 setae apically on each side of midline, 5-9 total setae; IX-Te index 0.55-0.67; length 0.08-0.10 mm; width 0.13-0.15 mm. **Insula.** With 6-9 tuberculi. **Upper vaginal lip.** Upper vaginal sclerite heavily pigmented, fenestrated. **Spermathecal eminence.** Comprised of somewhat circular, membranous structure extending caudally from apices of upper vaginal sclerites; few short, simple, spermathecal eminence spicules on median, basal area. **Postgenital lobe.** Moderately wide; apex flat or with small (0.03-0.04 of dorsal length), median emargination; 8-11 setae on each side of midline, 6 of apical setae long and stout, 16-21 total setae; ventral PGL/Ce index 0.46-0.57; dorsal PGL index 0.76-0.94; ventral PGL index 1.21-1.31; ventral length 0.10 mm. **Cercus.** Dorsal surface with numerous broad, dark scales covering distal 0.78-0.88, numerous short setae on distal 0.62-0.68; cercus index 1.72-1.85; Ce/dorsal PGL index 2.93-3.42; length 0.18-0.21 mm; width 0.07-0.08 mm.

Species assemblages within the subgenus based on morphological characters of the female genitalia.

I. Furcifer Assemblage (*Aedes furcifer*, Fig. 17). **Tergum VIII.** Base nearly straight or slightly concave; numerous broad scales covering distal 0.75-0.82; width 0.35-0.54 mm. **Sternum VIII.** Base slightly concave; apex very gently sloping from lateroapical corners to midline or nearly straight; numerous broad scales covering distal 0.82-0.90; setae on distal 0.80-0.87; VIII-S index 0.60-0.67. **Upper vaginal lip.** Upper vaginal sclerite heavily pigmented, fenestrated. **Spermathecal eminence.** Comprised of circular, membranous structure extending caudally from apices of upper vaginal sclerites; few short, simple, spermathecal eminence spicules on median, basal area. **Postgenital lobe.** Moderately wide; apex flat or with small (0.03-0.04 of dorsal length), median emargination. **Cercus.** Dorsal surface with numerous broad scales covering distal 0.76-0.88 (except *Ae. fascipalpis* (Edwards) which has 0-2 scales), numerous short setae on apical 0.62-0.70.

II. Pseudonummatius Assemblage (*Aedes pseudonummatius* Reinert, Fig. 18). **Tergum VIII.** Base concave; numerous broad scales covering distal 0.68-0.78; width 0.43-0.47 mm. **Sternum VIII.** Base very slightly concave; apex nearly straight with very short lobe on each side of median emargination (0.02-0.06 of VIII-S length); numerous broad scales covering distal 0.90-0.94; setae on distal 0.92-0.94; VIII-S index 0.70-0.72. **Upper vaginal lip.** Upper vaginal sclerite moderately pigmented, without fenestration. **Postgenital lobe.** Wide; apex broadly rounded. **Cercus.** Dorsal surface with number of broad scales on distal 0.71-0.72, numerous setae on distal 0.78-0.94.

III. Ramachandrai Assemblage (*Aedes ramachandrai* Reuben, Fig. 19). **Tergum VIII.** Base concave; numerous broad scales covering distal 0.30-0.75; width 0.33-0.42 mm. **Sternum VIII.** Base concave; apex gently sloping from lateroapical corners to midline; numerous broad scales covering distal 0.77-0.93; setae on distal 0.80-0.92; VIII-S index 0.58-0.68. **Upper vaginal lip.** Upper vaginal sclerite heavily pigmented, fenestrated. **Spermathecal eminence.** Comprised of circular, membranous structure bearing caudolateral lobe on each side; numerous short, simple, spermathecal eminence spicules on basomesal area. **Postgenital lobe.** Moderately wide to wide; apex rounded or with very small (0.04-0.09 of dorsal length), median emargination. **Cercus.** Dorsal surface without scales, with few setae on distal 0.28-0.38.

Species examined.

I. Furcifer Assemblage. *Aedes adersi* (Edwards), *Ae. fascipalpis*, *Ae. furcifer*, *Ae. taylora* Edwards, and *Ae. zethus* de Meillon and Lavoipierre.

II. Pseudonummatius Assemblage. *Aedes nummatius* Edwards and *Ae. pseudonummatius*.

III. Ramachandrai Assemblage. *Aedes franciscoi* Mattingly, *Ae. iyengari* Edwards, *Ae.*

periskelatus (Giles), *Ae. ramachandrai*, *Ae. reginae* Edwards, *Ae. scanloni* Reinert, and *Ae. whartoni* Mattingly.

Discussion. The type species for *Diceromyia* is *Ae. furcifer* which was proposed as a new name for *Mansonia niger* Theobald, 1906. Edwards (1913) proposed the new name since *niger* was preoccupied by *Ochlerotatus niger* Giles, 1904. *Diceromyia africana* Theobald, 1911 is a synonym of *Ae. furcifer*.

The following combination of features is most distinctive for subgenus *Diceromyia*: tergum VIII has the distal 0.30-0.82 covered with numerous broad scales and the apical margin has several long, stout setae; sternum VIII has the distal 0.79-0.94 covered with numerous broad scales; intersegmental membrane between segments VII and VIII is very short to short; tergum IX is comprised of a caudally directed, winglike lobe on each side bearing 1-10 setae apically, and is moderately to heavily pigmented throughout; postgenital lobe normally has the apex broadly and evenly rounded; and cercus is short, broad, and has numerous broad scales on the distal 0.71-0.88 of the dorsal surface (except species of the Ramachandrai Assemblage).

Published illustrations of female genitalia. Mattingly (1959), *Ae. franciscoi* and *Ae. iyengari*; Reuben (1967), *Ae. ramachandrai*; Reinert (1973c), *Ae. nummatus* and *Ae. pseudonummatus*; Huang (1978b), *Ae. meronephada* (Dyar and Shannon); and Tewari and Hiriyan (1992), *Ae. agastyai* Tewari and Hiriyan and *Ae. reubenae* Tewari and Hiriyan.

SUBGENUS EDWARDSAEDES BELKIN

(Fig. 20)

Subgenus description. *Tergum VIII.* Proximal 0.75-1.00 retracted into segment VII; covered with minute spicules; lightly pigmented; base strongly and sharply concave mesally; apex slightly concave or straight and relatively wide; lateral margins nearly straight; 0-7 (usually absent) scattered small, moderately broad scales; number of short and moderately long, slender setae scattered over distal 0.76-0.92; occasionally few short setae on membranous area near lateral and basal margins; basolateral seta absent; VIII-Te index 0.89-1.04; VIII-Te/IX-Te index 1.86-2.60; length 0.32-0.35 mm; width 0.32-0.44 mm. *Sternum VIII.* Covered with minute spicules; lightly pigmented with approximately distal 0.30 moderately pigmented (narrow lightly pigmented area along much of median length in *Ae. bekkui* Mogi); large; base deeply and sharply concave mesally; apex with very deep and narrow (0.22-0.26 of VIII-S length), median emargination and with small, narrow lobe on each side of emargination; sternum widest at about 0.30 from apex; 0-2 (usually absent) broad scales; number of short and few moderately long setae scattered over distal 0.92-0.97; setae 1-3-S widely separated, located in more or less diagonal line, 1-S basomesad, 2-S approximately 0.48 from 1-S, 3-S apicolaterad and approximately 0.52 from 2-S; basolateral setae absent; apical, intersegmental membrane nonpigmented; intersegmental membrane between segments VII and VIII very long; VIII-S index 1.01-1.14; length 0.37-0.44 mm; width 0.35-0.40 mm. *Tergum IX.* Covered with minute spicules; moderately pigmented with midline slightly less pigmented; long; widest point near apical 0.25-0.28; apex with moderately deep, median emargination; 5-14 moderately long setae distally on each side of midline, 11-26 total setae; IX-Te index 0.91-1.13; length 0.16-0.23 mm; width 0.14-0.21 mm; dorsal spheres present. *Insula.* Covered with short spicules; lightly to moderately pigmented; long; tongue-like; without tuberculi. *Lower vaginal lip.* Covered with short spicules; lightly to moderately pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. *Upper vaginal lip.* Covered with small spicules; moderately to heavily pigmented; narrow; upper vaginal sclerite large, heavily pigmented but with unequal pigmentation toward inner, caudal margin presenting fragmented appearance, fenestrated. *Spermathecal eminence.* Membranous; large; oblong; base flattened and attached to apices of upper vaginal sclerites; numerous short, simple, spermathecal

eminence spicules on basal and basal 0.50 of lateromesal areas. **Postgenital lobe.** Covered with small spicules; short; wide; apex with shallow to small (0.05-0.12 of dorsal length), median emargination; basal mesal apodeme small and circular in outline; 7-14 setae on each side of midline, 15-26 total setae; ventral PGL/Ce index 0.38-0.47; dorsal PGL index 0.72-1.06; ventral PGL index 1.51-1.95; ventral length 0.08-0.17 mm. **Proctiger.** Small spicules scattered over surface; membranous. **Cercus.** Covered with minute spicules; long; narrow; apex acuminate and with 2 long setae; dorsal surface without scales, with numerous short and several moderately long setae on distal 0.82-0.90; ventral surface with few short setae along outer, apical and inner margins; cercus index 3.35-4.33; Ce/dorsal PGL index 3.94-5.81; length 0.34-0.37 mm; width 0.08-0.10 mm. **Spermathecal capsules.** One large and 2 slightly smaller; heavily pigmented; spherical; each with short, pigmented neck; several small, spermathecal capsule pores near orifice. **Accessory gland duct.** Basal area heavily pigmented, long.

Type species description (*Aedes imprimens* (Walker), Fig. 20). **Tergum VIII.** With 0-7 (usually 0-3) scattered small, moderately broad scales; number of short and moderately long, slender setae scattered over distal 0.90-0.92; VIII-Te index 0.93-1.04; VIII-Te/IX-Te index 1.86-2.07; length 0.33-0.35 mm; width 0.32-0.44 mm. **Sternum VIII.** Apex with deep and narrow (0.21-0.26 of VIII-S length), median emargination; 0-2 (usually absent) broad scales; number of short and few moderately long setae scattered over distal 0.95-0.97; VIII-S index 1.01-1.14; length 0.39-0.44 mm; width 0.37-0.40 mm. **Tergum IX.** With 6-14 moderately long setae on each side of midline, 15-26 total setae; IX-Te index 0.91-1.13; length 0.16-0.23 mm; width 0.14-0.21 mm; dorsal spheres present. **Postgenital lobe.** Apex with shallow to small (0.05-0.12 of dorsal length), median emargination; 7-14 setae on each side of midline, 15-26 total setae; ventral PGL/Ce index 0.38-0.47; dorsal PGL index 0.72-0.94; ventral PGL index 1.51-1.95; ventral length 0.13-0.17 mm. **Cercus.** Dorsal surface with numerous short and moderately long setae on distal 0.84-0.90; cercus index 3.57-4.33; Ce/dorsal PGL index 4.17-5.81; length 0.34-0.37 mm; width 0.08-0.09 mm.

Species examined. *Aedes bekkui* and *Ae. imprimens*.

Discussion. The following combination of features is most distinctive for subgenus *Edwardsaedes*: tergum VIII has the base strongly and sharply concave mesally, apex is slightly concave or straight and relatively broad, scales are usually absent (only 1-7 scales when present), and nearly the entire surface is covered with numerous short and a few moderately long setae; sternum VIII has a distinctive shape (see Fig. 20), the base is deeply and sharply concave mesally, the apical margin has a very deep, narrow emargination separating a pair of small, narrow lobes, the widest area of the sternum is at about 0.30 from the apex, scales are normally absent (only 1,2 scales when present), and numerous setae covering nearly the entire surface; intersegmental membrane between segments VII and VIII is very long; upper vaginal sclerite is large, heavily pigmented but with unequal pigmentation toward the inner, caudal margin presenting a fragmented appearance, and it is fenestrated; postgenital lobe has a shallow to small, median, apical emargination; cercus is long and narrow, the apex is acuminate, and numerous short and several moderately long setae covering the distal 0.82-0.90 of the dorsal surface; and accessory gland duct has a long, heavily pigmented, basal area.

Female genitalia of *Edwardsaedes* share a number of features with *Neomelaniconion* and *Aedimorphus*, but differ from these in the development of sternum VIII, shape of tergum IX, length of the heavily pigmented, basal area of the accessory gland duct, and the development of the upper vaginal sclerite.

Published illustrations of female genitalia. Hara (1957a), *Ae. imprimens*; Hara (1957b), *Ae. imprimens*; Mattingly (1961), *Ae. imprimens*; Reinert (1976b), *Ae. imprimens*; Mogi (1977), *Ae. bekkui*; and Tanaka et. al. (1979), *Ae. imprimens*.

SUBGENUS *FREDWARDSIUS* REINERT

(Fig. 21)

Subgenus description. *Tergum VIII.* Proximal 0.90-1.00 retracted into segment VII; covered with short spicules; heavily pigmented; more or less trapezoidal; base moderately concave with median, unpigmented area and with basolateral angles extended and pointed; apex moderately wide, flat or slightly concave; usually without scales (1-5 when present); number of short setae scattered over distal 0.78-0.91; apex with 2,3 moderately long, slender setae in addition to short setae; basolateral seta usually absent; VIII-Te index 0.66-0.74; VIII-Te/IX-Te index 1.42-1.60; length 0.21-0.24 mm; width 0.31-0.35 mm. *Sternum VIII.* Covered with short spicules; heavily pigmented but with narrow, median, apical, lightly pigmented area (in some specimens lightly pigmented area extends approximately 0.65 to base); base with moderately deep and broad, median emargination; apex with moderately deep (0.12-0.16 of VIII-S length), narrow, median emargination separating broadly rounded lobes that have outer portion flattened and with strong (approximately 55°) slope to lateroapical angles at about 0.35 distance to base; lateral margins gently sloping inward to base; without scales; numerous short setae on distal 0.89-0.98; apical margin with short setae; setae 1-4-S in more or less diagonal line from near basomesal area to apicolateral margin, 1,2-S very long; basolateral seta present or absent; apical, intersegmental membrane moderately to heavily pigmented; intersegmental membrane between segments VII and VIII long; VIII-S index 0.81-0.90; length 0.29-0.33 mm; width 0.33-0.38 mm. *Tergum IX.* Covered with short spicules; moderately wide; moderately long; uniformly heavily pigmented or with basomesal and apicomesal areas more lightly pigmented; apical margin with 2 lobes separated by moderately deep, median emargination; 3-6 setae distally on each lobe, 8-12 total setae; IX-Te index 0.96-1.19; length 0.13-0.17 mm; width 0.14-0.15 mm; dorsal spheres present, dark. *Insula.* Covered with short spicules; moderately pigmented; tongue-like; 3-9 (usually 4-6) tuberculi located on apical 0.30, each with short, stout, setalike spicule. *Lower vaginal lip.* Covered with short spicules, those near hinge moderately long; moderately pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. *Upper vaginal lip.* Covered with short spicules; heavily pigmented; more or less stirrup-shaped; lateral areas narrow and bowed outward; caudal area nearly straight or very slightly convex; upper vaginal sclerite moderately large to large, heavily pigmented, apex blunt, posterior margin jagged, with sclerite fragments near margin. *Spermathecal eminence.* Membranous; nonpigmented; more or less circular in outline but with basal area flattened; numerous short, simple, spermathecal eminence spicules on basal 0.40-0.50. *Postgenital lobe.* Covered with short spicules; moderately long to long; evenly narrow throughout entire dorsal length; apex flat or with minute (0.04 of dorsal length), median emargination (specimens from South Africa with moderately deep, median emargination, 0.26 of dorsal length); basal mesal apodeme well developed, long and relatively narrow, heavily pigmented; 14-17 setae forming elongate, median patch on ventral surface; ventral PGL/Ce index 0.59-0.67; dorsal PGL index 1.05-1.44; ventral PGL index 2.65-3.19; ventral length 0.12-0.15 mm. *Proctiger.* Minute to short spicules scattered over entire surface; membranous. *Cercus.* Usually completely extended; covered with short spicules; moderately long to long; moderately wide with proximal 0.63-0.71 of uniform width; apex bluntly rounded and with about 4 long, stout setae; dorsal surface without scales, with number of short and few moderately long setae on distal 0.80-0.92; ventral surface with very few (usually 1-4) short setae on lateral margin from near middle to near apex; cercus index 2.42-3.10; Ce/dorsal PGL index 3.08-4.04; length 0.19-0.24 mm; width 0.07-0.08 mm. *Spermathecal capsules.* One large and 2 medium; heavily pigmented; spherical; few to several small, spermathecal capsule pores near orifice. *Accessory gland duct.* Basal area heavily pigmented, moderately long.

Type species description (*Aedes vittatus* (Bigot), Fig. 21). The above description is that of the type species for this monotypic subgenus.

Species examined. *Aedes vittatus*.

Discussion. The following combination of features is most distinctive for subgenus *Fredwardsius*: tergum VIII has the basolateral angles extended laterally and an index of 0.66-0.74; sternum VIII has the apex with a moderately deep to deep, narrow, median emargination separating broadly rounded lobes that have their outer portion flattened and with an approximately 55° slope to the lateroapical angles, and the base has a moderately deep, broad, median emargination; postgenital lobe is moderately long to long, the width is evenly narrow throughout the entire dorsal length, and an elongate, *median* patch of setae is on the ventral surface; and cercus is moderately long to long, moderately wide, and the proximal 0.63-0.71 has an approximately uniform width.

Female genitalia of *Ae. vittatus* are noticeably different in these characters from *Scutomyia*, *Stegomyia*, and *Aedimorphus*, the latter two subgenera in which it was previously placed. Also, they differ from those of these subgenera in the development of the spermathecal eminence.

The female genitalia of *Ae. vittatus* from populations located in some geographical areas show noticeable variation in the apex of the postgenital lobe, the length of the cercus, the width of tergum IX, the presence or absence of the basal lateral setae on sternum VIII and tergum VIII, and the depth of the median, apical emargination of sternum VIII. Specimens from South African populations show the greatest differences.

Published illustrations of female genitalia. Macfie and Ingram (1922), *Ae. vittatus*; and Huang (1977b), *Ae. vittatus*.

SUBGENUS *HUAEDE* HUANG

(Fig. 22)

Subgenus description. *Tergum VIII*. Proximal 0.60-0.80 retracted into segment VII; covered with minute spicules; moderately pigmented; wide; base slightly concave; apex slightly concave or straight; numerous broad, dark and pale scales on distal 0.47-0.84; apical margin with several long, stout setae; several moderately long and short setae on distal 0.45-0.59; basolateral seta present and inserted on membrane basolaterad of sclerotized area; VIII-Te index 0.64-0.72; VIII-Te/IX-Te index 1.92-2.32; length 0.24-0.29 mm; width 0.36-0.46 mm. *Sternum VIII*. Covered with minute spicules; moderately pigmented; large; wide; base straight or very slightly concave; apex with small (0.02-0.06 of VIII-S length), median emargination and small lobe on each side of midline; numerous broad, pale and dark scales covering distal 0.77-0.89, median, apical area without scales; numerous setae covering distal 0.83-0.90, setae short and moderately long (many setae moderately long in *Ae. variepictus* King and Hoogstraal); moderately large, basolateral, triangular area without setae; basolateral seta inserted on membrane basolaterad of sclerotized area; apical, intersegmental membrane nonpigmented; intersegmental membrane between segments VII and VIII short; VIII-S index 0.66-0.76; length 0.30-0.33 mm; width 0.43-0.48 mm. *Tergum IX*. Covered with minute spicules; comprised of 2 moderately long and moderately wide, moderately pigmented, lateral plates connected mesally by narrow, lightly pigmented area; apex of each plate evenly rounded; 5-9 moderately long, slightly curved setae distally on each side of midline, 10-17 total setae; IX-Te index 0.71-0.90; length 0.11-0.15 mm; width 0.14-0.17 mm; dorsal spheres present. *Insula*. Covered with short spicules; lightly pigmented; long; narrow; tongue-like; 6-10 small tuberculi on apical 0.30-0.40, each with small spicule. *Lower vaginal lip*. Covered with short spicules; lightly pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. *Upper vaginal lip*. Covered with short spicules; moderately pigmented; narrow; upper vaginal sclerite large, moderately pigmented. *Spermathecal eminence*. Membranous; nonpigmented; circular in outline with basal area flattened; spermathecal eminence spicules few, short, fine, simple and on basolateral areas. *Postgenital lobe*. Covered with short

spicules; moderately long; moderately wide; apex with moderately deep to deep (0.24-0.41 of dorsal length), median emargination; 2-8 setae on each side of midline, 5-15 total setae; ventral PGL/Ce index 0.64-0.68; dorsal PGL index 0.90-1.00; ventral PGL index 1.59-1.94; ventral length 0.13-0.14 mm. **Proctiger.** Short spicules scattered over entire surface; membranous. **Cercus.** Covered with short spicules; short; moderately wide; apex rounded; inner margin slightly concave; 5 stout setae on outer 0.33-0.51 and apical margins, setae long at apex and decrease in size proximally; dorsal surface with few to several broad scales on distal 0.29-0.38 (scales more numerous in *Ae. variegatus*), 2-4 long, stout setae on distal 0.20-0.23 and several short setae on distal 0.33-0.50; ventral surface with few short setae on outer margin and distal 0.20; cercus index 2.37-2.68; Ce/dorsal PGL index 2.76-3.14; length 0.20-0.21 mm; width 0.08-0.09 mm. **Spermathecal capsules.** One large and 2 medium; heavily pigmented; spherical; few small, spermathecal capsule pores near orifice. **Accessory gland duct.** Basal area heavily pigmented.

Type species description (*Aedes wauensis* Huang, Fig. 22). **Tergum VIII.** Numerous broad scales on distal 0.47-0.84; several moderately long and short setae on distal 0.45-0.59, apical setae with curved tips; VIII-Te index 0.65-0.72; VIII-Te/IX-Te index 2.00-2.32; length 0.24-0.27 mm; width 0.36-0.38 mm. **Sternum VIII.** Moderately pigmented with mesal and apical areas somewhat darker; apex with small (0.02-0.03 of VIII-S length), median emargination; numerous broad scales covering distal 0.77-0.89 except for small, median, apical area; numerous setae covering apical 0.83-0.90; VIII-S index 0.66-0.74; length 0.30-0.33 mm; width 0.43-0.48 mm. **Tergum IX.** With 5-8 moderately long, slightly curved setae on each side of midline, 10-15 total setae; IX-Te index 0.71-0.90; length 0.11-0.12 mm; width 0.14-0.16 mm. **Insula.** With 8-10 small tuberculi on apical 0.40. **Postgenital lobe.** With 2-5 setae on each side of midline, 5-9 total setae; dorsal PGL index 0.90-1.00; ventral PGL index 1.76-1.94. **Cercus.** With 5 stout setae on outer 0.35 and apical margins; dorsal surface with 4 long, stout setae on distal 0.23, several short setae on distal 0.33-0.50; 2-6 (usually 2-4) broad scales on distal 0.29-0.38; cercus index 2.37-2.63; Ce/dorsal PGL index 2.90-3.14; length 0.20-0.21 mm.

Species examined. *Aedes variegatus* and *Ae. wauensis*.

Discussion. The following combination of features is most distinctive for subgenus *Huaedes*: tergum VIII has the apex slightly concave or straight and bearing several long, stout setae, numerous broad, dark and pale scales are on the distal 0.47-0.84, and the basolateral seta is inserted on the membrane basolaterad of the sclerotized area; sternum VIII has the apex with a small, median emargination that separates a pair of small lobes, numerous broad, pale and dark scales are on the distal 0.77-0.89 except for the median, apical area, seta 1-S is very long whereas seta 2-S is long, and the basolateral seta is inserted on the membrane basolaterad of the sclerotized area; insula has the tuberculi on the apical 0.30-0.40; tergum IX is comprised of two moderately long, moderately wide, moderately pigmented, lateral plates bearing a total of 10-17 short setae distally, apex of each plate is evenly rounded, and the plates are connected mesally by a narrow, lightly pigmented area; postgenital lobe has a moderately deep (0.24-0.41 of dorsal length), median emargination; and cercus is short, moderately wide, and has a few to several broad scales on the dorsal surface.

Female genitalia of *Huaedes* have some similarity to those of *Leptosomatomyia* and *Lorrainea* but differ from these by the combination of features listed above, especially the position of the basolateral setae on tergum VIII. *Aedes (Stegomyia) chemulpoensis* Yamada and *Ochlerotatus (Levua) geoskusea* (Amos) are similar to both *Huaedes* and *Leptosomatomyia* in having the basolateral setae of sternum VIII on the membrane cephalad of the sclerotized area. *Pseudarmigeres* species have the basolateral seta of tergum VIII inserted very near the basal margin of the sclerotized area.

SUBGENUS *INDUSIUS* EDWARDS

(Fig. 23)

Subgenus description. *Tergum VIII.* Entirely retracted into segment VII; covered with moderately long spicules; moderately pigmented; wide at base and tapering to moderately wide, straight apex; base nearly straight but somewhat uneven; apical and lateral margins uneven presenting somewhat jagged appearance; without scales; numerous short and few moderately long, slender setae scattered over distal 0.94-0.97; basolateral seta absent; VIII-Te index 0.64-0.79; VIII-Te/IX-Te index 1.32-1.48; length 0.18-0.23 mm; width 0.24-0.35 mm. *Sternum VIII.* Covered with moderately long spicules; moderately pigmented with long, narrow, lightly pigmented, median area on distal 0.51-0.54; moderately wide; base slightly concave; apex with very deep (0.30-0.34 of VIII-S length), median emargination separating evenly and broadly rounded lobes; 0-4 broad scales on basomesal area (scales usually absent); numerous short and very few moderately long, slender setae scattered over distal 0.97-0.99; apical margin with setae short and slender; setae 1-3-S close together, all basad and in more or less transverse line, 1-S basomesad, 2-S laterad to 1-S, 3-S laterad and slightly distad to 2-S; basolateral seta absent; apical, intersegmental membrane nonpigmented; intersegmental membrane between segments VII and VIII long; VIII-S index 1.02-1.10; length 0.28-0.30 mm; width 0.26-0.29 mm. *Tergum IX.* Covered with short spicules; comprised of 2 long, relatively narrow, moderately pigmented, lateral plates connected mesally by membrane; apical portion of each plate expanded and with 6-10 short, slender setae borne on mesal and apical areas, 12-19 total setae; IX-Te index 1.31-1.51; length 0.14-0.16 mm; width 0.09-0.12 mm; dorsal spheres present. *Insula.* Covered with short spicules; moderately pigmented; tongue-like; 1-3 small tuberculi on apical area, each with minute spicule. *Lower vaginal lip.* Covered with minute spicules, long spicules on basal area near hinge; moderately pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. *Upper vaginal lip.* Covered with short spicules; moderately to heavily pigmented; narrow; upper vaginal sclerite large, moderately pigmented with basomesal area produced into narrow, heavily pigmented structure. *Spermathecal eminence.* Membranous; nonpigmented; more or less egg-shaped with base expanded; median, basal area with minute, simple, spermathecal eminence spicules. *Postgenital lobe.* Covered with short spicules; moderately long; moderately wide; apex with moderately deep (0.25-0.32 of dorsal length), median emargination; 6-10 setae on each side of midline, 12-19 total setae; basal mesal apodeme well developed and heavily pigmented; ventral PGL/Ce index 0.45-0.49; dorsal PGL index 0.85-0.95; ventral PGL index 1.61-1.67; ventral length 0.09-0.10 mm. *Proctiger.* Minute spicules scattered over entire surface; membranous. *Cercus.* Covered with short spicules; moderately long; moderately wide; apex bluntly pointed; inner margin nearly straight; outer margin bowed; dorsal surface without scales, with 2 long setae at apex, short and moderately long setae on distal 0.90-0.95; ventral surface with few short and moderately long setae along inner and outer margins; cercus index 2.43-2.83; Ce/dorsal PGL index 3.33-4.14; length 0.19-0.21 mm; width 0.06-0.09 mm. *Spermathecal capsules.* One large and 2 medium; heavily pigmented; spherical; few small, spermathecal capsule pores near orifice. *Accessory gland duct.* Basal area moderately pigmented.

Type species description (*Aedes pulverulentus* Edwards, Fig. 23). The above description is that of the type species for this monotypic subgenus.

Species examined. *Aedes pulverulentus*.

Discussion. The following combination of features is most distinctive for subgenus *Indusius*: tergum VIII is wide at the base and tapered to a moderately wide, broad, straight apex, the apical and lateral margins are uneven and present a somewhat jagged appearance, scales are absent, and numerous short and a few moderately long, slender setae, as well as moderately long spicules, nearly cover the entire surface; sternum VIII is longer than wide, moderately pigmented but with a long, narrow, median, lightly pigmented area on the distal 0.51-0.54, the base is evenly

concave, the apex has a very deep (0.30-0.34 of VIII-S length), median emargination that separates evenly and broadly rounded lobes, scales are normally absent (or only 1-4 when present), moderately long spicules and numerous short and a very few moderately long, slender setae are on the distal 0.97-0.99, and setae 1,2-S are in a transverse line near the basal margin while seta 3-S is laterad and slightly distad of setae 1,2-S; tergum IX is comprised of two long, relatively narrow, moderately pigmented, lateral plates that are connected mesally by a membrane, and each plate has 6-10 short, slender setae on the mesal and apical areas; and cercus is moderately long, moderately wide, without scales, and has setae covering the distal 0.90-0.95 of the dorsal surface.

Female genitalia of *Indusius* are most similar to those of *Aedimorphus*; however, they differ in the development of tergum VIII, sternum VIII with a deep, median, apical emargination, setae 1-3-S are placed differently, and the insula has only 1-3 tuberculi.

Published illustration of female genitalia. Reinert (1976b), *Ae. pulverulentus*.

SUBGENUS *ISOAEDES* REINERT

(Fig. 24)

Subgenus description. *Tergum VIII.* Proximal 0.60-0.80 retracted into segment VII; covered with minute spicules; lightly pigmented; more or less trapezoidal; number of broad scales on apical 0.60-0.64; short setae scattered over distal 0.49-0.66, few moderately long, stouter setae on apical margin; basolateral seta present; VIII-Te index 0.65-0.77; VIII-Te/IX-Te index 2.20-2.46; length 0.25-0.31 mm; width 0.37-0.44 mm. *Sternum VIII.* Covered with minute spicules; lightly to moderately pigmented; moderately wide; base slightly concave; apex with small (0.05-0.06 of VIII-S length), median emargination, with short, broadly rounded lobe more darkly pigmented on each side of emargination; several broad scales on distal 0.53-0.61; numerous short and few moderately long setae scattered over distal 0.70-0.78; apical margin with moderately long, stouter setae, several with curved tips; setae 1-3-S more or less evenly spaced in diagonal line, 1-S removed from basal margin; basolateral seta present; apical, intersegmental membrane lightly to moderately pigmented mesally; intersegmental membrane between segments VII and VIII short to moderately long; VIII-S index 0.66-0.76; length 0.31-0.35 mm; width 0.46-0.48 mm. *Tergum IX.* Covered with minute spicules; moderately pigmented; apex with moderately deep, median emargination; 10-17 short setae distally on each side of midline, 22-32 total setae; IX-Te index 0.77-0.90; length 0.11-0.13 mm; width 0.14-0.17 mm; dorsal spheres present. *Insula.* Covered with minute spicules; moderately pigmented; long; tongue-like; 3,4 small tuberculi on apical area, each with minute spicule. *Lower vaginal lip.* Covered with minute spicules; heavily pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. *Upper vaginal lip.* Covered with minute spicules; heavily pigmented; narrow; upper vaginal sclerite heavily pigmented, narrow, medium in size, elongate. *Spermathecal eminence.* Membranous; nonpigmented; more or less circular in general outline; spermathecal eminence spicules short, simple, forming basomesal patch. *Postgenital lobe.* Covered with minute spicules; moderately long; wide; apex straight or with minute to small (0.05-0.15 of dorsal length), median emargination; 10-16 setae on each side of midline, one on each side long and somewhat stouter, 22,23 total setae; basal mesal apodeme small, heavily pigmented; ventral PGL/Ce index 0.60-0.72; dorsal PGL index 0.69-0.84; ventral PGL index 1.02-1.25; ventral length 0.11-0.13 mm. *Proctiger.* Minute spicules scattered over entire surface; membranous. *Cercus.* Covered with spicules; short and moderately wide to wide; apex bluntly pointed; inner margin nearly straight with distal portion curved slightly inward; outer margin bowed; dorsal surface without scales, with short and moderately long setae scattered over distal 0.60-0.75; several long setae on apical area, those on margin somewhat stouter; ventral surface with few short setae along outer, distal margin; index 2.00-2.38; Ce/dorsal PGL index 2.43-2.66; length 0.18-0.22 mm; width 0.09-0.10 mm. *Spermathecal capsules.* One large and

2 medium; heavily pigmented; spherical; few small, spermathecal capsule pores near orifice. *Accessory gland duct.* Basal area heavily pigmented.

Type species description (*Aedes cavaticus* Reinert, Fig. 24). The above description is that of the type species for this monotypic subgenus.

Species examined. *Aedes cavaticus*.

Discussion. The following combination of features is most distinctive for subgenus *Isoaedes*: sternum VIII is wider than long, the apex has numerous moderately long setae of which several have curved tips, and with a moderately deep, median emargination separating a pair of short, broadly rounded lobes that are darkly pigmented, several broad scales are on the distal 0.53-0.61, and a number of short and a few moderately long setae are scattered over the distal 0.70-0.78, but the basal and the large, laterobasal areas are bare; tergum IX is slightly wider than long, and has 10-17 short setae distally on each side of a moderately deep, median emargination; lower vaginal lip is heavily pigmented; upper vaginal sclerite is narrow, medium in size, elongate, and heavily pigmented; and postgenital lobe is wide and moderately long, and has the apex straight or with a minute to small, median emargination.

Published illustration of female genitalia. Reinert (1979), *Ae. cavaticus*.

SUBGENUS *LEPTOSOMATOMYIA* THEOBALD

(Fig. 25)

Subgenus description. *Tergum VIII.* Proximal 0.70-0.80 retracted into segment VII; covered with minute spicules; moderately pigmented; base evenly concave; apex wide and straight or slightly rounded; lateral margins only slightly tapered inward from base; numerous broad scales covering distal 0.55-0.68; several long, stout setae along apical margin, few moderately long and short setae on distal 0.25-0.36; basolateral seta present; VIII-Te index 0.63-0.65; VIII-Te/IX-Te index 1.98-2.24; length 0.24-0.28 mm; width 0.37-0.44 mm. *Sternum VIII.* Covered with minute spicules; moderately pigmented with mesal and apical areas somewhat darker pigmented; large; wide; base slightly convex or nearly straight; apex with small (0.09-0.11 of VIII-S length), median emargination separating short, broadly rounded lobe on each side of midline; numerous broad scales covering distal 0.72-0.90 except for median, apical area; numerous setae covering distal 0.82-0.89 except for moderately large, basolateral, triangular area, many apical setae with curved tips; basolateral seta inserted on membrane next to basolateral corner of sclerotized area; apical, intersegmental membrane moderately to heavily pigmented; intersegmental membrane between segments VII and VIII short; VIII-S index 0.68-0.72; length 0.27-0.30 mm; width 0.39-0.43 mm. *Tergum IX.* Covered with minute spicules; uniformly moderately pigmented; base strongly convex; apex with moderately deep, median emargination; lateral areas wrinkled; 2-5 moderately long, curved setae distally on each side of midline, 5-9 total setae; IX-Te index 0.83-0.93; length 0.11-0.13 mm; width 0.12-0.15 mm; dorsal spheres present. *Insula.* Covered with short spicules; lightly pigmented; long; narrow; tongue-like; 2-4 small tuberculi on slightly raised area of apical 0.25, each with minute spicule. *Lower vaginal lip.* Covered with short spicules; lightly pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. *Upper vaginal lip.* Covered with short spicules; moderately pigmented; narrow; upper vaginal sclerite large, moderately pigmented. *Spermathecal eminence.* Membranous; nonpigmented; generally circular in outline but with lumpy appearance. *Postgenital lobe.* Covered with short spicules; moderately long; wide; apex with small to moderately deep (0.09-0.17 of dorsal length), median emargination; basal mesal apodeme well developed; 8-15 setae on each side of midline, 16-29 total setae; ventral PGL/Ce index 0.66-0.73; dorsal PGL index 0.91-1.06; ventral PGL index 1.38-1.52; ventral length 0.11-0.12 mm. *Proctiger.* Minute spicules scattered over entire surface; membranous. *Cercus.* Covered with short spicules; short; wide; distal portion wider than midlength; apex bluntly

rounded with 4 long, stout setae on distal 0.14; inner margin straight or very slightly concave; dorsal surface with 1-4 (usually 2,3) broad scales near base of area covered by setae, 2 long and 4 moderately long, stout setae on distal 0.26, several short setae on distal 0.49-0.55, apical and outer, short setae with strongly curved tips; ventral surface with few short setae on outer and apical margins; cercus index 1.94-2.17; Ce/dorsal PGL index 2.00-2.47; length 0.16-0.18 mm; width 0.08-0.09 mm. **Spermathecal capsules.** One large and 2 medium; heavily pigmented; spherical; several small, spermathecal capsule pores near orifice. **Accessory gland duct.** Basal area heavily pigmented.

Type species description (*Aedes aurimargo* Edwards, Fig. 25). The above description is that of the type species for this monotypic subgenus.

Species examined. *Aedes aurimargo*.

Discussion. The following combination of features is most distinctive for subgenus *Leptosomatomyia*: tergum VIII has the base evenly concave, the apex is broad, straight or slightly rounded and has several long, stout setae, the lateral margins are only slightly tapered inward from the base, and the distal 0.55-0.68 is covered with numerous broad scales; sternum VIII is wider than long, moderately pigmented but with the mesal and apical areas more darkly pigmented, the base is slightly convex or nearly straight, the apex has most of the setae short and with curved tips, and with a small, median emargination separating a pair of broadly rounded, short lobes, numerous broad scales are on most of the distal 0.72-0.90, and setae 1,2-S are very long and in a more or less transverse line on the basal area whereas seta 3-S is inserted slightly laterad and noticeably distad of seta 2-S; tergum IX is uniformly moderately pigmented, the base is strongly convex, the apex has a moderately deep, median emargination and has 2-5 setae distally on each side of the midline, and the lateral areas are wrinkled; insula has 2-4 small tuberculi on a slightly raised area of the apical 0.25; upper vaginal sclerite is large and moderately pigmented; and cercus is short and wide, the distal portion is wider than area at midlength, and the apex is bluntly rounded and has a number of short setae with their tips strongly curved, and several long and moderately long, stout setae are on the distal 0.26 of the dorsal surface.

Female genitalia of *Leptosomatomyia* have some similarity to those of *Huaedes*, but are easily distinguished by the development of tergum IX, shape of the cerci, shape and number of setae on the postgenital lobe, and the number and location of the tuberculi on the insula.

SUBGENUS *LORRAINEA* BELKIN

(Fig. 26)

Subgenus description. **Tergum VIII.** Proximal 0.80-1.00 retracted into segment VII; covered with minute spicules; lightly to moderately (usually moderately) pigmented; moderately long; wide; base slightly concave; apex broadly rounded; few to several broad scales usually present on distal 0.19-0.68; several moderately long and few short, stout setae on distal 0.39-0.71, several setae on apical and median areas, and usually few on lateral areas; apical margin with several moderately long and long, stout setae; basolateral seta minute (absent in *Ae. amesii* (Ludlow)); VIII-Te index 0.47-0.63; VIII-Te/IX-Te index 1.40-2.15; length 0.15-0.20 mm; width 0.29-0.37 mm. **Sternum VIII.** Covered with minute spicules; lightly to moderately (usually moderately) pigmented; base gently concave mesally; apex broadly rounded and with very small (0.03-0.05 of VIII-S length), median emargination; numerous broad scales on distal 0.67-0.89 except median, apical area; number of moderately long and few short setae on distal 0.80-0.95; apical margin with numerous stouter, curved setae, mesal setae short, setae gradually increase in length to moderately long on lateral margin; setae 1-3-S very long and in short diagonal line on proximal 0.35, 1,2-S close together, 3-S about 2 times distance separating 1,2-S; basolateral seta

absent; apical, intersegmental membrane with numerous moderately pigmented small patches; intersegmental membrane between segments VII and VIII moderately long; VIII-S index 0.57-0.70; length 0.20-0.26 mm; width 0.30-0.41 mm. **Tergum IX.** Covered with minute spicules; moderately long; moderately wide; comprised of 2 moderately pigmented, oblong, lateral plates connected mesally by lightly pigmented strip; both apical and basal margins narrow and heavily pigmented; without setae; IX-Te index 0.66-0.95; length 0.09-0.12 mm; width 0.11-0.14 mm; dorsal spheres present. **Insula.** Covered with short spicules; moderately pigmented; long; tongue-like; 2-5 small tuberculi on apical 0.32, each usually with minute spicule. **Lower vaginal lip.** Covered with short spicules; heavily pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. **Upper vaginal lip.** Covered with short spicules; moderately to heavily pigmented; narrow with basal areas moderately broad at hinge; caudal margin flat; upper vaginal sclerite moderately pigmented, large. **Spermathecal eminence.** Membranous; nonpigmented; ill-defined; usually with very few short, simple, spermathecal eminence spicules basolaterally at apices of upper vaginal sclerites. **Postgenital lobe.** Covered with short to moderately long spicules, moderately long spicules most numerous on lateral margins; moderately long; moderately wide; apex with minute to small or moderately deep (0.04-0.17 of dorsal length), median emargination; basal mesal apodeme well developed, moderately large; 4-8 setae on each side of midline, 4 setae on apical area moderately long to long, 9-15 total setae; ventral PGL/Ce index 0.52-0.66; dorsal PGL index 0.60-0.96; ventral PGL index 1.43-1.89; ventral length 0.09-0.11 mm. **Proctiger.** Minute to short spicules on most of area; membranous. **Cercus.** Covered with minute to short spicules; short; wide; apex truncate or bluntly rounded; dorsal surface with 0-4 (usually absent) broad scales, numerous short and few moderately long setae on distal 0.61-0.79; apex with 2 long, one moderately long and one short, stout setae; 3,4 moderately long, stout setae also on distal 0.24; ventral surface with few short setae on outer distal and apical margins; cercus index 1.51-2.09; Ce/dorsal PGL index 2.88-3.74; length 0.11-0.19 mm; width 0.07-0.11 mm. **Spermathecal capsules.** One large and 2 medium; heavily pigmented; spherical; several small, spermathecal capsule pores near orifice. **Accessory gland duct.** Basal area moderately pigmented.

Type species description (*Aedes dasyorrhus* King and Hoogstraal, Fig. 26). **Tergum VIII.** Proximal 0.90-1.00 retracted into segment VII; moderately pigmented; several broad scales usually present on distal 0.19-0.40; setae on distal 0.39-0.63; VIII-Te index 0.51-0.63; VIII-Te/IX-Te index 1.50-1.86; length 0.16-0.19 mm; width 0.29-0.34 mm. **Sternum VIII.** Moderately pigmented; apex with very small (0.03-0.05 of VIII-S length), median emargination; scales on distal 0.67-0.87; setae on distal 0.82-0.86; VIII-S index 0.61-0.70; length 0.23-0.26 mm; width 0.33-0.38 mm. **Tergum IX.** IX-Te index 0.76-0.91; length 0.10-0.11 mm; width 0.13-0.14 mm. **Insula.** With 3-5 small tuberculi. **Postgenital lobe.** Apex with minute to small (0.05-0.09 of dorsal length), median emargination; ventral PGL/Ce index 0.58-0.62; dorsal PGL index 0.60-0.85; ventral PGL index 1.43-1.58; ventral length 0.09-0.10 mm. **Cercus.** Apex truncate; dorsal surface with setae on distal 0.66-0.70; cercus index 1.69-1.95; Ce/dorsal PGL index 3.05-3.74; length 0.16-0.18 mm; width 0.09-0.10 mm.

Species examined. *Aedes amesii*, *Ae. dasyorrhus*, *Ae. fumidus* Edwards, and *Ae. lamelliferus* Bohart and Ingram.

Discussion. The following combination of features is most distinctive for subgenus *Lorrainea*: tergum VIII has the apical margin broadly rounded and with several long and moderately long, stout setae, and with a few short setae on the median area in addition to several moderately long and a few short setae on the distal and usually lateral areas, and usually with a few to several broad scales distally; sternum VIII has the apex broadly rounded with a very small, median emargination and with numerous stouter, curved setae that are short mesally and gradually increase in length to moderately long at the lateral margin, numerous broad scales on the distal 0.67-0.89 except for the median, apical area, and setae 1-3-S are very long and in a short, diagonal line on the proximal 0.35, setae 1,2-S are close together but seta 3-S is about two times the

distance separating seta 1-S and seta 2-S; tergum IX is comprised of two, moderately pigmented, oblong, lateral plates that have the apical and basal margins heavily pigmented, and setae are absent; lower vaginal lip is narrow and heavily pigmented; upper vaginal sclerite is large and moderately pigmented; and cercus is short and wide, the apex is truncate or bluntly rounded, scales are usually absent (occasionally 1-4 broad scales present) on the dorsal surface, and the apex has two long, one moderately long, and one short, stout setae.

Published illustration of female genitalia. Mattingly (1959), *Ae. fumidus*.

SUBGENUS *NEOMELANICONION* NEWSTEAD

(Figs. 27, 28)

Subgenus description. *Tergum VIII.* Proximal 0.45-1.00 retracted into segment VII; covered with minute spicules; moderately to heavily pigmented; base deeply and sharply concave mesally; apex straight and relatively wide; lateral margin nearly straight and gently tapering from base to apex; 0-7 (usually absent) moderately broad scales scattered over distal 0.70; number of short setae on distal 0.76-0.97; apex with several short setae and few slightly longer ones; basolateral seta absent; VIII-Te index 0.82-1.41; VIII-Te/IX-Te index 1.50-2.59; length 0.23-0.32 mm; width 0.20-0.32 mm. *Sternum VIII.* Covered with minute spicules; moderately to heavily pigmented, often with narrow, lightly pigmented, median area extending entire length or most of length; base deeply and sharply concave mesally; apex with deep (0.11-0.18 of VIII-S length), median emargination separating broadly and evenly rounded lobe on each side of midline; 0-7 (usually absent) moderately broad scales scattered over surface; numerous short setae on distal 0.90-1.00; apical margin with numerous short and several moderately long setae; setae 1-3-S moderately long, in more or less diagonal line, 1-S basomesad and near apex of basal emargination, 3-S apicolaterad; basolateral seta absent; apical, intersegmental membrane moderately pigmented; intersegmental membrane between segments VII and VIII very long; VIII-S index 0.78-1.03; length 0.27-0.37 mm; width 0.32-0.43 mm. *Tergum IX.* Covered with minute spicules; moderately to heavily pigmented; apex with moderately deep, median emargination; with 3-13 short setae distally on each side of midline, 7-25 total setae; IX-Te index 0.68-0.95; length 0.11-0.16 mm; width 0.13-0.20 mm; dorsal spheres present. *Insula.* Covered with minute spicules; moderately pigmented; tonguelike; 0-6 (usually 0-4) very small tuberculi on apical 0.60. *Lower vaginal lip.* Covered with short spicules; lightly to moderately pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. *Upper vaginal lip.* Covered with short spicules; heavily pigmented; narrow; upper vaginal sclerite moderately to heavily pigmented, moderately large to large, fenestrated, caudal margin more or less jagged. *Spermathecal eminence.* Membranous; nonpigmented; numerous very short, simple, spermathecal eminence spicules on most of basal 0.45-0.60, few longer spicules on lateral areas of some species, these spicules simple or lightly dendritic. *Postgenital lobe.* Covered with short spicules; narrow to moderately wide; short to moderately long; apex with deep to very deep (0.21-0.53 of dorsal length), median emargination; basal mesal apodeme well developed, more or less ovoid in outline; 4-11 setae on each side of midline, apical 2 moderately long, 10-21 total setae; ventral PGL/Ce index 0.31-0.49; dorsal PGL index 0.64-1.28; ventral PGL index 1.28-2.24; ventral length 0.09-0.14 mm. *Proctiger.* With minute spicules scattered over entire surface; membranous. *Cercus.* Covered with short spicules; long to very long and narrow or moderately long to long and moderately wide; apex acuminate or sharply rounded; dorsal surface with 0-4 (usually absent; specimens of *Ae. mcintoshii* Huang with 7-9) moderately broad scales scattered over surface, 2-4 long setae at apex, numerous short and few moderately long setae on distal 0.81-0.93; ventral surface with few short setae on outer and apical margins; cercus index 2.63-6.65; Ce/dorsal PGL index 3.24-5.76; length 0.22-0.38 mm; width 0.04-0.10 mm. *Spermathecal capsules.* One large and 2 medium;

heavily pigmented; spherical; few small, spermathecal capsule pores near orifice. *Accessory gland duct*. Basal area heavily pigmented.

Type species description (*Aedes palpalis* (Newstead), Fig. 27). *Tergum VIII*. Proximal 0.45-0.70 retracted into segment VII; moderately pigmented; without scales; short setae on distal 0.78-0.96; VIII-Te index 1.06-1.12; VIII-Te/IX-Te index 2.04-2.59; length 0.27-0.29 mm; width 0.24-0.26 mm. *Sternum VIII*. Moderately pigmented; apex with deep (0.12-0.14 of VIII-S length), median emargination; normally without scales (2-4 scales in 2 specimens); short setae on distal 0.90-0.94; VIII-S index 0.99-1.03; length 0.32-0.34 mm; width 0.32-0.34 mm. *Tergum IX*. Heavily pigmented; 3-6 setae distally on each side of midline, 7-10 total setae; IX-Te index 0.75-0.91; length 0.11-0.15 mm; width 0.14-0.19 mm. *Insula*. Tuberculi usually absent (2-4 in 2 specimens). *Upper vaginal lip*. Upper vaginal sclerite heavily pigmented. *Spermathecal eminence*. With few short, lightly dendritic, spermathecal eminence spicules on lateral areas in addition to numerous short, simple spicules on most of basal 0.60. *Postgenital lobe*. Short; narrow; apex normally with deep (0.29-0.43 of dorsal length; 0.09 in one aberrant specimen), median emargination; 5-7 setae on each side of midline, 10-14 total setae; ventral PGL/Ce index 0.37-0.38; dorsal PGL index 0.89-1.10; ventral PGL index 1.83-2.24; ventral length 0.11-0.12 mm. *Cercus*. Very long and narrow but with proximal part somewhat wider; apex acuminate; dorsal surface usually without scales (1,2 moderately broad scales when present), with setae on distal 0.85-0.93; cercus index 5.85-6.65; Ce/dorsal PGL index 4.03-5.35; length 0.30-0.32 mm; width 0.05-0.06 mm.

Species assemblages within the subgenus based on morphological characters of the female genitalia.

I. Palpalis Assemblage (*Aedes palpalis*, Fig. 27). *Tergum VIII*. Moderately pigmented and moderately sclerotized; 0.45-0.80 (usually 0.45-0.50) retracted into segment VII. *Sternum VIII*. Moderately pigmented and moderately sclerotized. *Postgenital lobe*. Ventral PGL index 1.52-2.24. *Cercus*. Very long; narrow; length 0.29-0.38 mm; index 4.00-6.65.

II. Lineatopennis Assemblage (*Aedes lineatopennis*, Fig. 28). *Tergum VIII*. Heavily pigmented and heavily sclerotized; 0.70-1.00 (usually 0.80-1.00) retracted into segment VII. *Sternum VIII*. Heavily pigmented and heavily sclerotized. *Postgenital lobe*. Ventral PGL index 1.28-1.75. *Cercus*. Moderately long to long; moderately wide; length 0.24-0.28 mm; index 2.63-3.24.

Species examined.

I. Palpalis Assemblage. *Aedes bequaerti* Wolfs, *Ae. carteri* Edwards, *Ae. crassiforceps* Edwards, *Ae. ellinorae* Edwards, *Ae. fuscinervis* (Edwards), *Ae. jamoti* Hamon and Rickenbach, *Ae. palpalis*, *Ae. punctocostalis* (Theobald), and *Ae. taeniarostris* (Theobald).

II. Lineatopennis Assemblage. *Aedes albicosta* (Edwards), *Ae. albothorax* (Theobald), *Ae. circumluteolus* (Theobald), *Ae. lineatopennis*, *Ae. luridus* McIntosh, *Ae. luteolateralis* (Theobald), *Ae. mcintoshi*, and *Ae. unidentatus* McIntosh.

Discussion. The following combination of features is most distinctive for subgenus *Neomelaniconion*: tergum VIII has the base deeply and sharply concave mesally, apex is straight, relatively broad, and has several short and a few slightly longer setae, lateral margin is nearly straight and gently tapering from the base to the narrower apex, scales are normally absent (only 1-7 scales when present), and nearly the entire surface is covered with scattered, short setae; sternum VIII has the base deeply and sharply concave mesally, the apex has a deep (0.11-0.18 of dorsal length), median emargination that separates broadly and evenly rounded lobes each bearing numerous short and several moderately long setae, scales are usually absent (only 1-7 scales when present), numerous short setae are scattered over nearly the entire surface, and setae 1-3-S are moderately long, inserted in a more or less diagonal line with seta 1-S basomesad and seta 3-S apico laterad; intersegmental membrane between segments VII and VIII is very long; upper vaginal sclerite is moderately large to large, moderately to heavily pigmented, and fenestrated;

spermathecal eminence has numerous very short spicules on most of the basal 0.45-0.60; postgenital lobe is narrow to moderately wide and has the apex with a deep to very deep, median emargination; and cercus is very long and narrow or moderately long to long and moderately wide, the apex is acuminate or sharply rounded, scales are normally absent (only 1-4 scales when present), and numerous short and a few moderately long setae are on the distal 0.81-0.93 of the dorsal surface.

Species of the Palpalis Assemblage have the cercus very long and narrow throughout its length but the proximal portion is somewhat expanded. *Aedes punctocostalis*, however, has a very long and narrow cercus, but it gradually increases in width from the apex to the base.

Published illustrations of female genitalia. Macfie and Ingram (1922), *Ae. lineatopennis*; Mattingly (1961), *Ae. lineatopennis*; Mohrig (1967), *Ae. luteolateralis*; Cornel (1991), *Ae. aurovenatus* Worth; and Lu (1997), *Ae. lineatopennis*.

SUBGENUS *PARAEDES* EDWARDS

(Figs. 29, 30)

Subgenus description. *Tergum VIII*. Proximal 0.70-1.00 retracted into segment VII; covered with minute spicules; moderately pigmented; base concave mesally; apex straight or slightly convex; without scales (except 0-2 scales in *Ae. chrysoscuta* Theobald); several to numerous short setae on distal 0.46-0.95; setae on apical margin short and slender, some species also with few moderately long, slender setae apically; basolateral seta present or absent (usually absent); VIII-Te index 0.56-1.12; VIII-Te/IX-Te index 1.67-2.70; length 0.15-0.28 mm; width 0.22-0.34 mm. *Sternum VIII*. Covered with minute spicules; moderately pigmented (*Ae. thailandensis* Reinert and *Ae. menoni* Mattingly with large, lightly pigmented, median area); base concave mesally; apex usually with moderately deep to deep (0.11-0.22 of VIII-S length), median emargination (*Ae. bonnae* Mattingly with minute, median indentation), and with small- to medium-sized lobe on each side of midline; greatest width at corners of apical margin; lateral margin more or less straight and tapering to narrower base; without scales (except 0-4 scales in *Ae. pagei* (Ludlow)); numerous short and few moderately long setae on distal 0.71-0.98; setae 1-3-S in more or less diagonal line, widely separated, 1-S basomesad but displaced somewhat from basal margin, 3-S apicolaterad; basolateral seta present or absent; apical, intersegmental membrane lightly pigmented; intersegmental membrane between segments VII and VIII moderately long to long; VIII-S index 0.54-0.98; length 0.17-0.33 mm; width 0.30-0.43 mm. *Tergum IX*. Covered with minute spicules; moderately pigmented; apex with small, median emargination or straight; 1-7 setae distally on each side of midline, 3-12 total setae; IX-Te index 0.56-1.04; length 0.06-0.13 mm; width 0.10-0.15 mm; dorsal spheres present. *Insula*. Covered with minute spicules; moderately pigmented; long; tongue-like; 2-7 very small to small tuberculi, each with minute spicule, tuberculi located about midlength. *Lower vaginal lip*. Covered with numerous minute to long spicules; moderately pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. *Upper vaginal lip*. Covered with short spicules; heavily pigmented; narrow; upper vaginal sclerite moderately to heavily pigmented, medium to large in size. *Spermathecal eminence*. Membranous; comprised of central, somewhat circular area with posterior portion expanded; with short, simple, spermathecal eminence spicules basomesally. *Postgenital lobe*. Covered with short spicules; moderately long; moderately wide; apex with minute to moderately deep (0.03-0.25 of dorsal length), median emargination; 4-13 setae on each side of midline, 4 of these moderately long to long, 9-26 total setae; basal mesal apodeme poorly to moderately developed; ventral PGL/Ce index 0.48-0.56; dorsal PGL index 0.72-1.09; ventral PGL index 1.20-1.79; ventral length 0.09-0.15 mm. *Proctiger*. Numerous minute to short spicules on entire area; membranous. *Cercus*. Covered with short spicules; moderately long; moderately wide; apex

sharply rounded and with 2,3 long, stouter setae; lateral margin bowed outward; dorsal surface without scales or few in number (3-11 scales in *Ae. barraudi* (Edwards); 0-5 scales in *Ae. bonneae*, *Ae. chrysoscuta*, and *Ae. ostentatio* (Leicester); 1-8 scales in *Ae. menoni*), with number of short and moderately long setae on distal 0.70-0.91; ventral surface with few short setae on outer margin; cercus index 2.15-3.48; Ce/dorsal PGL index 2.41-4.43; length 0.15-0.27 mm; width 0.07-0.09 mm. **Spermathecal capsule.** One large (one large and 2 medium in *Ae. barraudi* and *Ae. menoni*); heavily pigmented; spherical; several small, spermathecal capsule pores near orifice. **Accessory gland duct.** Basal area moderately to heavily pigmented.

Type species description (*Aedes barraudi*, Fig. 29). **Tergum VIII.** Proximal 0.90-0.95 retracted into segment VII; apex more or less straight; lateral margins somewhat jagged; without scales; numerous setae on distal 0.84-0.93 (some setae inserted outside pigmented area), setae on apical margin short and slender; basolateral seta absent; VIII-Te index 0.80-0.86; VIII-Te/IX-Te index 1.67-1.93; length 0.23-0.25 mm; width 0.26-0.31 mm. **Sternum VIII.** Apex with moderately deep (0.15-0.16 of VIII-S length), median emargination and medium-sized lobe on each side of midline; without scales; setae on distal 0.84-0.90; VIII-S index 0.88-0.95; length 0.32-0.33 mm; width 0.34-0.36 mm. **Tergum IX.** Apex with small, median emargination; 4-6 setae on each side of midline, 9-11 total setae; IX-Te index 0.84-1.00; length 0.12 mm; width 0.12-0.14 mm. **Insula.** With 5,6 small tuberculi. **Lower vaginal lip.** With numerous long spicules on basal 0.50-0.60. **Upper vaginal lip.** Upper vaginal sclerite medium in size. **Spermathecal eminence.** Comprised of central structure having caudolateral area expanded and posterior margin flat; with several short, simple, spermathecal eminence spicules. **Postgenital lobe.** Apex with moderately deep (0.09-0.14 of dorsal length), median emargination; 6-12 setae on each side of midline, 14-23 total setae; basal mesal apodeme poorly developed; ventral PGL/Ce index 0.54-0.55; dorsal PGL index 0.72-1.03; ventral PGL index 1.72; ventral length 0.13-0.14 mm. **Cercus.** With 2 long, stouter setae at apex; dorsal surface with 3-11 broad scales, setae on distal 0.81-0.87; cercus index 3.00-3.13; Ce/dorsal PGL index 3.03-4.43; length 0.24-0.26 mm; width 0.08 mm. **Spermathecal capsule.** One large and 2 medium.

Species assemblages within the subgenus based on morphological characters of the female genitalia.

I. Barraudi Assemblage (*Aedes barraudi*, Fig. 29). **Spermathecal capsules.** One large and 2 medium.

II. Ostentatio Assemblage (*Aedes ostentatio*, Fig. 30). **Spermathecal capsules.** Single large one.

Species examined.

I. Barraudi Assemblage. *Aedes barraudi* and *Ae. menoni*.

II. Ostentatio Assemblage. *Aedes bonneae*, *Ae. chrysoscuta*, *Ae. collessi* Mattingly, *Ae. ostentatio*, *Ae. pagei*, and *Ae. thailandensis*.

Discussion. The following combination of features is most distinctive for subgenus *Paraedes*: sternum VIII has the apex normally with a moderately deep, mesal emargination separating a pair of small- to medium-sized lobes, greatest width occurs at the corners of the apical margin, the lateral margin is nearly straight and tapers to a narrower base, scales are usually absent (1-4 scales present in one species), and seta 1-S is basomesal but is displaced somewhat from the basal margin; insula is tongue-like and has 2-7 very small to small tuberculi near the midlength; upper vaginal sclerite is medium to large; only a single large spermathecal capsule is present (except for two species with three spermathecal capsules); and cercus is moderately long and moderately wide, the apex is sharply rounded and the lateral margins are bowed outward.

Published illustrations of female genitalia. Mattingly (1958a), *Ae. bonneae*, *Ae. collessi*, and *Ae. pagei*; Mattingly (1958b), *Ae. menoni*; Reinert (1976a), *Ae. thailandensis*; Reinert (1981), *Ae. bonneae*, *Ae. chrysoscuta*, *Ae. collessi*, *Ae. menoni*, *Ae. ostentatio*, *Ae. pagei*, and *Ae. thailandensis*; and Tewari and Hiriyan (1994), *Ae. barraudi*.

SUBGENUS *PSEUDARMIGERES* STONE AND KNIGHT

(Fig. 31)

Subgenus description. *Tergum VIII.* Proximal 0.70-1.00 retracted into segment VII; covered with minute to short spicules; heavily pigmented; base moderately concave; apex straight to slightly concave; more or less trapezoidal but with basolateral corners narrower and projecting outward; numerous broad scales covering distal 0.24-0.59; several short and few moderately long setae on distal 0.18-0.42; apical margin with few long, stout setae; basolateral seta present and inserted very near basal margin of sclerotized area; VIII-Te index 0.50-0.64; VIII-Te/IX-Te index 1.54-3.64; length 0.19-0.26 mm; width 0.34-0.45 mm. *Sternum VIII.* Covered with minute to short spicules; heavily pigmented; base concave mesally; apex straight on lateral areas and with small to moderately deep (0.03-0.14 of VIII-S length), median emargination; numerous broad scales covering distal 0.80-0.93; few short and moderately long setae on distal 0.85-0.94; apical margin with short setae, approximately 50 percent of setae with curved tips; setae 1-4-S in somewhat diagonal line, 1-S basad and 4-S apicolaterad; basolateral seta usually present and inserted very near basal margin of sclerotized area; apical, intersegmental membrane mostly heavily pigmented and remainder lightly pigmented; intersegmental membrane between segments VII and VIII moderately long; VIII-S index 0.61-0.76; length 0.25-0.36 mm; width 0.39-0.50 mm. *Tergum IX.* Covered with minute spicules; heavily pigmented throughout; apex with moderately deep and wide, median emargination; 1-6 short setae distally on each side of midline, 2-12 total setae; IX-Te index 0.81-1.21; length 0.10-0.15 mm; width 0.10-0.17 mm; dorsal spheres present. *Insula.* Covered with minute spicules; moderately pigmented; long; tongue-like; 4-6 small tuberculi on apical 0.20-0.28. *Lower vaginal lip.* Covered with short spicules; moderately pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. *Upper vaginal lip.* Covered with short spicules; heavily pigmented; narrow; posterior margin flat; upper vaginal sclerite large, heavily pigmented, fenestrated. *Spermathecal eminence.* Membranous; nonpigmented; somewhat diamond- or ovoid-shaped in outline; basomesal area with patch of minute or short, simple, spermathecal eminence spicules. *Postgenital lobe.* Covered with short spicules; moderately long; narrow; apex normally with moderately deep to deep (0.15-0.37 of dorsal length, except 0.04 in *Ae. natalensis* Edwards), median, V-shaped emargination; basal mesal apodeme moderately to well developed; 4-13 setae on each side of midline, 9-26 total setae; ventral PGL/Ce index 0.62-0.80; dorsal PGL index 0.72-1.08, ventral PGL index 1.42-2.09; ventral length 0.09-0.14 mm. *Proctiger.* Few minute spicules scattered over surface; membranous. *Cercus.* Covered with minute spicules; short; wide; apex broadly rounded; dorsal surface with 0-4 (usually absent) moderately broad scales, several short setae on distal 0.60-0.69; 6-8 long stout and several short, slender setae on apex and distal 0.17-0.28; ventral surface with few short setae along outer and apical margins; cercus index 1.50-1.86; Ce/dorsal PGL index 2.10-3.00; length 0.14-0.19 mm; width 0.08-0.12 mm. *Spermathecal capsules.* One large and 2 medium; heavily pigmented; spherical; several small, spermathecal capsule pores near orifice. *Accessory gland duct.* Basal area lightly pigmented.

Type species description (*Aedes argenteoventralis dunni* Evans, Fig. 31). *Tergum VIII.* Apex straight; scales on distal 0.27-0.43; setae on distal 0.18-0.29; VIII-Te index 0.50-0.54; VIII-Te/IX-Te index 1.54-1.85; length 0.19-0.20 mm; width 0.35-0.39 mm. *Sternum VIII.* Apex with small (0.03-0.05 of VIII-S length), median emargination; scales on distal 0.89-0.90; setae on distal 0.87-0.94; basolateral seta present; VIII-S index 0.61-0.68; length 0.25-0.28 mm; width 0.41-0.42 mm. *Tergum IX.* With 1,2 setae on each side of midline, 2,3 total setae; IX-Te index 1.02-1.15; length 0.10-0.13 mm; width 0.10-0.13 mm. *Spermathecal eminence.* Somewhat ovoid-shaped with narrow, lateral and posterolateral, upraised areas; spermathecal eminence spicules short. *Postgenital lobe.* Apex with moderately deep (0.15-0.23 of dorsal length), median emargination; 4-6 setae on each side of midline, 9-15 total setae; ventral PGL/Ce index 0.62-0.68; dorsal PGL

index 0.77-0.96; ventral PGL index 1.42-1.52; ventral length 0.14-0.16 mm. **Cercus.** Dorsal surface normally without scales (one specimen with 1-4 scales), with setae on distal 0.61-0.69; cercus index 1.71-1.82; Ce/dorsal PGL index 2.35-3.00; length 0.14-0.16 mm; width 0.08-0.09 mm.

Species examined. *Aedes albomarginatus* (Newstead), *Ae. argenteoventralis argenteoventralis* (Theobald), *Ae. argenteoventralis dunni*, *Ae. kummi* Edwards, and *Ae. natalensis*.

Discussion. *Aedes argenteoventralis dunni* Evans is the type of subgenus *Pseudarmigeres*, a new name for subgenus *Dunnius* Edwards that was proposed by Stone and Knight (1956). Evans (1928) originally described *dunni* as a variety of *albomarginatus*; however, Edwards (1930) transferred variety *dunni* to *Ae. argenteoventralis*. White (1975) changed the status of *dunni* from a variety to a subspecies of *Ae. argenteoventralis*.

The following combination of features is most distinctive for subgenus *Pseudarmigeres*: sternum VIII is heavily pigmented, the base is slightly concave on the mesal area and the basolateral seta is inserted very near the basal margin of the sclerotized area, the apex is straight on the lateral areas and has a small to moderately deep, median emargination, and approximately 50 percent of the apical setae have curved tips, broad scales are numerous and densely covering the distal 0.80-0.93, and most of the apical, intersegmental membrane is heavily pigmented; tergum IX is heavily pigmented throughout, the apex has a moderately deep and wide, median emargination, and has 1-6 short setae distally on each side of the midline; upper vaginal sclerite is large, heavily pigmented, and fenestrated; postgenital lobe is moderately long and narrow, and the apex has a moderately deep (except shallow in *Ae. natalensis*), median, V-shaped emargination; cercus is short and wide, the apex is broadly rounded and has 7,8 long, stout setae and several short, slender setae on the distal area, and scales are usually absent (only 1-4 scales when present).

Species of *Pseudarmigeres* have the basolateral seta of tergum VIII inserted very near the basal margin of the sclerotized area which is similar to species of genus *Zeugomyia* Leicester (see Reinert 2000g) and *Ae. (Stg.) chemulpoensis*. *Huaedes* has the basolateral seta of tergum VIII inserted on the membrane anterior to the basal margin of the sclerotized area.

SUBGENUS SCUTOMYIA THEOBALD

(Fig. 32)

Subgenus description. **Tergum VIII.** Proximal 0.55-0.80 retracted into segment VII; covered with minute spicules; moderately to heavily pigmented; base gently concave; apex nearly straight to gently convex; numerous broad scales on distal 0.22-0.79 (distal 0.22-0.50 in all species except *Ae. boharti* Knight and Rozeboom (distal 0.79) and *Ae. pseudalbolineatus* Brug (distal 0.65)); several short setae on distal 0.19-0.40; apex with several short and few moderately long, stouter setae; basolateral seta present or absent (usually absent); VIII-Te index 0.45-0.60; VIII-Te/IX-Te index 1.82-2.97; length 0.19-0.26 mm; width 0.35-0.49 mm. **Sternum VIII.** Covered with minute spicules; moderately to heavily pigmented; base broadly and moderately concave; apex normally gently sloping from lateroapical corners to midline; number of broad scales on distal 0.69-0.90; short and few moderately long setae on distal 0.75-0.89; apical margin with numerous short and several moderately long, stouter setae; 1-3-S in somewhat curved line from basomedian area to lateroapical area, 1-S inserted mesally near basal margin, 1,2-S with bases close together, 3-S widely separated distally from 1,2-S; basolateral seta absent (present in one specimen of *Ae. hoogstraali* Knight and Rozeboom); apical, intersegmental membrane heavily pigmented; intersegmental membrane between segments VII and VIII short; VIII-S index 0.61-0.70; length 0.26-0.30 mm; width 0.37-0.47 mm. **Tergum IX.** Covered with minute spicules; moderately to heavily pigmented; apex with moderately deep, median emargination and with 3-8 (usually 3-6) setae distally on each side of midline, 6-16 (usually 6-12) total setae; base slightly

concave; IX-Te index 0.56-0.97 (usually 0.56-0.66); length 0.08-0.12 mm; width 0.12-0.16 mm; dorsal spheres present. **Insula.** Covered with minute spicules; moderately to heavily pigmented; tongue-like; 3-9 (usually 6-9) small tuberculi on apical 0.40, each with or without short spicule. **Lower vaginal lip.** Covered with short to moderately long spicules; moderately pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. **Upper vaginal lip.** Covered with short spicules; heavily pigmented; narrow; caudal margin straight; upper vaginal sclerite moderately to heavily pigmented, medium in size, fenestrated on caudal and mesal margins. **Spermathecal eminence.** Membranous; nonpigmented; with small, median longitudinal area of short to very short, simple, spermathecal eminence spicules near apices of upper vaginal sclerites. **Postgenital lobe.** Covered with short spicules; moderately long; moderately wide; apex sharply rounded, usually with minute to moderately deep (0.03-0.10 of dorsal length), V-shaped, median emargination; lateral margin gently and evenly tapering outward from relatively narrow apex to broader base; 8-11 setae on each side of midline, 17-22 total setae; basal mesal apodeme moderately to well developed; ventral PGL/Ce index 0.64-0.77; dorsal PGL index 0.80-1.13; ventral PGL index 1.57-1.92; ventral length 0.14-0.18 mm. **Proctiger.** Minute spicules scattered over entire surface; membranous. **Cercus.** Covered with short spicules; moderately long; moderately wide; apex rounded; dorsal surface without scales, with 4,5 moderately long and long, stouter setae on apical margin, several short and 2,3 moderately long setae on distal 0.42-0.66; ventral surface with few very short setae on distal portion of outer margins; cercus index 1.94-2.31; Ce/dorsal PGL index 2.42-2.97; length 0.14-0.18 mm; width 0.07-0.09 mm. **Spermathecal capsules.** One large and 2 medium; heavily pigmented; spherical; several small, spermathecal capsule pores near orifice. **Accessory gland duct.** Basal area heavily pigmented.

Type species description (*Aedes albolineatus* (Theobald), Fig. 32). **Tergum VIII.** Proximal 0.60-0.70 retracted into segment VII; scales on distal 0.40-0.50; setae on distal 0.27-0.40 (usually distal 0.40); VIII-Te index 0.52-0.54; VIII-Te/IX-Te index 2.08-3.13; length 0.19-0.26 mm (usually 0.19 mm); width 0.40-0.47 mm. **Sternum VIII.** Scales on distal 0.69-0.87; setae on distal 0.75-0.83; VIII-S index 0.61-0.70; length 0.26-0.29 mm; width 0.37-0.42 mm. **Tergum IX.** With 3-6 (usually 3-5) setae apically on each side of midline, 6-11 total setae; IX-Te index 0.57-0.73; length 0.08-0.09 mm; width 0.12-0.15 mm. **Insula.** With 6-9 (usually 6) tuberculi. **Postgenital lobe.** Apex with small to moderately deep (0.05-0.10 of dorsal length), median emargination; 9-11 setae on each side of midline, 19-21 total setae; ventral PGL/Ce index 0.68-0.75; dorsal PGL index 1.02-1.08; ventral PGL index 1.75-1.92; ventral length 0.16-0.17 mm. **Cercus.** Dorsal surface with setae on distal 0.60-0.79; cercus index 2.10-2.31; Ce/dorsal PGL index 2.39-2.58; length 0.16-0.17 mm; width 0.07 mm.

Species examined. *Aedes albolineatus*, *Ae. arboricola* Knight and Rozeboom, *Ae. boharti*, *Ae. hoogstraali*, *Ae. laffooni* Knight and Rozeboom, *Ae. platylepidus* Knight and Hull, and *Ae. pseudalbolineatus*.

Discussion. The following combination of features is most distinctive for subgenus *Scutomyia*: tergum VIII is noticeably wider than long, the apex has several short and a few moderately long, stouter setae, numerous broad scales are on the distal 0.22-0.79 (distal 0.22-0.50 in all species except two), and a few short setae are on the distal 0.19-0.40; sternum VIII has the base broadly and moderately concave, the apex has numerous short and several moderately long, stouter setae, and is normally gently sloping from the lateroapical corners to the midline, numerous broad scales are on most of the distal 0.69-0.90, and seta 1-S is inserted mesally near the basal margin, bases of setae 1,2-S are close together, and seta 3-S is widely separated distally from setae 1,2-S; postgenital lobe is moderately long, moderately wide, and the lateral margins are evenly and gently tapered outward from a relatively narrow apex to a broader base; cercus is moderately long and moderately wide, apex is rounded and has a few long and a few moderately long, stouter setae, and scales are absent from the dorsal surface.

Species of the subgenus are quite uniform in characters of the female genitalia; however, most species differ from each other based on a combination of features. Tergum VIII of *Scutomyia* is somewhat similar to species of *Aztecaedes* Zavortink, *Chaetocrucomyia* Theobald, some *Finlaya*

Theobald, *Macleaya* Theobald, *Protomacleaya* Theobald, and African *Diceromyia*. Female genitalia of *Scutomyia* are most similar to those of African *Diceromyia* but differ in the development of the cercus, tergum IX, and postgenital lobe.

Published illustrations of female genitalia. Huang (1978a), *Ae. hoogstraali* and *Ae. impatibilis* (Walker); Huang (1978c), *Ae. laffooni* and *Ae. pseudalbolineatus*; and Huang (1979), *Ae. albolineatus*.

SUBGENUS *SKUSEA* THEOBALD

(Fig. 33)

Subgenus description. *Tergum VIII.* Proximal 0.85-1.00 retracted into segment VII; covered with short spicules; moderately pigmented with lightly pigmented lateral and apical areas; relatively large; base wide and gently concave; apex moderately wide and gently convex to straight and with few short, slender setae; without scales (one scale in one specimen); few short, slender setae on distal 0.14-0.26 (usually on distal 0.18); basolateral seta present and displaced mesad; VIII-Te index 0.54-0.60; VIII-Te/IX-Te index 2.49-2.76; length 0.26-0.29 mm; width 0.48-0.52 mm. *Sternum VIII.* Covered with short spicules; moderately pigmented; base very slightly concave mesally; apex with minute (0.02-0.04 of VIII-S length) and wide, median emargination, with small lobe on each side of midline, also with small lobe on apicolateral margin; distal part of lateral margin slightly bowed outward; scales present or absent, few in number (3-8) and when present located near middle of length; several short and several moderately long setae on distal 0.89-0.91; apical margin with several short, slender setae, those on median lobes shorter and stouter; setae 1-3-S in short, transverse, basal line, very long and stout; basolateral seta absent; apical, intersegmental membrane nonpigmented to lightly pigmented; intersegmental membrane between segments VII and VIII moderately long; VIII-S index 0.66-0.71; length 0.30-0.32 mm; width 0.44-0.48 mm. *Tergum IX.* Covered with short spicules; moderately pigmented with apicomedian and basomedian areas lightly pigmented; wrinkled; both apex and base concave; lateroapical areas expanded; 4-7 short, slender setae distally on each side of midline, 9-13 total setae; IX-Te index 0.67-0.71; length 0.10 mm; width 0.15-0.16 mm; dorsal spheres present. *Insula.* Covered with minute to short spicules; moderately pigmented; relatively small; tonguelike; 2-5 minute tuberculi on apical 0.80, 1,2 tuberculi often on intersegmental membrane slightly distad or laterad of insula, tuberculi often each with minute spicule. *Lower vaginal lip.* With few minute spicules along margins; moderately pigmented; wrinkled and presenting twisted appearance; lower vaginal sclerite absent; ventral tuft present. *Upper vaginal lip.* Covered with short spicules; moderately to heavily pigmented; wrinkled and presenting somewhat twisted appearance; upper vaginal sclerite absent. *Spermathecal eminence.* Membranous; nonpigmented; ill-defined; with few short, fine, lightly pigmented, poorly developed, spermathecal eminence spicules near midlength. *Postgenital lobe.* Covered with short spicules, but long, simple spicules on lateral margins; long; distal portion broad and lateral margins moderately concave giving apex flared, angular appearance; apex with minute to small (0.06-0.11 of dorsal length), median emargination; basal mesal apodeme small, heavily pigmented; 7-10 setae on each side of midline, 2,3 of these are moderately long, 14-17 total setae; ventral PGL/Ce index 0.72-0.78; dorsal PGL index 1.03-1.14; ventral PGL index 1.75-1.93; ventral length 0.12-0.13 mm. *Proctiger.* Numerous short spicules on entire surface; membranous. *Cercus.* Covered with short spicules; short; moderately wide; apex sharply rounded; inner margin slightly concave; proximal area slightly wrinkled; dorsal surface without scales, with few short setae on distal 0.52-0.60 and moderately long setae on apical area and margin; ventral surface with 1-3 short setae on apical margin; cercus index 2.14-2.35; Ce/dorsal PGL index 2.09-2.43; length 0.16-0.17 mm; width 0.07-0.08 mm. *Spermathecal capsules.* One large and 2 slightly smaller; heavily pigmented; spherical; several small, spermathecal capsule pores near orifice. *Accessory gland duct.* Basal area moderately pigmented, short.

Type species description (*Aedes pembaensis* Theobald, Fig. 33). The above description is that of the type species.

Species examined. *Aedes pembaensis*.

Discussion. A number of features of the female genitalia of *Skusea* are different from those of all other subgenera of *Aedes*.

The following combination of features is most distinctive for subgenus *Skusea*: tergum VIII is relatively large and moderately pigmented but with a narrow, apical strip and a large, lateral area that is lightly pigmented, the base is wide and gently concave, the apex is moderately wide, gently convex or straight and has a few short, slender setae, the distal 0.14-0.26 also has a few short, slender setae, and the basolateral seta is displaced mesad; sternum VIII has the base very slightly concave mesally, the apex has a minute, wide, median emargination separating a pair of small, median lobes, apex also with a small lobe on each side of the apicolateral margin, and with several, short, slender setae, the distal part of the lateral margin is slightly bowed outward, scales are present or absent (3-8 scales when present), and setae 1-3-S are very long, stout, and inserted in a short, transverse line near the basal margin; tergum IX is wrinkled, moderately pigmented but with the apicomeral and basomesal areas more lightly pigmented, the lateroapical area is expanded, and 4-7 short, slender setae are inserted distally on each side of the midline; insula is relatively small and has 2-5 minute tuberculi on the apical 0.80 but one or two of the tuberculi are often located on the intersegmental membrane slightly distad or laterad of the insula; both the lower and upper vaginal lips are narrow, wrinkled and present a twisted appearance, and the upper vaginal sclerite is absent; postgenital lobe is long, the distal portion is broad and the lateral margins are moderately concave giving the apex a flared, angular appearance, and the apex has a minute to small, median emargination; and cercus is short, moderately wide, apex is sharply rounded, inner margin is slightly concave, proximal area is slightly wrinkled, and the dorsal surface has a few short setae on the distal 0.52-0.60, but scales are absent.

Published illustrations of female genitalia. Mohrig (1967), *Ae. pembaensis* and *Ae. species*.

SUBGENUS *STEGOMYIA* THEOBALD

(Figs. 34-41)

Subgenus description. *Tergum VIII.* Proximal 0.10-1.00 retracted into segment VII; covered with minute spicules; moderately to very heavily pigmented; base nearly straight to moderately concave; apex straight to slightly convex; few to numerous broad scales on distal 0.11-0.98 (scales usually on distal 0.46-0.85; Pandani Assemblage and some specimens of *Ae. aegypti* with scales usually on distal 0.11-0.59); several short setae on distal 0.21-0.85 (setae usually on distal 0.44-0.76); apex with several short and moderately long and few long setae; basolateral seta present or absent; VIII-Te index 0.52-0.88; VIII-Te/IX-Te index 1.43-3.13 (3.64-4.39 in *Ae. desmotes* (Giles)); length 0.18-0.36 mm; width 0.27-0.49 mm. *Sternum VIII.* Covered with minute spicules; moderately to very heavily pigmented; base slightly to moderately concave; apex with moderately deep to deep (0.05-0.22 of VIII-S length), median emargination and broadly rounded lobe on each side of midline (some species with small, sharply rounded lobe on each side of midline); numerous broad scales covering most of distal 0.62-0.97 (*Ae. agrihanensis* Bohart and *Ae. saipanensis* Stone with scales on distal 0.38-0.45; *Ae. aegypti* and *Ae. chemulpoensis* Yamada with median, distal area not scaled); short setae scattered over distal 0.64-0.95; apical margin with short setae; 1-4(-5)-S moderately long to long, usually in more or less diagonal line, 1-S basomesad (0.65 from apex in *Ae. desmotes*), 4(5)-S apicolaterad; basolateral seta present or absent; apical, intersegmental membrane heavily pigmented; intersegmental membrane between segments VII and VIII short to moderately long; VIII-S index 0.60-0.98 (0.49 in *Ae. agrihanensis*); length 0.22-0.38 mm; width 0.29-0.51 mm. *Tergum IX.* Covered with minute spicules; moderately to very heavily pigmented; apex normally with

moderately deep to deep, median emargination and with 2-10 (usually 3-6) short setae distally on each side of midline, 4-20 (usually 6-12) total setae; IX-Te index 0.39-1.35 (0.39-0.46 in *Ae. desmotes*); length 0.06-0.19 mm; width 0.11-0.22 mm; dorsal spheres present. **Insula.** Covered with minute spicules; moderately to heavily pigmented; tongue-like; 1-15 (usually 4-10) very small to small tuberculi on apical 0.30-0.50, each usually with minute to short spicule. **Lower vaginal lip.** Covered with short to long (long and stout in some species) spicules; moderately to heavily pigmented; narrow; lower vaginal sclerite absent; ventral tuft present. **Upper vaginal lip.** Covered with short spicules; heavily to very heavily pigmented; narrow; upper vaginal sclerite moderately pigmented, medium in size, almost always fenestrated (usually on caudal margin but often also on cephalic margin). **Spermathecal eminence.** Membranous; nonpigmented; with small, median, longitudinal area of short to very short, simple, spermathecal eminence spicules near apices of upper vaginal sclerites. **Postgenital lobe.** Covered with short spicules; moderately long; moderately wide; apex broadly rounded, straight or with minute to moderately deep (0.02-0.20 of dorsal length; *Ae. ruwenzori* Haddow and van Someren 0.32), median emargination; basal mesal apodeme well developed (moderately developed in *Ae. desmotes*); 4-22 (usually 6-13) setae on each side of midline, 8-42 total setae; ventral PGL/Ce index 0.54-0.83; dorsal PGL index 0.58-1.25; ventral PGL index 1.07-2.12; ventral length 0.07-0.13 mm. **Proctiger.** Minute spicules scattered over entire surface; membranous. **Cercus.** Covered with short spicules; short to moderately long (longer in Simpsoni and Pandani Assemblages); moderately wide to wide; apex broadly rounded or nearly truncate; dorsal surface with numerous broad scales or few broad scales or 0-7 moderately broad scales, and numerous short and very few moderately long setae on distal 0.43-0.92; apical margin with 4-6 moderately long to long, stouter setae; ventral surface with few very short setae on distal part of outer margin; cercus index 1.37-2.71; Ce/dorsal PGL index 1.86-3.79; length 0.12-0.23 mm; width 0.07-0.11 mm. **Spermathecal capsules.** One large and 2 medium; heavily pigmented; spherical; several small, spermathecal capsule pores near orifice. **Accessory gland duct.** Basal area heavily pigmented.

Type species description (*Aedes aegypti* (Linnaeus), Fig. 34). **Tergum VIII.** Proximal 0.85-1.00 retracted into segment VII; moderately pigmented; base slightly concave; apex slightly convex; scales on distal 0.14-0.23 (some specimens with scales on distal 0.44-0.51); basolateral seta usually absent; VIII-Te index 0.61-0.76; VIII-Te/IX-Te index 1.57-1.75; length 0.21-0.28 mm; width 0.34-0.41 mm. **Sternum VIII.** Moderately pigmented; base moderately concave; apex with moderately deep (0.10-0.13 of VIII-S length), median emargination and broadly rounded lobe on each side of midline; broad scales on distal 0.72-0.90; setae on distal 0.87-0.91; 1-5-S in more or less diagonal line, 1-S basomesad, 5-S apicolaterad; basolateral seta usually absent; VIII-S index 0.69-0.77; length 0.29-0.33 mm; width 0.40-0.47 mm. **Tergum IX.** Moderately pigmented; apex with deep, median emargination and with 4-9 (usually 5-7) setae on each side of midline, 8-15 total setae; IX-Te index 0.80-0.94; length 0.13-0.16 mm; width 0.16-0.19 mm. **Insula.** With 1-5 (usually 1,2) small tuberculi. **Lower vaginal lip.** With moderately long and long spicules; heavily pigmented. **Upper vaginal lip.** Heavily pigmented; upper vaginal sclerite fenestrated on caudal area. **Postgenital lobe.** Apex with small to moderately deep (0.04-0.12 of dorsal length), median emargination (one specimen with apex flat); basal mesal apodeme well developed; 10-22 (usually 12-16) setae on each side of midline, 20-42 total setae; ventral PGL/Ce index 0.54-0.64; dorsal PGL index 0.64-0.91; ventral PGL index 1.30-1.47; ventral length 0.18-0.19 mm; width 0.09-0.10 mm. **Cercus.** Moderately long; moderately wide; apex broadly rounded; dorsal surface with number of broad scales on distal 0.75-0.83, setae on distal 0.80-0.83; cercus index 1.97-2.14; Ce/dorsal PGL index 2.42-3.55; length 0.18-0.19 mm; width 0.09-0.10 mm.

Species assemblages within the subgenus based on morphological characters of the female genitalia.

I. Aegypti Assemblage (*Aedes aegypti*, Fig. 34). **Tergum VIII.** Proximal 0.85-1.00 retracted into segment VII; moderately pigmented; dark scales on distal 0.14-0.23 (some specimens with scales on distal 0.44-0.51); setae on apical 0.63-0.75; VIII-Te index 0.61-0.76; length 0.21-0.28. **Sternum VIII.** Moderately pigmented; apex with moderately deep (0.10-0.13

of VIII-S length), median emargination and broadly rounded lobe on each side of midline; dark scales on distal 0.72-0.90; setae on distal 0.87-0.91; VIII-S index 0.69-0.77; width 0.40-0.47 mm. **Tergum IX.** Apex with deep, median emargination; 8-15 total setae; IX-Te index 0.80-0.94; length 0.13-0.16 mm; width 0.16-0.19 mm. **Postgenital lobe.** With 10-22 (usually 12-16) setae on each side of midline, 20-42 total setae. **Cercus.** Moderately long; moderately wide; apex bluntly rounded; dorsal surface with number of broad scales on distal 0.75-0.83; cercus index 1.97-2.14.

II. Africanus Assemblage (*Aedes africanus* (Theobald), Fig. 35). **Tergum VIII.** Proximal 0.30-0.75 retracted into segment VII; very heavily pigmented; dark and pale scales on distal 0.61-0.89; setae on distal 0.36-0.65; VIII-Te index 0.56-0.85; length 0.22-0.32 mm. **Sternum VIII.** Very heavily pigmented; apex with small or usually moderately deep (0.05-0.15 of VIII-S length), median emargination and broadly rounded lobe on each side of midline; dark and pale scales on apical 0.67-0.90; setae on apical 0.76-0.94; VIII-S index 0.60-0.88; width 0.37-0.51 (usually 0.44-0.46) mm. **Tergum IX.** Apex with moderately deep, median emargination; 4-18 (usually 6-9) total setae; IX-Te index 0.68-1.00; length 0.12-0.17 mm (usually 0.13-0.16 mm); width 0.14-0.19 mm. **Postgenital lobe.** With 5-13 (usually 8-13) setae on each side of midline, 10-25 total setae. **Cercus.** Moderately long; moderately wide; apex rounded; numerous broad scales on distal 0.65-0.86; cercus index 1.37-2.26.

III. Simpsoni Assemblage (*Aedes simpsoni* (Theobald), Fig. 36). **Tergum VIII.** Proximal 0.10-0.70 retracted into segment VII; heavily pigmented; numerous dark scales covering distal 0.65-0.81; setae on distal 0.21-0.72; VIII-Te index 0.61-0.88; length 0.23-0.36 mm. **Sternum VIII.** Heavily pigmented; apex with moderately deep (0.07-0.13 of VIII-S length), median emargination and broadly rounded lobe on each side of midline; numerous dark scales on distal 0.63-0.93; setae on distal 0.89-0.95; VIII-S index 0.61-0.97; width 0.36-0.46 mm. **Tergum IX.** Apex with deep, median emargination; 8-17 total setae; IX-Te index 0.72-1.35; length 0.13-0.19 mm; width 0.14-0.19 mm. **Postgenital lobe.** With 7-10 setae on each side of midline, 14-19 total setae. **Cercus.** Longer; moderately wide; apex rounded; numerous broad scales covering distal 0.71-0.89; cercus index 2.16-2.71.

IV. Chemulpoensis Assemblage (*Aedes chemulpoensis*, Fig. 37). **Tergum VIII.** Proximal 0.85-0.90 retracted into segment VII; very heavily pigmented; dark and pale scales on distal 0.31-0.49; setae on distal 0.49-0.54; VIII-Te index 0.53-0.59; length 0.26 mm. **Sternum VIII.** Very heavily pigmented; apex with moderately deep (0.08-0.13 of VIII-S length), median emargination and broad, gently rounded lobe on each side of midline; both dark and pale scales on distal 0.62-0.79; setae on distal 0.91-0.94; median, apical area with dense patch of short, curved setae; VIII-S index 0.64-0.73; width 0.45-0.52 mm. **Tergum IX.** Apex with moderately deep, median emargination; 15-20 total setae; base slightly concave; IX-Te index 0.67-0.74; length 0.14-0.16 mm; width 0.22 mm. **Postgenital lobe.** With 9-15 setae on each side of midline, 19-29 total setae. **Cercus.** Moderately long; wide; apex nearly truncate; distal 0.65 of outer margin expanded and broadly rounded; 0-7 broad scales on distal 0.74; cercus index 1.49-1.73.

V. Scutellaris Assemblage (*Aedes scutellaris* (Walker), Fig. 38). **Tergum VIII.** Proximal 0.80-1.00 retracted into segment VII; moderately pigmented; dark scales on distal 0.46-0.80; setae on distal 0.45-0.85 (usually distal 0.60-0.76); VIII-Te index 0.52-0.84; length 0.18-0.26 mm (usually 0.21-0.24 mm). **Sternum VIII.** Moderately to heavily pigmented; apex with moderately deep (0.11-0.19 of VIII-S length), median emargination and broadly rounded lobe on each side of midline; dark scales on distal 0.69-0.93 (usually 0.72-0.90); setae on distal 0.78-0.95; VIII-S index 0.64-0.94; width 0.31-0.45 mm (usually 0.35-0.40 mm). **Tergum IX.** Apex with moderately deep, median emargination; 4-14 total setae; IX-Te index 0.74-1.15; length 0.11-0.14 mm; width 0.11-0.17 mm. **Postgenital lobe.** With 7-20 (usually 10-14) setae on each side of midline, 15-30 total setae. **Cercus.** Moderately long; moderately wide; apex rounded; 0-7 (usually 0-4) moderately broad scales (*Ae. paullusi* Stone and Farner and *Ae. seatoi* Huang with numerous broad scales on distal 0.66-0.70); cercus index 1.58-2.23.

VI. W-albus Assemblage (*Aedes w-albus* (Theobald), Fig. 39). **Tergum VIII.** Proximal 0.40-0.80 retracted into segment VII; moderately to heavily pigmented; scales on distal 0.55-0.76; setae on distal 0.23-0.39; VIII-Te index 0.58-0.77; length 0.18-0.22 mm. **Sternum VIII.** Moderately to heavily pigmented; apex with moderately deep (0.08-0.16 of VIII-S length), median emargination and with short, broadly rounded lobe on each side of midline; scales on distal 0.81-0.87; setae on distal 0.80-0.92; VIII-S index 0.66-0.97 (usually 0.77-0.78); width 0.29-0.35 mm. **Tergum IX.** Apex with moderately deep, median indentation; 4-7 total setae; IX-Te index 0.54-0.83; length 0.07-0.13 mm; width 0.11-0.15 mm (usually 0.11-0.12 mm). **Postgenital lobe.** With 4-9 setae on each side of midline, 9-17 total setae. **Cercus.** Short to moderately long; wide; apex broadly rounded; 0-6 (usually 3-5) broad scales on distal 0.43-0.75; cercus index 1.49-1.90 (usually 1.64-1.68).

VII. Pandani Assemblage (*Aedes pandani*, Fig. 40). **Tergum VIII.** Proximal 0.60-0.75 retracted into segment VII; moderately pigmented; scales on median distal 0.25-0.59 (distal 0.11 in *Ae. agrihanensis*); setae on distal 0.44-0.65; VIII-Te index 0.64-0.84; length 0.24-0.29 mm. **Sternum VIII.** Moderately pigmented, except for a narrow, median, longitudinal, nonpigmented strip on distal 0.24-0.42 (entire length in *Ae. agrihanensis* and *Ae. saipanensis*); apex with moderately deep to deep (0.16-0.22 of VIII-S length), median emargination and broad, truncate lobe on each side of midline; median portion of lateral margin expanded and broadly rounded; scales on distal 0.72-0.80 (distal 0.38 and 0.45 in *Ae. agrihanensis* and *Ae. saipanensis*); setae on distal 0.77-0.86; VIII-S index 0.81-0.93 (0.49 in *Ae. agrihanensis*); width 0.38-0.47 mm. **Tergum IX.** Apex with moderately deep, median emargination; 9-14 total setae; IX-Te index 0.59-0.75 (0.90 in *Ae. saipanensis*); length 0.08-0.14 mm (usually 0.09-0.11 mm); width 0.13-0.18 mm (usually 0.14-0.16 mm). **Postgenital lobe.** With 10-18 setae on each side of midline, 21-35 total setae. **Cercus.** Longer; moderately wide but gently tapered to wide base; apex more or less sharply rounded; inner margin gently concave; 0-2 moderately broad scales; cercus index 2.00-2.62.

VIII. Desmotes Assemblage (*Aedes desmotes*, Fig. 41). **Tergum VIII.** Proximal 0.10-0.15 retracted into segment VII; very heavily pigmented; apex gently concave; base gently convex; basolateral area forming nearly right angle; numerous dark and pale scales densely covering distal 0.88-0.98; setae on distal 0.50-0.65; VIII-Te index 0.69-0.77; length 0.23-0.27 mm (usually 0.26-0.27 mm). **Sternum VIII.** Very heavily pigmented; apex with moderately deep (0.11-0.13 of VIII-S length), median emargination and short, narrow, sharply rounded lobe on each side of midline; numerous dark and few pale, broad scales densely covering distal 0.94-0.97; setae on distal 0.64-0.83; setae 1-4-S on distal 0.65; VIII-S index 0.92-1.06; width 0.32-0.35 mm. **Tergum IX.** Short; wide; apex with deep and broad, median emargination; 3-8 (usually 4-6) setae apically on each side of midline, 6-14 total setae; IX-Te index 0.39-0.46; length 0.06-0.07 mm; width 0.14-0.17 mm. **Postgenital lobe.** With 4-9 (usually 4,5) setae on each side of midline, 8-16 (usually 9) total setae. **Cercus.** Moderately long; wide; apex broadly rounded; number of broad scales on distal 0.39-0.63; cercus index 1.70-2.03.

Species examined.

I. Aegypti Assemblage. *Aedes aegypti*.

II. Africanus Assemblage. *Aedes africanus*, *Ae. angustus* Edwards, *Ae. apicoargenteus* (Theobald), *Ae. contiguus* Edwards, *Ae. heischii* van Someren, *Ae. luteocephalus* (Newstead), *Ae. metallicus* (Edwards), *Ae. ruwenzori*, *Ae. schwetzi* Edwards, and *Ae. soleatus* Edwards.

III. Simpsoni Assemblage. *Aedes bromeliae* (Theobald), *Ae. lilii* (Theobald), *Ae. simpsoni*, and *Ae. woodi* Edwards.

IV. Chemulpoensis Assemblage. *Aedes chemulpoensis*.

V. Scutellaris Assemblage. *Aedes alcasidi* Huang, *Ae. cooki* Belkin, *Ae. dybasi* Bohart, *Ae. flavopictus* Yamada, *Ae. guamensis* Farner and Bohart, *Ae. gurneyi* Stone and Bohart, *Ae. hakanssoni* Knight and Hurlbut, *Ae. hensilli* Farner, *Ae. kesseli* Huang and Hitchcock, *Ae. krombeini* Huang, *Ae. malayensis* Colless, *Ae. marshallensis* Stone and Bohart, *Ae. palauensis* Bohart, *Ae. paullusi*, *Ae. pernotatus* Farner and Bohart, *Ae. polynesiensis* Marks, *Ae. pseudoscutellaris* (Theobald), *Ae. quasiscutellaris* Farner and Bohart, *Ae. riversi* Bohart and

Ingram, *Ae. scutellaris*, *Ae. scutoscriptus* Bohart and Ingram, *Ae. seatoi*, *Ae. tongae* Edwards, *Ae. unilineatus* (Theobald), and *Ae. upolensis* Marks.

VI. W-albus Assemblage. *Aedes annandalei* (Theobald), *Ae. craggi* (Barraud), *Ae. gardnerii* (Ludlow), *Ae. mediopunctatus* (Theobald), *Ae. perplexus* (Leicester), and *Ae. w-albus*.

VII. Pandani Assemblage. *Aedes agrihanensis*, *Ae. neopandani* Bohart, *Ae. pandani*, *Ae. rotanus* Bohart and Ingram, and *Ae. saipanensis*.

VIII. Desmotes Assemblage. *Aedes desmotes*.

Discussion. *Aedes aegypti*, described by Linnaeus in 1762, is the type species of *Stegomyia*, and *Culex fasciatus* Fabricius, 1805, is a synonym. *Stegomyia* includes a large number of species confined primarily to the Afrotropical Region, Oriental Region, and Pacific islands. The female genitalia of the 53 species examined can be placed in eight Assemblages based primarily on differences in tergum VIII (shape and pigmentation), sternum VIII (shape, especially the apical lobes, and pigmentation), tergum IX (shape), and cercus (shape and amount of scaling). These Assemblages correlate closely with most of the species groups defined by Huang (1979). Edwards (1932) divided the subgenus *Stegomyia* into four groups (Aegypti, W-albus, Scutellaris, and Vittatus), Knight and Rozeboom (1946) created an additional Group (Albolineatus), Bohart (1957) designated two additional Groups (Pandani and Maehleri), and Belkin (1962) established the Edwardsi Group. Huang redefined the Scutellaris (1972) and W-albus Groups (1977a), and removed the Vittatus Group from *Stegomyia* (1977b). Reinert (1985) resurrected the subgenus *Scutomyia* for the Albolineatus Group and later placed *Ae. vittatus* in the new subgenus *Fredwardsius* (Reinert 2000a).

Certain of the Assemblages presented here deviate from the group classifications previously mentioned, that is, the Aegypti Group is divided into four Assemblages (Aegypti, Africanus, Simpsoni, and Chemulpoensis), the Scutellaris Group is the same as the Scutellaris Assemblage, the W-albus Group is divided into two Assemblages (W-albus and Desmotes), and the Pandani Group is the same as the Pandani Assemblage. No specimens of the Edwardsi and Maehleri Groups were examined.

Female genitalia of *Stegomyia* are most similar to those of *Diceromyia*; however, they differ primarily in the shapes of tergum VIII, sternum VIII, and tergum IX. Species of *Stegomyia*, within Assemblages, show considerable similarity, but many, if not most, can be identified to species based on features of the female genitalia.

The following combination of features is most distinctive for subgenus *Stegomyia*: sternum VIII is moderately to very heavily pigmented, it possesses a moderately deep to deep, median emargination that separates a pair of apical lobes, much of the surface is covered with scales and setae, and setae 1-4(-5)-S are moderately long to long and are usually in a more or less diagonal line extending from the basomedian area to the apicolateral area; tergum IX is moderately to heavily pigmented and has a moderately deep to deep, median emargination, and 2-10 (usually 3-6) short setae are distally on each side of the midline; upper vaginal lip is heavily pigmented and the sclerite is moderately pigmented, medium in size, and almost always fenestrated; and cercus is short to moderately long, moderately wide to wide, and usually has scales (at least a few).

Published illustrations of female genitalia. Macfie and Ingram (1922), *Ae. aegypti* and *Ae. unilineatus*; Martini (1930), *Ae. aegypti* (figure of *Ae. fasciatus*); Gerry (1932), *Ae. aegypti*; Edwards (1941), *Ae. aegypti*; Ross (1947), *Ae. aegypti*; LaCasse and Yamaguti (1950), *Ae. aegypti*, *Ae. albopictus* (Skuse), and *Ae. flavopictus*; Yamaguti and LaCasse (1951), *Ae. aegypti*; Hayes (1953), *Ae. aegypti*; Hara (1957a), *Ae. albopictus*; Hara (1957b), *Ae. aegypti*, *Ae. albopictus*, *Ae. flavopictus*, and *Ae. galloisi* Yamada; Christophers (1960), *Ae. aegypti*; Curtin and Jones (1961), *Ae. aegypti*; Clements (1963), *Ae. aegypti*; Spielman (1964), *Ae. aegypti*; Jones and Wheeler (1965a, 1965b), *Ae. aegypti*; Mattingly (1965), *Ae. aegypti*; Mohrig (1967), *Ae. aegypti*, *Ae. africanus*, *Ae. albopictus*, *Ae. cretinus* Edwards, *Ae. schwetzi*, and *Ae. scutellaris*; Jones (1968), *Ae. aegypti*; Jones and Sheffield (1970), *Ae. aegypti*; Ryazantseva (1970), *Ae. aegypti*; Laffoon and Knight (1971), *Ae. aegypti*; Huang (1971), *Ae. malayensis* (figure of *Ae.*

scutellaris malayensis); Huang (1972), *Ae. malayensis*; Huang (1974a), *Ae. amaltheus* de Meillon and Lavoipierre; Huang (1974b), *Ae. seampi* Huang; Ohmori and Banfield (1974), *Ae. aegypti*; Huang (1975a), *Ae. pseudoscutellaris*; Huang (1975b), *Ae. krombeini*; Rossignol and McIver (1977), *Ae. aegypti*; Huang (1977a), *Ae. annandalei*, *Ae. craggi*, *Ae. desmotes*, *Ae. edwardsi* (Barraud), *Ae. gardnerii gardnerii*, *Ae. mediopunctatus*, *Ae. perplexus*, *Ae. seampi*, and *Ae. w-albus*; Huang (1979), *Ae. aegypti*, *Ae. unilineatus*, and *Ae. krombeini*; Huang and Hitchcock (1980), *Ae. cooki*, *Ae. kesseli*, *Ae. tongae tabu*, and *Ae. tongae tongae*; Harbach and Knight (1980), *Ae. aegypti*; Huang (1981), *Ae. ledgeri* Huang; Lu (1982), *Ae. novalbopictus* Barraud; Lu and Li (1982), *Ae. albopictus*; Amerasinghe (1983), *Ae. novalbopictus*; Gillett (1983), *Ae. aegypti*; Lewis (1987), *Ae. aegypti*; Huang (1988a), *Ae. saimedres* Huang; Huang (1988b), *Ae. josiahae* Huang; Huang (1990), *Ae. africanus*, *Ae. corneti* Huang, *Ae. luteocephalus*, *Ae. maxgermaini* Huang, *Ae. neoaffricanus* Cornet, Valade and Dieng, *Ae. opok* Corbet and van Someren, *Ae. pseudoafricanus* Chwatt, and *Ae. ruwenzori* Haddow and van Someren; and Clements (1999), *Ae. aegypti*.

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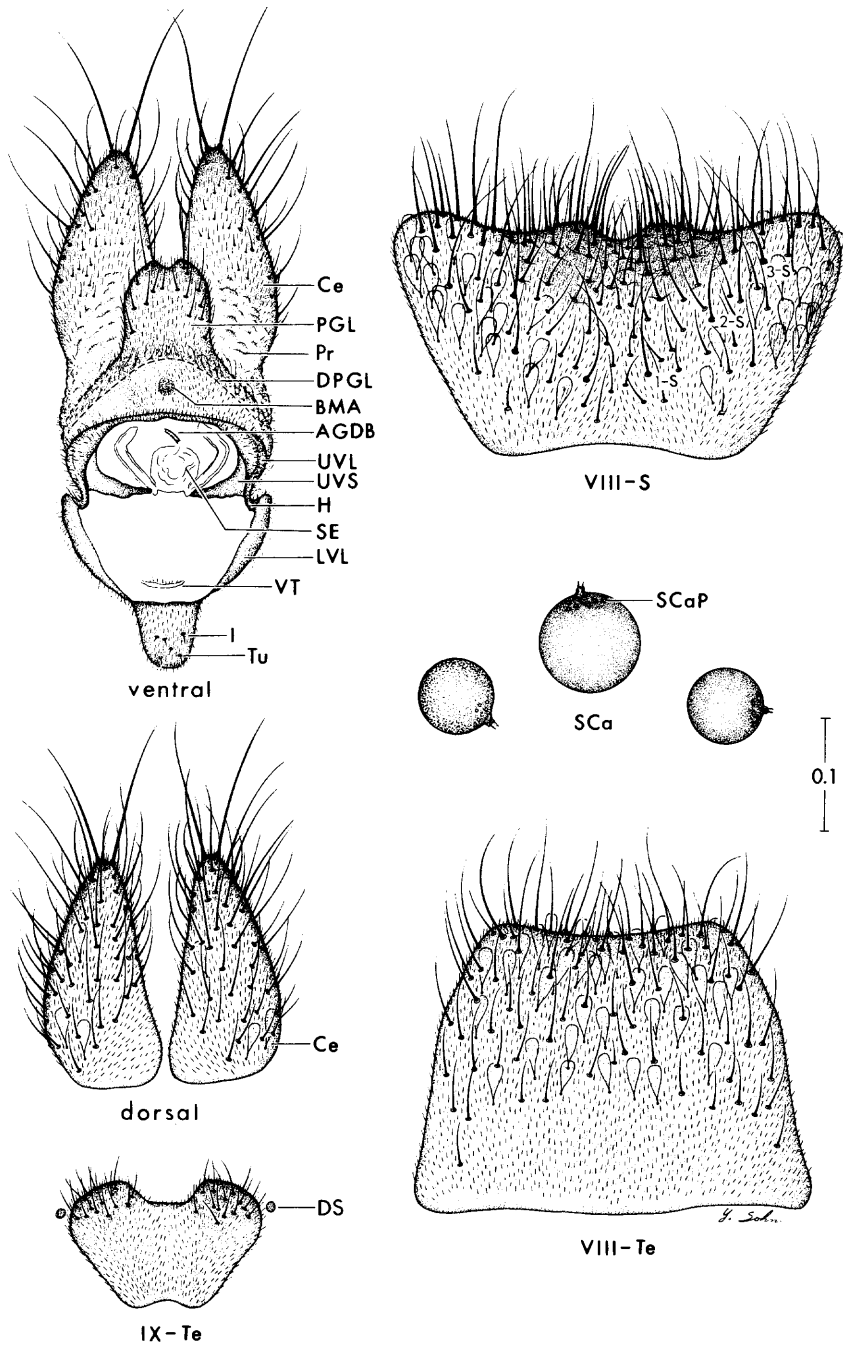
LIST OF FIGURES

- Figure 1. Female genitalia of *Aedes (Aedes) cinereus*.
Figure 2. Female genitalia of *Aedes (Aedimorphus) domesticus*.
Figure 3. Female genitalia of *Aedes (Aedimorphus) vexans*.
Figure 4. Female genitalia of *Aedes (Aedimorphus) mediolineatus*.
Figure 5. Female genitalia of *Aedes (Aedimorphus) pampangensis*.
Figure 6. Female genitalia of *Aedes (Aedimorphus) caecus*.
Figure 7. Female genitalia of *Aedes (Aedimorphus) taeniorhynchoides*.
Figure 8. Female genitalia of *Aedes (Aedimorphus) punctifemoris*.
Figure 9. Female genitalia of *Aedes (Aedimorphus) alboscuteclatus*.
Figure 10. Female genitalia of *Aedes (Aedimorphus) argenteopunctatus*.
Figure 11. Female genitalia of *Aedes (Alanstonea) brevitibia*.
Figure 12. Female genitalia of *Aedes (Albuginosus) marshallii*.
Figure 13. Female genitalia of *Aedes (Belkinius) aurotaeniatius*.
Figure 14. Female genitalia of *Aedes (Bothaella) helenae*.
Figure 15. Female genitalia of *Aedes (Cancraedes) cancricomis*.
Figure 16. Female genitalia of *Aedes (Christophersiomyia) thomsoni*.
Figure 17. Female genitalia of *Aedes (Diceromyia) furcifer*.
Figure 18. Female genitalia of *Aedes (Diceromyia) pseudonummatus*.
Figure 19. Female genitalia of *Aedes (Diceromyia) ramachandrai*.
Figure 20. Female genitalia of *Aedes (Edwardsaedes) imprimens*.
Figure 21. Female genitalia of *Aedes (Fredwardsius) vittatus*.
Figure 22. Female genitalia of *Aedes (Huaedes) wauensis*.
Figure 23. Female genitalia of *Aedes (Indusius) pulverulentus*.
Figure 24. Female genitalia of *Aedes (Isoaedes) cavaticus*.
Figure 25. Female genitalia of *Aedes (Leptosomatomyia) aurimargo*.
Figure 26. Female genitalia of *Aedes (Lorrainea) dasyorrrhus*.
Figure 27. Female genitalia of *Aedes (Neomelaniconion) palpalis*.
Figure 28. Female genitalia of *Aedes (Neomelaniconion) lineatopennis*.
Figure 29. Female genitalia of *Aedes (Paraedes) barraudi*.
Figure 30. Female genitalia of *Aedes (Paraedes) ostentatio*.
Figure 31. Female genitalia of *Aedes (Pseudarmigeres) argenteoventralis dunni*.
Figure 32. Female genitalia of *Aedes (Scutomyia) albolineatus*.
Figure 33. Female genitalia of *Aedes (Skusea) pembaensis*.
Figure 34. Female genitalia of *Aedes (Stegomyia) aegypti*.
Figure 35. Female genitalia of *Aedes (Stegomyia) africanus*.
Figure 36. Female genitalia of *Aedes (Stegomyia) simpsoni*.
Figure 37. Female genitalia of *Aedes (Stegomyia) chemulpoensis*.
Figure 38. Female genitalia of *Aedes (Stegomyia) scutellaris*.
Figure 39. Female genitalia of *Aedes (Stegomyia) w-albus*.
Figure 40. Female genitalia of *Aedes (Stegomyia) pandani*.
Figure 41. Female genitalia of *Aedes (Stegomyia) desmotes*.

LIST OF ABBREVIATIONS USED IN THE TEXT AND/OR FIGURES

AGDB	= accessory gland duct base
BLS	= basal lateral seta
BMA	= basal mesal apodeme
Ce	= cercus
DPGL	= line of attachment of Pr to dorsal surface of PGL
DS	= dorsal sphere
H	= hinge
I	= insula
IX-Te	= tergum IX
LVL	= lower vaginal lip
mm	= millimeter
PGL	= postgenital lobe
Pr	= proctiger
SCa	= spermathecal capsule
SCaP	= spermathecal capsule pore
SE	= spermathecal eminence
SES	= spermathecal eminence spicule
Tu	= tuberculus
UVL	= upper vaginal lip
UVS	= upper vaginal sclerite
VIII-S	= sternum VIII
VIII-Te	= tergum VIII
VT	= ventral tuft
1-5-S	= setae 1-5 of sternum VIII

Fig. 1



Aedes (Aedes) cinereus

Fig. 2

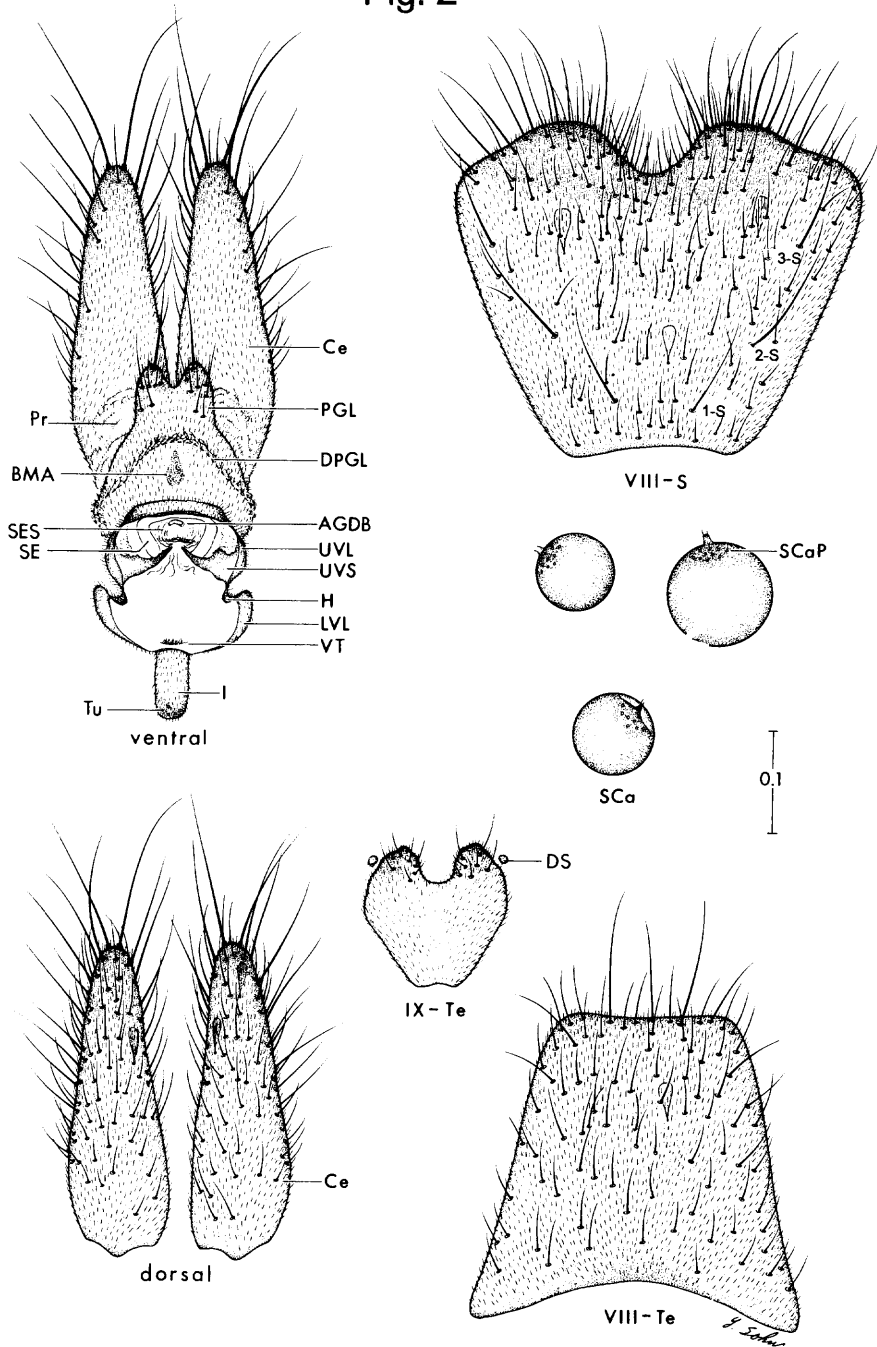

Aedes (Aedimorphus) domesticus

Fig. 3

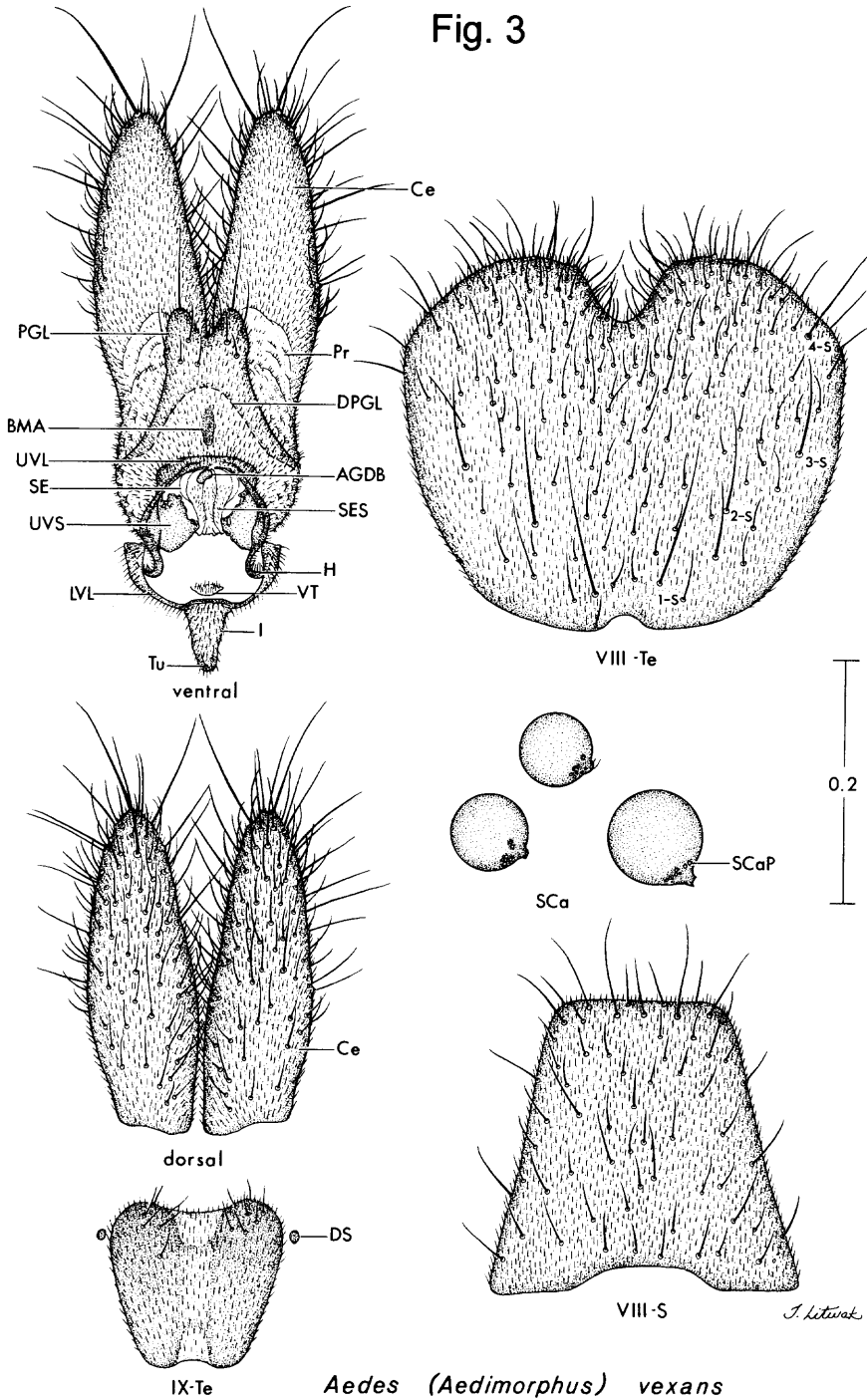
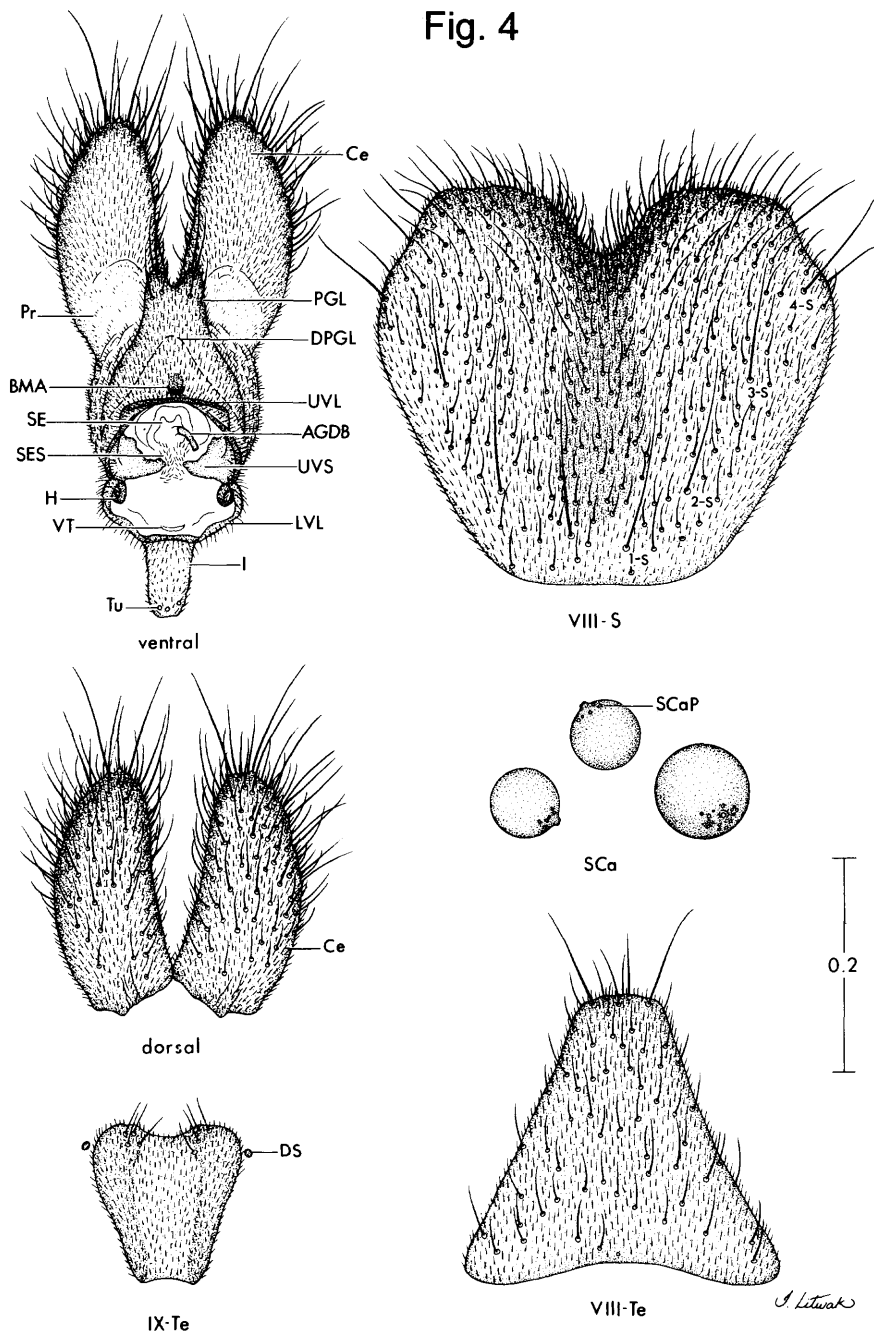


Fig. 4



Aedes (Aedimorphus) mediolineatus

Fig. 5

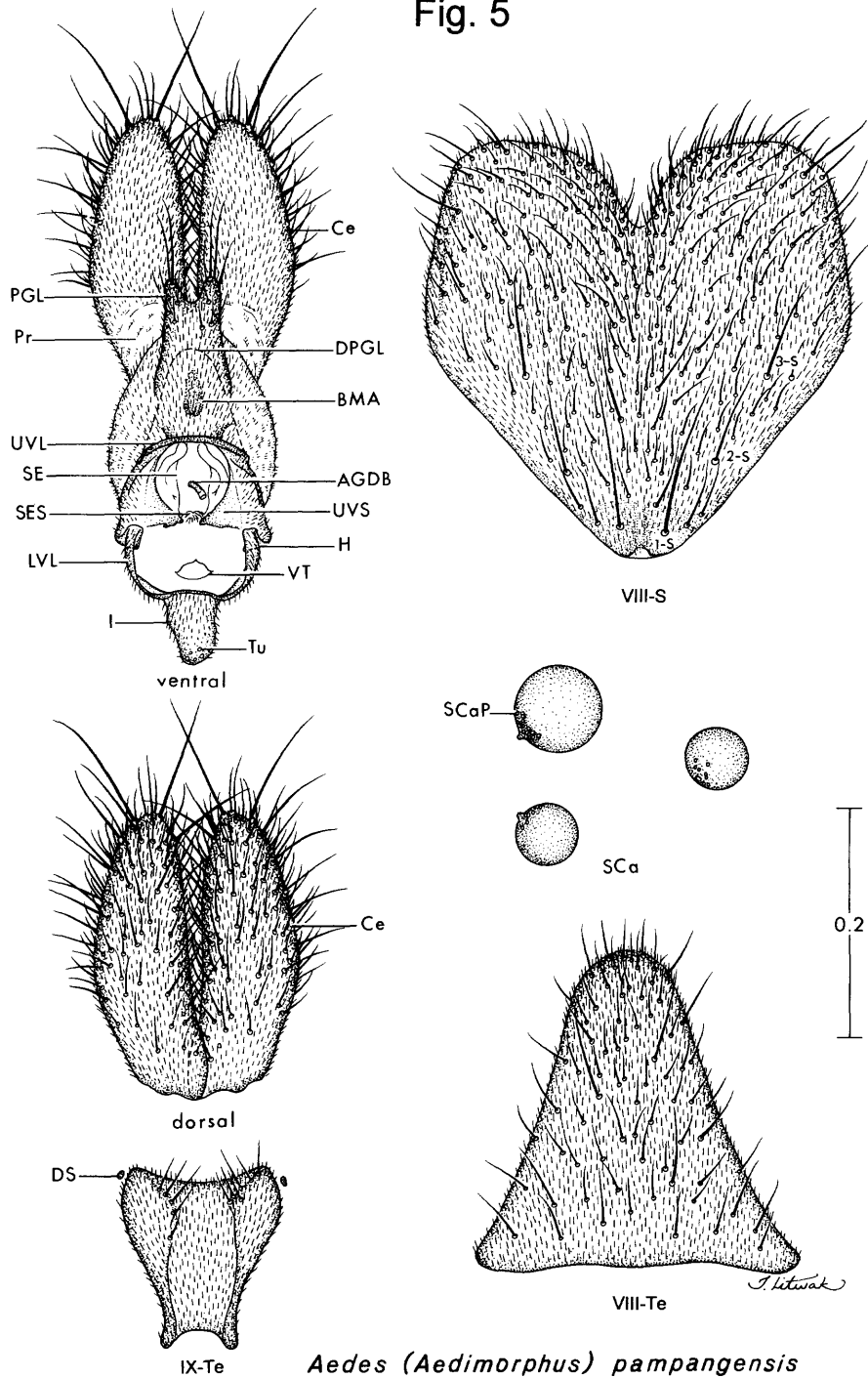
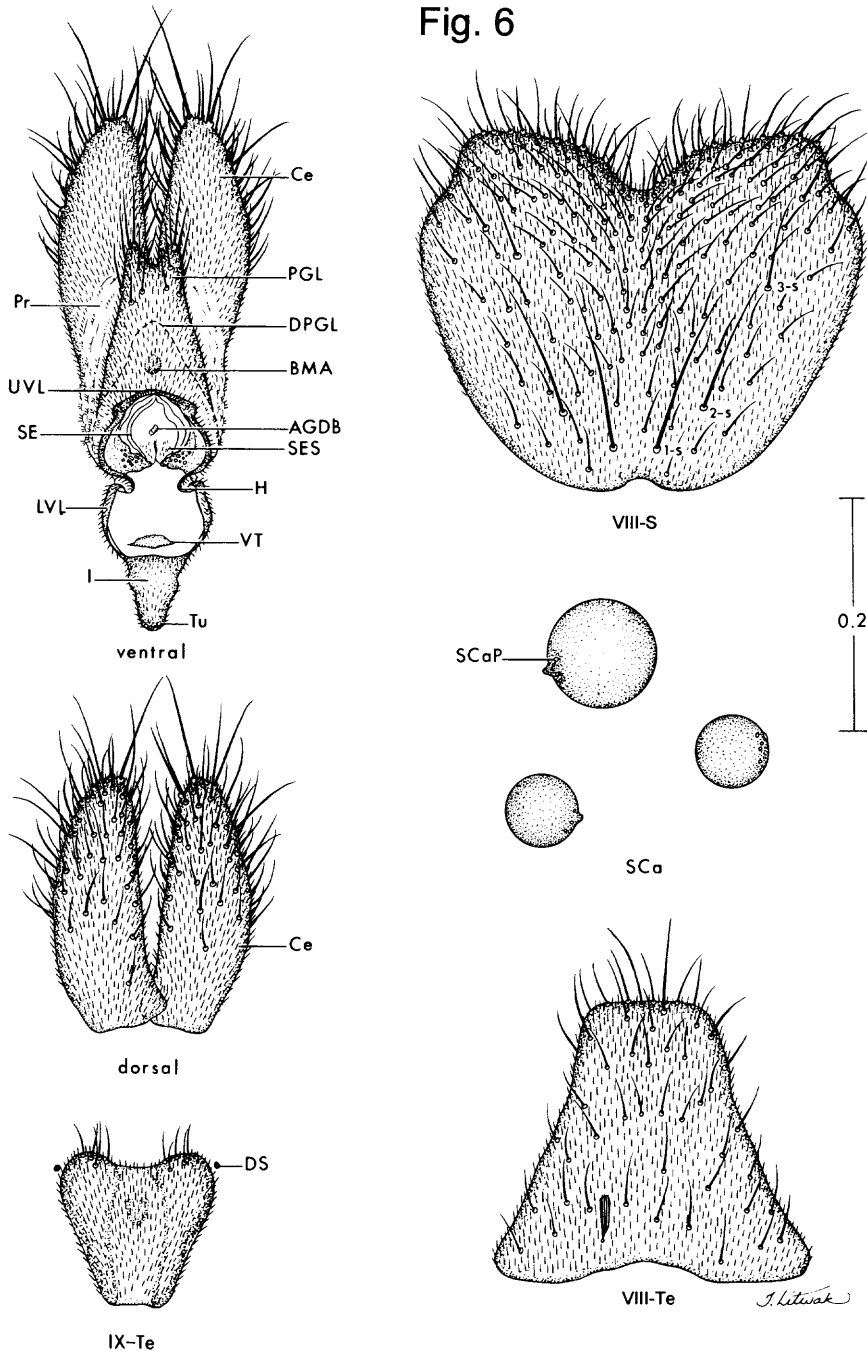


Fig. 6



Aedes (Aedimorphus) caecus

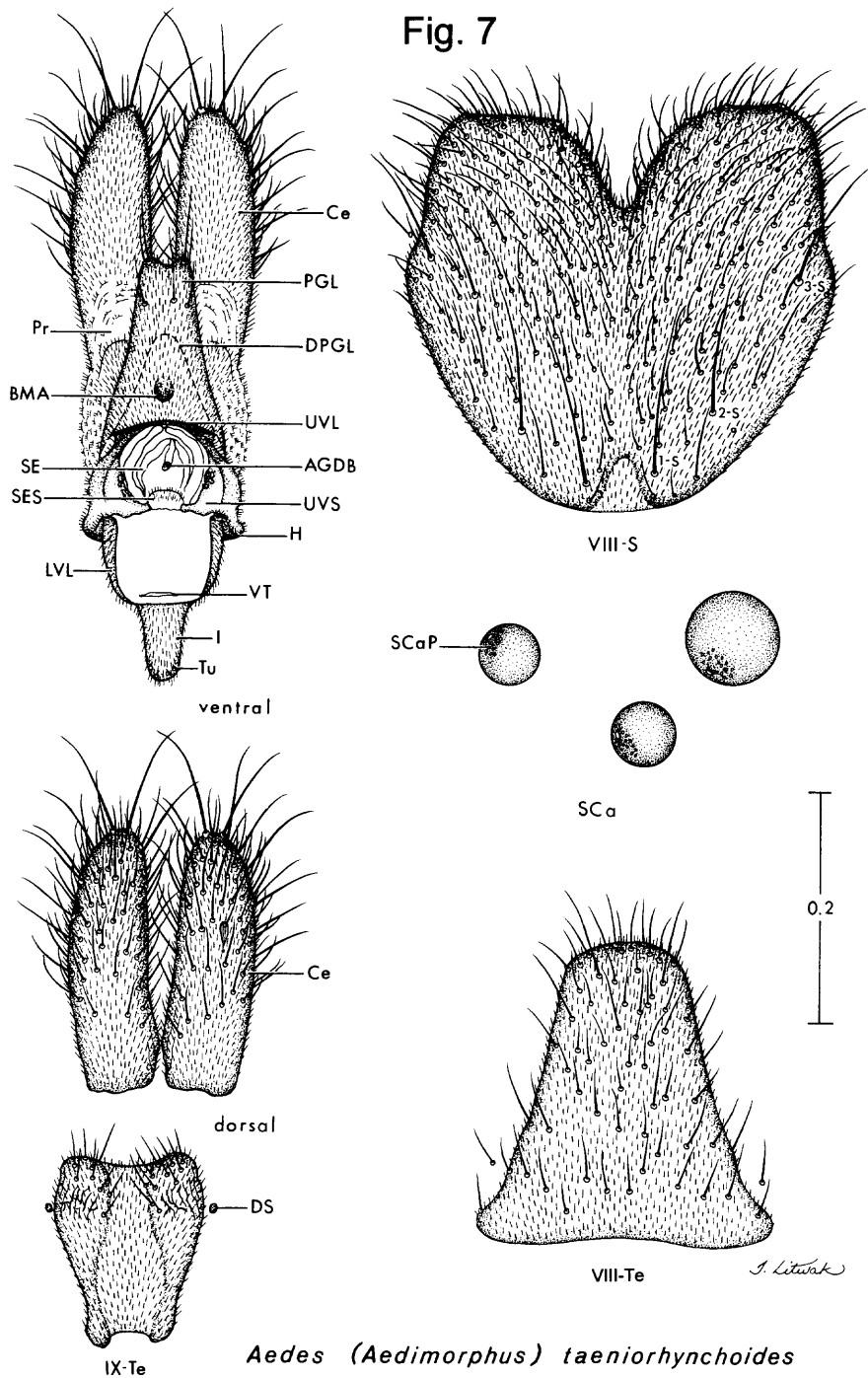


Fig. 8

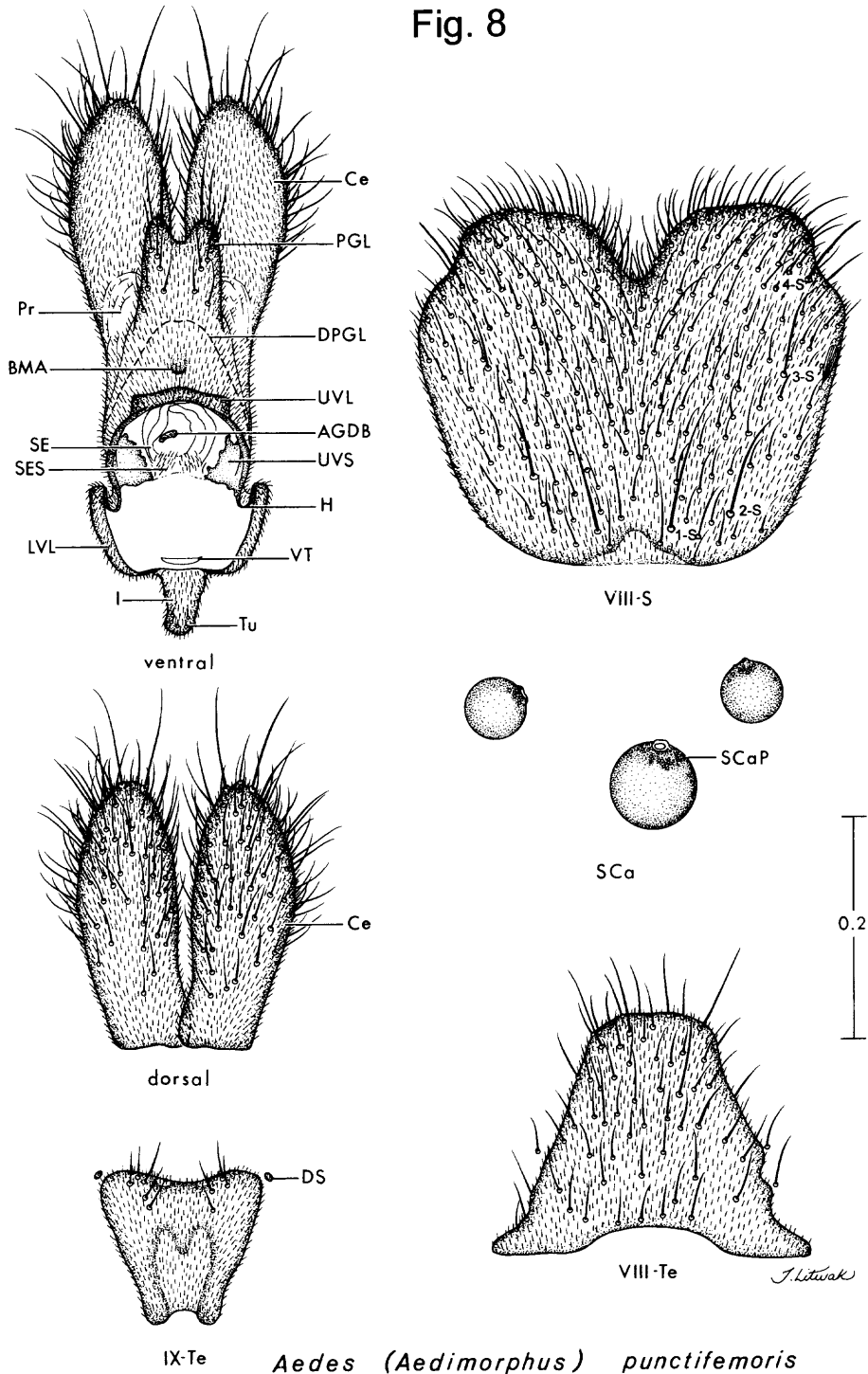
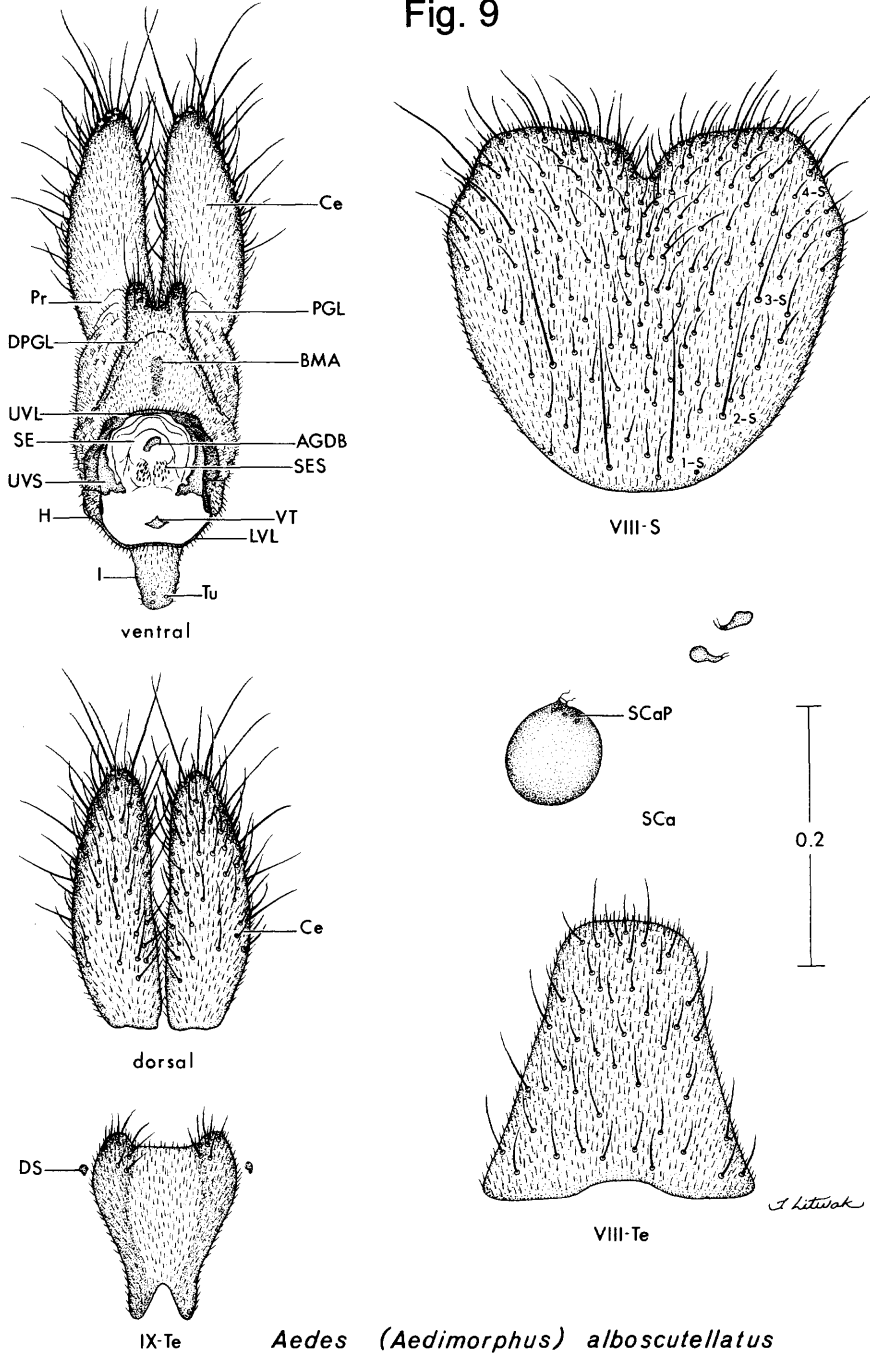
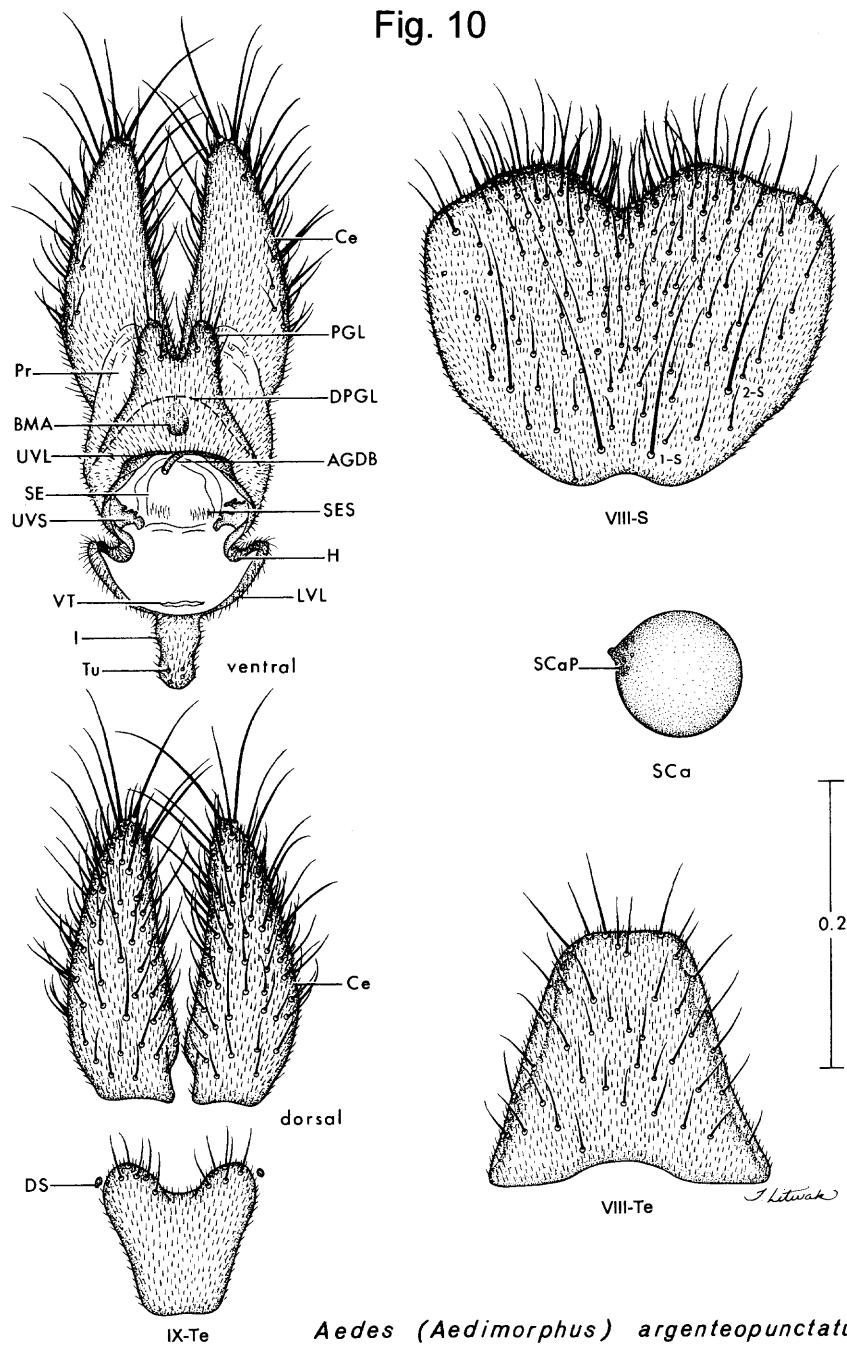


Fig. 9



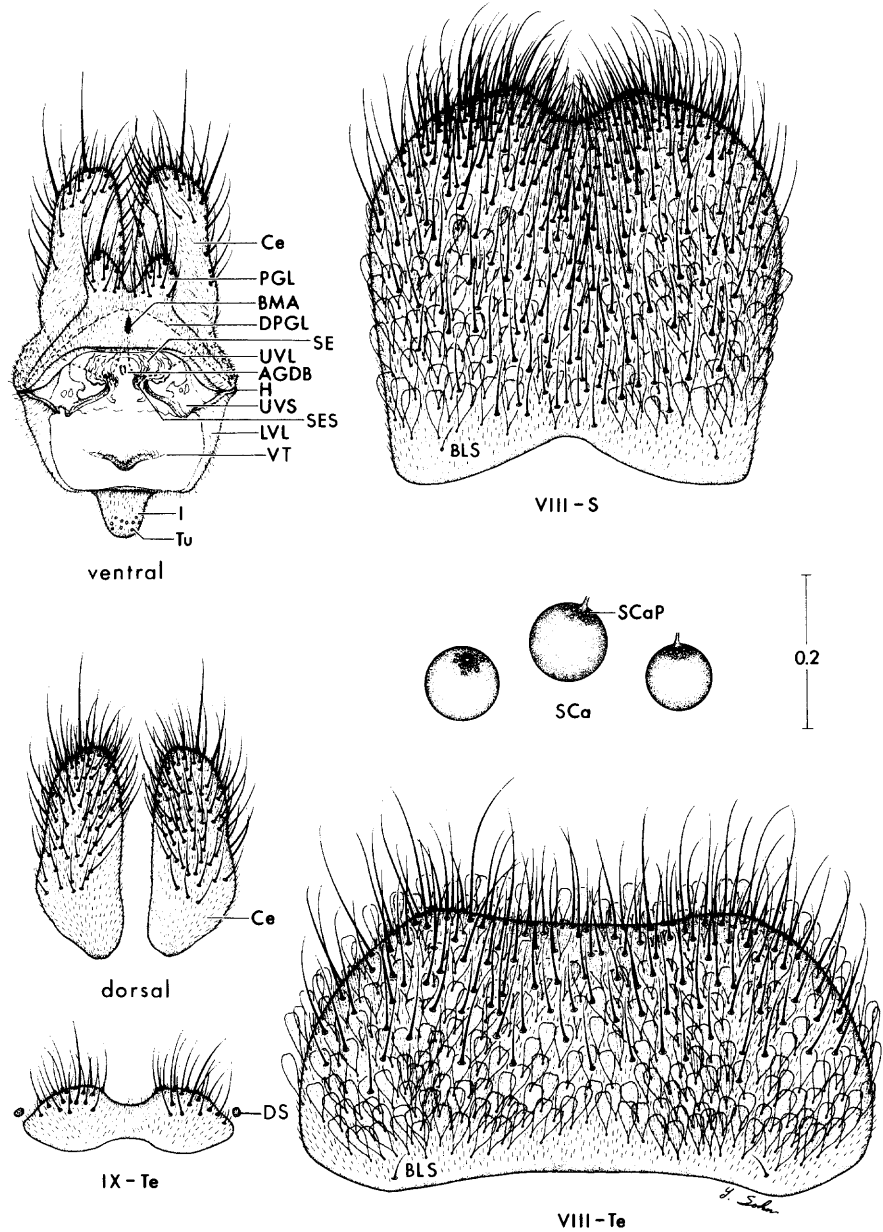
Aedes (Aedimorphus) alboscuteallatus

Fig. 10



Aedes (Aedimorphus) argenteopunctatus

Fig. 11



Aedes (Alanstonea) brevitibia

Fig. 12

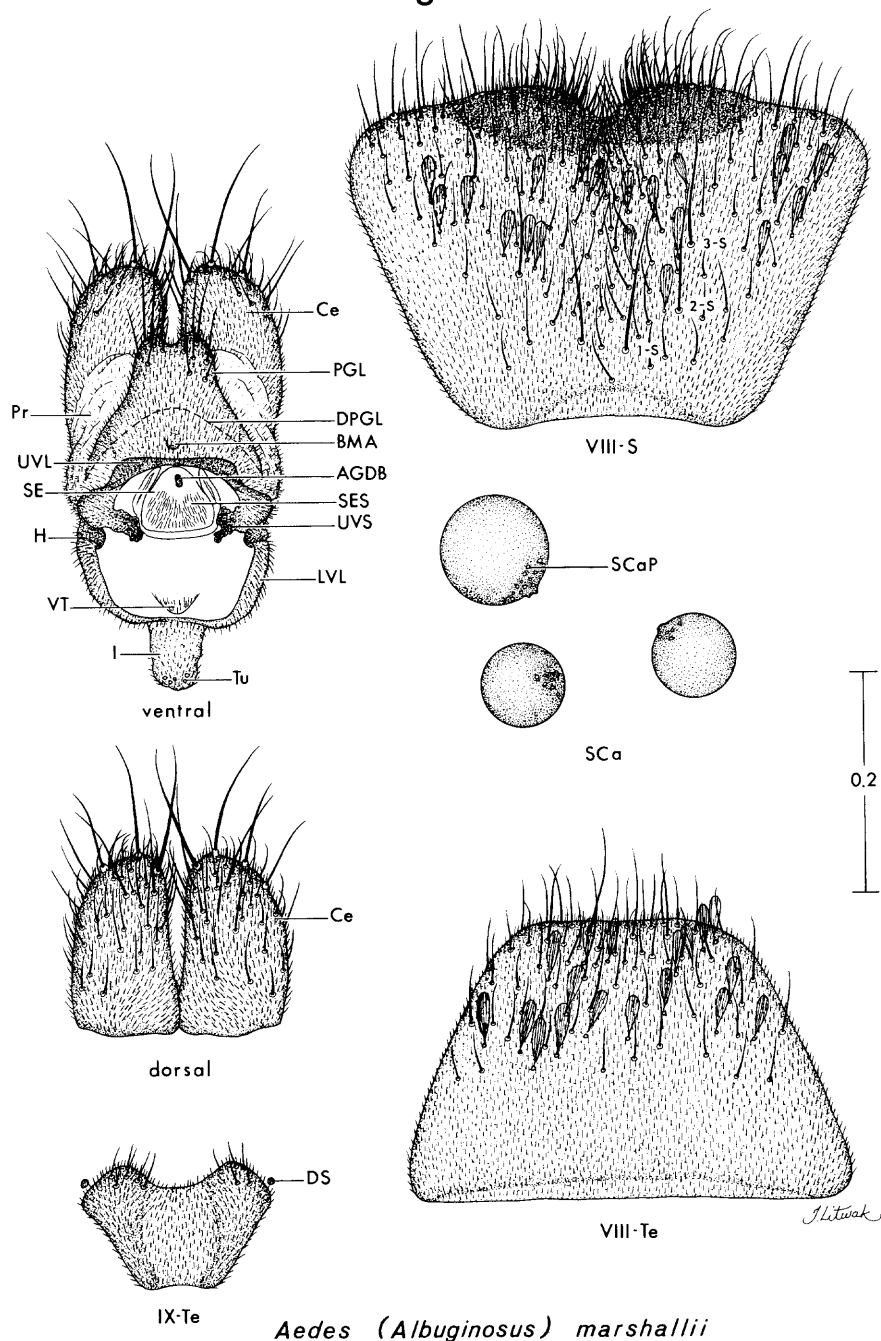


Fig. 13

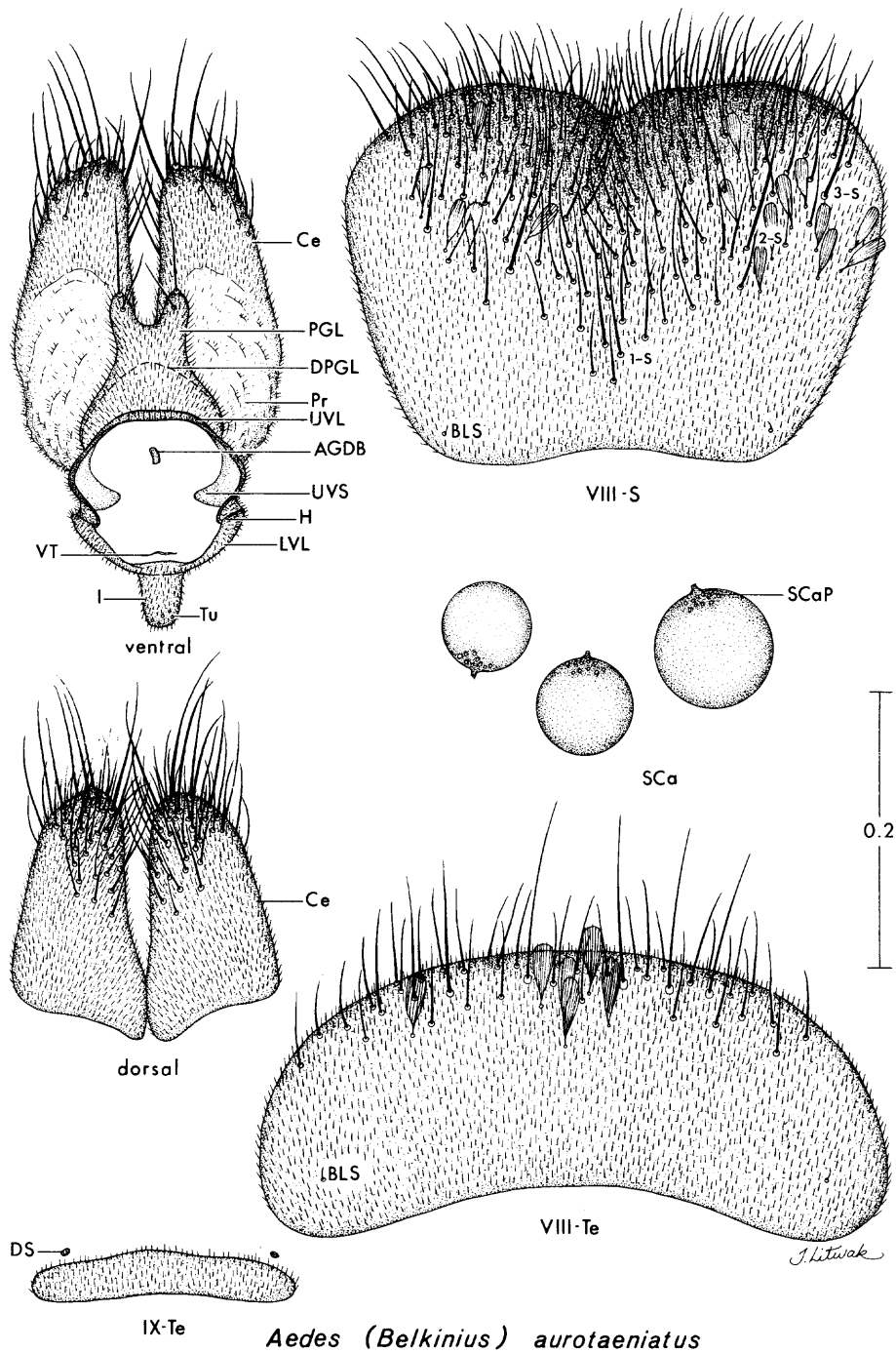
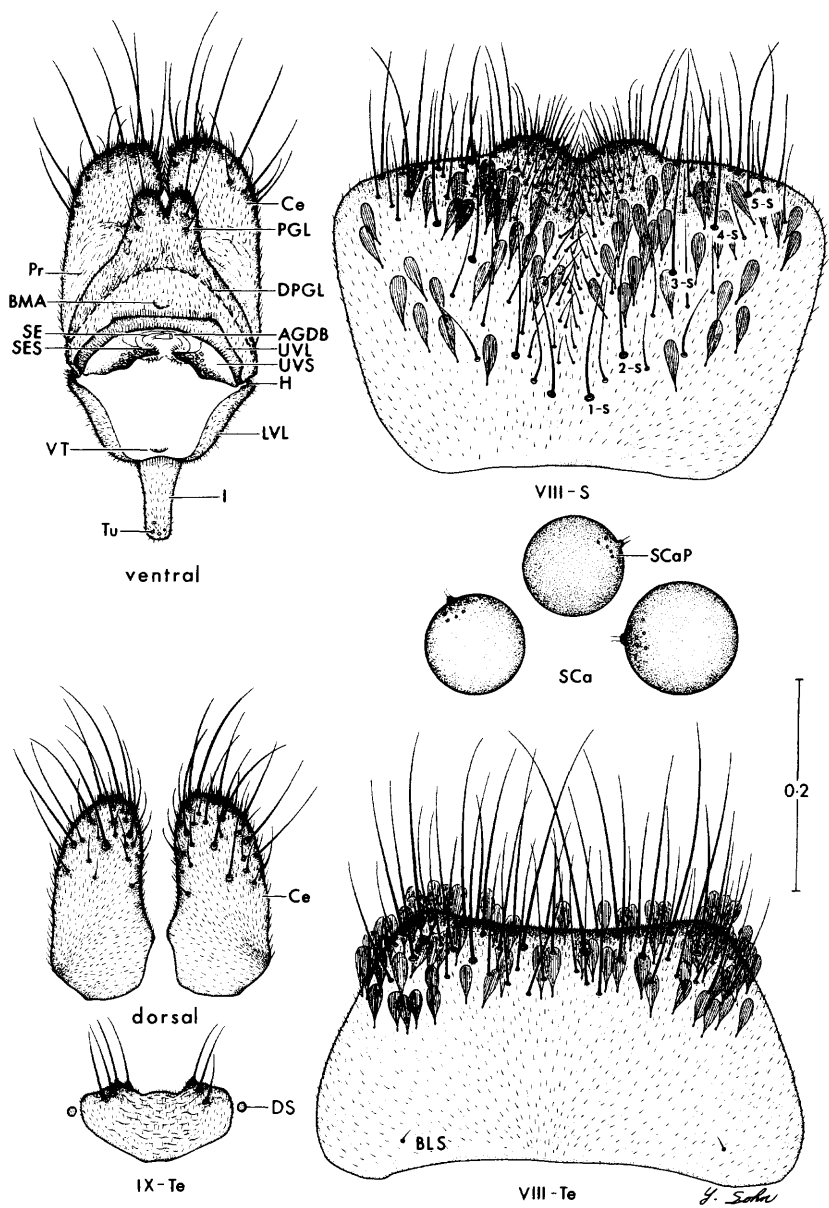
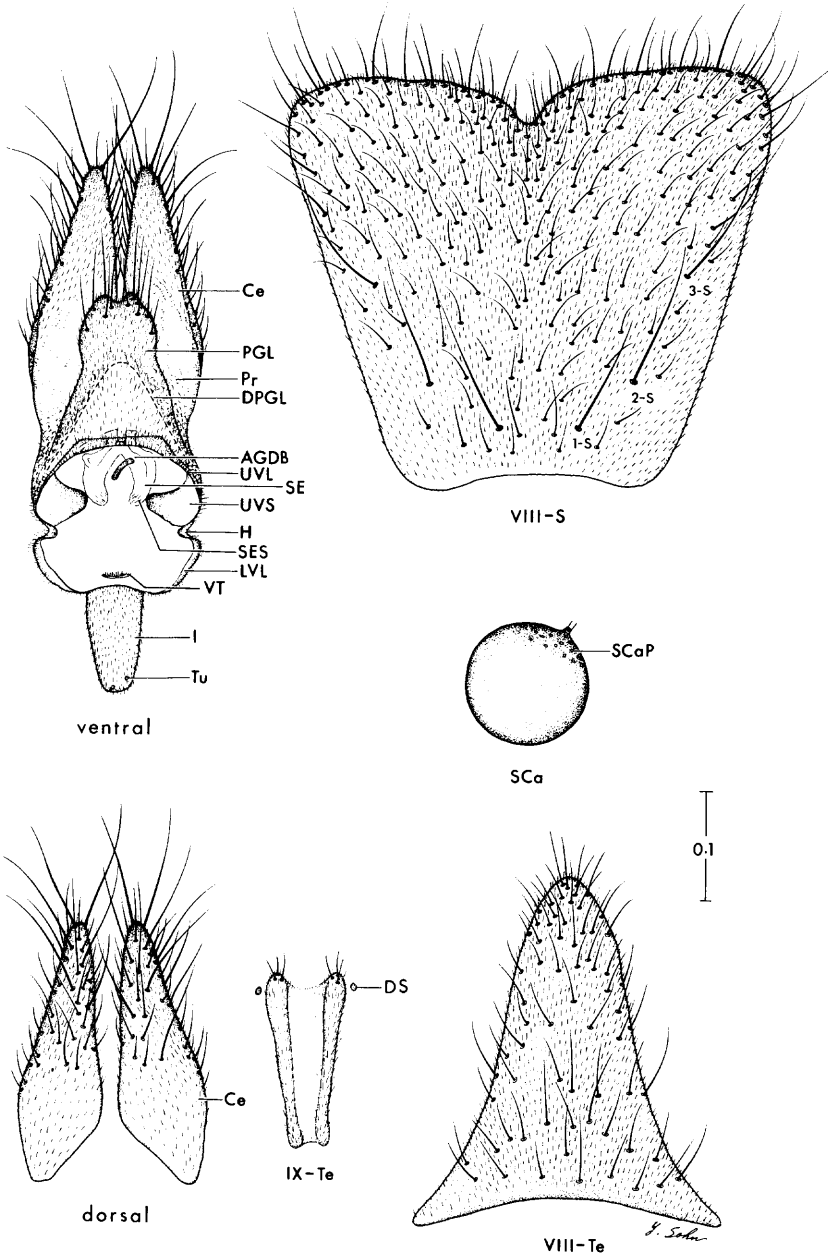


Fig. 14



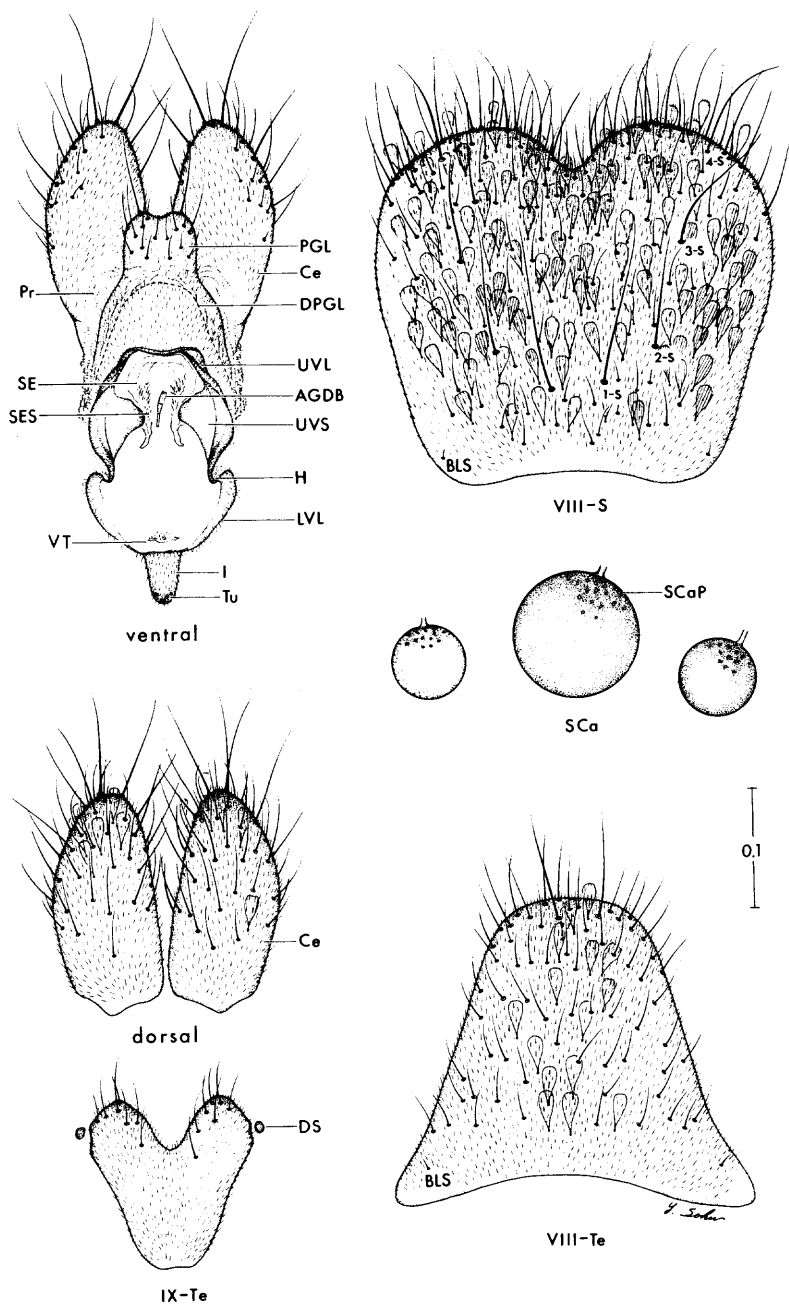
Aedes (Bothaella) helenae

Fig. 15



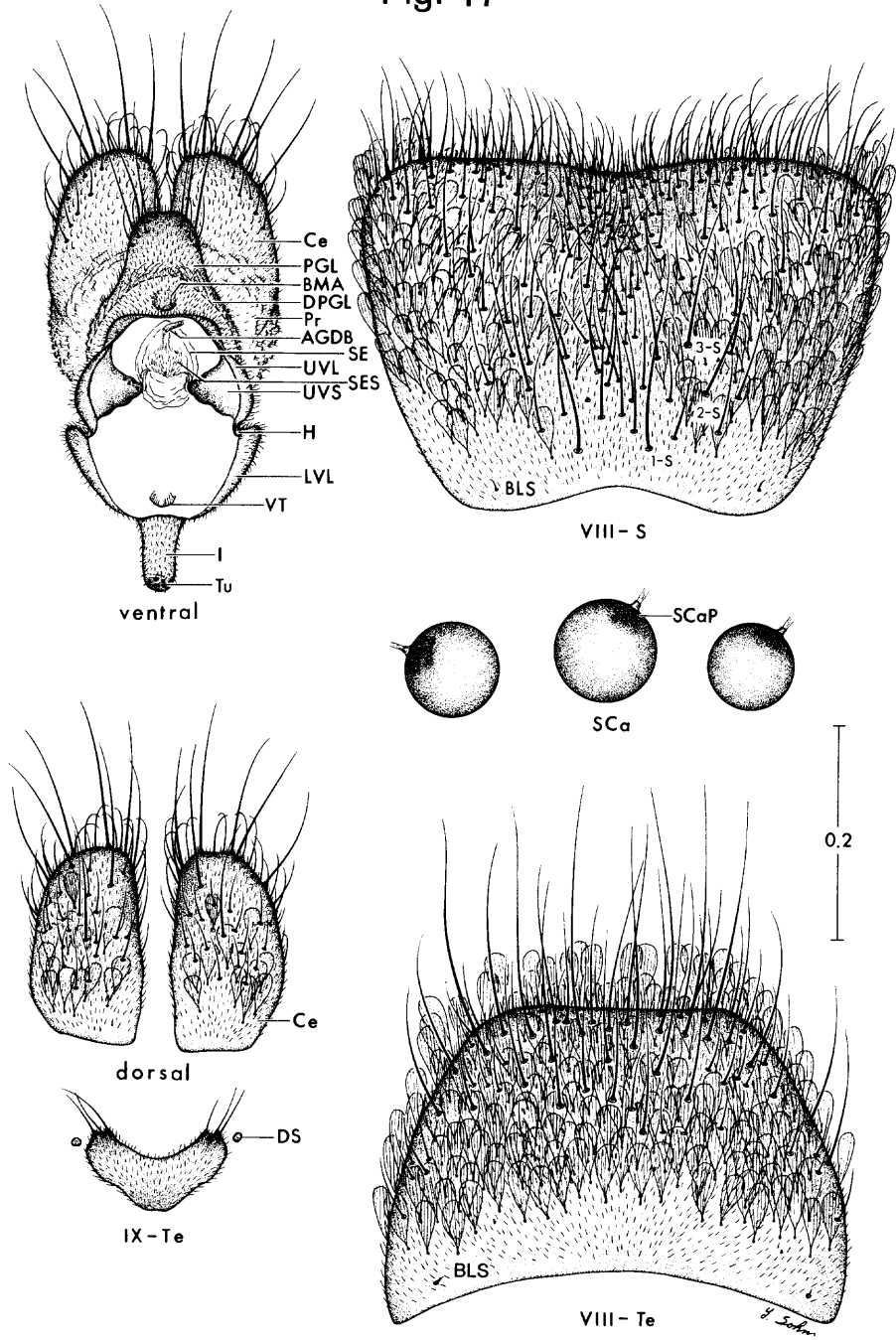
Aedes (Cancraedes) cancricomes
ANDAMAN ISLANDS

Fig. 16



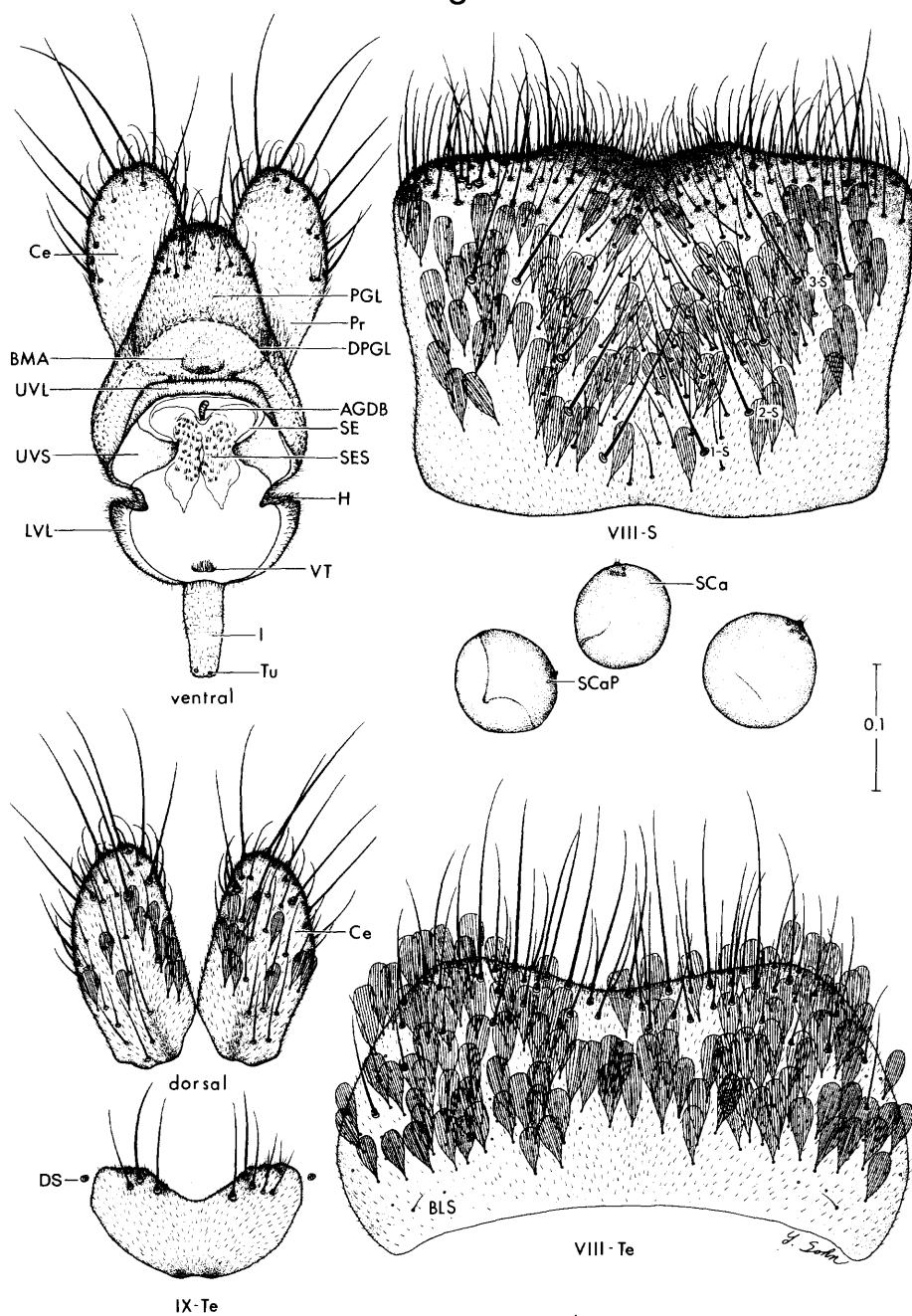
Aedes (Christophersiomyia) thomsoni

Fig. 17



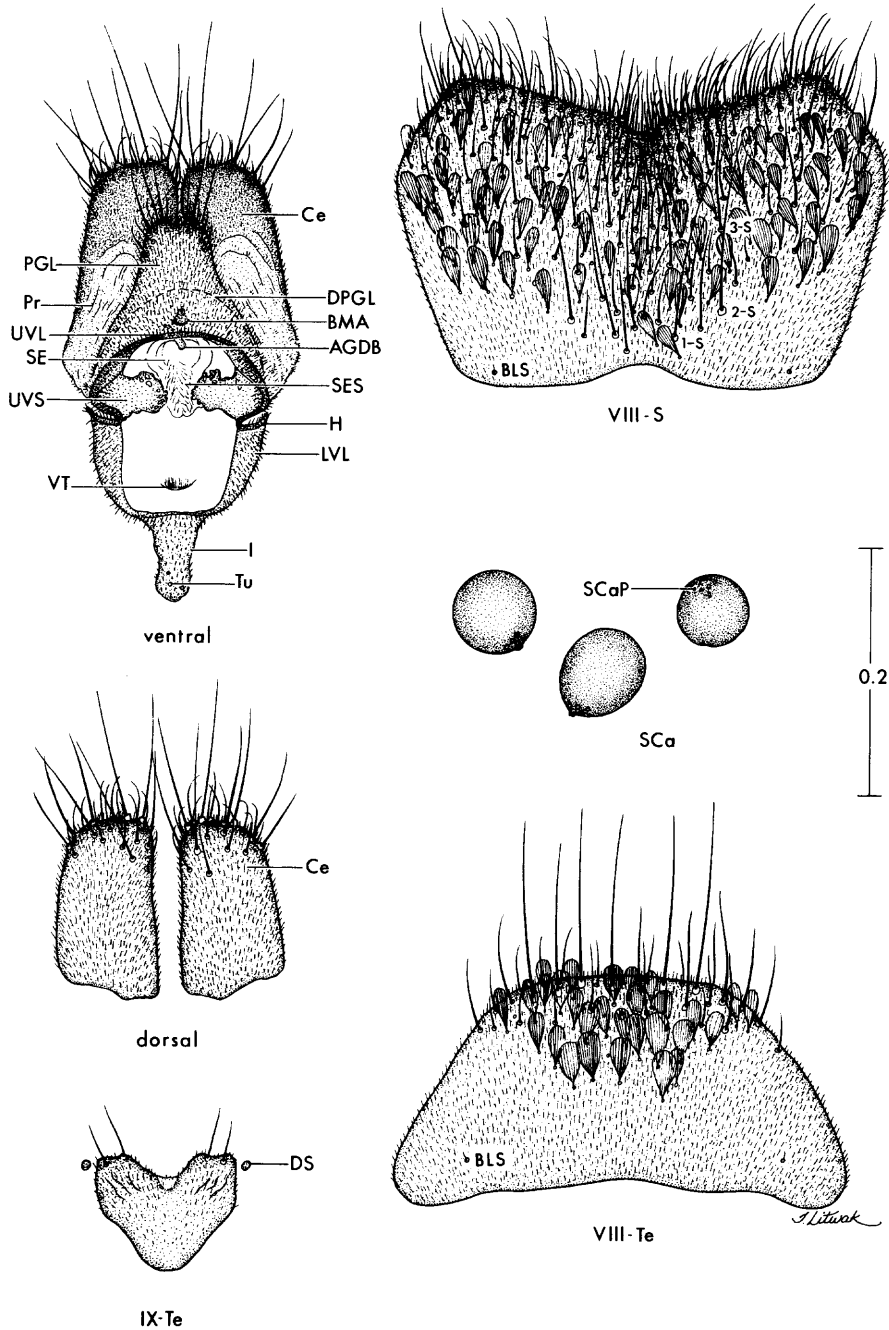
Aedes (Diceromyia) furcifer

Fig. 18



Aedes (Diceromyia) pseudonummatus

Fig. 19



Aedes (Diceromyia) ramachandrai

Fig. 20

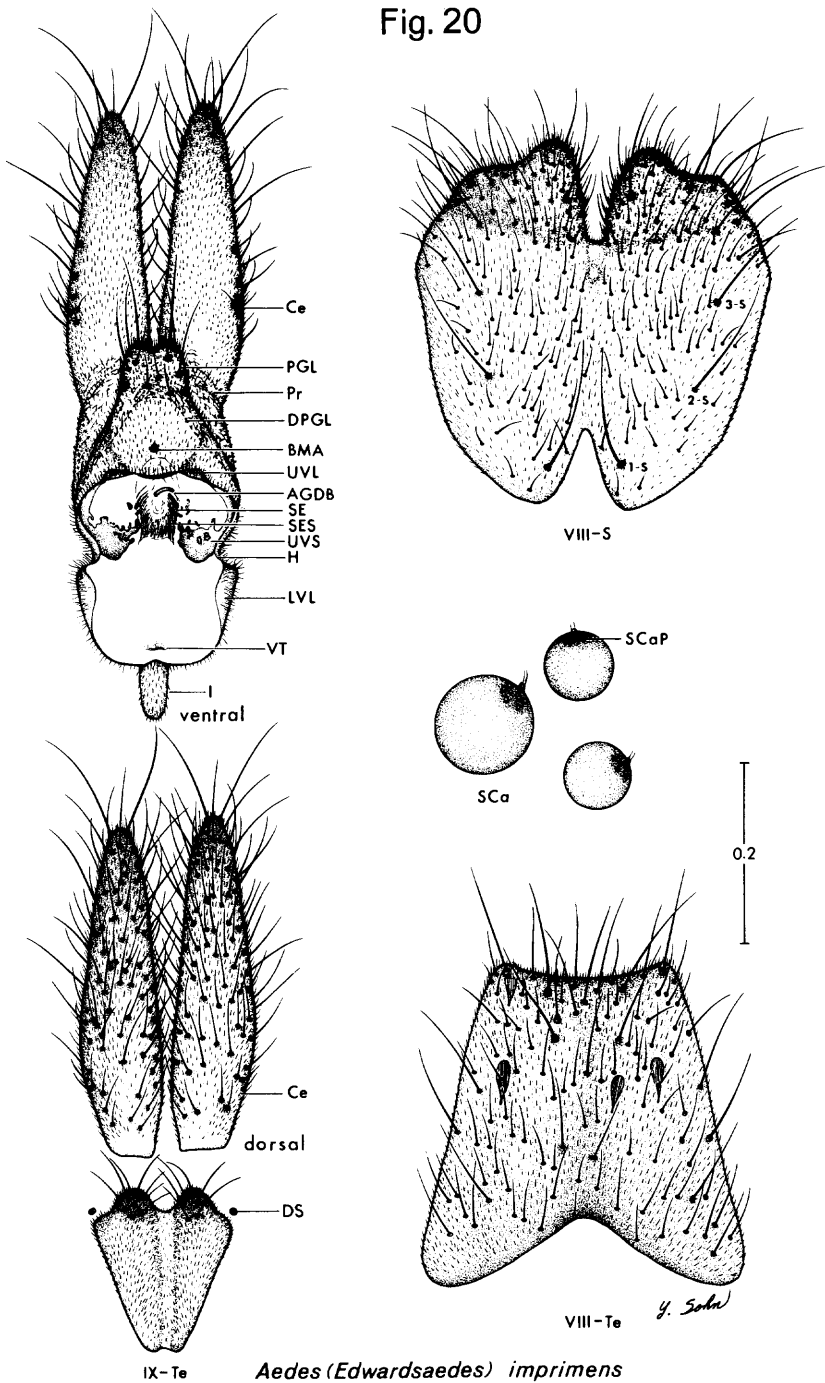
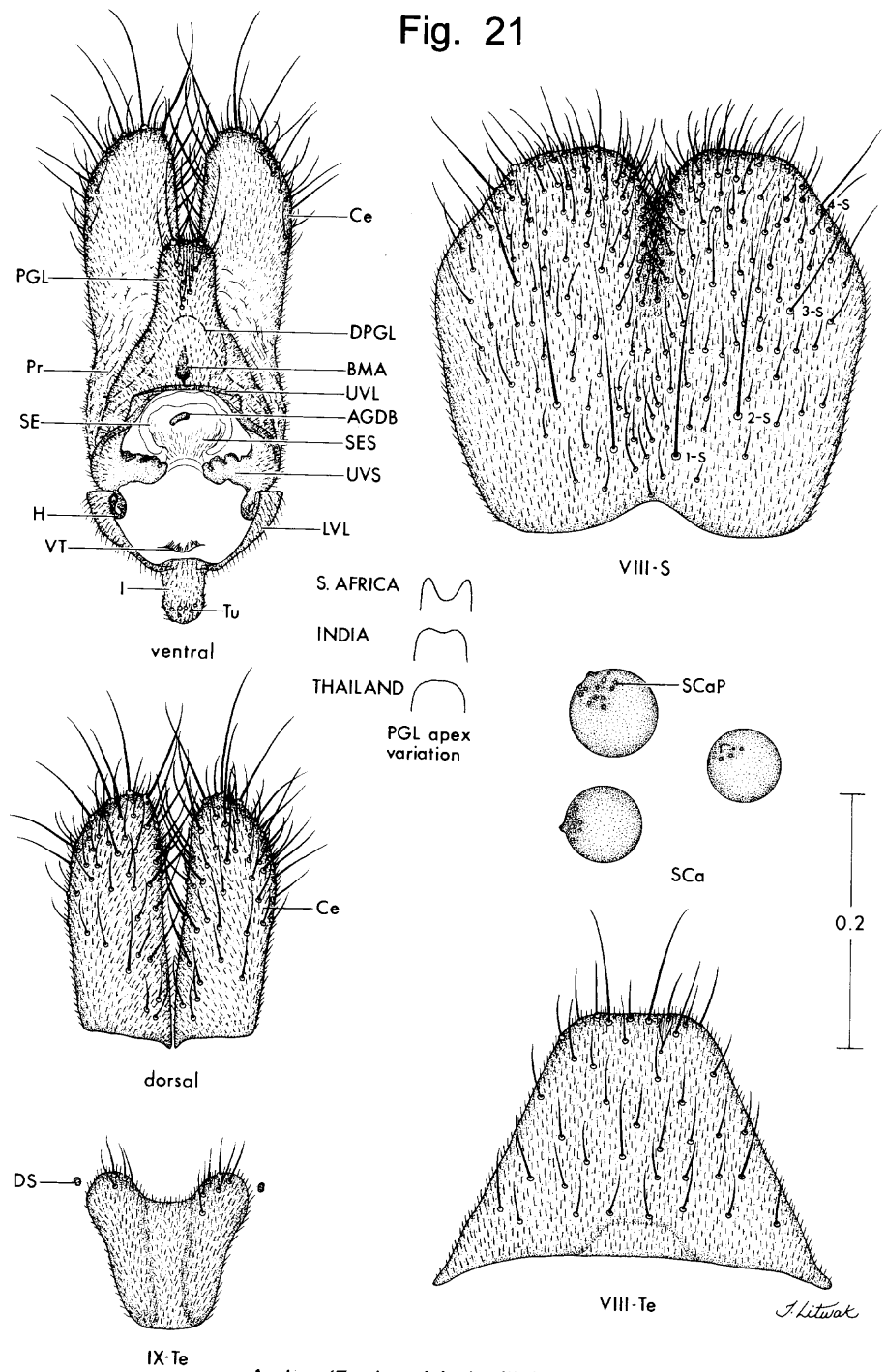
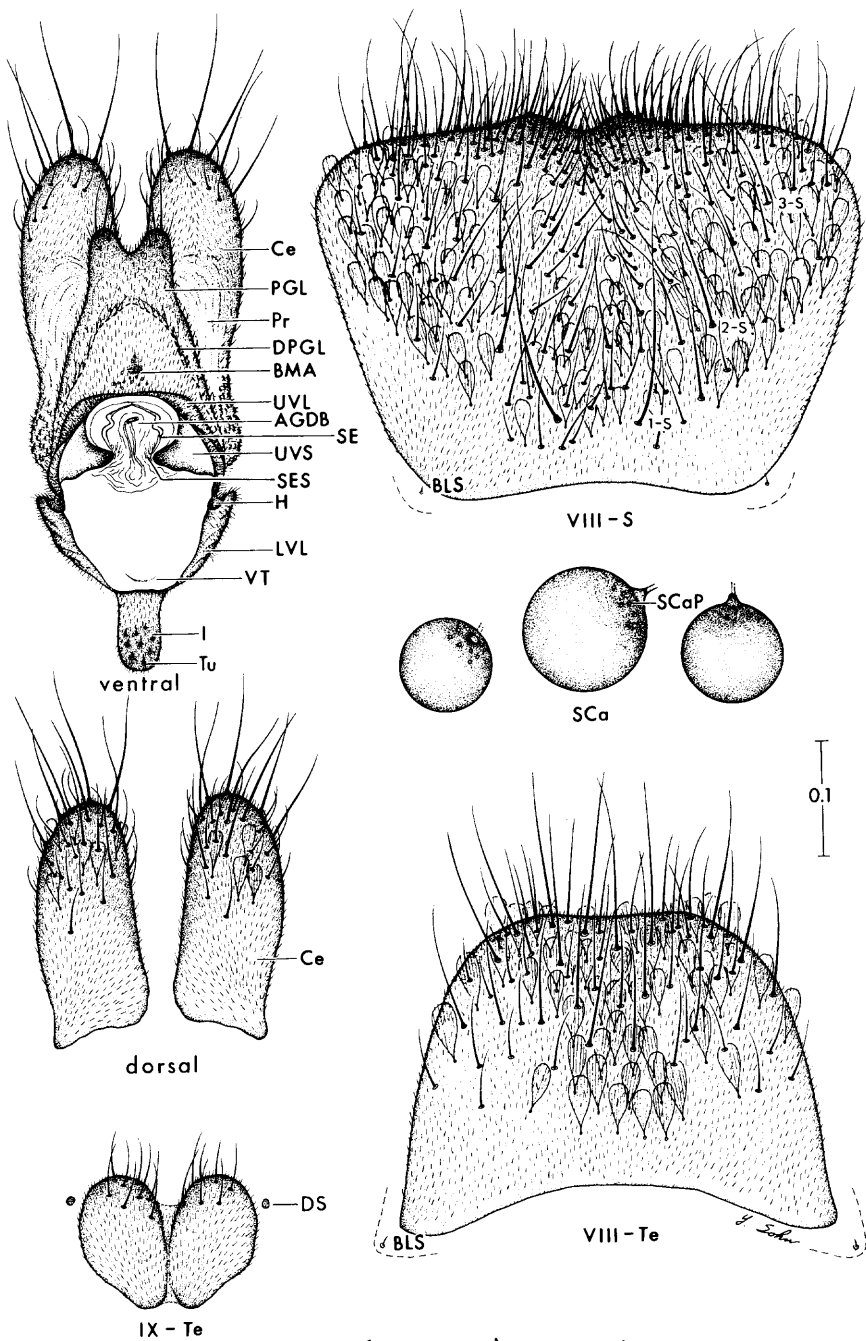


Fig. 21



Aedes (Fredwardsius) vittatus

Fig. 22



Aedes (Huaedes) wauensis

Fig. 23

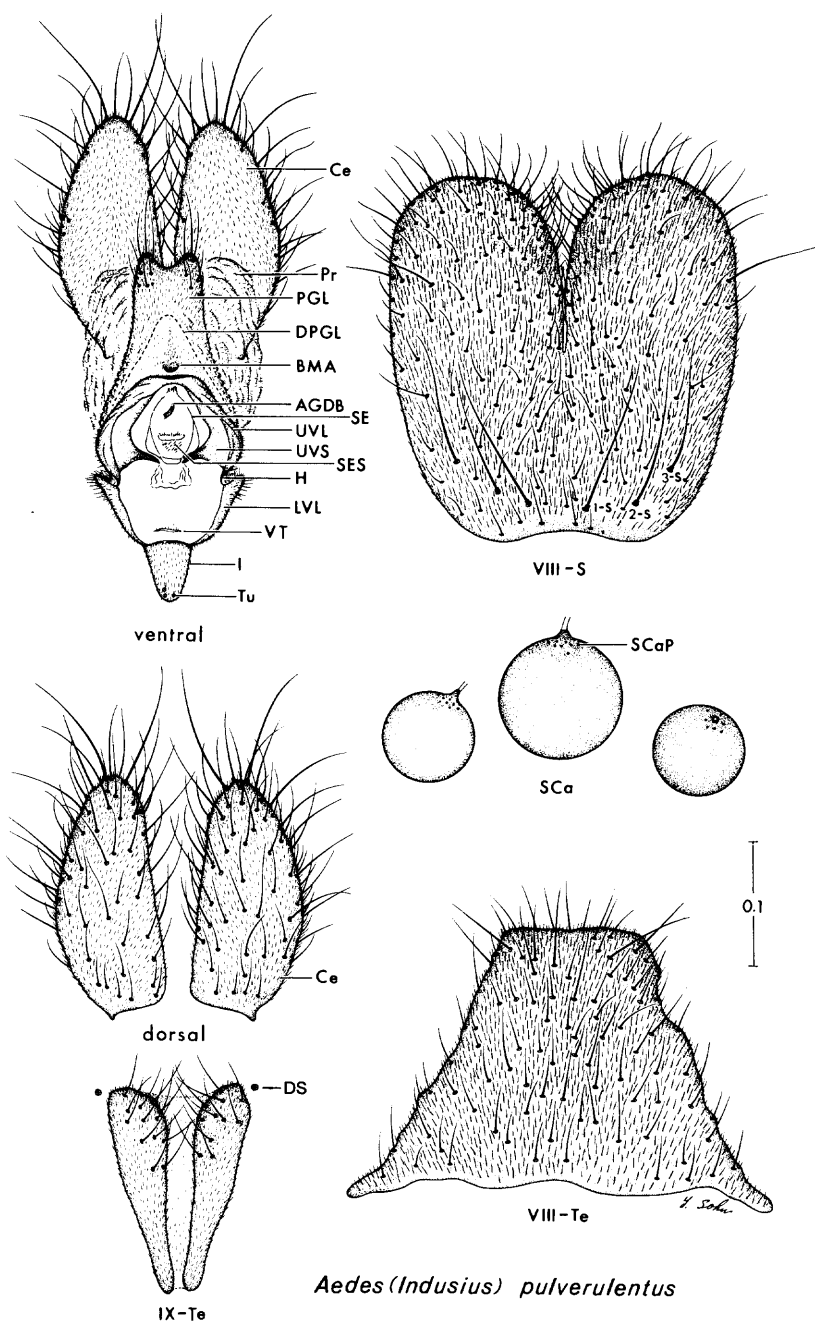
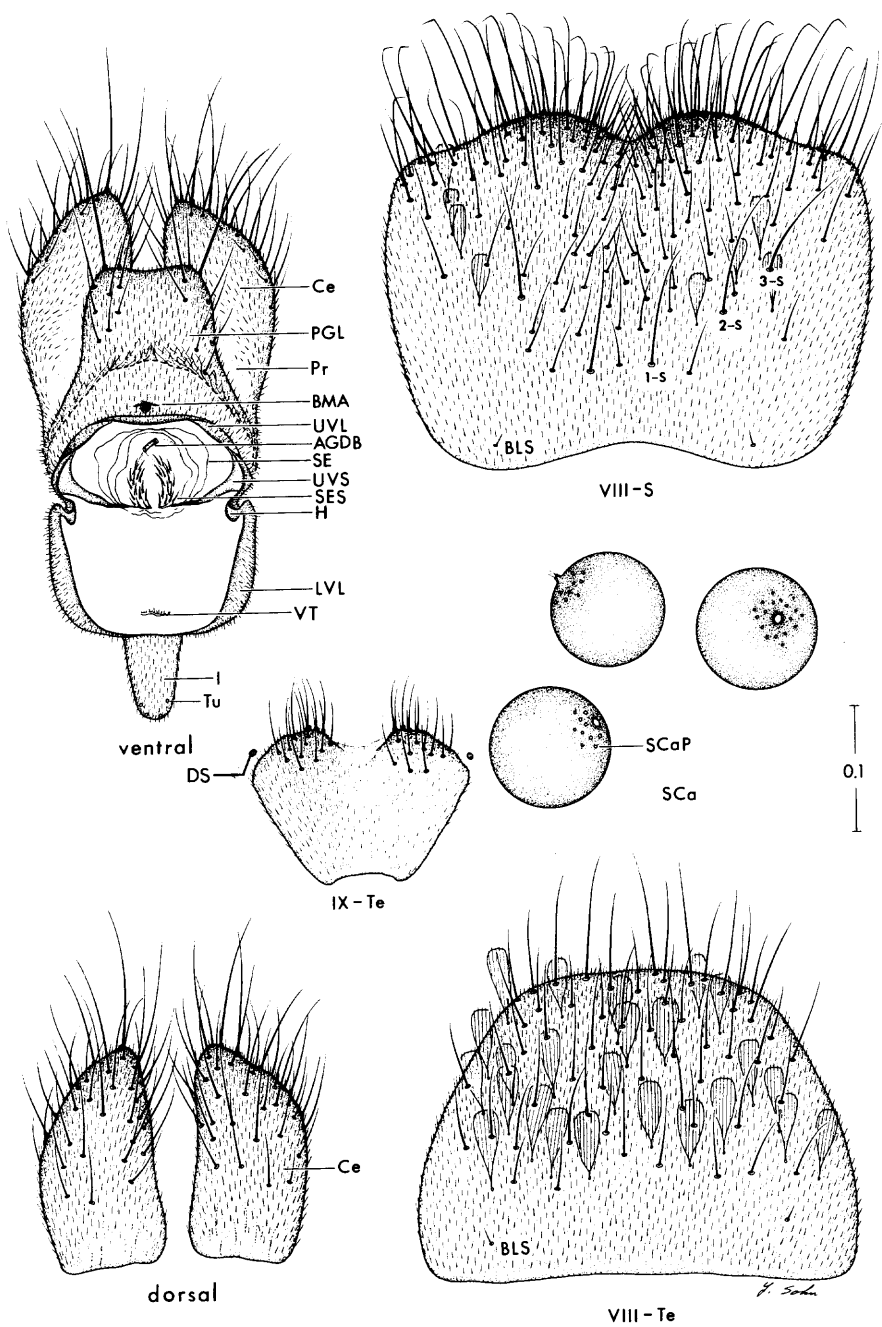


Fig. 24



Aedes (Isoaedes) cavaticus

Fig. 25

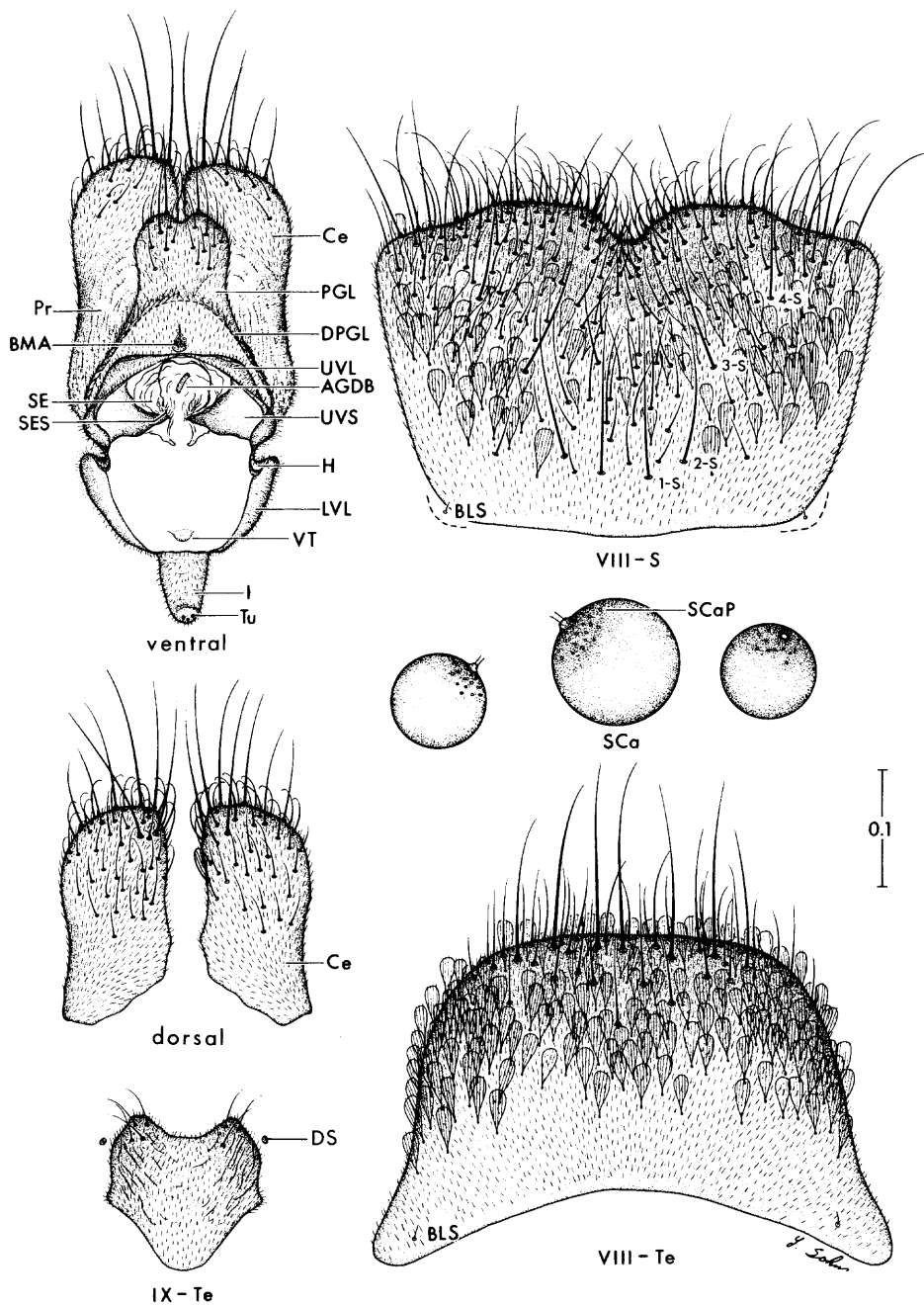
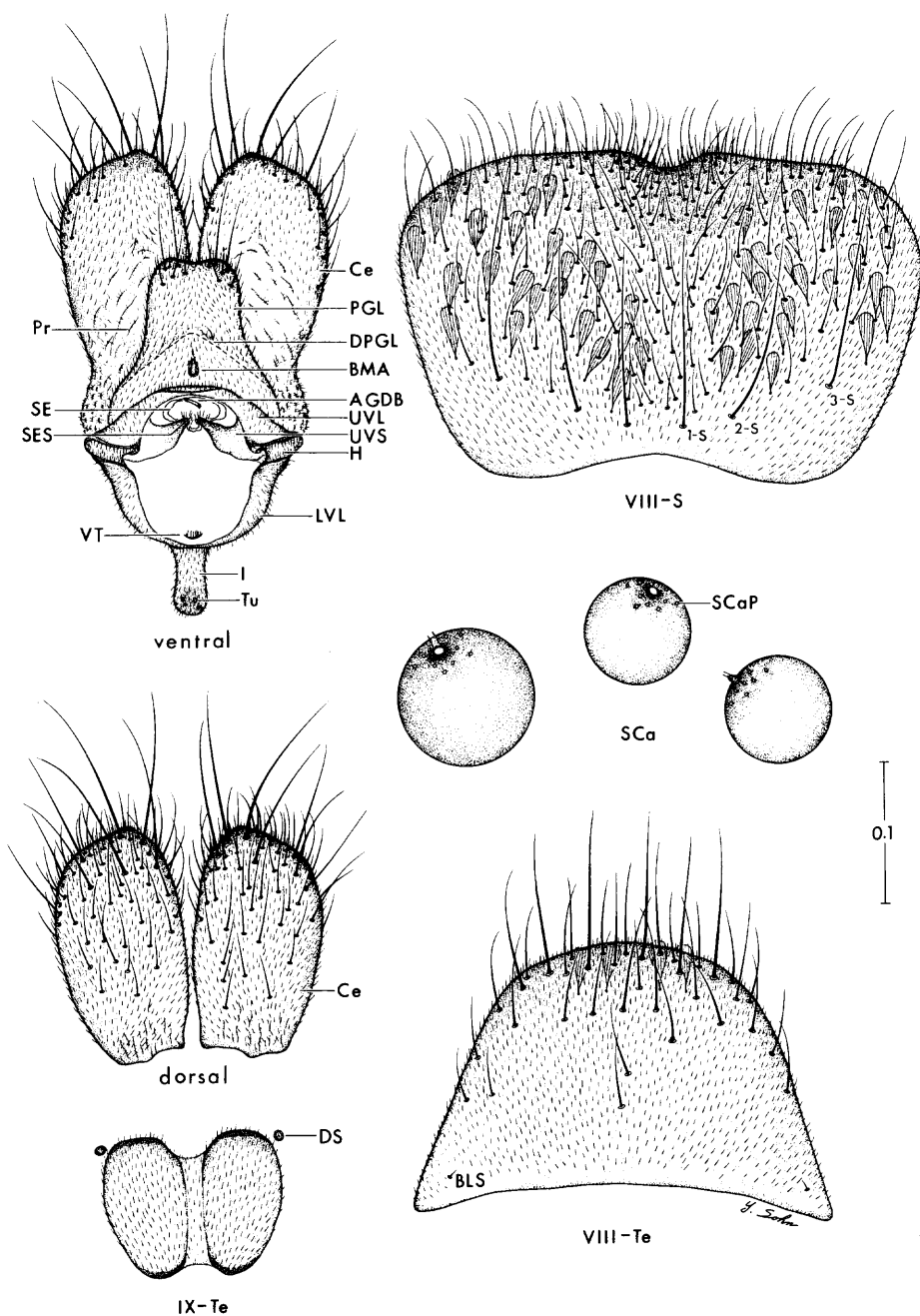
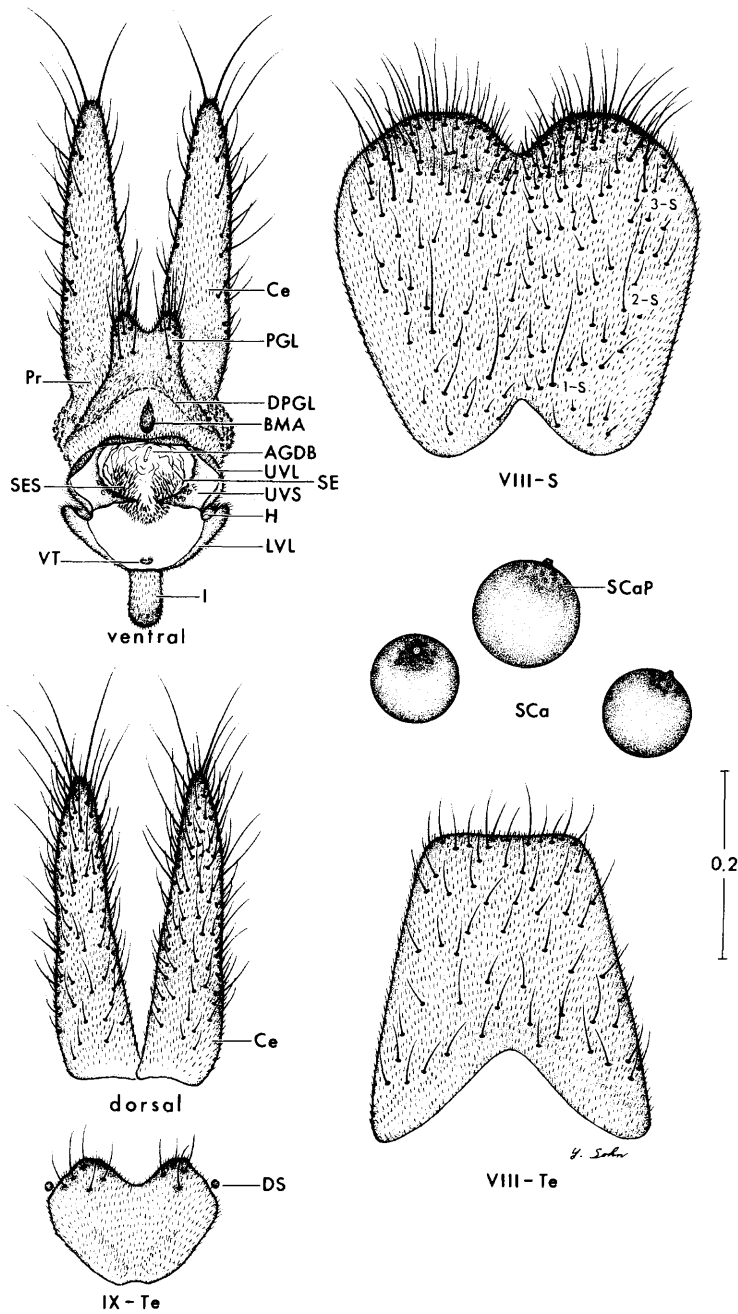
*Aedes (Leptosomatomyia) aurimargo*

Fig. 26



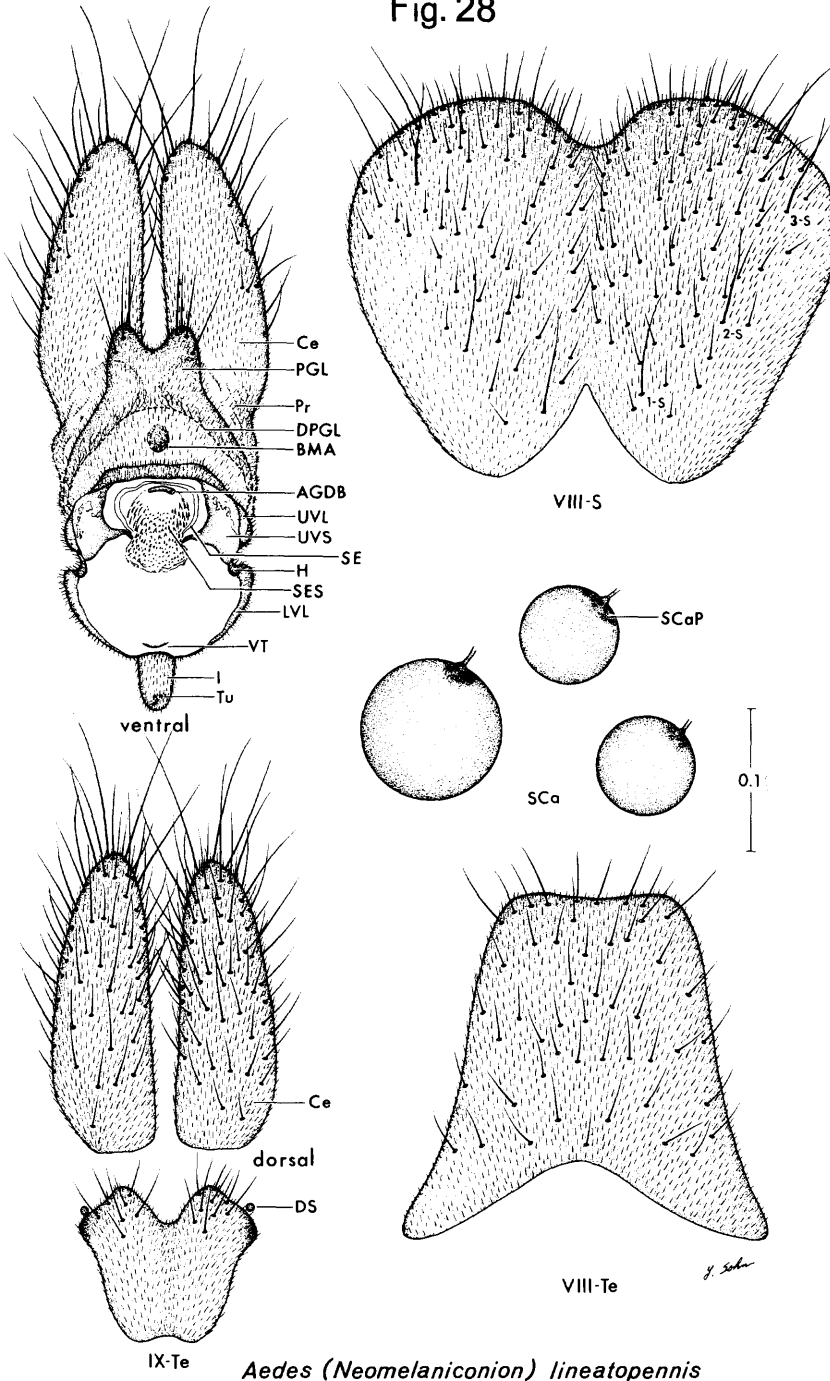
Aedes (Lorrainea) dasyorrhus

Fig. 27



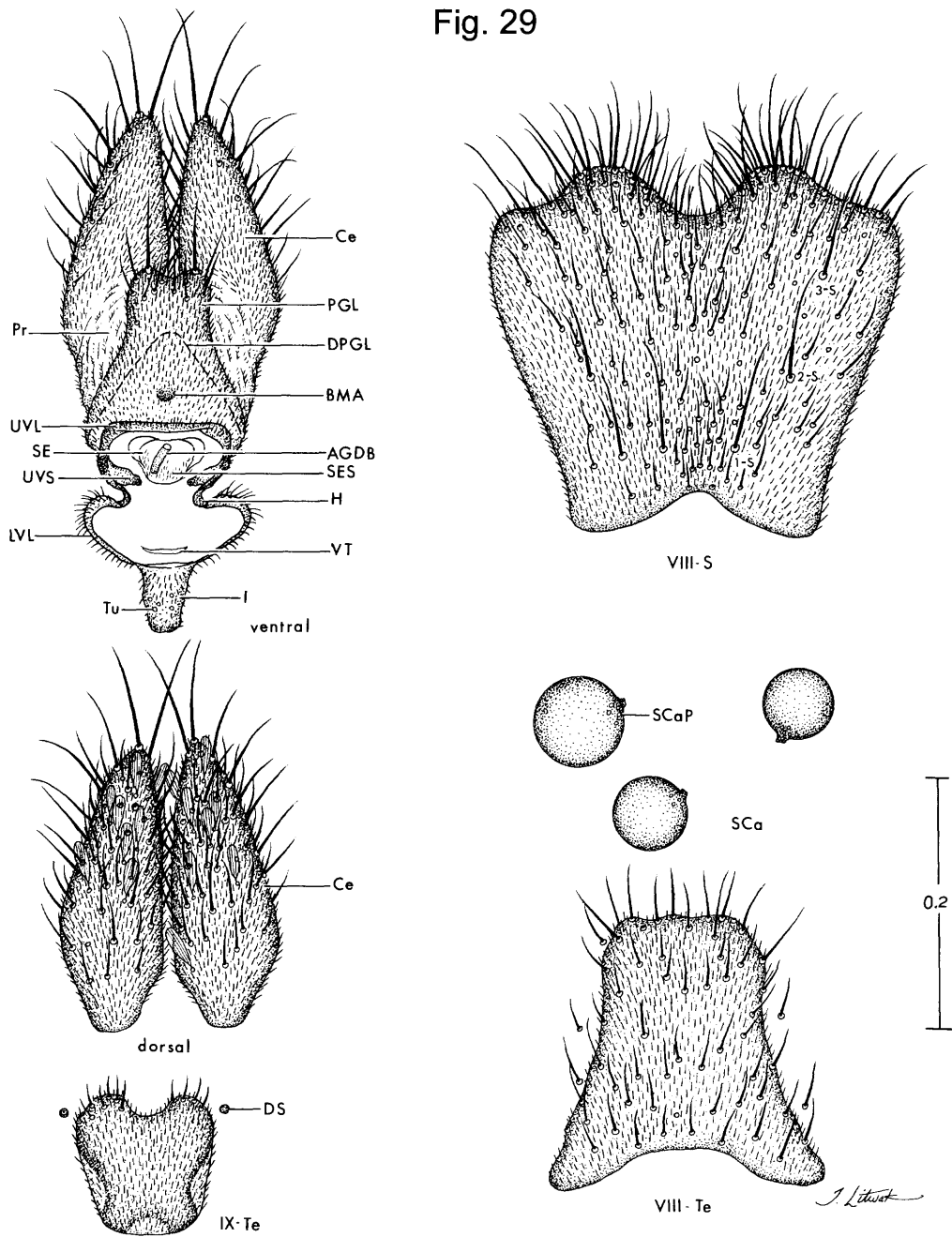
Aedes (Neomelaniconion) palpalis

Fig. 28



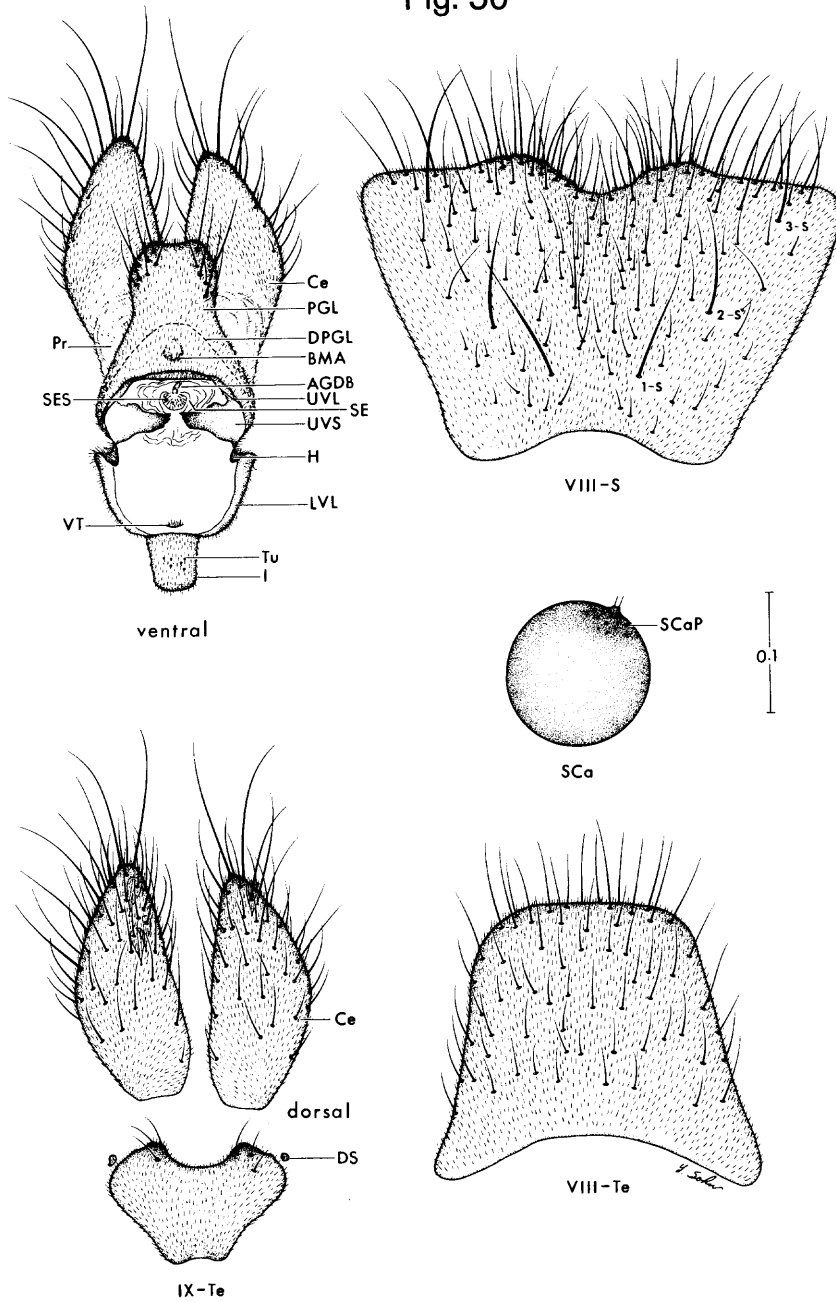
Aedes (Neomelanicion) lineatopennis

Fig. 29



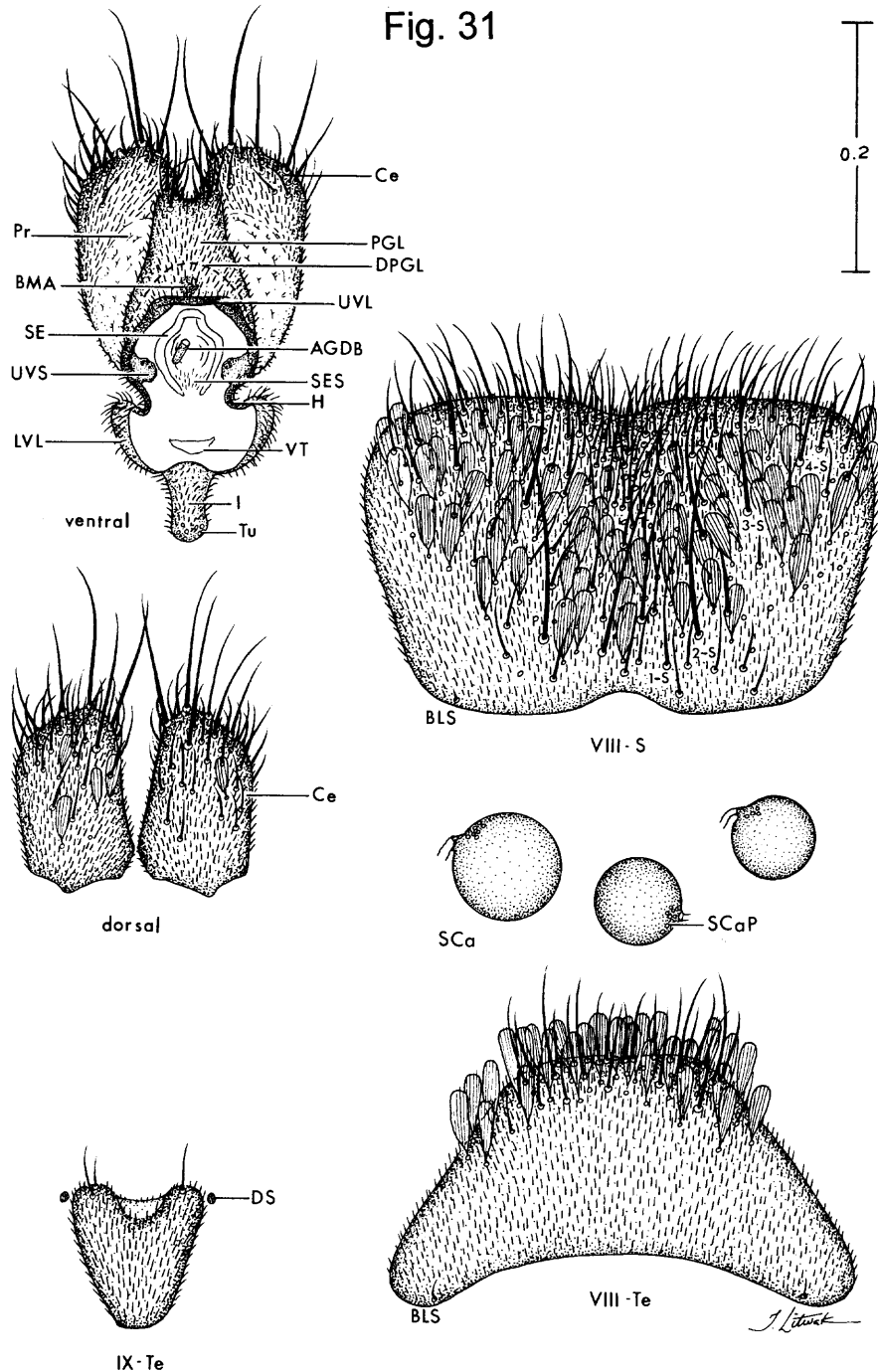
Aedes (Paraedes) barraudi

Fig. 30



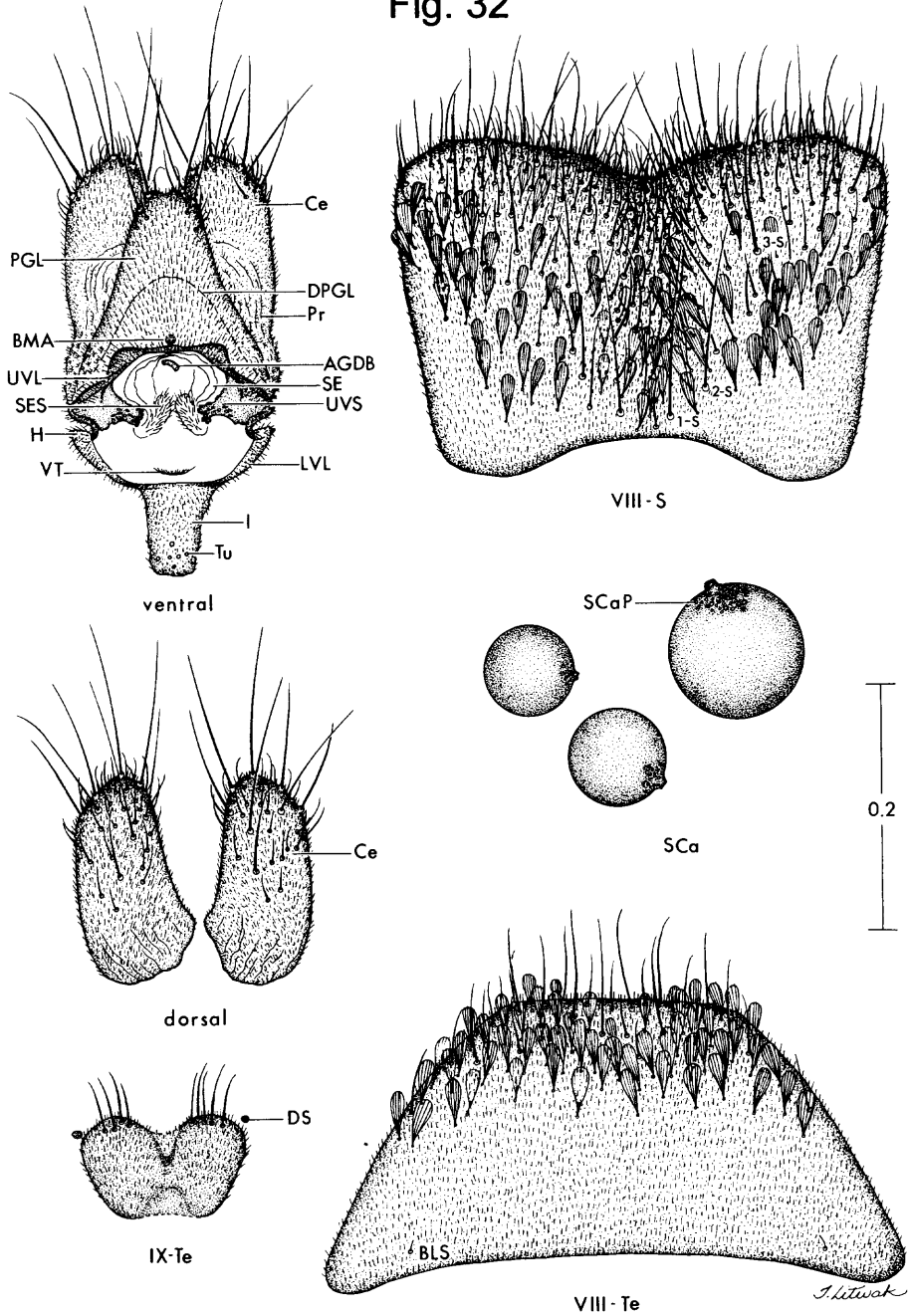
Aedes (Paraedes) ostentatio

Fig. 31



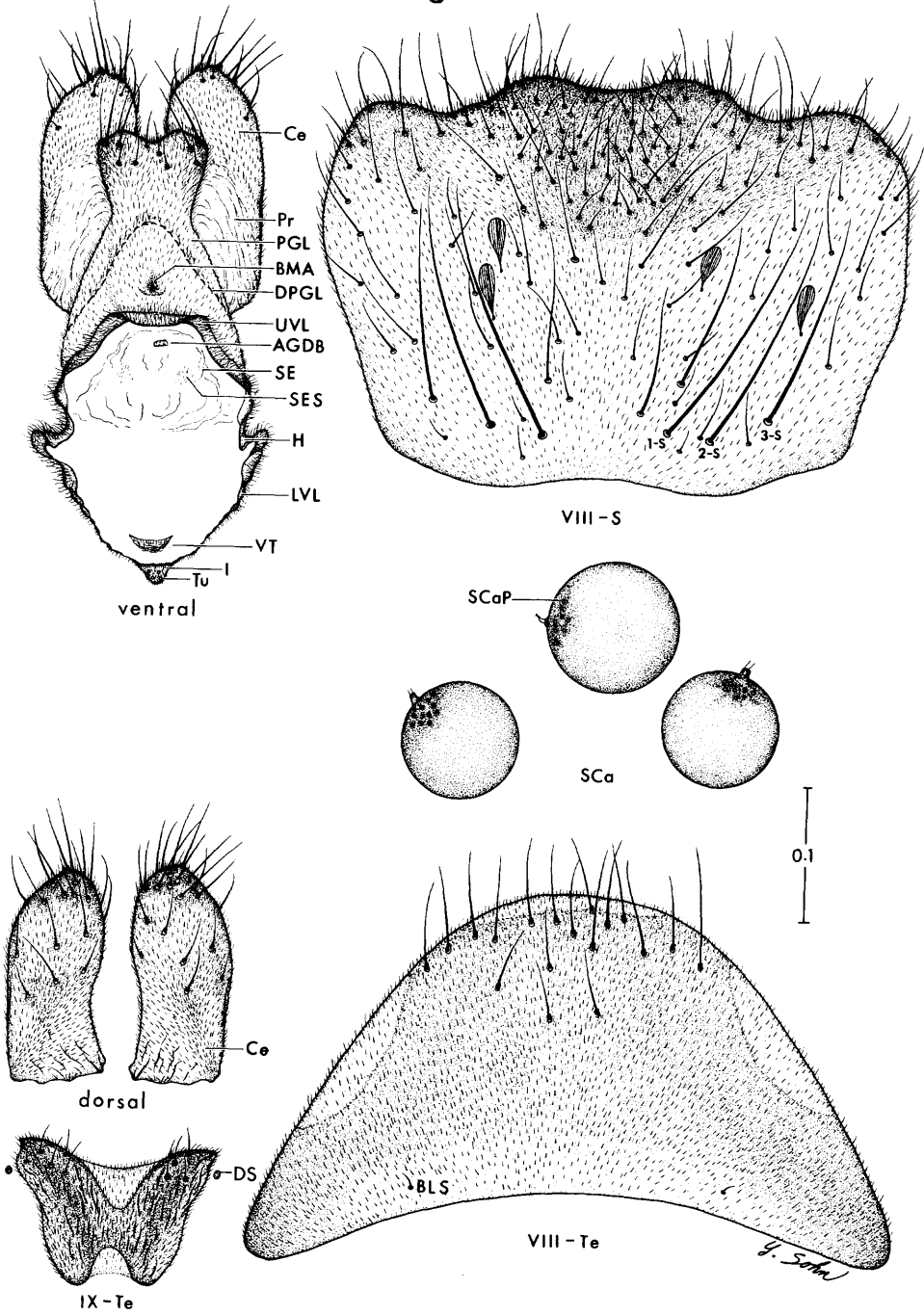
Aedes (Pseudarmigeres) argenteoventralis dunni

Fig. 32



Aedes (Scutomyia) albolineatus

Fig. 33



Aedes (Skusea) pembaensis

Fig. 34

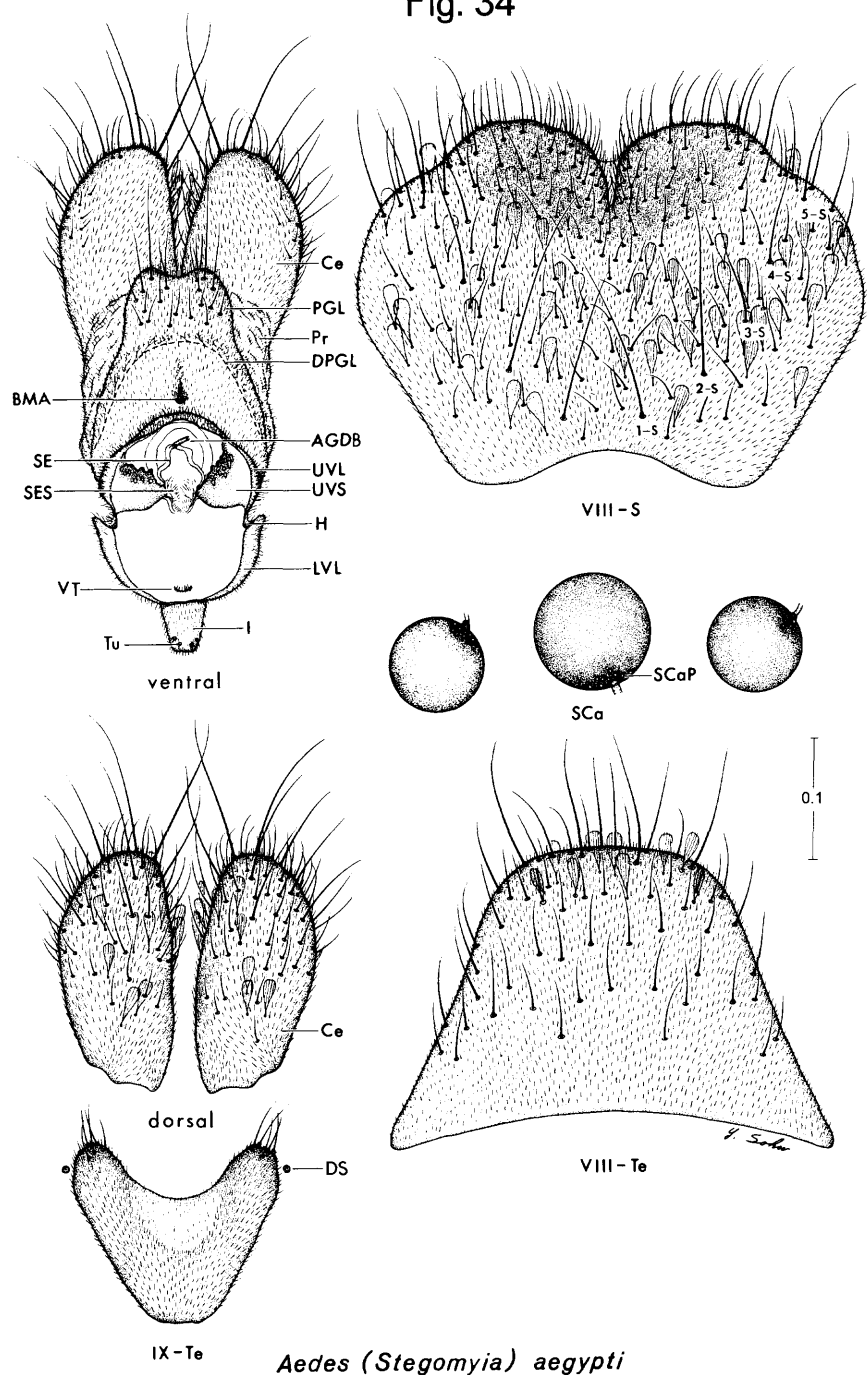
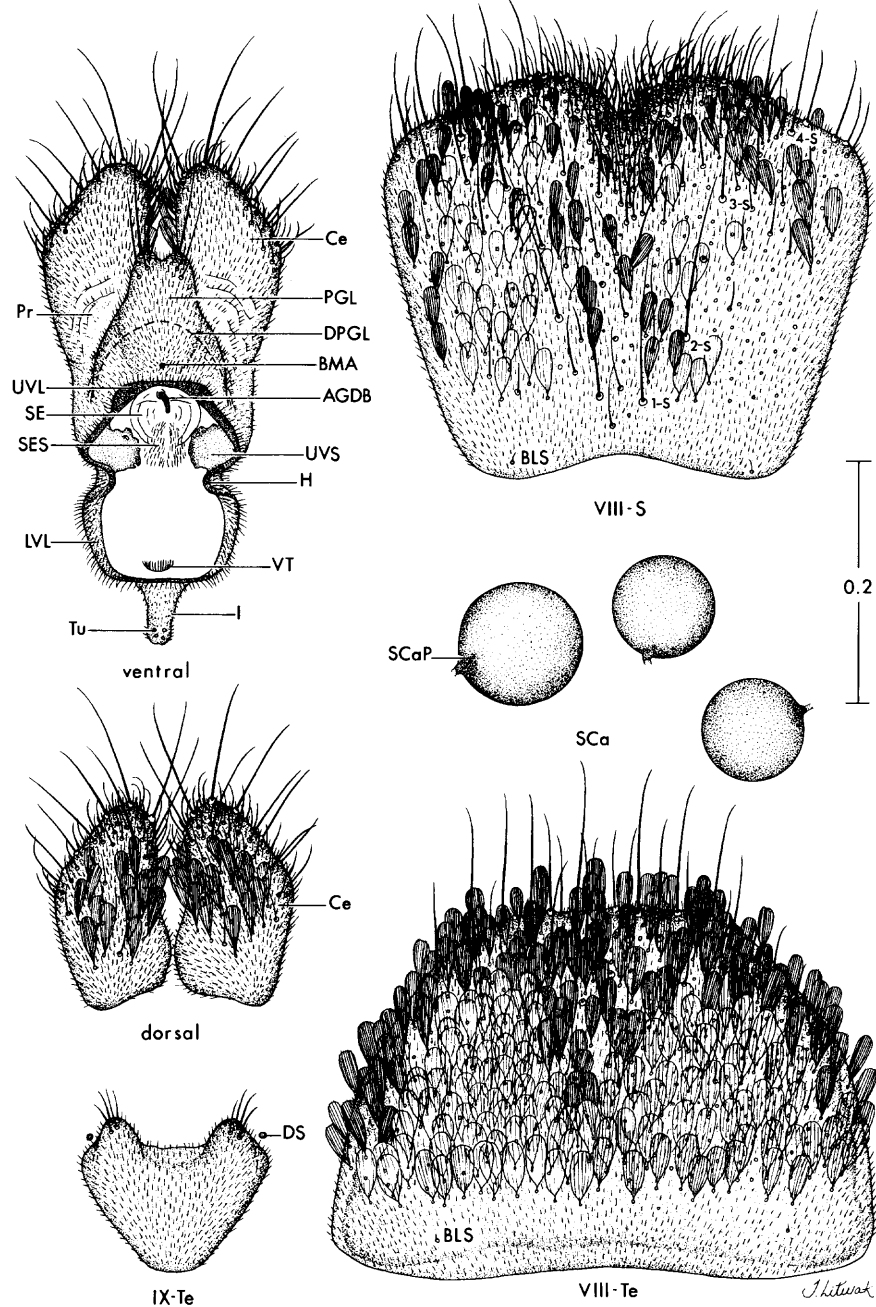


Fig. 35



Aedes (Stegomyia) africanus

Fig. 36

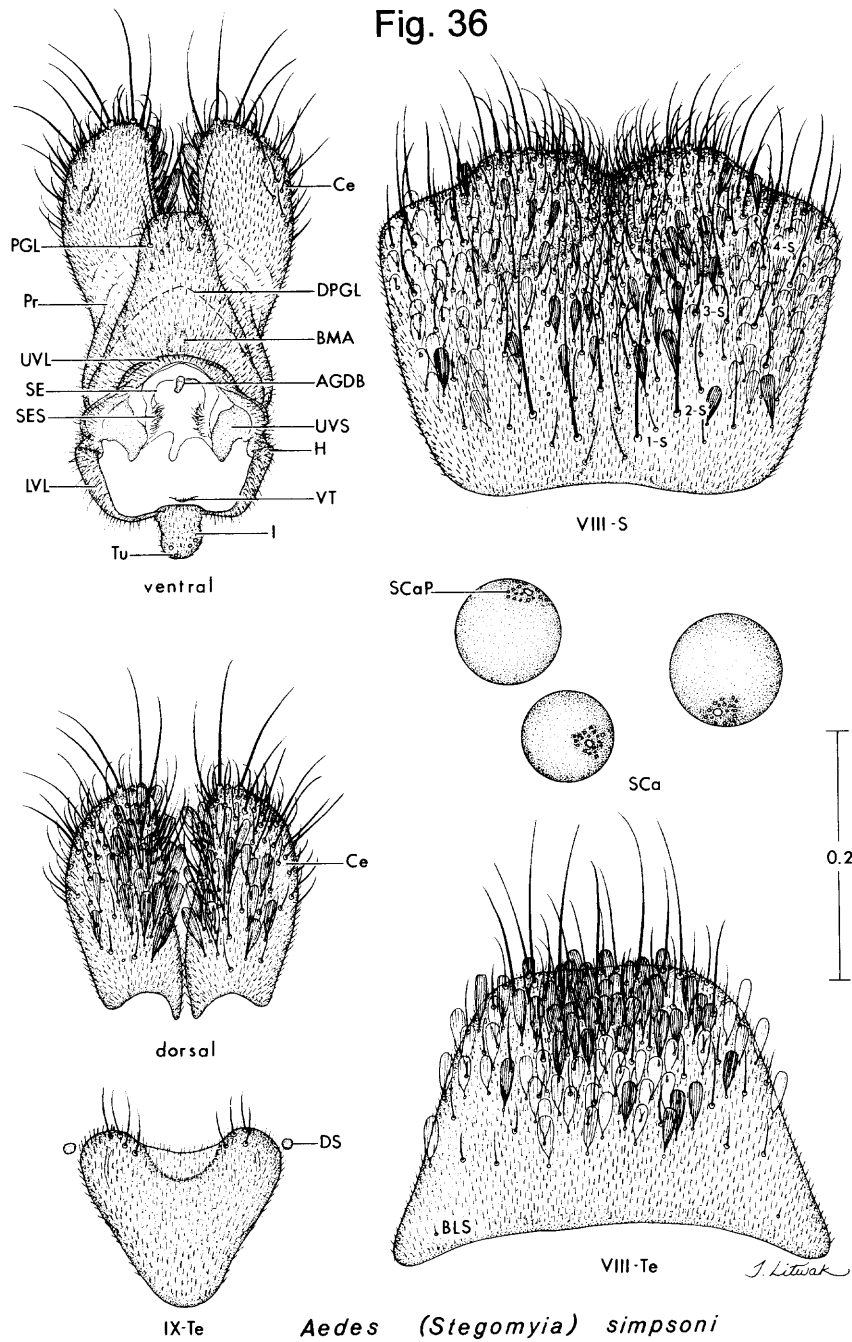


Fig. 37

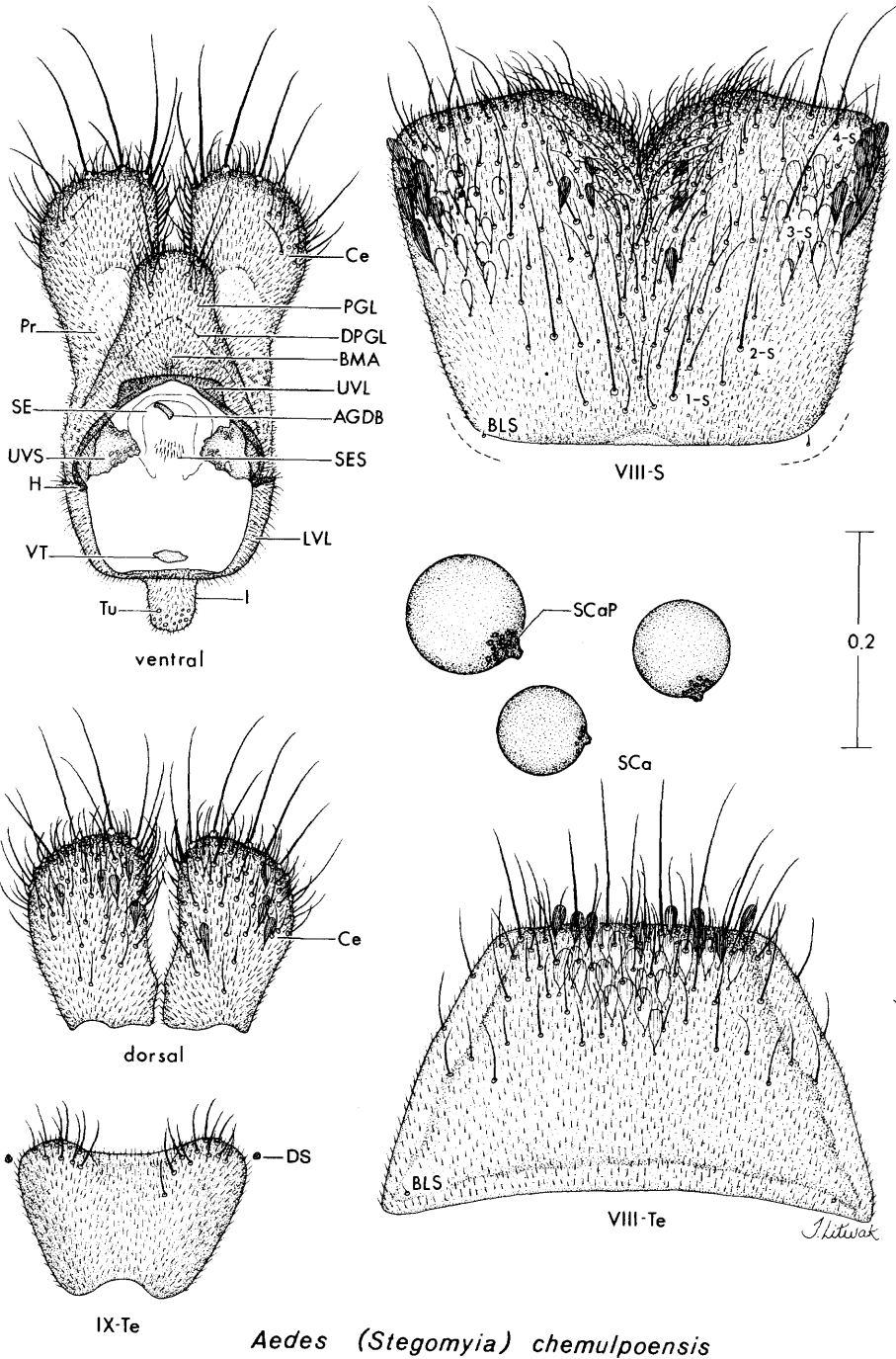
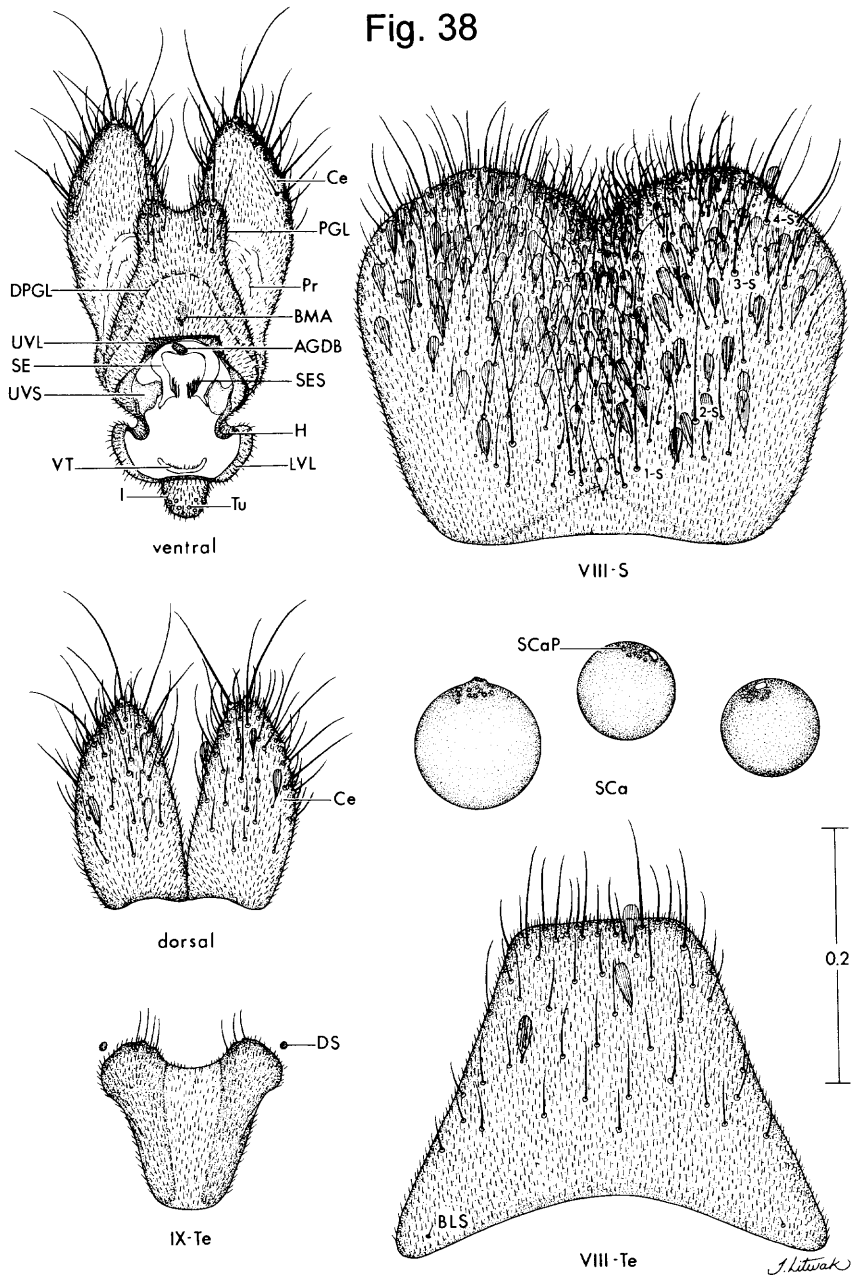
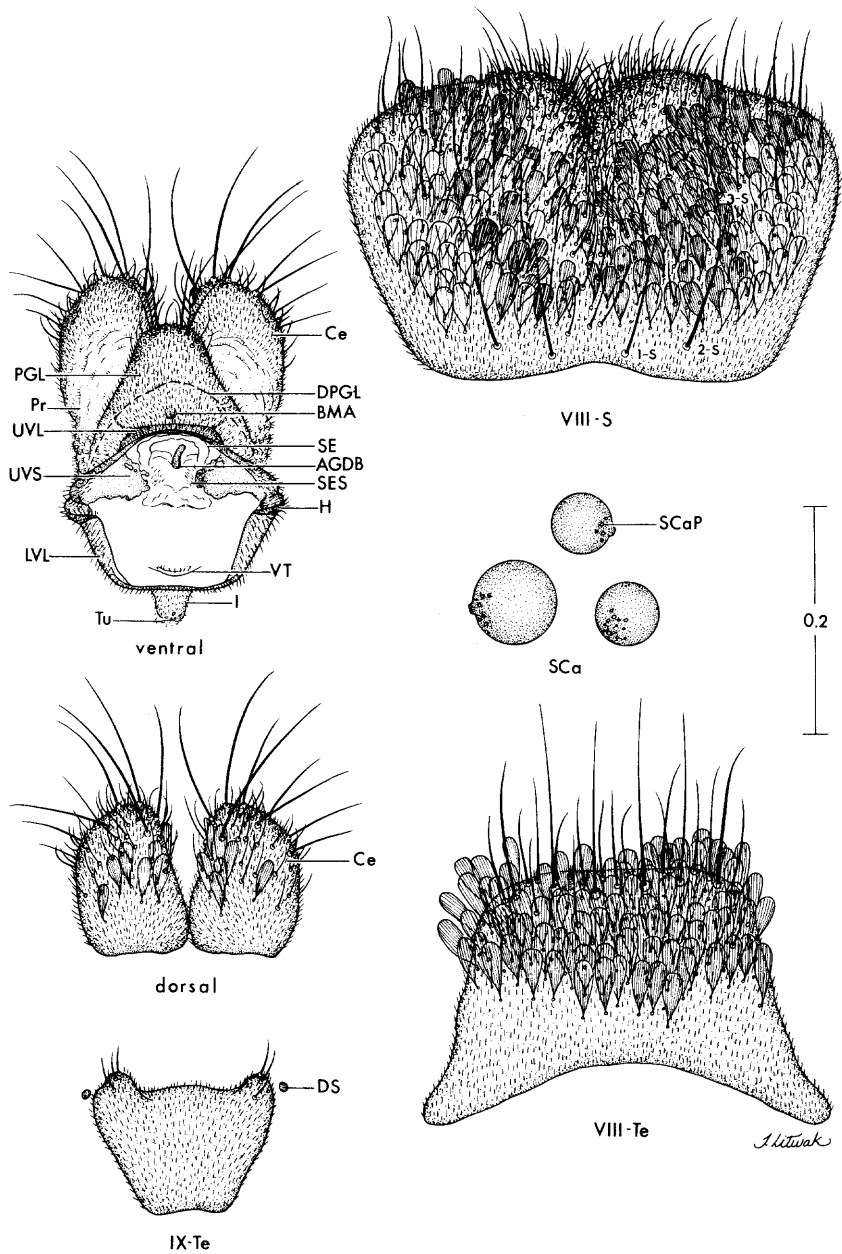


Fig. 38



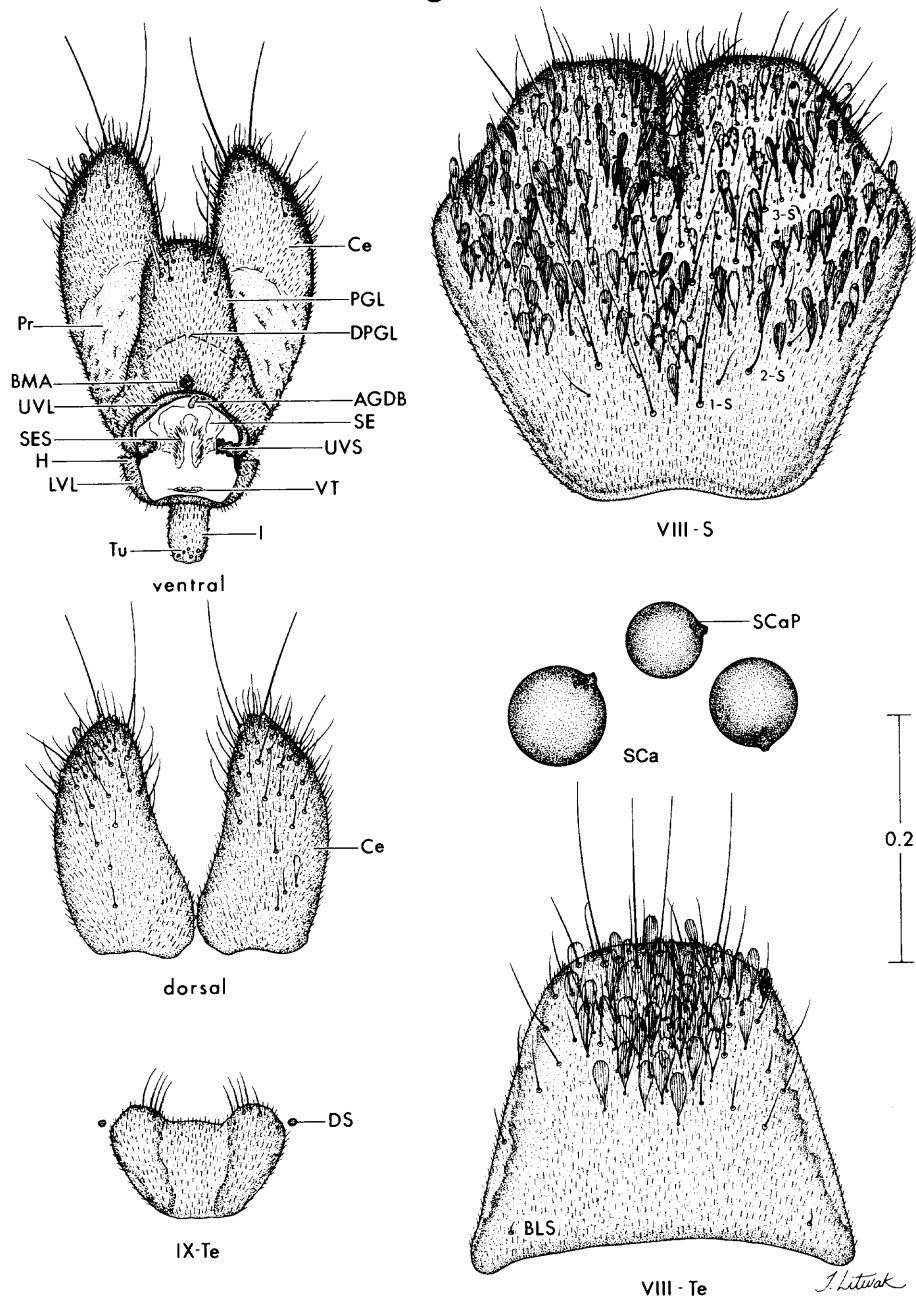
Aedes (Stegomyia) scutellatus

Fig. 39



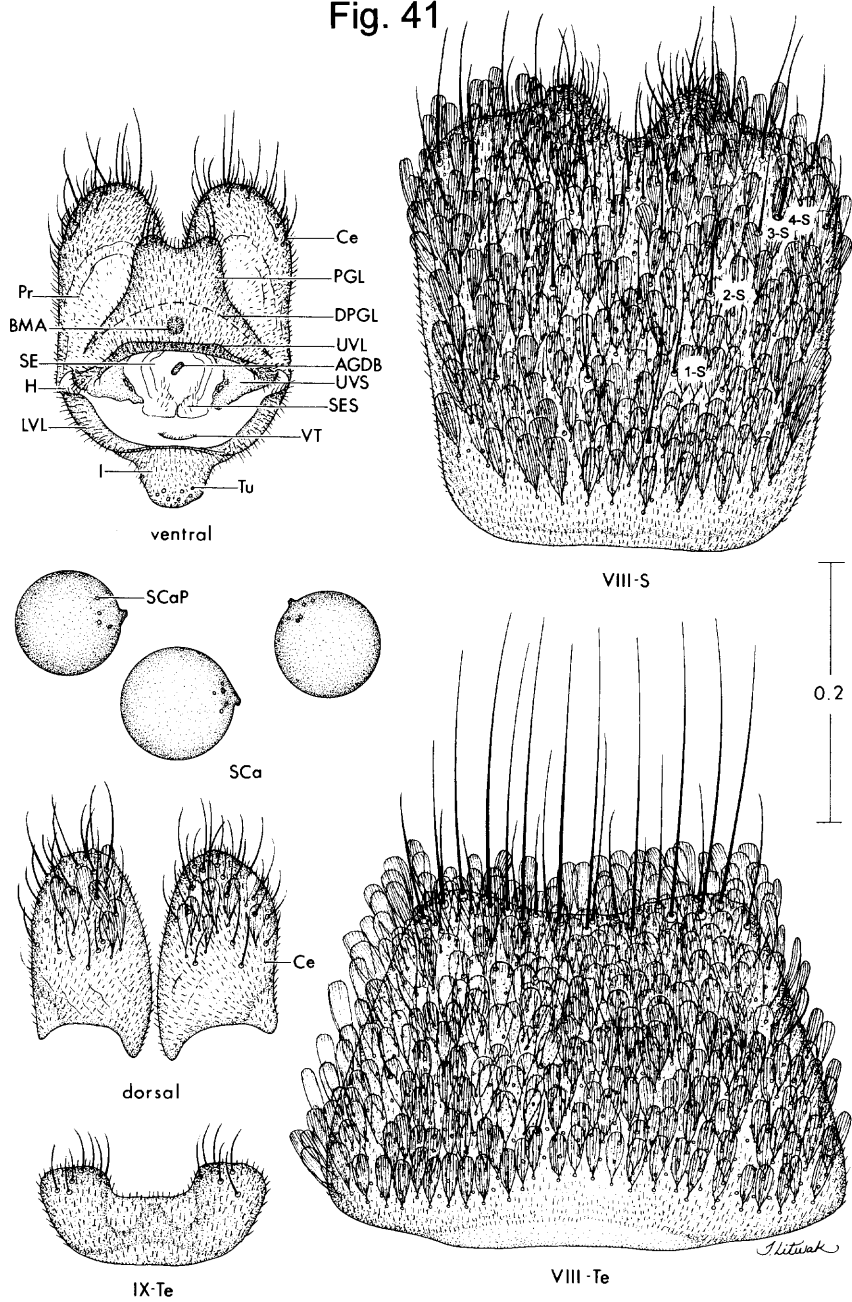
Aedes (Stegomyia) w-albus

Fig. 40



Aedes (Stegomyia) pandani

Fig. 41



Aedes (Stegomyia) desmotes

SYSTEMATIC INDEX

Valid generic, specific and subspecific taxa are italicized, synonyms and other taxa are in Roman type. Boldface page numbers are those which began the primary treatment of the taxon. Figure numbers are in parentheses.

<i>Aedes</i>	1, 2 , 3, 4, 6, 8 , 9, 11, 12, 13, 14, 15, 16, 18, 20, 21, 22, 23, 24, 25, 26, 27, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48
<i>Aedimorphus</i>	1, 3, 6, 8, 10 , 12, 13, 14, 17, 26, 28, 31
<i>aegypti</i>	8, 43, 44 , 46, 47, 48, (34)
<i>adersi</i>	24
Aedini	1, 2, 4
<i>africana</i>	25
<i>africanus</i>	25, 45, 46, 47, 48, (35)
<i>agastyai</i>	25
<i>agrihanensis</i>	43, 46, 47
<i>Alanstonea</i>	1, 2, 4, 14 , 15
<i>albicosta</i>	36
<i>albocephalus</i>	14
<i>albolineatus</i>	41 , 42, (32)
<i>albomarginatus</i>	40
<i>albopictus</i>	47, 48
<i>alboscuteclatus</i>	12, 14, (9)
<i>albothorax</i>	36
<i>alboventralis</i>	12
<i>Albuginosus</i>	1, 6, 8, 15 , 17
<i>alcasidi</i>	46
<i>amalthus</i>	48
<i>amesii</i>	33, 34
<i>angustus</i>	46
<i>annandalei</i>	47, 48
<i>annulirostris</i>	22
<i>apicoannulatus</i>	17
<i>apicoargenteus</i>	46
<i>arboricola</i>	41
<i>argenteopunctatus</i>	12, (10)
<i>argenteoventralis argenteoventralis</i>	40
<i>argenteoventralis dunni</i>	39 , 40, (31)
<i>aurimargo</i>	33 , (25)
<i>aurostriata</i>	18
<i>aurotaeniatus</i>	18 , (13)
<i>aurovenatus</i>	37
<i>Ayurakitia</i>	2
<i>Aztecaedes</i>	41
<i>bambiotai</i>	14
<i>barraudi</i>	8, 38 , (29)
<i>bekkui</i>	25, 26
<i>Belkinius</i>	1, 4, 17 , 18
<i>bequaerti</i>	36
<i>bevisi</i>	12
<i>boharti</i>	40, 41

<i>bonneae</i>	37, 38
<i>Bothaella</i>	1, 7, 18 , 19
<i>brayi</i>	22
<i>brevitibia</i>	15 , (11)
<i>bromeliae</i>	46
<i>caecus</i>	12, 14, (6)
<i>Cancraedes</i>	1, 4, 5, 20 , 21
<i>cancricomes</i>	20 , 21, (15)
<i>capensis</i>	15, 17
<i>carteri</i>	36
<i>cavaticus</i>	32 , (24)
<i>Chaetocruiomyia</i>	41
<i>chemulpoensis</i>	29, 40, 43, 45, 46, (37)
<i>Christophersiomyia</i>	1, 7, 21 , 22
<i>chrysoscuta</i>	37, 38
<i>cinereus</i>	9 , (1)
<i>circumluteolus</i>	36
<i>collessi</i>	38
<i>congolensis</i>	12
<i>contiguus</i>	46
<i>cooki</i>	46, 48
<i>corneti</i>	48
<i>craggi</i>	47, 48
<i>crassiforceps</i>	36
<i>cretinus</i>	47
<i>Culex</i>	47
Culicidae	1, 2
<i>culicinus</i>	12, 14
<i>cumminsii</i>	11, 12, 14
<i>curtipes</i>	21
<i>dalzieli</i>	12
<i>dasyorrhus</i>	34 , (26)
<i>dentatus</i>	11, 12
<i>desmotes</i>	43, 44, 46, 47, 48, (41)
<i>Diceromyia</i>	1, 8, 17, 23 , 25, 42, 47
Diptera	1
<i>domesticus</i>	11 , 12, 14, (2)
<i>dunni</i>	40
Dunnius	40
<i>durbanensis</i>	12
<i>dybasi</i>	46
<i>Edwardsaedes</i>	1, 5, 14, 25 , 26
<i>edwardsi</i>	48
<i>eldridgei</i>	19
<i>ellinorae</i>	36
<i>eritreae</i>	12
<i>esoensis</i>	9
<i>esoensis rossicus</i>	9
<i>fasciatus</i>	47
<i>fascipalpis</i>	24
<i>filicis</i>	12
<i>Finlaya</i>	41

<i>flavopictus</i>	46, 47
<i>fowleri</i>	11, 12
<i>franciscoi</i>	24, 25
<i>Fredwardsius</i>	1, 4, 27, 28, 47
<i>fumidus</i>	34, 35
<i>furcifer</i>	23, 24, 25, (17)
<i>fuscinervis</i>	36
<i>galloisi</i>	47
<i>gardnerii</i>	47
<i>gardnerii gardnerii</i>	48
<i>geoskusea</i>	29
<i>gombakensis</i>	22
<i>gouldi</i>	12, 13, 14
<i>guamensis</i>	46
<i>gurneyi</i>	46
<i>hakanssoni</i>	46
<i>haworthi</i>	15, 17
<i>heischi</i>	46
<i>helenae</i>	19, (14)
<i>hensilli</i>	46
<i>hirsutus</i>	11, 12
<i>hoogstraali</i>	40, 41, 42
<i>Huaedes</i>	1, 7, 19, 28, 29, 33, 40
<i>ibis</i>	22
<i>impatibilis</i>	42
<i>imprimens</i>	26, (20)
<i>indonesiae</i>	21
<i>Indusius</i>	1, 5, 30, 31
<i>insolens</i>	12
<i>irritans</i>	12, 14
<i>Isoaedes</i>	1, 6, 31, 32
<i>iyengari</i>	24, 25
<i>jamesi</i>	12
<i>jamoti</i>	36
<i>josiahae</i>	48
<i>kapretwae</i>	15, 16, 17
<i>kennethi</i>	15, 16, 17
<i>kesseli</i>	46, 48
<i>kleini</i>	19
<i>kohkutensis</i>	21
<i>krombeini</i>	46, 48
<i>kummi</i>	40
<i>laffooni</i>	41, 42
<i>lamelliferus</i>	34
<i>ledgeri</i>	48
<i>leptolabis</i>	12
<i>Leptosomatomyia</i>	2, 7, 19, 29, 32, 33
<i>Levua</i>	29
<i>lilii</i>	46
<i>lineatopennis</i>	36, 37, (28)
<i>Lorrainea</i>	2, 4, 5, 29, 33, 34
<i>lowisii</i>	12, 14

<i>luridus</i>	36
<i>luteocephalus</i>	46, 48
<i>luteolateralis</i>	36, 37
<i>Macleaya</i>	42
<i>malayensis</i>	46, 47, 48
<i>mamoedjoensis</i>	21
<i>Mansonia</i>	25
<i>marshallensis</i>	46
<i>marshallii</i>	15, 16, 17, (12)
<i>masculinus</i>	21
<i>mattinglyi</i>	12
<i>maxgermaini</i>	48
<i>mcintoshii</i>	35, 36
<i>mediolineatus</i>	11, 12, 13, 14, (4)
<i>mediopunctatus</i>	47, 48
<i>menoni</i>	8, 37, 38
<i>meronephada</i>	25
<i>metallicus</i>	46
<i>minutus</i>	12
<i>mixtus</i>	12
<i>mutilus</i>	12
<i>natalensis</i>	12, 39, 40
<i>natronius</i>	13, 39, 40
<i>neoafricanus</i>	47, 48
<i>Neomelaniconion</i>	2, 5, 14, 26, 35, 36
<i>ngong</i>	15, 17
<i>niger</i>	25
<i>nigrostriatus</i>	12, 13, 14
<i>novalbopictus</i>	48
<i>nummatus</i>	24, 25
<i>nyounae</i>	12
<i>oakleyi</i>	12
<i>Ochlerotatus</i>	2, 14, 25, 29
<i>ochraceus</i>	10, 12, 14
<i>opok</i>	48
<i>orbitae</i>	12, 14
<i>ostentatio</i>	38, (30)
<i>pagei</i>	37, 38
<i>palauensis</i>	46
<i>palawanicus</i>	20, 21
<i>pallidostriatus</i>	12, 13, 14
<i>palpalis</i>	14, 36, (27)
<i>pampangensis</i>	12, 13, 14, (5)
<i>pandani</i>	46, 47, (40)
<i>Paraedes</i>	2, 6, 8, 37, 38
<i>paullusi</i>	45, 46
<i>pembaensis</i>	43, (33)
<i>penghuensis</i>	21
<i>periskelatus</i>	25
<i>pernotatus</i>	46
<i>perplexus</i>	47, 48
<i>phyllolabis</i>	12

<i>pipersalatus</i>	12, 14
<i>platylepidus</i>	41
<i>polynesiensis</i>	46
<i>Protomacleaya</i>	42
<i>pseudalbolineatus</i>	40, 41, 42
<i>Pseudarmigeres</i>	2, 6, 29, 39 , 40
<i>pseudoafricanus</i>	48
<i>pseudonummatus</i>	24, 25, (18)
<i>pseudoscutellaris</i>	46, 48
<i>pseudotarsalis</i>	12
<i>Psorophora</i>	2
<i>pubescens</i>	10, 11, 12, 14
<i>pulverulentus</i>	30 , 31, (23)
<i>punctifemoris</i>	12, 14, (8)
<i>punctocostalis</i>	36, 37
<i>punctothoracis</i>	12
<i>quasiscutellaris</i>	46
<i>ramachandrai</i>	24, 25, (19)
<i>reginae</i>	25
<i>reubenae</i>	25
<i>riversi</i>	46
<i>rossicus</i>	9
<i>rotanus</i>	47
<i>ruwenzori</i>	44, 46, 48
<i>saimedres</i>	48
<i>saipanensis</i>	43, 46, 47
<i>scanloni</i>	25
<i>schwetzi</i>	46, 47
<i>scutellaris</i>	45, 47, (38)
<i>scutellaris malayensis</i>	48
<i>Scutomyia</i>	2, 7, 28, 40 , 41, 42, 47
<i>scutoscriptus</i>	47
<i>seampi</i>	48
<i>seatoi</i>	45, 47, 48
<i>semlikiensis</i>	12
<i>senyavinensis</i>	12
<i>simpsoni</i>	45, 46, (36)
<i>simulans</i>	17
<i>Skusea</i>	2, 3, 4, 42 , 43
<i>soleatus</i>	46
<i>Stegomyia</i>	2, 8, 17, 18, 22, 28, 29, 40, 43 , 47
<i>stenoetrus</i>	12, 14
<i>stokesi</i>	15, 17
<i>subdentatus</i>	11, 12
<i>syntheticus</i>	12, 13
<i>taeniarostris</i>	36
<i>taeniorhynchoides</i>	12, 14, (7)
<i>tarsalis</i>	12
<i>taylori</i>	24
<i>teesdalei</i>	15, 16, 17
<i>thailandensis</i>	37, 38
<i>thomsoni</i>	22 , (16)

<i>thurmanae</i>	21
<i>tongae</i>	47
<i>tongae tongae</i>	48
<i>tongae tabu</i>	48
<i>treubi</i>	15
<i>trimaculatus</i>	12, 13
<i>trukensis</i>	12
<i>Udaya</i>	2
<i>unidentatus</i>	36
<i>unilineatus</i>	47, 48
<i>upolensis</i>	47
<i>variepictus</i>	28, 29
<i>Verrallina</i>	2
<i>vexans</i>	14, (3)
<i>vexans nipponii</i>	12, 14
<i>vexans vexans</i>	12, 14
<i>vittatus</i>	27, 28, 47, (21)
<i>w-albus</i>	46, 47, 48, (39)
<i>wauensis</i>	29, (22)
<i>whartoni</i>	25
<i>wigglesworthi</i>	12
<i>woodi</i>	46
<i>yamadai</i>	9
<i>zethus</i>	24
<i>Zeugnomyia</i>	2, 40