

CONTRIBUTIONS TO THE MOSQUITO FAUNA OF SOUTHEAST ASIA. -XVIII.

A RECONSIDERATION OF *DICEROMYIA* THEOBALD WITH THE
INCLUSION OF *AEDES NUMMATUS* EDWARDS AND *AEDES*
PSEUDONUMMATUS NEW SPECIES (DIPTERA: CULICIDAE)¹

By

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ABSTRACT

Aedes nummatus Edwards is redescribed and the adult habitus, female and male genitalia and larva are illustrated. *Aedes pseudonummatus*, new species, is described and the female habitus and genitalia are illustrated. These 2 species are placed in the subgenus *Diceromyia* Theobald, *nummatus* being transferred from the subgenus *Aedimorphus* Theobald. A map shows the distribution of the above 2 species. Characters of *Diceromyia* are compared to related subgenera of *Aedes* Meigen.

INTRODUCTION

Edwards (1923: 4) in his original description of *Aedes nummatus* placed it in the subgenus *Aedimorphus* Theobald but stated that the reduced male palpi and the thoracic adornment differed strikingly from all other known species of the subgenus. He later (1932: 166) placed it in a monotypic species group (Group B) of *Aedimorphus*. Barraud (1928: 667, 1934: 265) also considered it as belonging to *Aedimorphus* but as an aberrant species differing in many respects from the other species in the subgenus. Reinert (1970b: 130) indicated that *nummatus* possessed morphological and ecological resemblances to the subgenus *Diceromyia* Theobald of *Aedes*.

Since the revision of the subgenus *Diceromyia* (Reinert 1970a) and during the revision of the subgenus *Aedimorphus* (Reinert 1973a) it became evident that *Aedes nummatus* shared many important features with both the Oriental and African members of the subgenus *Diceromyia* and possessed

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fewer characters in common with the subgenus *Aedimorphus*. This species, along with the following new species, appears morphologically to form a connecting link between the African and Oriental species of *Diceromyia*; therefore, because of the similarities of these 2 species to each other and to this subgenus, I am placing *pseudonummatus*, new species, in the subgenus *Diceromyia* and transferring *nummatus* to this subgenus. Notes on the subgenus *Diceromyia* and a comparison of characters with related subgenera are presented in the taxonomic discussion section of *nummatus*.

Nomenclature and chaetotaxy used for females, males and male genitalia follow Knight (1970) and Knight and Laffoon (1970a, 1970b, 1971a, 1971b). The terminology of the female genitalia follows Laffoon and Knight (1971) and Reinert (1973a). Illustrations of *nummatus* (Figs. 1-4) and *pseudonummatus* (Figs. 4-5) and a map (Fig. 6) showing their geographical distributions are included.

AEDES (DICEROMYIA) NUMMATUS EDWARDS

(Figs. 1, 2, 3, 4)

Aedes (*Aedimorphus*) *nummatus* Edwards 1923, Bull. ent. Res. 14: 4 (♂, ♀); Edwards 1932, Genera Insec., Fasc. 194: 167; Barraud 1934, Fauna Brit. India, Diptera 5: 265 (♂*, ♀, L*).

Aedes (*Aedimorphus*) *nummatus* Edwards, Barraud 1928, Indian J. med. Res. 15: 667 (♂*, ♀); Stone et al. 1959, Thomas Say Found. 6: 195.

FEMALE (Fig. 1). *Head*. Antenna dark brown, approximately 0.87 length of proboscis, pedicel dark brown with several small, broad, brown scales and a few short, fine, brown hairs mesally, flagellomere 1 with basal 0.40 pale and with a few small, broad, brown scales; clypeus dark brown, bare; maxillary palpus dark brown scaled, approximately 0.19 length of proboscis; proboscis dark brown scaled, approximately 1.10 length of femur I; vertex covered with broad, decumbent, dark brown scales and with a small posteromedian triangular patch of dusky-white ones; ocular line with a narrow row of broad white scales; lateral surface covered with broad dusky-white scales and connected to ocular line of white scales; occiput with a number of golden, erect, forked scales; eyes contiguous in front; 1 pair of long brown interocular setae; 8 long brown ocular setae. *Thorax*. Scutal integument dark brown; scutum covered with narrow curved dark reddish-brown scales with a large circular patch of narrow curved snowy-white scales covering most of anterior 0.50 of scutum but not reaching anterior and lateral margins which are reddish-brown scaled; prescutellar space bare; scutellum with a large patch of broad brown scales on median lobe and narrow curved brown ones on lateral lobe; following setae brown and well developed: 2-3 long and 3-4 short anterior promontory, scutal fossal (4-6 anterior, 3-4 lateral and 1 posterior), dorsocentral (0-1 in posterior of pale scaled area and several posterior ones), 34-49 supraalar, several posterior medial scutal, 1 postalar callar and scutellar (3-4 long and 3-4 short on lateral lobe, 4-5 long and 5-6 short on median lobe), other setae absent; pleural integument dark brown; antepnota normal size, widely separated, each with narrow curved reddish-brown scales, 12-15 long brown setae; postpronotum with narrow curved reddish-brown scales dorsally and 4-5 moderately broad white ones below, 3 golden posterior setae, upper one short and other 2 long; propleuron covered with broad snowy-white scales, 7-9 golden setae; prosternum bare; postspiracular area with 2-3 broad snowy-white scales;

mesepisternum with a large patch of broad snowy-white scales on upper area and extending ventrally over posterior area, 4-5 upper and 16-19 posterior golden-brown setae, lower ones shorter; prealar knob with 9-12 golden setae; paratergite narrow, bare; mesepimeron with a patch of broad snowy-white scales on upper area, 11-12 golden setae on upper area posterior to scale patch; other pleural areas bare. *Legs.* Coxae I-III each with several golden and brown setae, I with broad light brown scales and a small dorsal patch of snowy-white scales on anterior and lateral surfaces, II and III each with a patch of broad snowy-white scales on anterior surface; trochanters I-III each with several short pale setae and a patch of snowy-white scales; femora I and II with dark brown scales on anterior surface, I also with a large number of pale scales on basal 0.30-0.35, II also with a few pale scales at base and similar ones forming an incomplete, anteroventral, longitudinal stripe on apical 0.50-0.60, III covered with snowy-white scales and a narrow longitudinal stripe of brown scales on dorsal 0.50-0.60 which overlaps slightly onto anterior surface and greatly onto posterior surface, I with posterior surface snowy-white scaled with a narrow, longitudinal, brown scaled stripe on dorsoapical 0.25-0.30 and one on ventroapical 0.50-0.60, II with posterior surface snowy-white scaled with a posterodorsal, narrow, longitudinal, brown scaled stripe on apical 0.40-0.50; tibiae I-III covered with dark brown scales, I also with a posteroventral, longitudinal, snowy-white scaled stripe from base to apex, II also with a posteromedian, longitudinal, snowy-white scaled stripe from base to apex; tarsi I-III dark brown scaled, II and III also with a ventral, longitudinal, pale scaled stripe on tarsomere 1; posttarsi I-III each with 2 ungues, I and II with ungues equal in size, each with a tooth, III with ungues equal in size and simple. *Wing.* Dorsal and ventral veins with brown scales; alula with moderately broad brown scales along margin and a short second row above; 1-2 remigial setae; upper calypter with numerous dark hairs. *Halter.* Pedicel pale; capitellum covered with snowy-white scales and a few dusky ones at base. *Abdomen.* Terga I-VII each brown scaled with a large laterobasal triangular spot of snowy-white scales, spot largest on II and smaller on others; sterna white scaled with dusky scales along posterior margins; terga and sterna with numerous golden setae, mostly along posterior margins. *Genitalia* (Fig. 2). Tergum VIII with base and apex each slightly concave, 0.65 retracted into segment VII, several long stout setae on apical margin and a number of short and a few moderately long ones on apical 0.35, covered with minute spicules, numerous broad scales covering most of surface, index 0.49; sternum VIII with base slightly concave, apex with a small median indentation and a small lobe on each side of midline, numerous setae and broad scales covering most of surface, covered with minute spicules, index 0.72; tergum IX short, moderately pigmented, apex with a small median indentation and with 4-5 setae on each side of midline, covered with minute spicules; insula long, tongue-like, covered with minute spicules and with 2 small tuberculi on apical 0.20; lower and upper vaginal lips narrow, moderately pigmented, covered with small spicules; upper vaginal sclerite large and moderately pigmented; postgenital lobe moderately long and broad, apex broadly rounded, several short and 5-6 long setae on apical 0.45, covered with small spicules; cercus short, apex broadly rounded with a few long stout setae, completely covered with minute spicules, dorsal surface with a number of short and moderately long setae and broad scales, index 2.15; 3 pigmented, spherical seminal capsules, 1 large and 2 slightly smaller ones.

MALE (Fig. 1). Similar to female in general habitus but differs as follows. *Head.* Maxillary palpus brown, slender and 5 segmented, segments 1,

2 and 5 small, apical segment slightly downturned with 4-5 short and 2-3 longer dark brown setae at apex, 3-4 short dark brown setae ventrally at apex of segment 3, overall length approximately 0.42 length of proboscis; vertex and lateral surface of head covered with broad, decumbent, white scales with light brown ones intermixed. *Thorax*. Anteprenotum with narrow curved brown scales and a few broad pale brown ones; propleuron with 5 setae; mesepimeron with a patch of 9-11 upper setae and 1 lower one. *Legs*. Femur II with posterior surface white scaled with a triangular dorsoapical brown scaled spot which tapers to a point near mid femur; posttarsi I-III each with 2 ungues, I and II with ungues unequal in size, each with a tooth, III with ungues equal in size and simple. *Abdomen*. Tergum VIII white scaled; sternum VIII brown scaled. *Genitalia* (Fig. 3). Tergum IX bilobed with 5-7 setae on each lobe, entire surface covered with minute spicules; gonocoxite short and moderately broad, dorsal surface with numerous moderately long setae, lateral surface with a number of long stout setae from base to apex, ventral surface with a number of short setae mesally on basal 0.50 and numerous moderately long and long stout setae on distal 0.50, scattered scales on lateral and ventral surfaces; gonostylus with basal 0.34 broad and apical 0.66 forked into a slightly longer, narrow, lateral arm with a minute seta at the apex and a mesal, narrow, slightly shorter arm with a short apical, pigmented gonostylar claw; basal mesal lobe with an apical, moderately long, flattened seta and 4-5 shorter setae, distal one of these somewhat stouter, entire surface covered with short hair-like spicules; proctiger moderately long, paraproct moderately to heavily pigmented and with 3 bluntly pointed teeth apically, cercal setae absent; phallosome with aedeagus with 2 lateral plates connected basally, each plate with 7-8 long, longitudinal, lateral teeth with tergally curved apices and covered with a very lightly pigmented dorsal flap which has scattered hair-like spicules on sternal surface, paramere moderately long, approximately 0.65 length of lateral aedeagal plate, parameral apodeme broad basally and tapering into a long, narrow, distal arm; sternum IX large, entire surface covered with minute spicules, 4 setae near center (lateral 2 shorter).

PUPA and EGG. Not known.

LARVA (Fig. 4). The following description is from 2 badly damaged skins, one of them from the holotype. *Head*. Seta 0-C minute and single; 1-C long, stout and single; 3-C short and single; 4-C short and 12-14 branched; 8-C short and 4 branched; 9-C short and triple; 10-C short and 4 branched; 11-C moderately long, barbed and 5-6 branched; 12-C short and 9-10 branched; 13-C moderately long and 7 branched; 14-C short and single; 15-C short and double to 5 branched; 6-MP short and single; mental plate with 24-25 teeth. *Antenna*. Moderately long, apical 0.50 slightly incurved, moderately pigmented with a few small spicules on basal 0.50 of shaft; 1-A attached 0.49 from base; 2, 4-A long, approximately equal in length; 3-A approximately 0.50 length of 2-A. *Thorax*. Seta 0-P with 18-20 branches; 1-P triple or 4 branched; 2, 6, 9, 10, 12-P single; 3-P with 5 branches; 4, 7, 8-P triple; 5-7-P long and barbed; 11-P single or double; 14-P double or triple; 1, 8-M single; 2-M single or double; 3-M double; 4-M with 4 branches; 5, 7, 11-M single; 6-M with 4-5 branches; 5, 6-M long and barbed; 13-M with 15-18 branches; 14-M with 22-26 branches; 1-T with 5-6 branches; 2-T with 4-5 branches; 3-T with 21-22 branches; 4-T with 5 branches; 5, 11, 12-T single; 6-T double; 7-T long, barbed with 8 branches; 8-T with 8-12 branches; 13-T with 4-5 branches. *Abdomen*. Seta 1-I with 7-8 branches; 2-I single; 3-I double or triple; 4-I with 23-25 branches; 5-I with 5-7 branches; 6-I long, barbed with 7

branches; 9-I triple; 1-II with 24-28 branches; 2, 9, 10-II single; 3-II double to 4 branched; 5-II with 6 branches; 6-II long, barbed with 6-7 branches; 7-II moderately long, barbed with 8-10 branches; 8-II double or triple; 11-II double; 12-II triple; 13-II with 30-40 branches; 1, 3-III with 4 branches; 2, 8, 9-III single; 5-III with 5 branches; 6, 10, 11, 13-III double; 7-III with 10-14 branches; 12-III triple or 4 branched; 1, 10, 11-IV triple; 2, 8, 9-IV single; 3-IV with 4 branches; 4, 12, 13-IV double; 5-IV with 6 branches; 7-IV with 6-9 branches; 2, 8, 9, 12-V single; 3-V double; 5-V triple; 6-V long and double; 7-V with 7-11 branches; 10, 11-V double or triple; 13-V with 4 branches; 6-VI long and double; 1-VII long and single; 2, 11-VII single; 3-VII with 4-6 branches; 5-VII with 10 branches; 6-VII with 18-27 branches; 7-VII long, double or triple; 8-VII with 28-30 branches; 9-VII with 4 branches; 10, 12-VII triple or 4 branched; 13-VII with 6-10 branches; 0, 14-VIII single; 1-VIII with 5-6 branches; 2-VIII double or triple; 3-VIII long, barbed and triple or 4 branched; 4-VIII single or double; 5-VIII barbed with 4-6 branches; comb with 21-24 scales arranged in 2 irregular rows, each scale with a long, bluntly rounded, median spine with short denticles on lateral margins and apex; 1-X short and triple or 4 branched; 2-X long and single or double; 3-X long and single; ventral brush with 10 setae on grid and no precratal ones, setae with 7-12 branches; 4 anal papillae, moderately long and slender; saddle moderately pigmented, incompletely rings segment X, acus absent. *Siphon*. Moderately pigmented, index 3.50-4.00; pecten composed of 12-14 evenly spaced teeth, each tooth long, slender, pointed and with a ventral row of tiny denticles from base to near apex; seta 1-S small, triple or 4 branched, inserted 0.67-0.73 from base; 2-S small and single.

TYPE-DATA. *Aedes (Aedimorphus) nummatus* Edwards, holotype male with associated larval skin, Meenglas, Bengal, INDIA, VIII-1922, M.O.T. Iyengar collector, adult reared from a larva collected from water in a treehole, type deposited in British Museum (Natural History). Edwards (1923: 5) states the female allotype is in Mr. Iyengar's collection.

DISTRIBUTION. Specimens examined: INDIA, Assam, Haflong, 2 females, Aug. 1922, P. J. Barraud; Bengal, Meenglas, Jalpaiguri, 1 male (holotype) with associated larval skin and 1 female with associated larval skin, Aug. 1922, M. O. T. Iyengar; and Sukna, 1 male, 28 Aug. 1922, P. J. Barraud. *Other distribution*. INDIA, Assam, Nongpoh, Khasi Hill Dist.; Haflong, Cachar Hills (Barraud 1934: 267).

BIOLOGY. The type was reared from a larva which was collected from water in a treehole (Edwards 1923: 5). Barraud (1928: 667) records larvae collected from water in treeholes and similar situations and from a broken bottle in the jungle. Barraud (1934: 267) also collected larvae from water in bamboos and at an elevation of 500 feet in Sukna, India.

TAXONOMIC DISCUSSION. *Aedes nummatus* and *pseudonummatus*, new species, possess a greater number of morphological and ecological similarities to the subgenera *Diceromyia* and *Stegomyia* than to the subgenus *Aedimorphus*. A comparison of the adult females of these 2 species with the other *Diceromyia* and related subgenera of *Aedes* follows: (1) head with only decumbent broad scales on vertex and erect forked scales restricted to occiput; *Diceromyia* with decumbent broad scales on vertex (a few African species with moderately broad curved scales, e.g., *flavicollis* Edwards, *furcifer* Edwards, *taylori* Edwards) and most Oriental species have numerous erect forked scales on occiput and none or only a very few near anterior portion of vertex, however, *periskelatus* (Giles) and all African species have erect forked scales on vertex as well as occiput; *Stegomyia* with decumbent broad scales on vertex and erect forked scales restricted to occiput; *Aedimorphus* with decumbent, narrow, curved

scales on vertex (broad scales present in *punctifemoris* (Ludlow) and a few African species) and erect forked scales numerous on occiput and vertex extending to ocular line, (2) antennal pedicel with a few small broad scales and short fine hairs mesally which is similar to both *Diceromyia* and *Aedimorphus* but unlike *Stegomyia* which has a large patch of broad, overlapping, snowy-white or silvery scales on mesal and ventral areas which usually extends onto lower portion of lateral surface, (3) prosternum bare which is similar to both *Diceromyia* and *Aedimorphus* except females of the *vexans* group which have a few narrow scales on ventral area (scales absent in males of this group) but unlike *Stegomyia* which has broad white scales on this structure, at least on dorsolateral area, (4) propleuron of female with 7-9 setae; *Diceromyia* with 4-10 setae; *Aedimorphus* with 10-38 setae (usually 12 or more) and *Stegomyia* with 4-7 setae, (5) mesepisternum with 4-5 upper and 16-19 posterior setae which is similar to *Diceromyia* (0-4 upper and 7-16 posterior) and *Aedimorphus* (2-6 upper, usually 3-4 and 10-24 posterior) while *Stegomyia* has 0-2 upper and 1-8 posterior setae (usually only 2-4 posterior setae), (6) acrostichal setae absent which is similar to *Stegomyia* and most Oriental *Diceromyia* (African species and the following Oriental species -- *micropterus* (Giles), *periskelatus* and *reginae* Edwards with acrostichal setae) while all species of *Aedimorphus* have these setae, (7) wing with 1-2 remigial setae which is similar to *Diceromyia* and *Aedimorphus* but unlike *Stegomyia* in which these setae are absent, (8) alula of wing with 2 rows of moderately broad scales (1 row on margin and a second shorter linear row above) which is similar to *Diceromyia* and many *Stegomyia* but unlike all *Aedimorphus* which have a single row of narrow scales along the margin and (9) female posttarsi I-III each with 2 ungues, I and II with ungues each with a tooth and III with ungues simple which is similar to African species of *Diceromyia* (Oriental species with all ungues of posttarsi simple), most species of *Stegomyia* (*scutellaris* group with all ungues simple) and *Aedimorphus* except for a few species (e.g., *pampangensis* (Ludlow) which has ungues of III toothed, *stenoetrus* (Theobald), *vexans vexans* (Meigen) and *vexans nipponii* (Theobald) which have ungues of III toothed or simple).

The female genitalia of *nummatus* and *pseudonummatus* are very similar to both *Diceromyia* and *Stegomyia*; however, a greater number of features are shared with the former subgenus. These 2 species resemble Oriental members of *Diceromyia* in the development of tergum IX and African species of the subgenus in the development of tergum VIII, sternum VIII and presence of numerous broad scales on the cerci. Other features of the female genitalia are similar to both the Oriental and African species of the subgenus. Female genitalia of *Stegomyia* differ primarily in the development of tergum VIII and sternum VIII and may have broad scales present or absent on the cerci depending on the species. Both species differ sharply from *Aedimorphus* by the short, blunt cerci with numerous scales, shape and presence of numerous scales on sternum VIII and tergum VIII, and postgenital lobe which has a broadly rounded apex. *Aedimorphus* species have long cerci with none to only a few moderately broad scales, 0-4 scales on a heart-shaped sternum VIII, 0-4 scales on tergum VIII and postgenital lobe with a moderately deep to deep median apical notch.

The male genitalia of *nummatus* resemble African members of *Diceromyia* in the development of the basal mesal lobe, proctiger and forked gonostylus (e.g., *fascipalpis* (Edwards), *furcifer*, *taylori*) and Oriental species in the development of the phallosome and gonocoxite. The aedeagus of *nummatus* is composed of 2 lateral plates each with several longitudinal teeth and covered with a lightly pigmented dorsal flap which is like other Oriental species of *Dicero-*

myia. The subgenus *Ayurakitia* Thurman possesses a similar phallosome but the adults are easily distinguished from *Diceromyia* by the absence of post-spiracular setae. *Aedimorphus* genitalia have the aedeagus similarly developed to *Diceromyia* except the dorsal flap is heavily pigmented, gonocoxite moderately long, proctiger usually with a subapical, small, thumb-like process and the gonostylus which is greatly expanded distally or blade-like (*vexans* group). Genitalia of *Stegomyia* lack the aedeagal dorsal flap, usually have a long slender gonostylus with an apical gonostylar claw (*albolineatus* group with a gonostylus which resembles those of several African species of *Diceromyia*) and proctiger differently developed.

The adult habitus of *nummatus* and *pseudonummatu*s has a large white scaled area on anterior of the scutum which superficially resembles members of the *Aedes* (*Finlaya*) *niveus* group and *Aedes* (*Chaetocruimyia*) *spinosipes* Edwards. These 2 species are easily distinguished from the *Finlaya* by the aedeagus of the male genitalia which has 2 lateral toothed plates and the female genitalia which have a tongue-like insula without setae while the *Finlaya* have the male aedeagus simple, trough-like and without teeth and the female insula is lip-like with a few long well developed setae. From *spinosipes* these 2 species differ by the absence of acrostichal setae and the absence of a patch of long, narrow, forked scales arising from base of the remigium.

The male maxillary palpi of *nummatus* are slender, approximately 0.42 length of the proboscis, with only a few short setae and have the apical 2 segments short which are similar to *Aedes* (*Finlaya*) *okinawanus* Bohart, several species of the *albolineatus* group of *Stegomyia* (group as outlined by Knight and Rozeboom, 1946) and the subgenus *Diceromyia* (except the overall length). *Aedes nummatus* can be separated from *okinawanus* by the characters of the *Finlaya* mentioned above and from the *Stegomyia* by a combination of characters given by Reinert (1973b). Some of these characters of the *Stegomyia* that differ from *nummatus* and *pseudonummatu*s not mentioned above are: mesepimeron without lower setae, tarsus III always with a large white dorso-basal patch or band of white scales on tarsomeres 1 and 2 and female maxillary palpi with a large dorsoapical spot or apical band of snowy-white scales (palpi dark scaled in *albolineatus* group).

The larva of *nummatus* has head seta 4-C medium size, multiple branched and mesad to 6-C, 5-C is caudad to 6-C, abdominal setae 6-I-VII moderately long to long, 1-VII long, comb scales thorn-like, abdominal segment X without precratal setae in ventral brush, saddle and siphon without an acus, and larval habitat in water in bamboos and treeholes. This combination of larval features differs from *Aedimorphus* but fits *Diceromyia* and is somewhat similar to *Stegomyia*; however, the presence of 10 setae in the ventral brush on segment X, each of which has 7-12 branches, resembles *Aedimorphus* except for the absence of precratal setae.

From the above comparison of *nummatus* and *pseudonummatu*s with the subgenera of *Aedes* it becomes evident they share many important features with *Diceromyia* and fewer with other subgenera and are therefore placed in *Diceromyia* but in a separate species group. Also from a comparison of features it appears the subgenus *Diceromyia* contains species that share a number of characters with both *Aedimorphus* and *Stegomyia* but with an apparent closer relationship with the latter subgenus.

Aedes nummatus and *pseudonummatu*s adults are easily identified from the other species of *Diceromyia* by the large white scaled patch on the anterior 0.50 of the scutum. The larva of *nummatus* is distinguished from other members of the subgenus by the pecten teeth which are long, slender and with hair-

like denticles along the ventral margins.

AEDES (*DICEROMYIA*) *PSEUDONUMMATUS*, NEW SPECIES

(Figs. 4, 5)

FEMALE (Fig. 4). *Head*. Antenna dark brown, approximately 0.90 length of proboscis, pedicel dark brown with a few small, broad, brown scales and a few short, fine, brown hairs mesally, flagellomere 1 with basal 0.50 pale and with several small, broad, brown scales; clypeus dark brown, bare; maxillary palpus dark brown scaled, approximately 0.19 length of proboscis; proboscis dark brown scaled, approximately 1.08 length of femur I; vertex covered with broad, decumbent, dark brown scales with a posteromedian triangular patch of dusky-white ones, patch with posterior margin moderately broad and tapered to a long narrow apex before reaching ocular line which has a narrow row of similar scales; lateral surface covered with broad dusky-white scales and connected to ocular line of similar scales; occiput with a number of golden, erect, forked scales; eyes contiguous in front; 1 pair of long brown interocular setae; 8 long brown ocular setae. *Thorax*. Scutal integument dark brown; scutum covered with narrow curved scales with prescutellar space bare, posterior 0.50 of scutum with dark reddish-brown scales and small patches of similar scales on anterior promontory and anterior scutal fossal areas, anterior 0.50 of scutum covered with snowy-white scales extending to lateral margins and a few similar scales along lateral margins of prescutellar bare space; scutellum with a large patch of broad snowy-white scales on median lobe and narrow curved snowy-white scales on lateral lobe; following setae brown and well developed: 4 long and 3 short median anterior promontory, scutal fossal (8-9 anterior, 2-3 lateral and 2 posterior), dorsocentral (2-3 in pale scaled area and several posterior ones), 52-57 supra-alar, several posterior medial scutal, 1 postalar callar and scutellar (4-5 long and 3-4 short on lateral lobe, 6 long and 6 short on median lobe), other setae absent; pleural integument dark brown; antepnота normal size, widely separated, each with narrow curved snowy-white scales, 12 long golden and brown setae; postpronotum with narrow curved scales, reddish-brown ones dorsally and a small lower posterior patch of snowy-white ones, 4 posterior golden setae, upper and lower ones short and middle 2 long; propleuron covered with broad snowy-white scales, 9-10 golden setae; prosternum bare; postspiracular area with a posterior patch of broad snowy-white scales, 5 long golden bristles; subspiracular area with a small patch of 5 broad snowy-white scales; mesepisternum with a large patch of broad snowy-white scales on upper area and extending ventrally over posterior area, 4 upper and 19 posterior golden setae, lower ones shorter; prealar knob with 15-16 golden setae; paratergite narrow, bare; mesepimeron with a large patch of broad snowy-white scales on upper area, 17-18 short golden setae on upper area posterior to scale patch; other pleural areas bare. *Legs*. Coxae I-III each with several golden and brown setae, I with broad snowy-white scales on anterior and lateral surfaces, a small patch of broad pale brown scales near middle of pale area, II and III each with a patch of broad snowy-white scales on anterior surface; trochanters I-III each with several short pale setae and a patch of snowy-white scales; femora I and II with broad dark brown scales on anterior surface, I also with a large number of pale scales on basal 0.33, II also with a narrow, antero-ventral, longitudinal, snowy-white scaled stripe from base to near apex, III with anterior surface covered with snowy-white scales and a narrow, dorsal, longitudinal brown scaled stripe on apical 0.40, I with posterior surface snowy-white

scaled with a narrow, posteroventral, longitudinal, dark brown scaled stripe on apical 0.75, II and III each with posterior surface snowy-white scaled with a posterodorsal dark brown scaled area on apical 0.40; tibiae I-III each dark brown scaled, I also with a posteroventral, longitudinal white scaled stripe from base to apex, II also with a posterior, longitudinal, wide white scaled stripe from base to apex, III also with a ventral, longitudinal, indistinct, pale, scaled stripe from base to near apex; tarsi I-III each dark brown scaled, II also with a posterior, longitudinal, narrow pale scaled stripe on tarsomeres 1-3, III also with a ventral, longitudinal, narrow, pale scaled stripe on tarsomeres 1 and 2; posttarsi I-III each with 2 ungues, I and II with ungues equal in size, each with a tooth, III with ungues equal in size and simple. *Wing*. Dorsal and ventral veins covered with dark brown scales except for a small patch of snowy-white scales at base of costa; alula with moderately broad brown scales along margin and a short second, longitudinal row above; 2 remigial setae; upper calypter with numerous dark hairs. *Halter*. Pedicel pale; capitellum covered with snowy-white scales and with brown ones dorsally and mesally. *Abdomen*. Terga I-VII each dark brown scaled with a large laterobasal patch of snowy-white scales; sterna snowy-white scaled, V-VIII each also with a posterior, narrow dark brown scaled band; terga and sterna with numerous short golden setae, mostly along posterior margins. *Genitalia* (Fig. 5). Tergum VIII with base and apex slightly concave, 0.50 retracted into segment VII, several long stout setae on apical margin and a number of short and a few moderately long ones on apical 0.42, covered with minute spicules, numerous broad scales covering most of surface, index 0.50; sternum VIII with base slightly concave mesally, apex with a small median indentation and a small lobe on each side of midline, numerous setae and broad scales covering most of surface, covered with minute spicules, index 0.70; tergum IX short, moderately pigmented, apex with a small median indentation and with 6-7 setae on each side of midline, covered with minute spicules, index 0.59; insula long, tongue-like, covered with minute spicules and with 2 small tuberculi on apical 0.20; lower and upper vaginal lips narrow, moderately pigmented, covered with small spicules; upper vaginal sclerite large and moderately pigmented; postgenital lobe moderately long and broad, apex broadly rounded, 23 short and 4 long setae on apical 0.50, covered with small spicules, dorsal PGL index 0.80, ventral PGL index 1.30; cercus short, apex broadly rounded with a few long stout setae, completely covered with minute spicules, dorsal surface with a number of short and moderately long setae and broad scales, index 2.02; 3 pigmented, spherical seminal capsules, 1 large and 2 slightly smaller ones.

MALE, PUPA, LARVA and EGG. Not known.

TYPE-DATA. Holotype female (genitalia removed and mounted on a microscope slide, preparation number T72.610), Doi Jom Jang, near Wat Phra Bat Mon Kaeo, Amphoe Sanpatong, *Chiang Mai*, THAILAND, 25 September 1963, Mr. Seham Esah collector, collection number CM 119-1-33, female reared from a larva collected from water in a treehole, at an elevation of 382 meters, type deposited in U. S. National Museum (Natural History), Washington, D.C. Unfortunately the immature skins were lost and I did not see them.

DISTRIBUTION. Known only from the type-locality.

BIOLOGY. The holotype female was reared from a larva which was collected from water in a treehole.

TAXONOMIC DISCUSSION. *Aedes pseudonummatus* is very similar in adult habitus and female genitalia to *nummatus* but can be separated by the following features: *pseudonummatus* possesses: scutum with a large patch of

snowy-white scales on anterior 0.50 which extends to lateral margins of scutum; scutellum with snowy-white scales on each lobe; 52-57 supra-alar setae; anteprenotum with snowy-white scales; mesepimeron with 17-18 setae on upper posterior area; and female genitalia with 6-7 setae on each lobe of tergum IX while *nummatus* possesses: scutum with a large patch of snowy-white scales on anterior 0.50 which does not reach lateral margins of scutum; scutellum with dark brown scales on each lobe; 34-49 supra-alar setae; anteprenotum with reddish-brown scales; mesepimeron with 11-12 setae on upper posterior area; female genitalia with 4-5 setae on each lobe of tergum IX. Additional information is included in the taxonomic discussion section of *nummatus*.

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6. Distribution of *Aedes* (*Diceromyia*) *nummatus* and *pseudonummatus*

Fig. 1

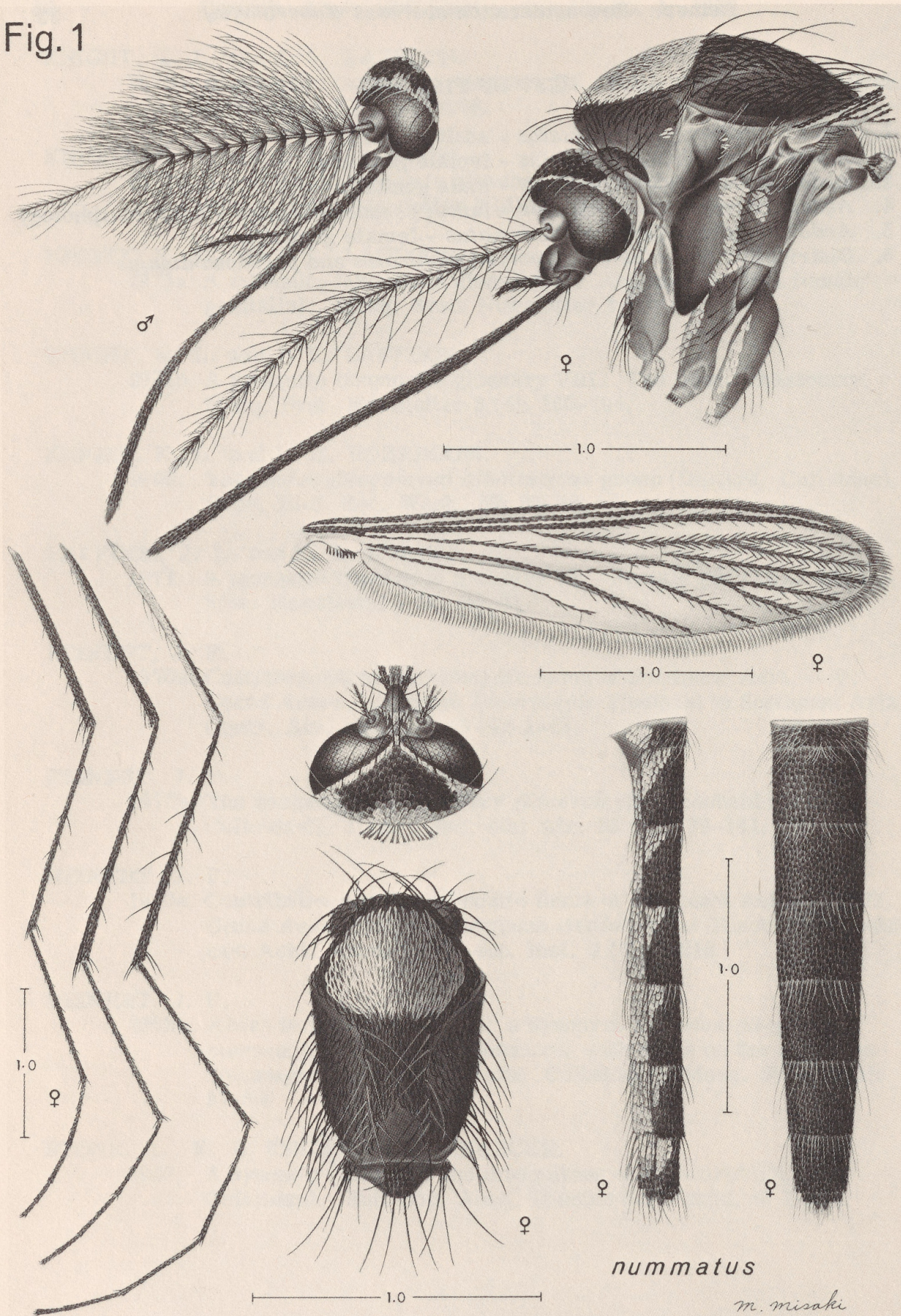


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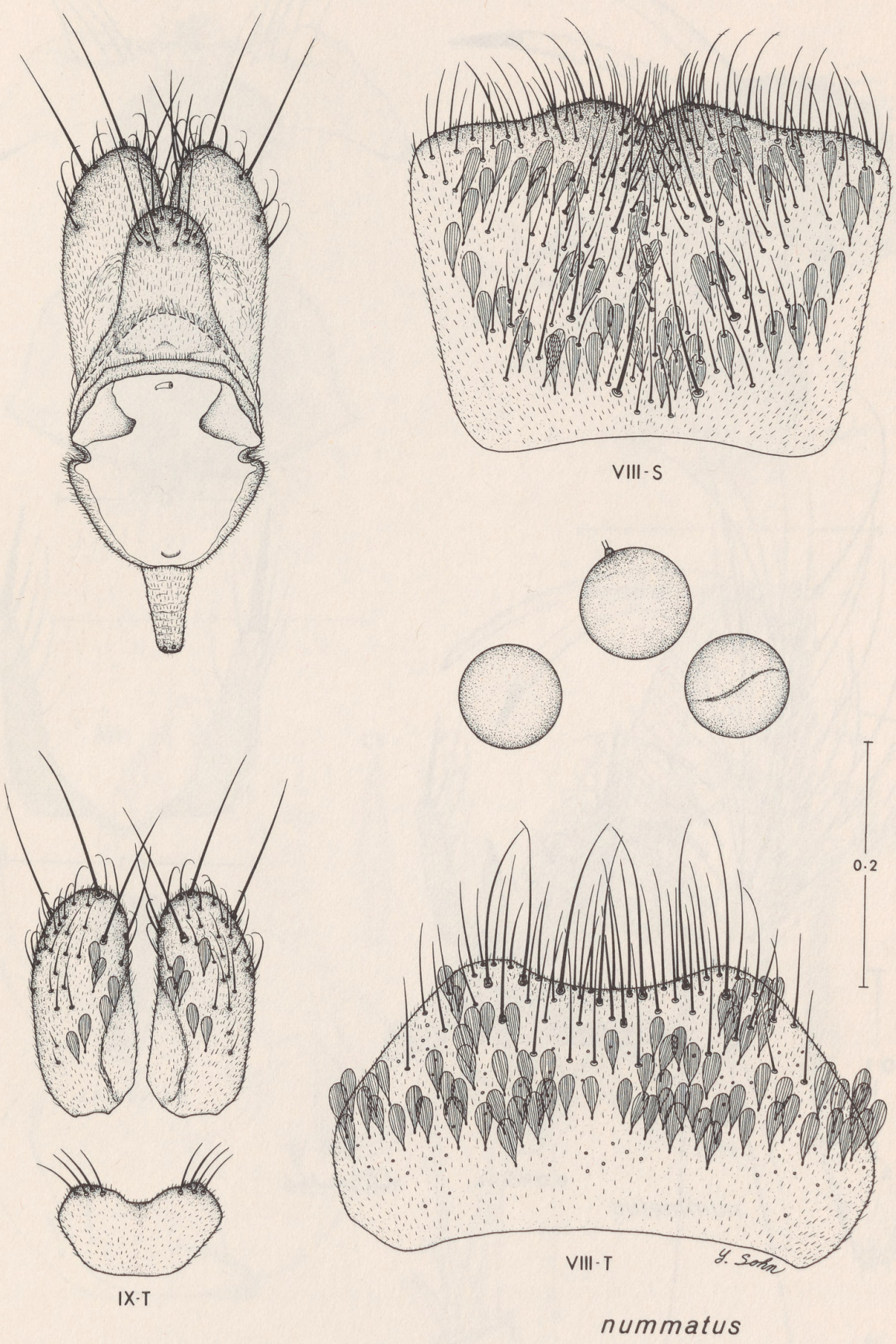
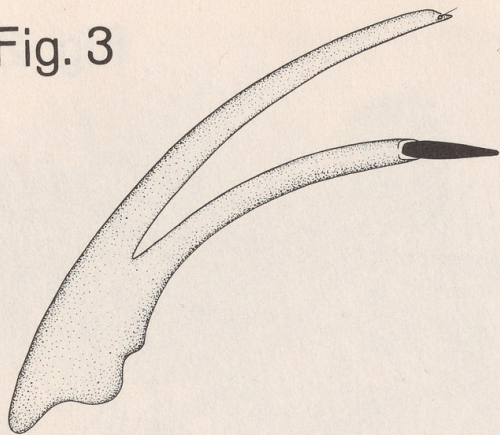
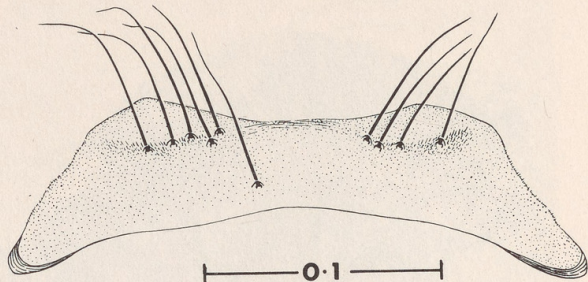


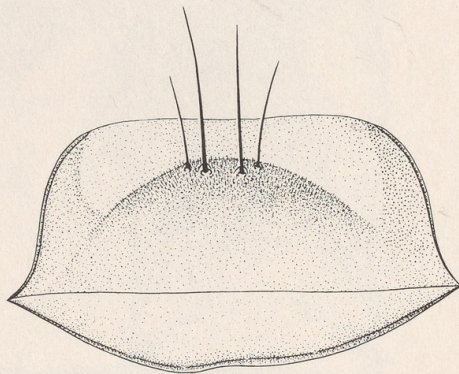
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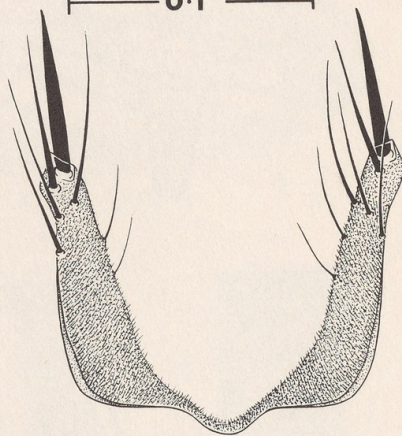
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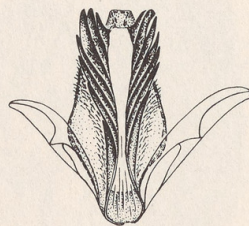
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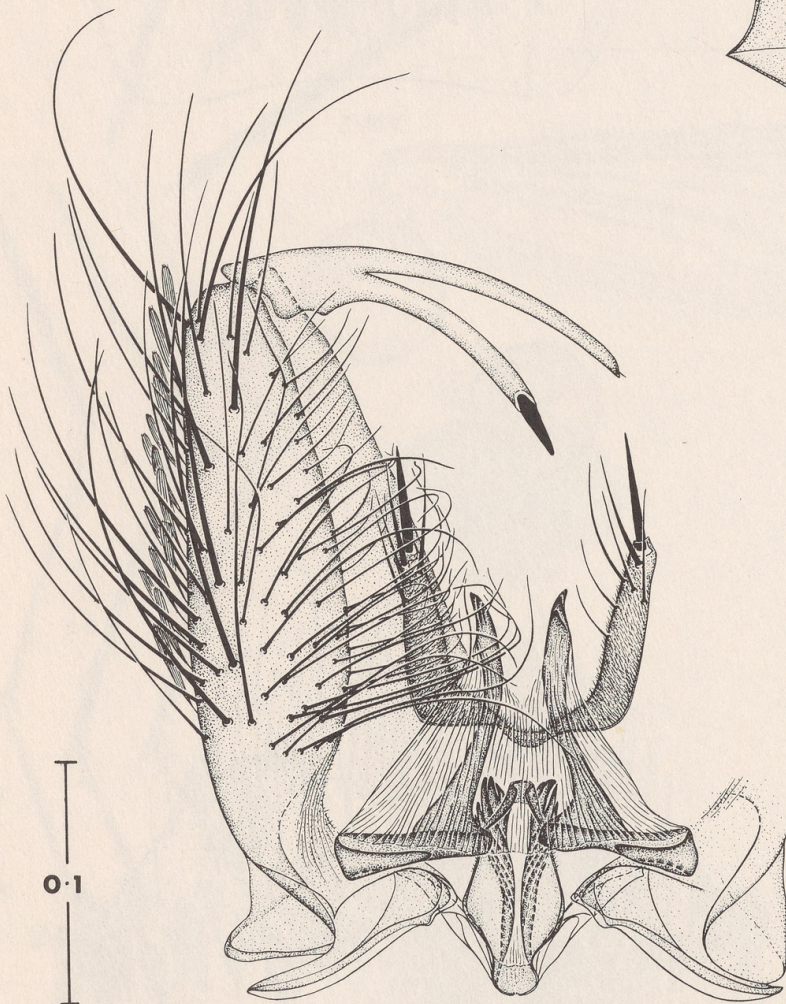
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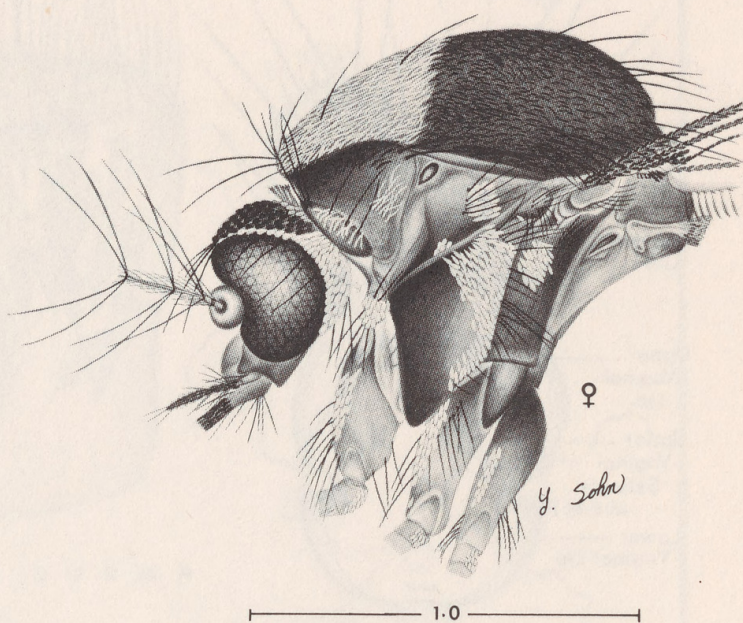
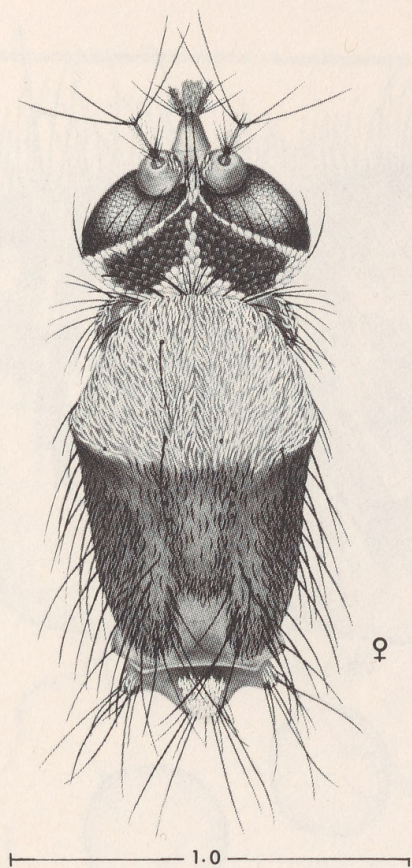
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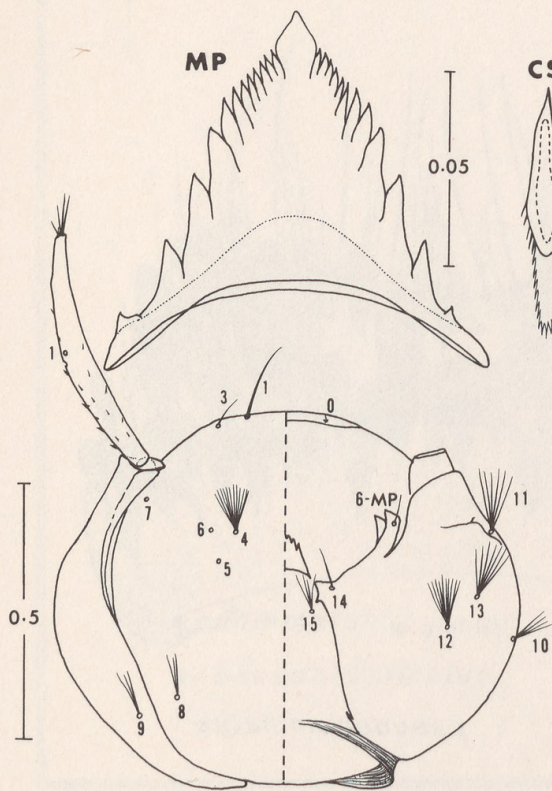
Vichai Malikul

nummatus

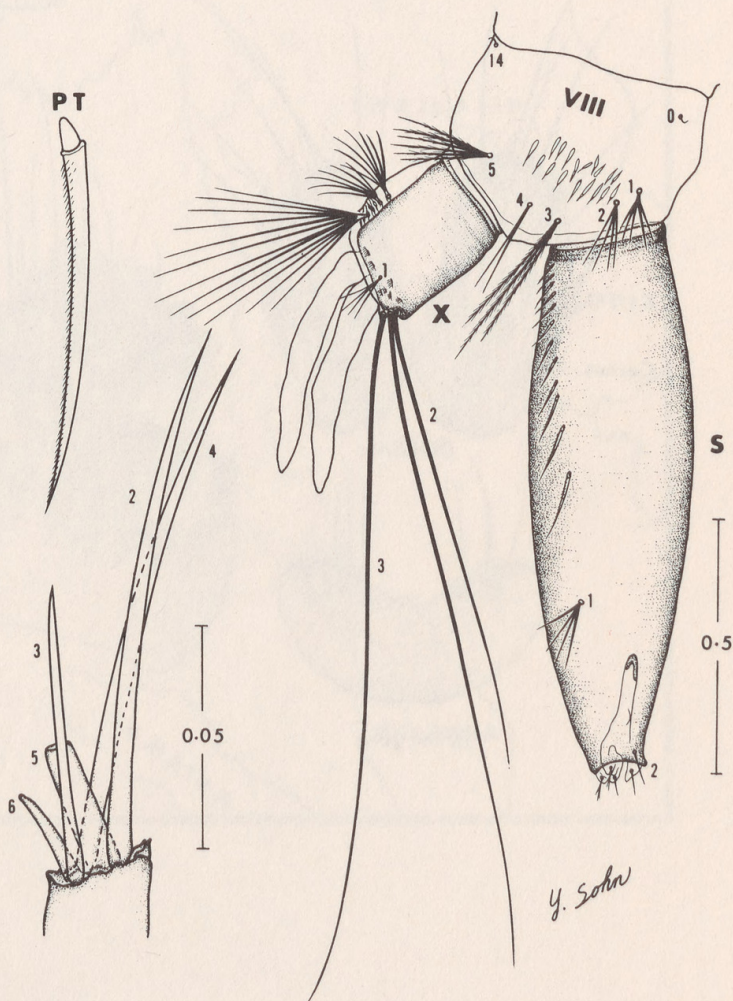
Fig. 4



pseudonummatus



nummatus



Y. Sohn

Fig. 5

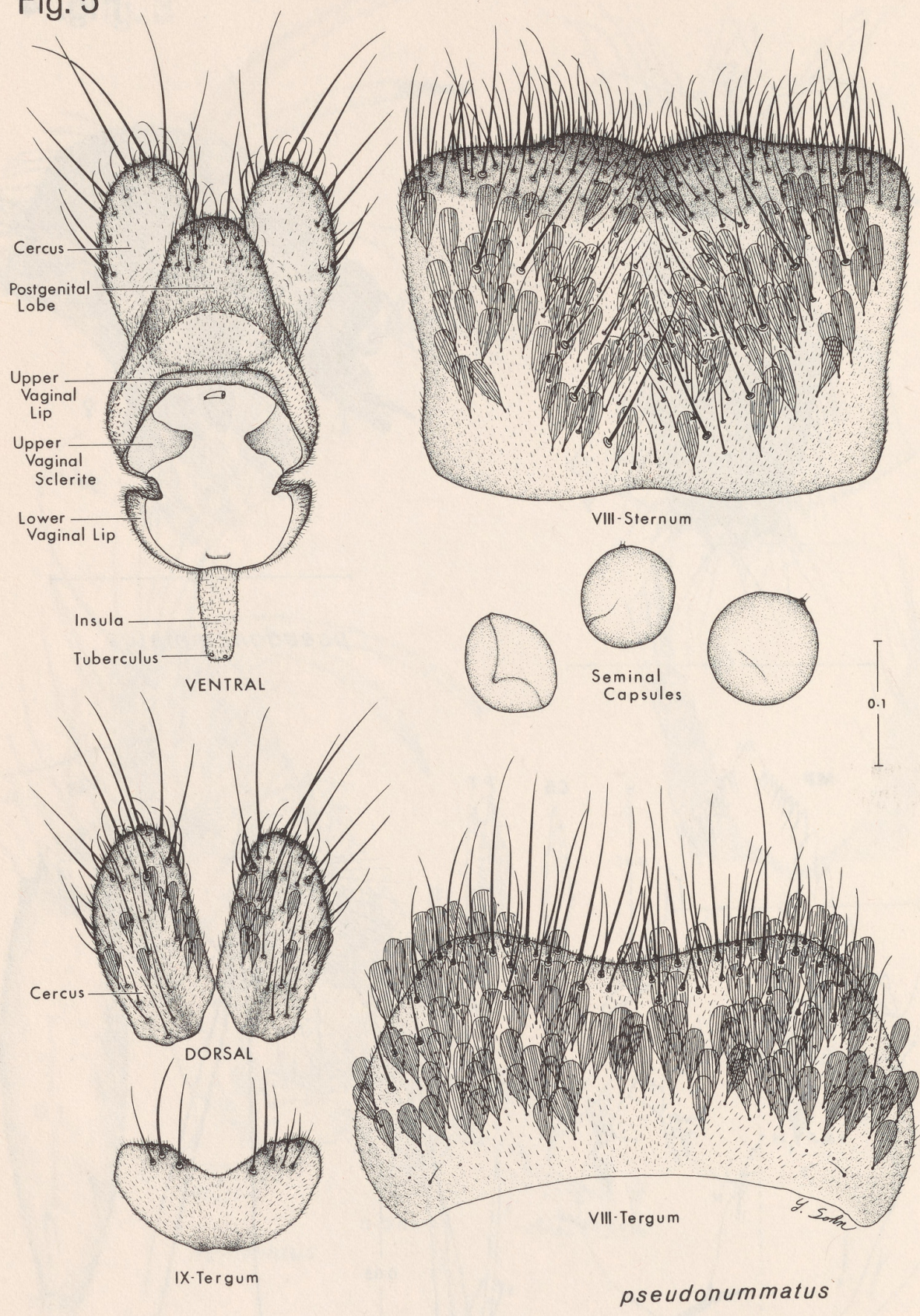


Fig. 6



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