

AUSTRALIAN MOSQUITOES DESCRIBED BY MACQUART. I.

SPECIES IN THE PARIS MUSEUM, AËDES (FINLAYA) ALBOANNULATUS (MACQUART), AËDES (FINLAYA) RUBRITHORAX (MACQUART), AËDES (OCHLEROTATUS) ALBIROSTRIS (MACQUART).

NEW SYNONYMY AND A NEW SPECIES FROM NEW ZEALAND.

By J-M. KLEIN, Office de la Recherche Scientifique de la France d'Outre Mer, Paris, and ELIZABETH N. MARKS, National Mosquito Control Committee, Department of Entomology, University of Queensland.

(Two Text-figures.)

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Synopsis.

The type material of the three species, *Culex albo-annulatus*, *Culex rubrithorax* and *Culex albirostris*, described by Macquart (1850), has been examined, redescribed and compared with specimens from the Australian region. Lectotypes of *C. rubrithorax* and *C. albirostris* are designated. The Lectotype of *C. rubrithorax* is a species of *Aedes* (*Finlaya*) and *A. queenlandis* (Theobald) is synonymous with it. The name *A. procax* (Skuse) is available for the species of subgenus *Ochlerotatus* hitherto identified as *A. rubrithorax* (Macquart). The type locality of *C. albirostris* is New South Wales, not Akaroa, New Zealand, as stated by Macquart. The Lectotype of *C. albirostris* is a species of *Aedes* (*Ochlerotatus*) and *A. vigilax* (Skuse) is synonymous with it. It is proposed to apply for validation of the specific name *vigilax* Skuse, 1889, for this species. The specimen from Invercargill, New Zealand, identified by Edwards (1924) as *A. albirostris* (Macquart) is described as *Aedes* (*Ochlerotatus*) *subalbirostris*, n. sp.

There is no indication in the literature that the Australian mosquitoes in the Paris Museum described by Macquart (1850) have ever been compared by subsequent workers with specimens from the Australian region. The current concept of the identity of *C. albirostris* dates from Edwards (1924) and of *C. rubrithorax* from Theobald (1901); identification of *C. alboannulatus* has never been in doubt. The type series of these species have been examined by one of us (J-M.K.) and compared with specimens of Australian species and notes on their distinctive characters supplied by the other (E.N.M.), who has also compared descriptions of the type series with further Australian material.

C. alboannulatus was described from a single specimen which is therefore the Holotype. Macquart did not designate a type specimen of either *C. albirostris* or *C. rubrithorax* in his original descriptions, but one specimen in each series now bears the label "TYPE". In order to comply with the rules of Zoological nomenclature, we hereby designate the specimen of *Culex albirostris* Macquart marked "TYPE" and the specimen of *Culex rubrithorax* Macquart marked "TYPE" as Lectotypes of their respective species. Full data are given below.

On the pins of all the Types in the Paris Museum studied by Macquart, there is the same handwriting on the folded paper as that found on the Types of the species discussed here; it is clearly the writing of Macquart himself.

The principal synonymy of each species is given, but errors and emendations of spelling have not been listed.

In the following descriptions leg measurements were made with an ocular micrometer with Zeiss Opton. Oc. 20, obj. 25; about 26 divisions = 1 mm.

AËDES (FINLAYA) ALBOANNULATUS (Macquart).

Culex albo-annulatus Macquart, 1850, *Dipt. Exot.*, suppl. 4: 10. *Culicelsa alboannulata*, Theobald, 1907, *Monogr. Culic.*, 4: 382. *Ochlerotatus alboannulatus*, Edwards, 1912, *Ann. Mag. nat. Hist.*, (8), 9: 524. *Aedes* (*Ochlerotatus*) *alboannulatus*, Cooling, 1924, *Comm. Aust. Dep. Hlth. Serv. Publ.*, 2: 20. *Aedes* (*Finlaya*) *alboannulatus*, Edwards, 1924, *Bull. ent. Res.*, 14: 384.

Original Description:

"13. *Culex albo-annulatus*, Nob.

Fuscus. Abdomine nigro incisuris albis. Femoribus tarsisque albo-annulatis.

Long. 2l. ♀. Voisin du *C. annulatus*. Trompe noire; un peu de blanchâtre au milieu en-dessous. Antennes brunes; les deux premiers articles testacés. Thorax brun; métathorax d'un testacé brunâtre. Abdomen noir, à léger duvet gris et incisions blanches. Cuisses d'un jaunâtre pâle; tiers postérieur noir, à anneau blanc, avant l'extrémité; jambes jaunâtres, à extrémité noirs; tarses noirs; chaque article à base blanche, peu distincte aux quatrième et cinquième. Ailes claires, à petites écailles brunes.

De la Nouvelle-Hollande, côte orientale. Muséum. C'est peut-être une variété du *C. albirostris*."

Holotype Female.—The single specimen in the Paris Museum bears printed data "Type. J. Verreaux." and manuscript data "Nouvelle Hollande. 2.47.". It now consists only of the thorax with one wing and a fragment of the other wing. The scutum is without scales, the wing bears only dark scales, and r-m is about its own length distant from the base of M_{3+4} .

Identification of this species from Macquart's description has never been in doubt; the most recent description of it is by Dobrotworsky (1959).

AÈDES (FINLAYA) RUBRITHORAX (Macquart).

Culex rubrithorax Macquart, 1850, *Dipt. Exot.*, suppl. 4: 9. *Culex occidentalis*, Theobald (not Skuse, 1889), 1901, *Monogr. Culic.*, 1: 419. *Ochlerotatus occidentalis*, Edwards, 1912, *Ann. Mag. nat. Hist.*, (8), 9: 524. *Aedes (Finlaya) occidentalis*, Mackerras, 1926, *Aust. Nat.*, 6: 36. *Culicelsa similis* Strickland, 1911, *Entomologist*, 44: 132. *Culicelsa queenslandis* Strickland, 1911, *Entomologist*, 44: 179. *Aedes (Finlaya) queenslandis*, Edwards, 1924, *Bull. ent. Res.*, 14: 384. *Culicada demansis* Strickland, 1911, *Entomologist*, 44: 202. *Culicada cumpstoni* Taylor, 1914, *Trans. ent. Soc. Lond.*, 1913: 692. *Culicada hybrida* Taylor, 1916, *Proc. Linn. Soc. N.S.W.*, 41: 568.

Original Description:

"12. *Culex rubrithorax*, Nob.

Thorace testaceo. Abdomine nigro, incisuris albidis. Pedibus flavidis; tarsis fuscis albo-annulatis.

Long. 2 1/2l. ♀. Trompe fauve, à base et extrémité noires, quelquefois entièrement noire. Palpes noirs, à base fauve. Front brun, à duvet gris. Antennes noires. Thorax d'un rouge testacé (dénudé). Abdomen d'un noir plus ou moins luisant, à duvet d'un blanc grisâtre sur les incisions. Pieds d'un jaune assez pâle; cuisses postérieures quelquefois noires dans le tiers postérieur; jambes postérieures d'un brun noir; tarses noirs, quelquefois jaunâtres; les trois premiers articles à anneau blanc à la base, étroit et quelquefois peu distinct aux antérieurs et intermédiaires, large aux postérieurs. Ailes assez claires; nervures normales, couvertes de petits poils noirs.

De la Tasmanie. Muséum. Cinq individus ♂ dont l'un avait les anneaux des tarses presque nuls."

Lectotype Female.—The insect is directly transfixated by the mounting pin at the level of the thorax. Below it are labels in the following order. 1. A card with red printed inscription "TYPE". 2. A pink card with printed inscription "Museum de Paris. TASMANIE. Verreaux 3-47.". 3. A folded paper, pinned through, with the manuscript inscription "Culex rubrithorax n. sp. Macquart Tasmanie". The terminalia have now been mounted between two coverslips attached to a card, which is pinned near the specimen and carries the following information: "*C. rubrithorax* Macq. TYPE (Finlaya) ♀."

Head and thorax are covered by an old web of mould; no scales are visible. The antennae and wings are missing. The palps are dark brown as described by Macquart,

but at the apex there is distinctly observable at high magnification on both palps (which are in good condition) a small patch of white scales, quite surrounded and almost hidden by a crown of brown scales which cover the remainder of the palps. It is difficult to distinguish the scales which clothe the proboscis; they seem to be adherent to the integument which is of a dark brown colour throughout the length of the proboscis. Macquart wrote "Trompe fauve, à base et extrémité noires" (fauve = reddish-brown) and he added "quelquefois entièrement noire". It is impossible to recognize an actual difference of colour between a middle part and the extremities which may perhaps be a darker brown ("noires"). There is no indication of a median zone covered with white scales.

Legs.—Right fore leg: Femur 52; tibia 59; tarsal segment I, white 4, brown 32; II, white 4, brown 11; III, white 2, brown 7; IV and V brown, a little clearer at the base, lengths respectively 4 and 6; claws with a distinct tooth about the middle. Left fore leg: Femur 55; tibia 58; tarsal segment I, white 4, brown 31; II, white 3, brown 11; III, brown 9, a little clearer at the base; IV, brown 4; V, brown 6. Right mid leg: Femur 65; tibia 68; tarsal segment I, white 5, brown 39; II, white 5, brown 15; III, white 3, brown 8, broken at this level. Left mid leg: Femur 65; tibia 70, broken here. Left hind leg: Femur not measurable; tibia 76; tarsal segment I, white 8, brown 45; II, white 8, brown 2, broken here. Right hind leg: Femur 67; tibia 76; tarsus missing. The scaling of the hind legs is as follows: Left femur on its outer aspect with about the proximal half light coloured, yellowish, with some pale scales, then mixed brown and pale scales, the distal third dark brown, the knee lighter coloured; on its upper edge, dark brown scales; its inner aspect scarcely visible. Left tibia with a uniform dark brown appearance, but very few scales visible. Right femur on its outer aspect with the proximal half yellowish-white, then a mixture of brown and pale scales, some yellowish-white scales visible around the knee; on its upper edge, dark brown scales on the distal five-sixths; on its inner aspect with the proximal half of clear yellowish-white appearance, then mixed white and brown scales, the brown appearance intensified distally, light coloured scales around the knee. Right tibia with a brown appearance, few scales visible.

Abdomen.—On tergite II there is a basal median triangular zone of dull light-coloured scales, which does not reach the lateral margin of the tergite. On tergites III, IV and V, there are some vestiges of basal pale scaling mesially which never reach the lateral margin. On tergite VI a small, very irregular median basal area of pale scales is distinctly visible. One can state that on no tergite does the basal band reach the lateral margin, that it exists only in the median basal zone, and that it is distinctly broader on tergites II, III, V and VI. On the remainder of the surface of tergites VI and VII it is now impossible to distinguish the pale scales from the others; they are more or less massed together giving a dirty brown appearance to the whole. On the distal margin of tergites V, VI and VII the integument appears bare and slightly lighter coloured. On the left side the sternites have become rolled up over the lateral extremity of the tergites; at this level, at the elevation of the basal bands one can see distinctly one or two broad scales, entirely, even vividly, white which belong to the tergites; those appear on tergites III-VII. On the right side the tergites themselves are rolled up under the lower surface of the specimen; at this level at the base of tergites III and IV there seems to be a lighter coloured zone, but no scales are distinguishable; on tergite V at the level of the end of the basal band there is a group of 4 or 5 scales; on tergite VI there is a similar patch of 6 white scales forming a small point directed posteriorly; on tergite VII there are 4 or 5 white scales at the base forming a posteriorly directed point.

It is very difficult to observe the sternites. Sternite III shows sparse white scales in the median zone; the peripheral regions are dark brown. Sternite IV has a median basal triangular white area; other white scales scattered over all the median portion; peripheral and distal zone dark brown except on the middle of the right lateral sternal region which shows a patch of white scales. On sternite V there is the same central

basal area of white scales extending three-quarters the length of the sternite, and some white scales scattered over the right lateral sternal portion from the base to about mid length of the sternite, with brown scales elsewhere. On sternite VI there is a large central basal area of white scales, a patch of white scales in the middle of the right sternal region, and brown scales elsewhere. Terminalia (Fig. 1): Sternite VIII is large and the cerci short as in subgenus *Finlaya*.

Identification.—Hardy (1929) produced evidence that led him to conclude that the majority, if not all, of the Diptera described by Macquart in his fourth supplement as

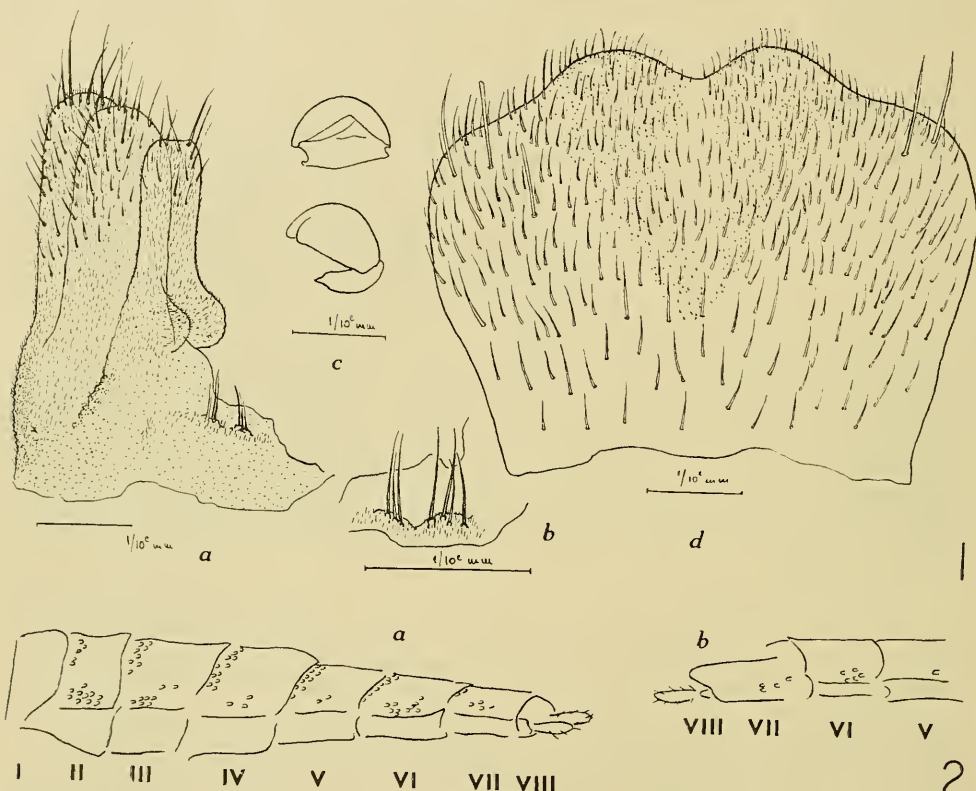


Fig. 1.—*Aedes (Finlaya) rubrithorax* Macquart. Terminalia of Lectotype Female. *a*: Cerci, postgenital plate and IXth tergite. *b*: IXth tergite. *c*: Spermathecae. *d*: VIIIth sternite.

Fig. 2.—*Aedes (Ochlerotatus) albistrois* (Macquart). Abdomen of Lectotype Female. *a*: Left side. *b*: Right side.

being from Tasmania were actually from Sydney, and this possibility must be considered in attempting to identify the type of *C. rubrithorax*. We may reasonably assume that *C. rubrithorax* was not so rare that it has not since been collected.

The characters of the Lectotype of *C. rubrithorax* may be summarized as follows: (1) Occurs in Tasmania and/or New South Wales. (2) Tip of abdomen of *Finlaya*-type. (3) Palps with white patch at tip. (4) Proboscis without a distinct median area of white scales. (5) Scutal integument reddish (we believe that it must have been a very distinct reddish for Macquart to have referred to this character in the specific name). (6) Banded tarsi. (7) Toothed claws. (8) Basal bands of the tergites only in the median zone of the tergites. (9) Lateral patches of the tergites basal.

In Australia and Tasmania, the only genus of mosquitoes with toothed female claws is *Aedes*, and the only species of *Aedes* with reddish scutum and banded tarsi belong

to the subgenera *Ochlerotatus* and *Finlaya*. On terminalia characters *C. rubrithorax* must be placed in *Finlaya*. In this subgenus there are two species, *Aedes monocellatus* Marks and *Aedes queenslandis* (Strickland), which agree with the Lectotype of *C. rubrithorax* in occurring in Tasmania and/or New South Wales, and in having white-tipped palps, reddish scutum and banded tarsi. *A. monocellatus* is a rare species not known to occur in Tasmania, and has a distinct antero-ventral white basal patch or band on the hind tibia, which excludes it from possible synonymy with *C. rubrithorax*. *A. queenslandis* is a common species in both New South Wales and Tasmania, frequently taken biting man, and corresponds well to the Lectotype of *C. rubrithorax* in most characters including terminalia. Differences are: (1) The ratio of white to dark scaling on hind tarsal segment I, which in *A. queenslandis* is usually between 1:3 and 1:3.5. However, the band is poorly preserved on the Lectotype (in which the ratio is 1:5.6), and a rubbed specimen of *A. queenslandis* has the ratio 1:5, while a rather poor and puny specimen has the ratio 1:5.5. (2) The scaling of the sternites. This is very variable in *A. queenslandis* and specimens from Mittagong, N.S.W., correspond fairly well with the Lectotype.

Aedes rupestris Dobrotworsky, which has recently been distinguished from *A. queenslandis*, is recorded from Victoria and Queensland and presumably occurs also in New South Wales. It differs from *C. rubrithorax* in having scutal integument dark brown, the areas of dark scaling intensely black, the mottling of the femora striking and above all in the characteristic scale pattern of its sternites.

We have no hesitation in regarding *Aedes queenslandis* (Strickland) (and its various synonyms) as conspecific with the Lectotype of *Culex rubrithorax* Macquart, and we believe that as this species occurs in Tasmania, Macquart's citation of Tasmania as the type locality should be regarded as correct. Dobrotworsky (1959) has described and figured adults and larvae of *A. queenslandis*.

Paratypes.—Four specimens each transfixed by the mounting pin and each labelled with a single pink card with the printed data "Museum de Paris. TASMANIE. Verreaux 3-47."

PARATYPE No. 1. Female.—Head, thorax, one wing and one leg remain, abdomen missing. Head with narrow-curved golden scales in the middle and broad white scales on the sides; many upright forked dark scales. Palps dark brown, white scales at the apex very distinct; some scales elsewhere, perhaps the joints. Proboscis uniformly dark brown.

Thorax: Scutum with narrow golden scales, integument brownish; no lower mesepimeral bristles (upper are still distinct). Foreleg: Femur 52, sprinkled with white scales, darker on the distal half; tibia 57; tarsal segment I, white 4, brown 31; II, white 5, brown 10; III, brownish 9; IV, brownish 6; V, brownish 5; III-V, a little clearer at the base. Claws toothed. Wing: Dark scaled; shift of crossveins in proportion 7:11:7 (not the same scale as for the legs).

It seems probable that this specimen is conspecific with the type of *C. rubrithorax* since the characters observable agree with it or with specimens of *A. queenslandis*, but it is too incomplete for certain identification.

PARATYPE No. 2.—Thorax and abdomen without scales; head, wings and legs missing. The specimen is not identifiable.

PARATYPE No. 3.—Head and thorax are covered with an old web of mould; wings missing; abdomen without scales. The specimen is not identifiable.

PARATYPE No. 4. Female.—Head without antennae and palps. Thorax covered with a web of mould. Wings shrivelled. Legs unbanded; on one leg two claws and a pulvillus visible; hind legs with tibia and tarsal segment I approximately equal in length. Abdomen slightly tapering; basal white bands uniformly broad on tergites III-VII; terminalia mounted. The presence of a pulvillus and the terminalia characters indicate that this is a specimen of *Culex*, but it is not specifically identifiable.

The terminalia have been mounted between coverslips attached to a card labelled "*C. rubrithorax* Macq. Paratype No. 4 (*Culex* ♀)" which is pinned near the specimen.

Nomenclature.—Following the interpretation of Theobald (1901) the name *Culex rubrithorax* Macquart has consistently been applied to a species of *Ochlerotatus*, which Edwards (1912) showed was identical with *Culex procax* Skuse, the latter name then falling into synonymy. In addition to subgeneric terminalia differences, the type of *C. procax* and all other females examined of the species hitherto known as "*rubrithorax*" have the palps entirely dark-scaled, and cannot be conspecific with the Lectotype of *C. rubrithorax* Macquart. The name *Aedes* (*Ochlerotatus*) *procax* (Skuse) is available for this species.

A. queenslandis was for many years treated as a synonym of *Aedes occidentalis* (Skuse), and there are not a large number of published references to it under the name *queenslandis*, nor is there an extensive literature on *A. procax* under the misidentification of *A. rubrithorax*. Comparatively little confusion should result from the change in names and an application for suspension of the law of priority does not appear warranted in this case.

AËDES (OCHLEROTATUS) ALBIROSTRIS (Macquart).

Culex albirostris Macquart, 1850, *Dipt. Exot.*, suppl. 4: 10. *Culex vigilax* Skuse, 1889, Proc. LINN. Soc. N.S.W., (2), 3: 1731. *Culicelsa vigilax*, Theobald, 1907, *Monogr. Culic.*, 4: 382. *Ochlerotatus vigilax*, Edwards, 1912, *Ann. Mag. nat. Hist.*, (8), 9: 524. *Aedes* (*Ochlerotatus*) *vigilax*, Edwards, 1922, *Bull. ent. Res.*, 13: 99. *Culex marinus* Theobald, 1901, *Monogr. Culic.*, 1: 396. *Culex annulifera* Ludlow, 1903, *J. N.Y. Ent. Soc.*, 11: 141. *Ochlerotatus annuliferus*, Edwards, 1917, *Bull. ent. Res.*, 7: 215. *Culex ludlowi* Blanchard, 1905, *Les Moustiques*: 630. *Aedes* (*Ochlerotatus*) *vigilax ludlowi*, Knight and Hull, 1951, *Pacif. Sci.*, 5: 226. *Culicelsa pseudovigilax* Theobald, 1907, *Monogr. Culic.*, 4: 382. *Culicelsa uniformis* Strickland, 1911, *Entomologist*, 44: 131. *Aedes* (*Ochlerotatus*) *vigilax vansomereneae* Mattingly and Brown, 1955, *Bull. ent. Res.*, 46: 78.

Original Description:

"14. *Culex albirostris*, Nob.

Niger. Thorace cinereo pubescente. Abdomine incisuris albis. Rostro albo. Pedibus flavidis; tarsis albo-annulatis.

Long. 21. ♀. Trompe blanche, à base et extrémité noirs. Palpes noirs; un peu de blanc à l'extrémité. Face blanche. Front noir, à léger duvet brunâtre. Antennes noirâtres; premiers articles pâles. Thorax à duvet d'un gris un peu roussâtre. Abdomen d'un noir foncé; bord postérieur des segments blancs. Pieds d'un jaunâtre pâle; un peu de noirâtre à l'extrémité des cuisses; jambes brunâtres; postérieures un peu blanchâtres au milieu; tarsi noirâtres; un anneau blanc à la base de chaque article. Ailes à nervures normales.

D'Akaroa, Nouvelle-Zéland. Muséum."

Lectotype Female.—The insect is mounted on a minuten pin which is set on the first card. A second card bears a red printed inscription "TYPE". A third card carries the printed inscription "Museum de Paris" and a manuscript inscription "Nlle Galle du Sud. J. Verreaux 4.9.47.". A folded paper carries the manuscript inscription "*Culex albirostris* ♀ Macquart n. sp. Nouv. Zélande."

Head with narrow curved golden scales in the middle; with many upright forked scales; on the sides one or two patches of broad scales, white and yellowish. Palps: apex with very conspicuous patch of white scales. Proboscis with basal and distal parts dark; proportions about 10:30:20.

Thorax: Only one lateral half remains. Scutal integument brown. Scutal scales narrow and golden, some dark brown scales visible. No trace of lower mesepimeral bristle insertion.

Wings: A fragment of each wing remains sufficient to see many pale grey broad scales on the veins. There is a group of white scales on the lower surface of the wing, on the posterior side of the costal vein, inside the humeral cross vein and extending

almost to the level of it; on the left wing there are 8 white scales in this site, on the right 9 or 10. On the left wing the cross veins are visible; r-m is its own length distal to the base of M_{3+4} .

Legs: Only the left mid leg and right hind femur remain. Mid leg: Femur length 57, no scales visible on proximal two-thirds, on the distal one-third outer surface with dark brown and scattered pale scales, upper edge dark brown, some pale scales visible; tibia with brown scales and scattered pale scales, length 60; tarsal segments I-III with basal white bands; I, white 3, brown 32; II, white 3, brown 11; III, white 3, brown 7; tarsal segments IV and V brown, rather yellowish at the base, lengths respectively 5 and 6; no claws. Hind femur length 55, outer surface strongly mottled with pale scales over its whole surface, the distal half slightly darker; upper edge with mixed brown and pale scales; inner surface of yellowish appearance, with pale scales on the proximal three-quarters except along the upper border where these scales are scarcer, and the brown numerous; distal end of the inner surface with mixed brown and pale scales.

Abdomen (Fig. 2): In good condition. Sternite VIII seems to be small; cerci are long. The basal bands on the tergites are distinctly white and uniformly broad; on tergite II about one-quarter length of tergite, on III and IV one-fifth length; on V the white band is slightly broader in the middle and there are some white scales along the posterior border; on VI the basal band is about one-sixth or less and along the whole width of the posterior border are many scattered pale grey scales; on VII no basal band is visible, but along the posterior quarter is a broad band of scattered pale grey scales; the anterior border of this band is very irregular. The tergites have lateral patches of white scales about the middle of the lateral margin; there is a large clear space between the white scales of the basal band and those of the lateral patch; the lateral patches do not extend distinctly towards the middle of the tergite, but two of them extend upwards and backwards. Thus one finds: on the left on tergite II, a group of 10-12 white scales; on tergite III, 8 scales in ascending order; on tergite IV, 3 scales at the middle of the lateral border; on tergite V, 2 scales similarly placed; on tergite VI, 10 scales, the posterior ones extending upwards; on tergite VII, 4 scales. On the right, no scales are visible on tergites II, III and IV; on tergite V, one white scale at the middle of the lateral margin; and on tergite VI, 5 scales similarly placed.

Identification.—On the folded paper the inscription with locality "Nouv. Zélande" is in Macquart's handwriting. It seems then that the written inscription on the third card, which carries the name of the collector and the date of collection, gives us also the original inscription with regard to the place of collection. This writing is apparently in the hand of Verreaux and can be recognized on each of the three paratypes. Consequently one must retain as the place of collection, New South Wales, and reject the inscription of Macquart, New Zealand.

The characters of the type of *C. albirostris* may be summarized as follows: (1) Occurs in New South Wales. (2) *Ochlerotatus*-type tip to abdomen. (3) Palps white-tipped. (4) Proboscis with base dark, middle portion pale and apex dark in proportions 10:30:20. (5) Dark scutal integument. (6) No lower mesepimeral bristle. (7) Scattered pale scales on wings. (8) Mottled femora. (9) Banded tarsi. (10) Straight basal white bands on tergites. (11) Apical pale scales on tergites VI and VII. (12) Lateral patches at mid length of tergites, well separated from basal bands.

There is only one species which corresponds in all these characters—that is *Aedes vigilax* (Skuse). A few specimens of *Aedes theobaldi* (Taylor) would fit all but (12), but this species has basal lateral patches on the tergites. (Among the species of Australian *Ochlerotatus* without lower mesepimeral bristles, only *A. vigilax* has the lateral patches at about mid length of the tergites.) Moreover it is most unlikely that Macquart would have overlooked the speckled appearance of the wings of *A. theobaldi* with numerous distinctly white scales. The pale wing scales of the type of *C. albirostris* are pale grey and in the same proportion as in specimens of *A. vigilax*, and its tarsal bands on the mid leg correspond in width to those of *A. vigilax*.

We have no hesitation in regarding *Aedes vigilax* (Skuse) (and its various synonyms) as conspecific with the Lectotype of *Culex albirostris* Macquart.

Paratypes.—Three specimens each directly transfixed by the mounting pin and each bearing a single card with the printed inscription "Museum de Paris" and the manuscript inscription "Nlle Galle du Sud. J. Verreaux 4.9.47.". All three appear conspecific with the Lectotype.

PARATYPE No. 1. Female.—Head with narrow golden scales in the middle, broad white scales on the sides. Apex of palps with a very distinct patch of white scales. Proboscis with basal and distal parts dark, proportions about 12:27:17.

Thorax: Scutal integument dark brown. Scutal scales golden and in places mixed with dark brown ones; no lower mesepimeral bristle insertions. No wings. Only one incomplete hind leg with femur with distal quarter brown; tarsal segment I with white basal band—white 4, brown 34; II with white 6, brown 8, broken here.

Abdomen: Basal white bands rather irregular; posterior border of tergite VI with a row of white scales; numerous white scales in the neighbourhood of the posterior border of tergite VII. On the right side, there is a lateral patch only on tergite VII; it is made up of some ten white scales, forming a group at the middle of the lateral margin and extending slightly upwards and backwards. On the left side, on tergite IV is a group of 4 to 6 white scales about the middle of the lateral margin and extending posteriorly; on tergite V is a group of 10 white scales forming a triangle the apex of which extends towards the mid line of the tergite; on tergite VI there are 5 scales at the middle of the lateral margin.

PARATYPE No. 2. Female.—Head: Tips of both palps with white scales. Proboscis with basal and distal parts dark, proportions 8:34:27 (not a very precise measurement as proboscis is curved).

Thorax: Scutal integument reddish, covered with golden scales; no lower mesepimeral bristle insertions. Wings rubbed, but some white scales are visible; on the right wing is a group of five white scales at the level of the humeral cross-vein. Legs: Left fore leg with femur 45, distal part darker; tibia 52; tarsal segment I, white 3, brown 25; II, white 3, brown 7; III, white 3, brown 4; IV, yellowish, length 5; V, yellowish, length 4; claws with distinct tooth. Left mid leg with femur 55, on the last six divisions dark brown scales; tibia broken. Right mid leg with femur 55; tibia 65; tarsal segment I, white 3, brown 35; II, white 4, brown 12; III-V, yellowish; III, 10; IV, 5; V, 6. Hind legs missing.

Abdomen rubbed, but some white scales are still visible at the posterior border of tergite VII.

PARATYPE No. 3. Female.—Head with golden scales in the middle; proboscis broken; apex of palps with white scales.

Thorax: Scutal integument brown; scales golden; no lower mesepimeral bristle insertions. Wings rubbed, but some white scales present; on the lower surface of the right wing there are three pale scales on C at the level of the humeral cross-vein. Legs: Forelegs missing. Mid leg with femur length 55, distal third brown; tibia length 61; first tarsal segment, white 2, brown 35, broken there. Hind leg with femur 55, distal quarter brown; tibia 65; tarsal segment I, white 3, brown 46; II, white 5, brown 21; III, white 6, brown 9; IV and V yellowish, length of both 5.

Abdomen: White scales visible on the posterior margin of tergites VI and VII; some scattered on VII; a lateral patch visible on the left side of tergite IV, formed of six white scales grouped at mid length.

Nomenclature.—Hitherto following Macquart's published locality record of Akaroa, *C. albirostris* has been regarded as a New Zealand species, though Theobald (1903, p. 162) identified (most probably correctly) specimens from Port Darwin, Australia, as *C. albirostris*.

There are a vast number of references in the literature to *Aedes vigilax* (Skuse) which is the common pest species of the tropical and subtropical coasts of Australia and occurs also in New Guinea, Solomon Islands and the Indo-Malayan region, with

subspecies in Philippine Is. and Seychelles, and which is an important vector of filariasis in New Caledonia. Much confusion would result from a change in the name of this species which is well known to public health workers. It is therefore planned to apply to the International Commission on Zoological Nomenclature to use its plenary powers to validate the specific name *vigilax* Skuse, 1889 (as published in the combination *Culex vigilax*), and reject the specific name *albirostris* Macquart, 1850 (as published in the combination *Culex albirostris*). Until a decision on this application is given it is desirable that authors continue to refer to this species as *A. vigilax* (Skuse).

Edwards (1924) treated *C. albirostris* as a species of *Aedes* (*Ochlerotatus*) and described a specimen from Invercargill, New Zealand, as probably that species; no other specimens have been recorded from New Zealand and inquiry indicates there are apparently none in collections in that country. The specimen described by Edwards was received on loan from the British Museum (Natural History) through the kindness of Mr. P. F. Mattingly and was compared with the type of *C. albirostris*. It does not agree with this or with any other known species from the Australian region and represents a new species.

AÈDES (OCHLEROTATUS) SUBALBIROSTRIS, n. sp.

Aedes (*Ochlerotatus*) *albirostris*, Edwards (not Macquart, 1850), 1924. *Bull. ent. Res.*, 14: 376.

Holotype female in the British Museum (Natural History) bears a printed label "New Zealand, W. Wesché 1920-68" and manuscript label "Invercargill 23.xi.86."

Edwards' (1924) description is as follows:

"Head with ochreous scales in the middle and round the eyes, surrounding a pair of patches of darker scales. Proboscis largely clothed with whitish scales, especially in the middle, but leaving the base and the apical fourth dark. Palpi narrowly white at the tip and at each joint. Thoracic integument reddish-brown, darker above. Proepimera with narrow ochreous scales above, flat black and white ones below. Mesonotal scales all narrow, reddish brown in the middle, lighter at the sides; no distinct markings. No lower mesepimeral bristles. Abdomen blackish, with narrow white bands which are mainly basal but spread onto the apical margin of the last four segments. Cerci long. All the femora largely pale-scaled, except towards the tips; the anterior pairs with scattered dark scales in front and more especially above. Tibiae and tarsi dark; first two segments of the front tarsi, three of the middle and four of the hind tarsi narrowly ringed with white at the base; remaining segments all dark. Claws all toothed. Wing-scales all dark."

The following are additional characters: Wing: On the lower surface of the wing, on the costal margin at some millimetres from the base, mixed with the brown scales there are 10 to 15 distinctly lighter pale grey scales; there are also 3 to 5 lighter scales on the costal vein at the level of the humeral cross-vein and at the same level on the radius is a projecting tuft of dark brown scales. Leg measurements: Left fore tarsus: I, white 2, brown 47; II, white 3, brown 16; III, white 2, brown 10; IV, brown 6; V, brown 8. Right fore tarsus: I, white 2, brown 47; II, white 3, brown 17; III, white 1, brown 11; IV, brown 7; V, brown 8. Left mid femur, 82; tibia, 84; tarsus: I, white 4, brown 54; II, white 4, brown 21; III, white 3, brown 13; IV, brown 8; V, brown 7. Left hind tarsus: I gummed to stage; II, white 8, brown 31; III, white 7, brown 23; IV, white 3, brown 15; V, brown 10. Right hind tarsus: I, white 5, brown 70; II, white 7, brown 32; III, white 7, brown 23; IV, white 2, brown 15; V, brown 10.

Abdomen: The basal bands on the tergites are uniformly broad, and the scales have yellowish reflections contrasting with the vivid whiteness of the lateral patches on tergites V and VI; there is no basal band on VII. There are pale grey scales along the posterior margin of tergites II to VII and others are sprinkled relatively abundantly on the dark areas of the tergites. Lateral patches: On the right side an oval patch of white scales covers the whole side of tergite I; there is no lateral patch on tergites II-IV, on tergite V a lateral patch of white scales fuses at the base with

the basal band and extends posteriorly to the midlength of the tergite; on tergite VI the lateral basal patch is visible dorsally as a triangular area of white scales extending the basal band outwards and backwards; on tergite VII there is a small patch broad at the base and pointed posteriorly, which is also visible from above. The left side is difficult to observe as the insect is pinned and gummed by a leg onto a large card, so that it rests on the left side of the abdomen; patches on tergites VI and VII are similar to the right side.

In this specimen outstanding differences from the Lectotype of *C. albirostris* are the basal lateral patches on the tergites, the reddish-brown scutum; the wing scales which appear uniformly dark as described by Edwards and have not the speckling found in the type (of the lighter scales described above one can say at the most that they are lighter than the brown, perhaps discoloured by time), the size (length of mid tarsal segment I approximately 2.23 mm. compared with 1.35 mm. in the type and also the whole size of the insect—compared to the type it is a very large one).

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