

proximad, separated by a naked area somewhat as in *mytilaspidis*, but much longer (cephalo-caudad), there is another line of about five or six cilia, somewhat smaller. The fore wing, proximad, in this species is broader than in *mytilaspidis*; also the proximal tarsal joint of the caudal legs is shorter and stouter, and the short, sessile stigmal vein is bent more at right angles to the marginal. The mandibles of the two species also differ, in *mytilaspidis* having at least two outer (lateral) teeth which are distinct and acute, and a third inner one which is smaller, weak, and obtusely rounded; in *automatus* there is only a single outer, distinct, acute tooth, and a second inner one which is broadly truncate and separated from the first by a small, acute notch. (From a single specimen, $\frac{2}{3}$ -inch objective, 1-inch optic, Bausch and Lomb.)

Male.—Unknown.

Described from a single female specimen reared from *Chaitophorus*, new species on poplar, Chicago, Illinois, September 15, 1910 (J. J. Davis). The specimen issued from a single round hole in the dorso-lateral aspect of the abdomen of its host, whose body was black in colour and attached firmly to the leaf surface.

Habitat.—United States—Chicago, Illinois.

Type.—Accession No. 44,229, Illinois State Laboratory of Natural History, Urbana, Illinois, U.S.A.; one female in xylol-balsam.

SOME NEW CULICIDÆ FROM WESTERN AUSTRALIA, SOUTH QUEENSLAND, AND TASMANIA.

BY E. H. STRICKLAND (Dip. S.E.A.C.).

(Continued from p. 134.)

A NEW SPECIES FROM SOUTH QUEENSLAND.

Two female specimens from South Queensland, sent by Dr. Bancroft, both proved to be representatives of a new species of the genus *Culicelsa* (Felt).

The *type* specimen has been forwarded to the British Museum.

Culicelsa queenslandis, n. sp.

Thorax clothed with light yellow and golden yellow scales, arranged in longitudinal bands. Scutellum with pale yellow scales. Abdomen black scaled with incomplete ochreous basal bands, and snowy white lateral spots. Tarsi with snowy white basal bands.

♀. Head very densely scaled. The narrow curved scales are golden yellow and larger and broader on the vertex than on the nape and sides of the head. There is a distinct border of small scales round the eyes. The upright forked scales are golden at the front of the head but black at the back. The lateral flat scales are ochreous. Antennæ with basal and second segments testaceous. Palpi longish with a white median band, and white scales at the apex. Eyes black.

Thorax with light yellow and golden yellow narrow curved scales, arranged in bands. Those forming the median band are light yellow, with a central narrow bare black line, the rest of the thorax being a light warm brown colour. On either side of this band is a golden yellow band. At the side of the thorax is a large central light yellow spot, with golden yellow scales before it and a golden yellow and black scaled area behind. Scutellum rather densely scaled with pale yellow narrow curved scales. Prothoracic lobes with creamy yellow narrow curved scales and golden brown bristles. Pleuræ with creamy flat scales. Abdomen with incomplete basal bands on all segments consisting of a few median ochreous scales and distinct snowy white lateral spots. Ventral surface with ochreous and a few dark scales. Femora dark scaled with a few scattered ochreous scales except for the basal half of the ventral surface which is all pale coloured. Tibiæ dark with a few pale scales arranged more or less in a line, unbanded. Tarsi with distinct white basal bands. Fore and mid legs with two apical joints unbanded. Hind with apical joint only unbanded.

Wings with mid and supernumerary cross-veins in a straight line. Posterior cross-vein about one and a half times its own length distant from the mid cross-vein. First fork cell narrower and longer than the second fork cell. Its stem rather over half the length of the cell.

Length 5.5 mm.

Habitat.—South Queensland.

Time of capture.—June.

Observations.—Described from two rather damaged females.

NEW SPECIES FOUND IN A SMALL COLLECTION OF MOSQUITOES FROM TASMANIA.

This collection was received by Mr. F. V. Theobald from Dr. Bancroft.

It was found that of the seven or possibly eight species represented only one had been already described. This species, *Culex frenchii* (Theobald), which had not been before recorded from Tasmania, was represented by three specimens which were quite true to type. Two other specimens, however, appeared to be either a variation of the type, or a distinct species. They differed mainly in possessing deeper coloured thorax and scutellum, both of which bear golden coloured bristles, whereas the type *Culex frenchii* bears black bristles.

As, however, both specimens were badly rubbed, it was impossible to state whether these represented a new species or not.

The mosquitoes of Tasmania appear to have been very much neglected in the past; three species only, all belonging to the genus *Culex*, are recorded in Mr. Theobald's 'Monograph of the Culicidae of the World,' vol. v. 1910.

These species are *Culex rubithorax* (Macquart); *Culex australis* (Erichson), and *Culex nigrithorax* (Macquart).

The following genera are represented by the new species in this collection:—(1) *Culicada* (Felt), four species. (2) *Stegomyia* (Theo.), one species. (3) *Andersonia* (nov. gen.), one species.

Type specimens of these have been sent to the British Museum.

Culicada tasmaniensis, n. sp.

Thorax black, ornamented with mixed golden and brownish-black narrow curved scales, with a more or less distinct median spot of more creamy scales a little before the scutellum. Abdomen with broad white basal bands on all segments. Legs unbanded, femora mostly pale beneath. Wing membrane with a slight brownish tinge.

♀. Head dark brown in the middle, but lighter laterally with rather large creamy narrow curved scales, which are finer and smaller at the back of the head, where there are a few black upright forked scales. These are replaced in the front of the head by many long black bristles. The median flat scales are creamy and are interspersed with black bristles. Antennæ brown, second segment testaceous at the base. Palpi dark with several black strong bristles. Proboscis brown, darker at the apex than at the base. Prothoracic lobes with a few creamy white broad scales and black bristles.

The thorax is unornamented, except for the pale spot in front of the scutellum, the golden and dark scales being evenly distributed over the remaining area. Bristles are most numerous over the wing roots and round the base of the mesothorax, elsewhere they are practically absent. Scutellum with golden narrow curved scales, and strong posterior border bristles on all lobes. Abdomen dark with broad rather dull white basal bands on all segments, ventral surface mainly white scaled. Wings not very densely scaled, scales rather narrow and brown. First fork cell longer and narrower than second posterior. Supernumerary cross-vein nearer the base of the wing than the mid cross-vein, by about two-thirds of its own length; posterior cross-vein about one and a half times its own length distant from the mid cross-vein. Apices of all femora and tibiae more or less clothed with ochreous scales. Apex of hind tibia and base of hind metatarsus rather densely clothed ventrally with light coloured scales. Tarsi all dark. (Ungues $\frac{1}{1} + \frac{1}{1} + \frac{1}{1}$.) Halteres with light stems and dark knobs.

Length 6·5–8·5 mm.

♂. Scales on the head similar to those on the head of the female, but fewer bristles are present. The dark scaled palpi are about four-fifths the length of the proboscis. The fourth joint is somewhat shorter than the three preceding joints which are subequal. First joint slender, especially at the base; second joint with apex swollen, and bearing on this part long ventral hairs; third joint cylindrical and entirely clothed ventrally with long hairs, apical joint swollen towards the apex. Antennæ not very densely plumose.

Thorax and abdomen similar to that of the female, except that the ventral surface of the latter is mainly dark with broad basal pale bands, and the dorsal basal bands are more snowy white.

Legs similarly scaled to those of the females. Ungues apparently

all uniserrate, though not very clearly defined in the single specimen examined.

Length 6 mm.

Habitat.—Tasmania.

Observations.—Described from two females and one male.

It appears to be related to *Culicada nemorosa* (Meigen), though it is a decidedly larger species.

(To be continued.)

NOTES AND OBSERVATIONS.

THE EMERGENCE OF A BORNEAN CICADA (*Huechys sanguinea*, de Geer).—Having just watched a Cicada emerge from its pupa—or nymph—case for the first time, I took some notes of this curious performance which, perhaps, may be of interest to your readers.

The skin and half-emerged imago were brought to me about 11.45 a.m., having been found hanging on the stump of an old tree. Almost immediately the imago crawled out, free of the skin, and I spent an interesting three-quarters of an hour watching its development. The skin of the pupa case is split on the upper side only—longitudinally from anterior margin of the head to the cruciform elevation. The head and body were bright yellow, with two curious little delicate light blue wool-like excrescences on either side; these slowly began to swell—the tegmina first; during this process the basal margin (or “collar,” one might call it) of the pronotum was raised; I suppose this was to allow a fluid to run from thorax through the veins to extend the tegmina and wings, as I could see some swollen nervules below this upraised “collar.” Similarly the region of the cruciform elevation, and on either side of it, seemed to be connected with the extension of the wings, as that part was also swollen, the general colour being a very light-blue, like that of the basal region of pronotum. By 12 o'clock the tegmina had almost reached the end of abdomen, and in another seven or eight minutes the fully emerged imago was hanging by its fore legs only from the under side of a leaning twig which I had put in the glass cylinder for its use. It thus remained hanging by the fore legs only, both the tarsi and the coxæ of which I noticed were touching the twig. The tegmina were a beautiful blue-white colour; but at 4 p.m. I noticed the veins showed up dark grey, and by next morning this suffusion was further developed: although not yet complete, as the basal region was still streaked in appearance, owing to the grey suffusion not having overspread the internervular spaces. The head, thoracic and abdominal colouring had already deepened, thus losing its original bright yellow hue.

The nymph case has rather coarse and thick antennæ sheaths, prominent excrescences for the eyes and ocelli; the pronotal folds are distinct, the base of pronotum is coloured deep black, as are the posterior margins of mesonotum and of each abdominal segment on the upper side; the general colour being of light sand relieved by these transverse black stripes. The fore legs are typically fossorial, with stout femora each armed with a spine.

SOME NEW CULICIDÆ FROM WESTERN AUSTRALIA,
SOUTH QUEENSLAND, AND TASMANIA.

BY E. H. STRICKLAND (Dip. S.E.A.C.).

(Continued from p. 182.)

Culicada inornata, n. sp.

Thorax dark brown, clothed with golden brown scales, on the posterior half are two lateral lines of whitish scales, spreading from the white pre-scutellar patch. Scutellum white scaled. Abdomen black, scaled with indistinct white lateral spots, and basal bands on some of the segments. Tarsi with poorly defined yellowish white basal bands.

♀. Head black, clothed with rather dull yellow narrow curved scales, and similarly coloured upright forked scales at the back and middle area of the head, which appear to be black in certain lights. The lateral flat scales are white. A few golden yellow bristles project between the eyes. There is a narrow margin of more white-coloured scales bordering the eyes. Eyes bronzy. Palpi with white scales at the apex, remainder dark scaled with a few white scales scattered over the upper surface. Clypeus black. Antennæ with basal joint mainly dark with a few white scales. Second and third joints mainly testaceous. Proboscis rather short. Thorax dark brown, clothed with dull golden brown scales. On the posterior half are two indistinct curved lateral lines of paler scales. The scales before the scutellum are whitish. Scutellum clothed with white narrow curved scales. Prothoracic lobes and pleuræ with white scales. Abdomen black, scaled with traces of dull white basal bands forming a median patch on all segments. There are small irregular lateral dull white spots on some of the segments. The ventral surface is clothed with white scales. The femora and tibiæ are spotted, the former are mostly white scaled below. Knee spots yellow. Tibiæ unbanded. Tarsi not very definitely banded with narrow yellowish-white bands. Fore and mid legs with apical tarsus unbanded. Hind legs with all tarsi banded, though the bands on the metatarsus and apical tarsal are very rudimentary and incomplete.

Wings not very densely scaled, the first fork cell is longer and narrower than the second posterior cell. Its stem is about half the length of the cell. The supernumerary and mid cross-veins are nearly in line, the former being slightly nearer to the wing base. The posterior cross-vein is rather less than its own length distant from the mid cross-vein. Halteres with light stems and blackish knobs.

Length 5 mm.

Habitat.—Tasmania.

Observations.—Described from two rather damaged females.

It is apparently a true *Culicada*, the palpi being much longer than those one usually finds in *Culex*.

Culicada demansis, n. sp

Thorax deep brown, with uniform golden brown scales. Scutellum with creamy scales. Abdomen black with dull white incomplete basal bands on all, and lateral white spots on some of the segments. Tarsal bands white, very broad on the hind tarsi, which character at once distinguishes this species.

♀. Head black. The narrow curved and lateral flat scales are creamy yellow, and the rather sparse upright forked scales at the back of the head are black. The palpi are long, clothed with black scales, except for the white apex, and a few white scales at the junction between the second and third segments, and the junction between the first and second segments. Proboscis entirely dark scaled. Antennæ black, the basal segment is dark brown and only a little lighter in colour than the remaining segments.

Thorax deep brown, with uniform golden brown scales, which are perhaps a little darker laterally; just behind the prothoracic lobes are a few creamy narrow curved scales. Prothoracic lobes and scutellum with creamy narrow curved scales. Pleuræ with creamy scales. Abdomen black with dull white incomplete basal bands on all segments, none of which reach the lateral margins where, however, in some segments there is a small whitish lateral spot. Ventral surface with dull white scales, and a few scattered darker scales. Femora and tibiæ light testaceous. Femora light scaled below, except for apical third, and dark scaled elsewhere with a few scattered whitish scales. Knee spot ochreous. Tibiæ unbanded. Tarsi with broad white bands, all apical tarsi unbanded; fore and mid legs with fourth tarsi also unbanded. Banding very deep on hind legs.

Wings rather densely clothed with dark brown scales. The first fork cell is longer, but narrower than the second posterior cell, its stem is over half the length of the cell. The supernumerary and mid cross-veins form a straight line with each other. The posterior cross-vein is about its own length distant from the mid cross-vein. Halteres, light stems and knobs.

Length 5 mm.

Habitat.—Tasmania.

Observations.—Described from one rather damaged female.

As only one specimen was sent, the ungues could not be well examined, so the relationship of this species to others of the genus *Culicada* cannot at present be determined.

Culicada vandema, n. sp.

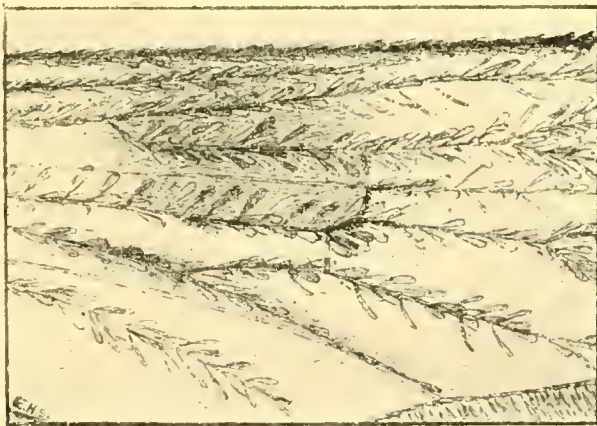
This species varies very much in thoracic scale ornamentation, from uniform dark brown scales to a variety which possesses many golden scales, especially on the median area. Abdomen unbanded, but with ochreous lateral spots on some segments. Legs testaceous with yellowish tarsal bands. The distinctive character of this species is a large dark area in the centre of the wing.

♀. Head black on the vertex and yellow at the sides and back. The narrow curved scales are uniform in size and of a light golden colour. The upright forked scales are all black, and the lateral flat

scales are of an ochreous tint. The basal antennal segment, together with the greater part of the second segment, is testaceous. Clypeus testaceous. Palpi dark scaled, somewhat lighter below. Proboscis dark scaled with scattered lighter more yellowish scales.

Thorax dark brown, sometimes with a lighter median band, and lighter basal lateral patches. The scales are uniformly dark brown; some specimens, however, have a few scattered golden scales. Scutellum with light yellow narrow curved scales. Abdomen black scaled on the basal segments gradually giving place to dull ochreous scales on the apical segments. None of the segments are banded, but dull ochreous lateral spots are present on some of the segments. Ventral surface dark scaled with a few scattered ochreous scales. Femora all mottled, but are mainly dark above and light below. Tibiæ dark scaled with a few ochreous scattered scales. Tarsi with yellow basal bands.

Wings with a dark brown cloud extending from the costa to the fourth longitudinal vein in the one direction, and from the base of the second longitudinal forward to the supernumerary and mid cross-veins in the other direction. There is also another slight cloud along the



Portion of wing of *Culicada vandema*, n. sp., showing mottled scales and the clouded patches.

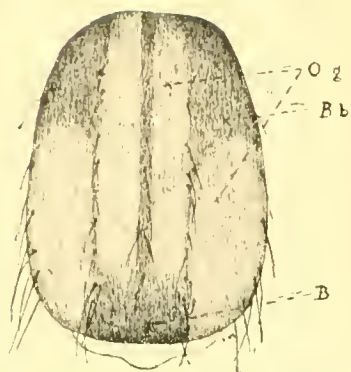
fifth longitudinal vein which follows the lower branch of the fork. The supernumerary and mid cross-veins are almost in a line with each other, and the hind cross-vein is not quite its own length distant from the mid cross-vein. First fork cell narrower and a little longer than the second posterior, its stem is not half the length of the cell. The scales are rather dense, and are mottled dark brown and yellow. Halteres, light ochreous stems and knobs.

Length 5.5-6 mm.

Habitat.—Tasmania.

Observations.—Described from five female specimens.

This is a very distinctive species owing to the dark cloud on the wings which is very clearly defined. The species itself, however, appears to be subject to much variation in thoracic adornment, as all the five species varied from each other in this respect. A description of a marked variety is appended.

Culicada vandema var. *variegatans*.

Thorax of *Culicada vandema*
var. *variegatans*.

O.g. = Deep orange. Golden scales.

B.b. = Dark brown. Brown scales.

B = Dark brown. No brown scales.

♀. This variety is true to the description of *C. vandema* given above in all respects, with the exception of the thoracic ornamentations.

The thorax is for the greater part of an orange brown colour. There is a deep brown median line which terminates in the pre-scutellar area, which is also dark brown and devoid of scales. On either side of this area a narrow line runs forward, parallel with the dark median line to dark lateral patches which occur on the apical third of the thorax, as shown in the diagram. The narrow curved scales are of a bright golden colour all over, with the exception of over the dark lateral patches, where they are replaced by dark brown scales.

Observations.—Described from a single female.

The other specimens which varied from the typical description appeared to be intermediate stages between the type and this variety, but in none of them were the golden coloured scales on the thorax much in evidence.

(To be continued.)

NEW LEPIDOPTERA-HETEROCERA FROM FORMOSA.

By A. E. WILEMAN, F.E.S.

(Continued from p. 176.)

Thosea castanea, sp. n.

Reddish brown. Fore wings silky, rather darker towards the base; a darker, diffuse, slightly sinuous band from costa near apex to outer margin at vein two.

Expanse, 23–25 millim.

Collection number, 738.

Two male specimens from Kanshirei (1000 ft.), July 24th, 1906.

Narosa nigrisigna, sp. n.

♀. Fore wings white, sprinkled with ochreous brown on basal and inner marginal areas, clouded with darker ochreous brown on medial and outer areas; some black scales at end of cell, and a black sinuous line beyond; a marginal series of black dots. Hind wings whitish, thickly sprinkled with ochreous brown.

Expanse, 21 millim.

Collection number, 608.

The complete transformations of the summer emergence of *atalanta* are of short duration, occupying in all about fifty days—the egg state nine days; larval state twenty-three days; pupal state seventeen days—total forty-nine days from the time the egg is laid to the emergence of the imago. These are the average periods, which are liable to vary somewhat according to temperature.

The butterflies of the summer brood pair and produce others, so that a succession of broods occur during the summer and autumn, which accounts for the larvæ in all stages occurring from about the middle or end of June until the middle of September, and fully grown larvæ during the early part of October.

May, 1911.

SOME NEW CULICIDÆ FROM WESTERN AUSTRALIA, SOUTH QUEENSLAND, AND TASMANIA.

By E. H. STRICKLAND (Dip. S.E.A.C.).

(Continued from p. 204.)

Stegomyia tasmaniensis, n. sp.

Head with silvery scales round the eyes, remainder dark.

Thorax clothed with dark scales all over. Scutellar scales also all dark. Pleuræ and pro-thoracic lobes with silvery scales. Abdomen dark scaled with silvery lateral spots.

Legs dark, unbanded; silvery knee-spots on all femora, and silvery apical spot on all tibiæ. The last two hind tarsi, with part of the third, are of a dull white colour.

♀. Head clothed with flat scales, which are of a black colour, except round the posterior borders of the eyes, where they are white; and a few black upright forked scales at the back of the head. The proboscis and palpi are entirely covered with dark scales. Eyes dark brown. Clypeus black rugose. Mesothorax covered with blackish narrow curved scales with a slight brownish reflection. There are a few stout long bristles, especially about the wing roots. Scutellum with black flat scales, with a violaceous reflection, and strong posterior bristles to the lobes. Prothoracic lobes and pleuræ with silvery spindle-shaped scales. Abdomen with black flat scales, with a violaceous reflection; and with silvery apical lateral spots on all segments except the first two. Ventral surface of abdomen clothed with mixed white and dark scales, which are all white on the apical segment.

Legs with a white apical spot on all the femora and tibiæ. Fore and mid tarsi all dark, unbanded. Hind legs pale scaled on the inside along the entire length, last two hind tarsi, and part of third tarsus all dull white. Wings with brown scales, with a violaceous reflection. First fork cell long, slightly narrower than the second posterior, and its base considerable nearer the base of the wing; its

stem about one-fifth its length. Supernumerary cross-vein slightly nearer base of wing than the mid cross-vein, posterior cross-vein about two and a half times its own length distant from the mid cross-vein.

Length 5 mm.

Habitat.—Tasmania.

Observations.—Described from four females, all rather damaged.

Genus *ANDERSONIA*, nov. gen.

Head clothed in the centre with narrow curved and upright forked scales, and at the sides with flat scales as in *Culex*. Female palpi of four segments as in *Culicada*.

Thorax clothed on the greater part with narrow-curved scales, but on either side just before the wing-roots is a patch of flat and broad spindle-shaped, scales. Scutellum with narrow-curved scales. Abdomen with flat scales. Wing venation and scales similar to *Culicada*.

Male unknown.

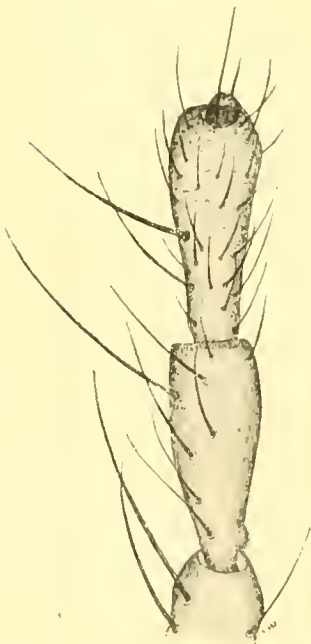
One species only is known at present and is found in Tasmania.

This genus appears to be closely related to *Culicada*, from which, however, it can at once be separated by the presence of flat lateral scales on the thorax.

Andersonia tasmaniensis, n. sp.

♀. Head black, clothed with light golden small narrow curved scales, numerous similarly coloured upright forked scales, and cream coloured lateral flat scales. There are very few bristles on the head. Eyes bronzy. Antennæ with basal segment and basal half of second segment testaceous, the remainder dark. Palpi with very small fourth segment, somewhat densely scaled. Proboscis all dark in colour.

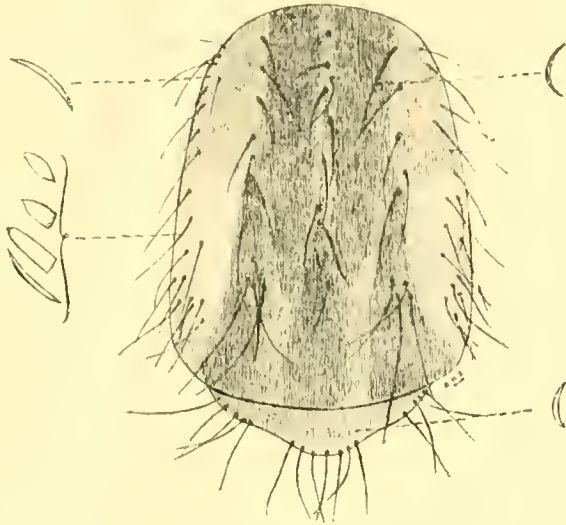
Thorax dark brown, clothed on the median area with small narrow curved scales, which are mainly of a dark brown colour; there is, however, a lighter median line of more golden brown scales on the apical three-quarters of the thorax; the basal quarter of the thorax is devoid of scales in the centre. There is, however, a narrow line of golden brown scales on either side of this area, bounded laterally by another small bare patch, which extends al-



Female palp of *Andersonia tasmaniensis*, denuded of scales.

most to the wing-root. The apical lateral third of the thorax is clothed with large golden yellow narrow curved scales, which lie with their apices toward the centre of the thorax. Just in front of, and extending to, the wing-roots is a very conspicuous patch of large

creamy white, spindle-shaped, flat and elongated narrow-curved scales; the last-mentioned, together with similar coloured hairs, are most numerous basally near the wing-roots. There are three distinct rows of black bristles on the thorax besides lateral bristles and those which surround the wing-roots. The central row terminates at the commencement of the bare patch before the scutellum. Scutellum with light yellow narrow curved scales. Prothoracic lobes with light yellow narrow curved scales, and a few bristles. Pleuræ with



Thorax of *Andersonia tasmaniensis*, n. sp.

creamy flat scales. Abdomen with flat scales. White basal lateral spots on all segments. This character does not appear to be quite constant, as in several specimens examined one or more spots were absent, while in two specimens there were traces of complete white basal bands on the second and third segments respectively. Ventral surface of abdomen white scaled. Wings densely clothed with brown *Culicada*-like scales. First fork cell narrower and considerably longer than the second posterior, its stem is not quite half its length. Supernumerary and mid cross-veins almost in a line, the former slightly nearer the wing base. Posterior cross-vein about its own length distant from the mid cross-vein.

Legs with femora, testaceous and clothed with mottled dark and light scales, replaced apically by a spot of ochreous scales. Tibiæ darker, but also mottled. Tarsi dark and all dark scaled.

Length 5.5–6.5 mm.

Habitat.—Tasmania.

Observations.—Described from eighteen females sent by Dr. Anderson. There were no males. The species is very distinctive, the sides of the thorax being distinctly lighter in colour than the median area, and in this it superficially resembles *Banksinella luteolateralis* (Theobald); the flat lateral scales, however, distinguish it at once from any other described genus.

South-Eastern Agricultural College, Wye.

November 22nd, 1910.