depositing their ova in it in rapid succession. Intrusive males were promptly expelled. Samples of the fish, male and female, were obtained and of the ova in every stage of development.

"The most striking feature of the fish in its natural state is the heavy opaque white under lip. This is not always very evident in the preserved specimens, and the very faint pink coloration on the posterior edge of the tail appears to have entirely vanished."

LVII.—*A Key to the Australasian Species of* Ochlerotatus (Culicidæ). By F. W. Edwards, B.A., F.E.S.

(Published by permission of the Trustees of the British Museum.)

A recent examination of the Culicidæ described last year by Mr. E. H. Strickland has revealed the fact that many of them were previously known under other names. As all Strickland's types, and, indeed, the types of most of the Culicidæ so far described from Australia, are in the British Museum, the task of composing a table of the species proved a comparatively easy one, and it seems as though it would be of use to publish at once the results of the examination of the material in the National Collection. The following table is of course intended to be used in conjunction with the published descriptions. For a definition of the genus *Ochlerotatus*, with full generic synonymy, *vide* 'Bulletin of Entomological Research,' vol. iii. no. 1.

Table of the Species.

1.	Joints of tarsi, especially on the hind legs, pale-ringed at the base	2.
	Joints of tarsi not pale-ringed	16.
2.	Thorax, femora, and tibiæ adorned with fine white lines	1. *notoscriptus*.
	Species not so marked	3.
3.	Deep blue, submetallic scales on abdomen, legs, proboscis, and palpi	2. *purpureus*.
	Not blue species	4.
4.	Head and sides of mesonotum clothed with short yellowish spindle-shaped scales	3. *aculeatus*.
	Head in middle and whole of mesonotum clothed with longer, curved, quite narrow scales	5.

5.	Anterior two-thirds or more of mesonotum clothed with pale golden scales, rest dark; the rings on the tarsi are not very distinct.	4. *australiensis.*
	Thorax differently adorned	6.
6.	Thoracic scales pale ochreous, with four very distinct dark longitudinal lines; abdomen nearly all pale ochreous	5. *vittiger.*
	Species not at all resembling the last.....	7.
7.	Integument of wings with a large dark patch towards costa in middle	6. *vandema.*
	Integument of wings not peceptibly darkened.	8.
8.	Wings conspicuously mottled with light and dark scales	9.
	Wings not conspicuously mottled	10.
9.	Scales and integument of mesonotum deep chocolate-brown: tarsal rings indistinct (on anterior legs: others missing)	7. *stricklandi.*
	Scales of mesonotum yellowish brown; tarsal rings distinct	8. *flavifrons.*
10.	Femora, and often tibiæ and metatarsi, mottled with light and dark scales	11.
	Legs not mottled	15.
11.	Tibiæ mottled; last hind tarsal joint whitish at base	12.
	Tibiæ not mottled; last hind tarsal joint entirely dark	14.
12.	Lateral pale spots of abdominal segments (which form part of the pale band at the base of each segment) spreading out towards the middle line in the middle of the segments.....	13.
	Lateral spots of abdomen without median projections	9. *labeculosus.*
13.	Thorax nearly black; female palpi white only at the tip	10. *vigilax.*
	Thorax more reddish; female palpi pale at the tip and near the middle.....	11. *nocturnus.*
14.	Femora with a rather distinct pale ring near the tip; thorax darker.....	12. *alboannulatus.*
	Femora without any pale ring; thorax lighter.....	13. *occidentalis.*
15.	Last joint of hind tarsi white only at base..	14. *rubrithorax.*
	Last joint of hind tarsi entirely white	15. *quasirubrithorax.*
16.	Femora (at least those of the four anterior legs) distinctly mottled	17.
	Femora not at all mottled.....	19.
17.	Integument of thorax "deep brown or pitchy black"	16. *sagax.*
	Integument of thorax reddish brown; basal joint of antennæ yellowish, but with a black spot on the inner side	18.
18.	A line of broad white scales in front of the wing-base	17. *tasmaniensis.*
	No such scales present	18. *australis.*
19.	Scales of mesonotum dark brown, a transverse band of pale brown ones in the middle: small species	20. *multiplex.*
	No transverse pale band on mesonotum	20.

20. Large species (7–8 mm.): abdominal segments with basal greyish bands, indented in the middle; male palpi four-jointed, the joints all about equal in length, nearly one-fourth shorter than proboscis ..... 19. *crucians*.
Smaller species (5 mm.) ..... 21.
21. Abdomen with narrow pale bands at the bases of the segments; "deep umbrous brown, with an almost imperceptible violet reflection" ..... 21. *macleayi*.
Abdomen with basal lateral yellow spots, most conspicuous on segments 5–7; violet-brown in general colour ..... 22. *bupengaryensis*.

Synonymical Notes.

1. *O. notoscriptus*, Skuse (*Culex*), Proc. Linn. Soc. N.S.W. ser. 2, vol. iii. p. 1738 (1889).

Stegomyia notoscripta, Theo. Mon. Cul. i. p. 286 (1901).
Scutomyia notoscripta, Theo. Gen. Ins. Cul. p. 19 (1905).

2. *O. purpureus*, Theo. Mon. Cul. v. p. 479 (1910).

Molpemyia purpurea, Theo. *l. c.*

Though this is only known from the female, it seems to be an almost typical *Ochlerotatus*.

3. *O. aculeatus*, Theo. Mon. Cul. iii. p. 233 (1903).

Gilesia aculeata, Theo. *l. c.*

4. *O. australiensis*, Theo. Mon. Cul. v. p. 313 (1910).

Leucomyia australiensis, Theo. *l. c.*

5. *O. vittiger*, Skuse, Proc. Linn. Soc. N.S.W. ser. 2, vol. iii. p. 1728 (1889).

Culex vittiger, Skuse, *l. c.*

6. *O. vandema*, Strick. Entomologist, xliv. p. 202 (1911).

Culicada vandema, Strick. *l. c.*

7. *O. stricklandi*, nom. nov.

Grabhamia australis, Strick. Entomologist, xliv. p. 133 (1911), nec *O.* (*Culex*) *australis*, Erichs.

8. *O. flavifrons*, Skuse, Proc. Linn. Soc. N.S.W. ser. 2, vol. iii. p. 1735 (1889).

Culex flavifrons, Skuse, *l. c.*
Grabhamia flavifrons, Theo. Mon. Cul. iv. p. 304 (1907).

9. *O. labeculosus*, Coq. (*Culex*), Ent. News, xvi. p. 116 (1906).

Culicelsa westralis, Strick. Entomologist, xliv. p. 130 (1911).
Culicada inornata, id. *l. c.* p. 201.

The chief variation in this species is in the scaling of the female palpi. These are always tipped with ochreous white, but have a variable number of ochreous scales scattered over the upper surface. The differences do not seem to me to be of specific value.

10. *O. vigilax*, Skuse (*Culex*), Proc. Linn. Soc. N.S.W. ser. 2, vol. iii. p. 1731 (1889).

Culex marinus, Theo. Mon. Cul. i. p. 396 (1901).
Culex procax, Theo. *l. c.* p. 415 (nec Skuse).
? *Culex vigilax*, Theo. *l. c.* p. 395.
Culex albirostris, Theo. (nec Macq.) Mon. Cul. iii. p. 162 (1903).
Culicelsa vigilax, Theo. Mon. Cul. iv. p. 382 (1907).
? *Culicelsa pseudovigilax*, Theo. *l. c.*
Culicelsa uniformis, Strick. Entomologist, xliv. p. 131 (1911).

11. *O. nocturnus*, Theo. (*Culex*), Mon. Cul. iii. p. 159 (1903).

Doubtfully distinct from the preceding. The male is unknown.

12. *O. alboannulatus*, Macq. Dipt. Exot., 4th Supp. p. 10 (1850).

Culex alboannulatus, Macq. *l. c.*

13. *O. occidentalis*, Skuse, Proc. Linn. Soc. N.S.W. ser. 2, vol. iii. p. 1729 (1889); Theo. Mon. Cul. i. p. 419 (1901).

Culex occidentalis, Skuse, *l. c.*
Culicelsa similis, Strick. Entomologist, xliv. p. 132 (1911).
Culicelsa queenslandis, Strick. *l. c.* p. 179.
Culicada demansis, Strick. *l. c.* p. 202.

Strickland's species only differ in very slight characters (chiefly the colour of the thoracic integument), and it is impossible to regard them as distinct. The species is no doubt correctly identified as *C. occidentalis*, Skuse.

14. *O. rubrithorax*, Macq. (*Culex*), Dipt. Exot., 4th Supp. p. 9 (1850).

Culex procax, Skuse, Proc. Linn. Soc. N.S.W. ser. 2, vol. iii. p. 1742 (1889).

The species which Theobald has identified as *C. rubrithorax* answers in every particular to Skuse's description of *C. procax*, and I have no doubt they are the same. Macquart's description is very inadequate, but since Theobald claims to recognize *C. rubrithorax*, the name may as well be retained.

15. *O. quasirubrithorax*, Theo. (*quasirubithorax*), Mon. Cul. v. p. 348 (1911).

May be only a variety of the preceding species.

16. *O. sagax*, Skuse, Proc. Linn. Soc. N.S.W. ser. 2, vol. iii. p. 1744 (1889).

This must be an *Ochlerotatus*, for Skuse refers to the "lamellæ of the ovipositor," describing them as "deep brown, elongate." In *Culex* the ovipositor is never prominent externally and has no distinct "lamellæ." Theobald is certainly wrong in his interpretation of the species: the specimens so named by him in the British Museum collection proved to be only light specimens of *C. fatigans*. I have seen no insect which answers to Skuse's description.

17. *O. tasmaniensis*, Strick. Entomologist, xliv. p. 250 (1911).

Andersonia tasmaniensis, Strick. *l. c.*

18. *O. australis*, Erichs. (*Culex*), Arch. für Naturg. viii. p. 270 (1842).

Erichson's description would apply equally well to *O. crucians*, especially as he mentions that the palpi of the male are a little shorter than the proboscis. But in the absence of proof of its erroneousness, Theobald's determination is accepted. Should this species prove to have longer male palpi, the name *australis* would have to be used for *crucians* and a new name proposed for the species at present under consideration. The Tasmanian specimens recorded by Strickland ('Entomologist,' 1911, p. 179) with some doubt as *Culex frenchii* are this species, but differ slightly from the Victorian specimens. In the latter the basal half of the hind femora is entirely pale, in the former it is mottled on the

outside, pale on the inside. Dr. J. B. Cleland has found the larvæ of this species living at a height of 6000 feet on Mt. Kosciusko, in a shallow pool fed by a snowdrift but warmed by the sun.

19. *O. crucians*, Walk. (*Culex*), Ins. Saund. i. p. 432 (1856).

Culicada tasmaniensis, Strick. Entomologist, xliv. p. 181 (1911).

Walker's type is in poor condition, but quite recognizable as being the same as Strickland's *C. tasmaniensis*. The species is quite distinct from that recognized by Theobald as *C. australis*.

20. *O. multiplex*, Theo. (*Skusea*), Mon. Cul. iii. p. 293 (1903).

Pseudoskusea multiplex, Theo. Mon. Cul. iv. p. 192 (1907).

The specimens Theobald records from New Guinea probably represent another species ; males of this species from Queensland have the claws of the middle legs unequal.

21. *O. macleayi*, Skuse (*Culex*), Proc. Linn. Soc. N.S.W. ser. 2, vol. iii. p. 1746 (1889).

This species, like *sagax*, is evidently an *Ochlerotatus*, and not a *Culex*, on account of the following phrase in the original description :—"lamellæ of the ovipositor light brown, densely pubescent." Theobald erroneously regards it as synonymous with *Culex fatigans*. I have not seen it.

22. *O. bupengaryensis*, Theo. (*Culex*), J. Econ. Biol. i. p. 27 (1905).

Culicada bupengaryensis, Theo. Mon. Cul. iv. p. 348 (1907).

Unidentified Species.

The following probably belong to the genus *Ochlerotatus*, but the descriptions are inadequate for recognition :—

Culex camptorhynchus, Thomson, Eugenies Resa, Dipt. p. 443 (1868).

Culex albirostris, Macq. Dipt. Exot., 4th Suppl. p. 10 (1850).

Culex nigrithorax, Macq. Dipt. Exot., 2nd Suppl. p. 9 (1847).

Culex pseudovigilax, Theo. Mon. Cul. iv. p. 38 (1907).—There is no type, and nothing answering to Theobald's

description exists in the British Museum Collection. Perhaps the specimen from which Theobald's description of *C. vigilax* (subsequently renamed *pseudovigilax*) was taken was, after all, only a slight aberration of the true *C. vigilax*, Skuse.

LVIII.—*Descriptions of new Species of* Pyrochroidæ.

By K. G. Blair.

(Published by permission of the Trustees of the British Museum.)

I have recently been rearranging the collection of Pyrochroidæ in the British Museum, and amongst the accessions are a considerable number of undescribed species. These were for the most part contained in the Fry Collection, and collected by Doherty in the Ruby Mines district of Burma: other species obtained by him in Perak, specimens of which are also contained in the Fry Collection, have recently been described by M. Pic. In addition to these are descriptions of two species from the Nilghiri Hills, the types of which have been generously presented to the Museum by Mr. H. E. Andrewes, and one species from Sumatra, communicated by Dr. Gestro, of the Museo Civico, Genova. To M. Maurice Pic I am indebted for the loan of several types and for his identification of many species.

Pyrochroa melanocephala, sp. n.

Elongata, subparallela; supra rufa; capite nigro, collo rufo.
Long. 14 mm.

Hab. Sikkim.

Resembles *ruficeps*, Pic, from the same locality, but that the head is black, with only the neck red. The head is transversely excavated between the eyes in the male, the cavity being filled with black hairs. The antennæ are slender and finely pectinate; the thorax is widest before the base and the elytra subcostulate.

Pyrochroa rufipes, sp. n.

♀. Rufa, antennis, palpis et abdomine nigris.
Long. 14 mm.

Hab. Nilghiri Hills (*H. E. Andrewes*).