

which shows already a membranous and somewhat pointed³ fold directed backwards, the future *concha*. Between the prominence produced by the liver and the abdomen in general on the one side and the snout on the other, appears the fore-leg bent downwards. On the surface of the abdomen slight traces of 8 or 9 ribs may be observed. The hind-leg is not very clear, as parts of the membranes have dried with it. The tail is rather long and disappears in the membranes. Three characters may be pointed out as especially ungulate:—1, the small size of the head; 2, the length of the fore-leg, which distinguishes also sheep and deer from pig embryos of the same stage; 3, the length of the tail.

I am obliged not only to Dr. I. David, but also to Prof. F. Keibel, who kindly verified my statements.

2. List of further Collections of Mammals from Western Australia, including a series from Bernier Island, obtained for Mr. W. E. Balston; with Field-notes by the Collector, Mr. G. C. Shortridge. By OLDFIELD THOMAS, F.R.S.

[Received August 18, 1906.]

In the March number of the 'Proceedings'* I gave a list of a number of mammals obtained in S.W. Australia by Mr. G. C. Shortridge, who had been commissioned for the purpose by Mr. W. E. Balston, by whom a complete series has been presented to our National Museum.

In making his first collection Mr. Shortridge had been disappointed at the rarity or absence of many of the species supposed to be common and characteristic of Western Australia. Fortunately, however, in making the second collection he hit on a region where the fauna still persists in its original state, and he has therefore been able to send home a remarkably fine series of a number of species hitherto only represented by faded old specimens of the Gould & Gilbert era, or by the one or two examples picked up as great rarities in regions where the native animals have been more nearly killed out.

The places now visited were four in number—Stockpool, Dwaladine, and Woyaline, respectively some twenty to thirty miles to the east of Burnley, Brookton, and Pinjelly, stations south of York on the Perth-Albany railway-line, and Dale River, a similar distance to the west of the line. These localities are all in the upper part of the watershed of the River Avon, in the county of the same name, about 117° E. and between 30° and 31° S.

Finally, Mr. Shortridge paid a visit to Bernier Island, off

* P. Z. S. 1906, p. 460.

Shark's Bay, a locality interesting for many reasons, and the specimens obtained there are included in an appendix to the present paper.

The series of specimens amounts to about 400, a number indicative of a vast amount of energy and hard work on the part of Mr. Shortridge and of the friend who accompanied him, Mr. John W. Bell.

Mr. Shortridge's field-notes on the species occupy the greater part of the present paper, and are of much value as putting on record the status of each animal at the present time. Every species obtained in either the first or second collection is mentioned, as the field-notes apply to both; but the record of the specimens sent only refers to the second collection, a list of the first having been already published.

One novelty only from the mainland now needs description, a Rat allied to *Mus lineolatus* of Eastern Australia. Two of the Bernier Island specimens also require new names.

It may be noted that before Mr. Shortridge's expedition only two Bats, *Nyctophilus timoriensis* and *Vespertilio pumilus*, were recognised as occurring in Western Australia. This number is now raised to ten by the capture there of *Pipistrellus tasmaniensis*, *Chalinolobus gouldi* and *morio*, and *Nyctinomus australis* and *planiceps*, by the discovery of *Pipistrellus regulus* and *Scoteinus balstoni*, and by the recognition of *Nyctophilus geoffroyi* as a valid species.

1. NYCTOPHILUS TIMORIENSIS Geoff.

2. NYCTOPHILUS GEOFFROYI Leach.

3. VESPERTILIO PUMILUS Gray.

7 specimens from Dwaladine, Woyaline, and Dale River.

4. PIPISTRELLUS REGULUS Thos.

5. PIPISTRELLUS TASMANIENSIS Gould.

♂. 503. Dwaladine.

6. CHALINOLOBUS GOULDI Gray.

11 specimens from Dwaladine and Dale River.

"Very plentiful in the districts between Beverley and Kalgurli, extending as far eastward as Laverton, where it is not quite so common.

"Native name, 'Tarding' (applicable to all bats)."—G. C. S.

7. CHALINOLOBUS MORIO Gray.

♂. 479. Dwaladine.

8. SCOTEINUS BALSTONI Thos.

9. NYCTINOMUS AUSTRALIS Gray.

10. NYCTINOMUS PLANICEPS Peters.

Nyctinomus wilcoxi Krefft; *N. petersi* Leche.

12 from Dwaladine and Dale River.

"The specimens obtained were always flying over water."—*G. C. S.*

This Bat is an addition to the West Australian list, all previous examples having come from the south and east.

It differs by its flattened head from *N. norfolcensis* Gray, to which Dobson assigned it. He stated at the same time that Gray's species had six lower incisors, but this is not the case in any of these small Australasian *Nyctinomi*, as I have proved by the examination of a considerable number of specimens, including Gray's type of *norfolcensis*, a typical example of *wilcoxi*, and a co-type of *petersi*.

11. CANIS DINGO Blum.

"Apparently occurring throughout the South-west, but very much thinned out in the farming districts on account of their being very destructive to stock.

"Native names, 'Yarging,' 'Dwert.'"—*G. C. S.*

12. HYDROMYS FULIGINOSUS Gould.

3 from Dale River.

"Very plentiful throughout the South-west, near rivers and swamps, not extending very far inland. It seems to feed to a large extent on freshwater crayfish and shell-fish, the former when used as a bait being very successful.

"Native name, 'Wamp wamp.'"—*G. C. S.*

The increase in the length of the hind feet with age is well exemplified by these Dale River specimens, No. 194 having the feet only 59 mm., while in No. 198, an old male, they are no less than 72 mm. in length.

13. MUS RATTUS L.

"Plentiful around Albany, where it seems to be the common house-rat. I did not obtain any specimens of *Mus norvegicus* in the district."—*G. C. S.*

14. MUS FUSCIPES Waterh.

"A water-rat, frequenting the banks of rivers and reedy swamps; plentiful around Albany."—*G. C. S.*

15. MUS SHORTRIDGII, sp. n.

♂. 542. Woyaline, east of Pinjelly, 970', 27 April, 1906. B.M. No. 6.8.1.73. *Type*.

"Trapped near water."—*G. C. S.*

Size rather smaller than in *Mus lineolatus*, about three-fourths that of *Mus rattus*. Fur long, soft and loose; ordinary hairs of back about 17, longer hairs about 22 mm. in length. General

colour above pale hair-brown with a tinge of buffy, the lining from the dark tips of the longer hairs well-marked. Individually the ordinary hairs are dark slaty for three-fourths their length, their ends dull clay-colour. Under surface similar to upper, but rather paler, without lines of demarcation. Ears of medium length, their proectote black, their metentote grizzled blackish, their edges with a well-defined white rim. Upper surface of hands and feet dull greyish white. Tail rather short, well-haired, the scales quite hidden; dark brown above, dull white below.

Skull with many of the essential characters of that of *M. lineolatus*, but smaller, the supraorbital margins more sharply angular, the front edge of the zygomatic plate less deeply concave, the palatal foramen much shorter, and the bullæ smaller. The palatal foramina are narrowly pointed behind, and barely project between the front of the roots of m^1 . Mesopterygoid fossa broadly open, the palatal edge well in front of the anterior end of the parapterygoid fossæ.

Molars constructed as in *M. lineolatus*, but narrower, though broader than in *M. higginsii*.

Dimensions of the type, measured in the flesh:—

Head and body 145 mm.; tail 110; hind foot 27; ear 20.

Skull—greatest length 32 mm.; basilar length 26; greatest breadth 17.2; nasals 11.5×3.7 ; interorbital breadth 4.2; breadth of brain-case 14.4; palatilar length 14.6; palatal foramina 7×2 ; length of upper molar series 5.7; breadth of m^1 2.

Hab. & type as above.

This Rat, which I have much pleasure in naming after its captor, belongs to the peculiar Australian group of which *Mus lineolatus* Gould, of New South Wales, and *M. higginsii* Trouessart (*M. leucopus* Higg. & Pett.), of Tasmania, have hitherto been the only known members. Within the group the Tasmanian species is at once distinguished from both the Australian forms by its very long tail and narrow molars, while the new western species may be separated from its eastern ally by its rather smaller size, paler colour, and by the cranial characters above noted, of which the most tangible are the narrowness of the molars and the shorter palatal foramina.

16. *MUS ALBOCINEREUS* Gould.

22 from Stockpool and Dwaladine.

“Frequenting sand plains; plentiful east of Beverley. Their burrows differ from those of *Notomys gouldi* by having sand thrown up around them; they also often seem to fill up the entrance of these burrows when inside—when they are very difficult to detect.”—*G. C. S.*

17. *MUS MUSCULUS* L.

5 from various localities.

“The common House-Mouse, besides swarming in all the

inhabited districts, seems also to have adapted itself to an entirely out-door life here. I have come across it in every place that I have visited in the South-west, in some places at least twenty miles from any house."—*G. C. S.*

18. *NOTOMYS GOULDI* Gould.

20 from Stockpool, Dwaladine, and Woyaline.

This fine series is of particular value, as these peculiar native Muridæ seem to be dying out everywhere in competition with the introduced forms, and the preservation of proper specimens is therefore of much importance.

This is the *Hapalotis mitchelli* of Gould's 'Mammals of Australia,' but not the original *Dipus mitchelli* of Ogilby. Finding out the mistake when writing the Introduction, Gould said: "*H. gouldii* of Gray will be the correct designation of the animal I have called *H. mitchelli*." But unfortunately *H. gouldii* was never described by Gray, its description having been accidentally omitted from the Appendix to Grey's 'Australia,' where the name merely occurs as a *nomen nudum*. Consequently, on the above sentence, the species seems to stand as *gouldii* of Gould himself, and the specimen figured by him as *H. mitchelli*, recently received with the Tomes Collection (B.M. No. 7.1.1.135), would be the type.

I may here draw the attention of Australian zoologists to the fact that the genus I recently called *Ammomys* has been renamed *Mesembriomys* by Mr. T. S. Palmer, the former name having been preoccupied.

"The burrows of this species are very difficult to find, the entrances being very small and often hidden by tufts of grass. Each burrow has two or more outlets which descend perpendicularly for some distance and then wind about in all directions, sometimes nearly three feet below the surface. Each burrow contains one pair or family, the usual number of young being four, but occasionally as many as six. Frequenting heavily timbered country and seeming to prefer the neighbourhood of water. This species is said to be migratory, their movements probably being affected by dry seasons.

"Native name, 'Gunding.'"—*G. C. S.*

[*ORYCTOLAGUS CUNICULUS* Linn.

"The Rabbit has so far been kept out of the agricultural districts of the South-west by a rabbit-proof fence that passes through Burracoppin on the Eastern railway, extending to Israelite Bay on the south. It seems to have spread everywhere east of the fence."—*G. C. S.*]

19. *MACROPUS GIGANTEUS* Zimm.

13 specimens from Stockpool, Dwaladine, and Woyaline.

"The common or grey Kangaroo of the south-west, not

extending very far inland, and replaced in the interior by *Macropus rufus*.

"Native names, 'Yongure' ♂, 'Woyre' ♀."—*G. C. S.*

20. *MACROPUS RUFUS* Desm.

"Occurring in the South-west—from the west of Southern Cross throughout the Interior, evidently not so dependent on water as *M. giganteus*. The females, which are normally blue, are not infrequently of the same sandy-red colour as the males.

"Native name, 'Bigoder.'"—*G. C. S.*

21. *MACROPUS IRMA* Jourd.

14 specimens from Stockpool, Dwaladine, Woyaline, and Dale River.

"Generally distributed over the South-west. Not gregarious like the smaller wallabies; more resembling the larger kangaroos in habits. When hunted with dogs they are very swift and can turn and double with great agility.

"Brush Kangaroo of Colonists, 'Quoirer' of natives."—*G. C. S.*

22. *MACROPUS EUGENEI* Desm.

19 specimens from Stockpool, Dwaladine, Woyaline, and Dale River.

"The most plentiful and widely-distributed wallaby in the South-west. Frequenting dense thickets, where they usually collect together in large numbers.

"Native name, 'Tammar.'"—*G. C. S.*

23. *MACROPUS BRACHYURUS* Quoy & Gaim.

"Very plentiful around Albany, but not extending very far inland. It seems to be far more coastal in its range than any of the other wallabies, not appearing to occur anywhere at a great distance from the sea; gregarious. Resembling *M. eugenei* in habits.

"Native name, 'Bangcup.'"—*G. C. S.*

24. *PETROGALE LATERALIS* Gould.

9 specimens from Stockpool, east of Beverley.

"Fairly plentiful among low rocky hills around York and Beverley. Seemingly local and patchy in its distribution; according to the natives it does not occur among the Stirling Ranges.

"Native name, 'Boggile.'"—*G. C. S.*

25. *ONYCHOGALE LUNATA* Gould.

18 specimens from Woyaline, east of Pinjelly.

"More local than *Macropus eugenei* and seeming to prefer lower and more scrubby thickets than that animal. Very numerous in some localities; it rather resembles the Kangaroo-

Rats (*Bettongia penicillata*) in some of its habits, often running into hollow logs when disturbed.

"Native name, 'Wurrine' or 'Wurrung.'"—*G. C. S.*

26. *LAGORCHESTES HIRSUTUS* Gould.

"Occurring very sparingly on sand-plains to the east of York and Beverley. Known locally as the Whistler.

"Native name, 'Wurru'."—*G. C. S.*

No specimens of this species were sent home by Mr. Shortridge, so that in working out the Bernier Island form I have had to trust to the old Gould & Gilbert material.

27. *LAGOSTROPHUS FASCIATUS ALBIPILIS* Gould.

17 from Woyaline.

"Apparently local in the South-west, occurring very plentifully about twenty miles east of Pinjelly, but only in certain districts, among thick low prickly scrub. Also said to be found east of Wagin and near the Salt River.

"Native name, 'Munning' or 'Munnine.'"—*G. C. S.*

For the nomenclature of this animal, see below in the Bernier Island Appendix (p. 774).

28. *BETTONGIA PENICILLATA* Gray.

16 from Dwaladine and Woyaline.

"Very plentiful. The Kangaroo-Rat of colonists. Nocturnal. This species simply swarms about twenty miles east of Pinjelly, as it probably does in many other places. Said to be rather destructive to crops. — Both this animal and *B. lesueuri* are great scavengers, and collect often in large numbers around camps at night in order to feed on any scraps that may be lying about. They become wonderfully fearless, often approaching within a foot or two of where people are sitting, when they might easily be knocked over with sticks. However, when startled they are marvellously quick, and can double and dodge about with such agility that it is almost impossible for a dog to catch them at night; when put up in the daytime they will generally make for the nearest hollow log or cover. Sleeping by day in a grass nest rather like those made by Bandicoots. I do not think that the Kangaroo-Rats can be said to have prehensile tails, although in the case of '*penicillata*' they seem inclined to curve downwards. But *Thalacomys lagotis* has this peculiarity still more strongly developed, though not enough to be used for any prehensile purpose.

"Native name, 'Woylyer' or 'Woyre.'"—*G. C. S.*

29. *BETTONGIA LESUEURI GRAYI* Gould.

17 from Dwaladine, Woyaline, and Dale River.

"Very plentiful in most districts throughout the South-west. Making a rather smaller burrow than *Thalacomys lagotis*, a number

often getting together and forming warrens similar to those of rabbits. This species does not seem to occur around Albany.

“‘Boodee’ of colonists and natives.”—*G. C. S.*

For nomenclature see below, p. 773.

30. *TARSIPES SPENSERÆ* Gray.

“Seeming to prefer damp localities in the vicinity of Ti trees (*Melaleuca*), among the branches of which they are said to build small round nests, like Dormice.”—*G. C. S.*

31. *DROMICIA CONCINNA* Gould.

“Said to be fairly plentiful near Parker’s Range.”—*G. C. S.*

32. *PSEUDOCHIRUS OCCIDENTALIS* Thos.

“Apparently local, frequenting well-watered districts. Plentiful in some localities.

“Native name, ‘Wormp.’”—*G. C. S.*

33. *TRICHOSURUS VULPECULA* Kerr.

20 from Stockpool, Dwaladine, Woyaline, and Dale River.

“Abundant and generally distributed throughout the South-west, although very much thinned out in the more settled districts; not extending in any numbers far inland. The red patch on the throat only appears in adult specimens, often becoming more suffused over the rest of the body in aged individuals. The black form seems to be local and more plentiful in the coastal districts. The common method of trapping ‘Possums’ is by a snare set on a slanting stick fixed against the base of a tree. They will always come down a tree on the sloping side, however slight the slope is; and the stick being in a more sloping position still, they invariably run down it and get caught in the snare.

“Native name, ‘Coomul.’”—*G. C. S.*

34. *THALACOMYS LAGOTIS* Reid.

15 from Woyaline.

Mr. Shortridge has drawn my attention to the fact that this animal has a distinct horny spur at the tip of its tail, of a similar nature to that in *Onychogale lunata*.

“With the exception of *Bettongia lesueuri*, this seems to be the only true burrowing marsupial in the South-west. *Bettongia penicillata* and the Bandicoots dig little holes in the ground in search of roots &c., but they do not live in burrows. It makes a larger and deeper burrow than *B. lesueuri*, and, like a badger, it is difficult to dig for, as it will burrow almost as fast as a man can dig. Although more plentiful near the coast, it has a wide range inland, occurring sparingly as far as Laverton; but for some reason it seems to have become scarcer in the interior than formerly, for while old burrows are plentiful, it seems to have almost left parts of the country where it was once well known—

perhaps on account of the succession of droughts inland of late years.

"Native name, 'Dalgyte.'"—*G. C. S.*

35. *PERAMELES BOUGAINVILLEI MYOSUROS* Wagn.

♂. 504. Woyaline.

For the use of the name *myosuros* see below, p. 777.

"One specimen only was obtained, about twenty miles east of Pinjelly, where it is evidently far from common.

"Native name, 'Marl.'"—*G. C. S.*

36. *ISOODON OBESULUS* Shaw.

15 from Dwaladine and Woyaline.

"The common Bandicoot of the South-west, not extending inland, or far from permanent water. Hiding by day in a nest on the ground, generally hidden either under a fallen tree or under a tuft of grass. Making for the nearest hollow log or thick patch of scrub when disturbed. Insectivorous: the stomachs of all specimens examined contained numerous wing-cases and legs of beetles, and orthopterous insects. I believe they also feed to a certain extent on roots and vegetable matter. The native Pig of colonists.

"Native name, 'Quaint.'"—*G. C. S.*

The nomenclature of the Bandicoots is dealt with in my previous paper.

37. *DASYURUS GEOFFROYI FORTIS* Thos.

20 from Dwaladine and Woyaline.

"Numerous in some localities, especially where there is rocky country, but killed off as much as possible in the more settled districts, as they are very destructive to poultry. Hiding by day in crevices among rocks, hollow logs, deserted burrows, &c. Arboreal to a great extent; resembling the pole-cats and viverrine animals very much in their habits.

"Native name, 'Chudich.'"—*G. C. S.*

38. *PHASCOGALE FLAVIPES LEUCOGASTER* Gray.

"Five specimens obtained around Albany, in thickly-timbered country. This species and the other smaller kinds of *Phascogale* seem to be more plentiful in the extreme South-west than further inland; the coastal districts, which are for the most part heavily wooded and not so subject to bush fires, probably being a better stronghold for the smaller marsupials than the grass country and farming districts, which are to a large extent annually burnt off between March and April."—*G. C. S.*

39. *PHASCOGALE PENICILLATA* Shaw.

"Reported from around Beverley and York, but not common; said to become more plentiful further south. Known locally as the Squirrel. Described as being arboreal, and very active among

the branches of trees. Occasionally found around farms, where they come, according to the natives, after mice.

"Native name, 'Cōming-cōming.'"—*G. C. S.*

40. *SMINTHOPSIS MURINA* Waterh.

"Not uncommon around Albany, seeming to be more plentiful in the coastal districts than further inland. Occasionally to be found in the hollow stumps of dead grass-trees (*Xanthorrhœa*)."—*G. C. S.*

41. *MYRMECOBIUS FASCIATUS* Waterh.

10 from Dwaladine, Woyaline, and Dale River.

"Diurnal. Fairly numerous throughout the South-west, especially where the prevailing timbers are the white gum (*Eucalyptus redunca*) and the jam (*Acacia acuminata*), getting less plentiful outside that area. It extends very sparingly as far inland as Laverton. When alarmed it will make for the nearest hollow log, but is unable to climb trees. It does not seem to use its teeth much, either in mastication or self-defence. The stomach of one example proved, on examination, to be full of white ants, most of which had evidently been swallowed whole.

"Native name, 'Numbat.'"—*G. C. S.*

42. *TACHYGLOSSUS ACULEATUS INEPTUS* Thos.

"Rare in the South-west, but seeming to become numerous towards the Interior and North-west. Reported to frequent hills and rocky country. Their claws are very powerful, and when disturbed they will cling to the ground so tightly that it is difficult to dislodge them.

"Native name, 'Ningan.'"—*G. C. S.*

APPENDIX ON A COLLECTION FROM BERNIER ISLAND.

After making the fine collection above described, Mr. Shortridge travelled northward by steamer to Carnarvon, and from there paid a visit to Bernier Island, situated at the mouth of Shark's Bay in 25° S. latitude.

Mr. Shortridge writes as follows about Bernier Island and its mammals:—"The island is quite small—16 miles by 3—sandy, and covered for the most part rather thinly with low scrub, very like the mainland. I am sending you a list of the mammals and birds. *Lagorchestes*, *Lagostrophus*, and *Bettongia* swarmed in the island. In the case of *Lagostrophus* I have never seen any animal, not even rabbits, in such numbers. It has been a particularly dry season, and they were very thin. Food was evidently insufficient for them all, and dead specimens were lying about in all directions. It would seem that they have no natural enemies on the island; and they breed to such an extent that the island will carry no more, and in times of drought a number have to die. *Lagorchestes* was not so plentiful. I believe Bernier Island will be the most northern locality for all the three forms. The distribution of

mammals in this part of the country is very curious, as, with all these Rat-Kangaroos on the islands off the coast, they are entirely absent from the mainland about here (Carnarvon). [It remains to be seen, however, whether there are none on the coast to the south, which a study of the map would indicate as the natural way of entry for the animals of these islands.—*O. T.*] In addition to the species sent, the island possesses *Perameles bougainvillei*, of which there is an example from 'Denham Sound' in the Perth Museum; but I was unable to secure a specimen, though I picked up a dried skull, and I fear that, owing to the presence of cats, they may have been exterminated."

The specimens sent by Mr. Shortridge from Bernier Island prove to be most interesting; for in every case they are definably different from the S.W.-Australian form to which he supposed them to belong, and from which they would appear to be widely separated geographically.

And in this differentiation there is one interesting and noticeable point, namely, that all three of the Rat-Kangaroos differ from their respective allies in one character—the comparative shortness of their ears and a correlated reduction of their auditory bullæ. When we remember that the forms affected belong to three quite distinct genera, this instance of geographical isomorphism is well worthy of mention.

As a cause it may be suggested that since, as Mr. Shortridge states, the animals have on the island no enemies to fear, the faculty of hearing would have lost that supreme importance for the preservation of life that it would have had in the presence of man, dingoes and dasyures. The ears would have consequently tended to become reduced by the survival of individuals with duller hearing, who in other places would have been speedily eliminated by predatory enemies.

43. BETTONGIA LESUEURI Quoy & Gaim.

Three males; six females.

These specimens represent the typical *lesueuri*, which was discovered during the Voyage of the 'Uranie' on the neighbouring island of Dirk Hartog, and, as in the case of *Lagostrophus fasciatus*, prove, on comparison with the good series obtained by Mr. Shortridge in Avon County, to be recognisably different. Their ground-colour is paler, their fur is less long, and their ears (just as in the case of the *Lagostrophus*) are very distinctly shorter. The following are Mr. Shortridge's measurements of a pair from each region:—

B. lesueuri lesueuri.—Bernier Island.

	Head and body.	Tail.	Hind foot.	Ear.
	mm.	mm.	mm.	mm.
♂	350	280	102	35
♀	360	300	110	36

B. lesueuri grayi.—Avon District.

♂	390	310	112	42
♀	360	285	108	40

In the skull, the bullæ of *lesueuri* are decidedly smaller than in *grayi*—a difference already noted in the ‘Catalogue of Marsupials.’

Gould's *Hypsiprymnus grayi* was described from the Swan River; and this name will therefore stand for the continental form. Its type is in the Museum, B.M. No. 41.1157.

44. LAGOSTROPHUS FASCIATUS Pér. & Les.

Three males; five females.

In 1807 Péron and Lesueur described the Banded Wallaby from specimens obtained on this very island; so that Mr. Shortridge's examples are absolute topotypes, and as such of very great interest, no specimens having been again obtained from the islands until quite recently. In 1900, however, the British Museum received from the Perth Museum two skins from Dorre Island; but these were put away without any special comparison being made of them with the mainland form. Indeed, at that date, before the Balston Exploration, no specimens well-enough collected to form the basis of a comparison were available in this country.

Now, however, that the Balston series contains sets from both localities, I am able to state that the two forms—the one from the islands about lat. 25° S., and the other from the Perth and Avon regions of the mainland, about lat. 32° S.—are quite definably different. The latter would bear the name of *L. fasciatus albipilis* Gould, whose *co-types* are nos. 44.9.30.1 & 2 of the British Museum collection.

As the present specimens show, true *L. fasciatus* is a rather shorter-tailed animal than *albipilis*; the fur is shorter, the general colour is paler, the ears are both shorter and paler-coloured than in the allied form, the long white-ringed piles of the coat are less prominent and numerous, and the bristle-hairs of the toes only cover the base of the claws, while in *albipilis* they considerably surpass the latter; the claws are also longer in *fasciatus*, surpassing the tip of the toes by from 2 to 5 mm. more than is the case in *albipilis*.

The following are the measurements of a pair of each subspecies, taken in the flesh by Mr. Shortridge:—

L. fasciatus fasciatus.—Bernier Island.

	Head and body.	Tail.	Hind foot.	Ear.
	mm.	mm.	mm.	mm.
♂ 593	400	330	106	48
♀	400	355	110	51

L. fasciatus albipilis.—Avon District.

♂	410	405	112	62
♀	400	390	110	60

I can find no tangible difference between the Dorre and Bernier Island examples of *L. fasciatus*.

45. *LAGORCHESTES HIRSUTUS BERNIERI*, subsp. n.

Ten males; seven females.

General characters as in the typical subspecies; but the fur is not nearly so long (hairs of back in winter specimens about 18 mm., wool-hairs 12 mm., instead of 32 and 24 mm. respectively); the ears are slightly shorter; the long hairs on the feet are of a more glossy sandy colour, instead of brownish; and the tail, instead of being well-haired throughout and blackish on the upper side of the terminal half, is practically naked above, the few minute scattered hairs being sandy.

The skulls are remarkably uniform in character; but, no equally good material existing of the true *L. hirsutus*, it can now be stated only that the bullæ, in correlation with the shorter external ear, are very decidedly smaller than in the type. The interorbital is broad and parallel-sided.

Dimensions of the type, measured in the flesh:—

Head and body 370 mm.; tail 270; hind foot s.u. 112, c.u. 125; ear 48.

Skull—greatest length 76 mm.; basal length 66; greatest breadth 41·5; nasals $30 \times 11\cdot8$; interorbital breadth 12·9; palatal length 42; length of secator 4·7; combined length of three anterior molariform teeth 15·2.

Hab. Bernier Island, Shark's Bay.

Type. Adult male. B.M. No. 6.10.5.18. Original number 571. Collected 16 June, 1906, by G. C. Shortridge and presented by Mr. W. E. Balston.

This animal, which differs from its mainland relations in very much the same way as do the other two Rat Kangaroos of the island from theirs, is fortunately able to take its proper position in nomenclature as an insular subspecies of *L. hirsutus*, the mainland form having in this case been first described. No record exists as to how far north the true *L. hirsutus* occurs, the only specimen with an exact locality that I am aware of being the type, which was obtained by Mr. Gilbert at York, in the Avon district inland of Perth.

But further, a careful comparison of two specimens obtained by Mr. J. T. Tunney on Dorre Island, just to the south, with the series from Bernier Island shows that a slight difference has already been developed between the two; and one that I think should be recognised by name. The Dorre Island form may therefore be called *Lagorchestes hirsutus dorrea*.

Externally the differences are not essential, though it may be noted that the fur of *dorrea* is slightly softer, and in one example longer (specimens obtained in the southern summer, and compared with winter specimens of *bernieri*), though not so long as in true *hirsutus*, and that the ground-colour is more rufous, the ordinary and wool hairs, and not only the long piles of the rump, having a tinge of sandy rufous.

The skull may be at once distinguished from that of *bernieri*

by the narrowness of the interorbital region, which is only 10 mm. across as compared with over 13 mm. in *bernieri*, and in this respect the skulls of the latter are remarkably uniform.

Dimensions of the type, measured in the skin:—

Head and body 400 mm; tail 280; hind foot s.u. 109, c.u. 124; ear 43.

Skull—greatest length 76 mm.; basal length 66; greatest breadth 44; nasals 19×11.5 ; interorbital breadth 10; length of secutor 5.

Hab. Dorre Island, Shark's Bay.

Type. Old male. B.M. No. 0.6.1.18. Original number 93. Collected February 1899 by Mr. J. T. Tunney, and presented by the Western Australian Museum, Perth.

From true *L. hirsutus* the Dorre Island form differs in all the characters mentioned above as distinguishing *L. h. bernieri*, and is of course very closely allied to the latter.

46. *MUS ALBOCINEREUS SQUALORUM*, subsp. n.

One male, four females.

Quite like the true *M. albocinereus* of the Swan and Avon districts in all respects of proportions, colour, and structure of skull, but markedly smaller throughout, as evidenced by the following measurements, all taken by Mr. Shortridge in the flesh:—

M. a. albocinereus.—Dwaladine, Avon District.

	Head and body.	Tail.	Hind foot.	Ear.
	mm.	mm.	mm.	mm.
♂	105	115	23	18
♂	105	105	22	18
♀	98	97	22	18

M. a. squalorum.

♀	90	88	21	18
♀	83	82	21	16
♀	80	85	21	16

The following are the skull-dimensions of the type, followed in brackets by the corresponding dimensions of a rather younger skull of the true *M. albocinereus*:—

Greatest length 25 (27.5); basilar length 18.5 (21); greatest breadth 13 (13.7); length of nasals 9.2 (10.2); interorbital breadth 4 (4); breadth of brain case 11.6 (12.4); palatilar length 10.6 (11.7); palatal foramina 4.7 (5.2); length of upper molar series 3.6 (3.9).

The tails of all the specimens are entirely white, not darker above, but this is frequently the case with inland specimens of true *albocinereus*, although the co-types figured by Gould, from the coast near Perth, both have distinctly darker upper sides.

Hab. Bernier Island, Shark's Bay.

Type. Old female. B.M. No. 6.10.5.6. Original number 622.

Collected 4 July, 1906, by G. C. Shortridge, and presented by Mr. W. E. Balston.

The range of the beautiful grey *M. albocinereus* on the mainland of Western Australia is as yet quite unknown, all the recorded specimens being from one restricted area.

47. *MUS MUSCULUS* L.

Male and female.

48. *PERAMELES BOUGAINVILLEI* Quoy & Gaim.

An imperfect skull, picked up.

Owing to the probable extermination of this species in Bernier Island, and the fact that we have no specimens at all from Shark's Bay, whence the species was originally described, this skull, imperfect as it is, is of much value to us.

It indicates, as in the case of the other Shark's Bay animals, that this Bandicoot is different from the one found further south, to which Wagner's name *myosuros* will be applicable.

The chief difference observable is in the size of the teeth, the combined length of the three anterior molariform teeth of *bougainvillei* being only 9 mm., while in *myosuros* they measure 10-10.5 mm.

3. Zoological Results of the Third Tanganyika Expedition,
conducted by Dr. W. A. Cunningham, 1904-1905.
Report on the Turbellaria. By F. F. LAIDLAW.

[Received July 12, 1906.]

(Text-figure 126.)

[The species of Turbellarian described below by Mr. Laidlaw was the only one observed during the Expedition. Specimens were collected at Niamkolo, at the south end of Tanganyika, and at Ndanvie, near the north end, but the species was observed at several other localities. The specimens were taken on the under side of stones in shallow water.—W. A. C.]

PLANARIA TANGANYIKÆ, sp. n. (Text-fig. 126.)

A small species. Length of the largest spirit-specimen about 8 mm. Breadth 3 mm.

Anterior end rather pointed; eyes (*e.e.*) moderately distant, lying in front of the level of the pair of auricles (*au.*). Body (of spirit-specimen) rather oval, the hinder end pointed. Pharynx opening (*ph.*) a little in front of the commencement of the hinder fourth of the body, at the level of its greatest width. The colour is black in the larger specimens, grey-brown in the smaller. The ovaries lie at the hinder end of the first fourth of the body. The oviducts were not seen. The uterus (*ut.*) is symmetrical and lies



Thomas, Oldfield. 1907. "List of further collections of mammals from Western Australia, including a series from Bernier Island, obtained for Mr. W.E. Balston; with field-notes by the collector, Mr. G.C. Shortridge." *Proceedings of the Zoological Society of London* 1906, 763–777.

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