THE

MAMMALS OF AUSTRALIA,

ILLUSTRATED BY

MISS HARRIETT SCOTT, AND MRS. HELENA FORDE,

FOR THE

Council of Education;

WITH

A SHORT ACCOUNT OF ALL THE SPECIES HITHERTO DESCRIBED.

BY

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PREFACE.

The following plates, representing some of our Mammals, for which these brief descriptions have been written, were published, in the first instance, by the Council of Education, as Object Lessons, for the use of their Schools.

Mr. L. T. Scott, M.A., was entrusted with their execution, and his talented Daughter, Miss Scott, and from the new mounted specimens that could be procured. Only 18 Animals are represented herein; but it is hoped that the Council of Education will continue this very useful Work to completion.

The letter-press supplies all the most necessary information, including remarks on the anatomy and the geographical distribution of the animals referred to. The price of Mr. Good's elaborate Work places it beyond the reach of ordinary means, and Mr. Watersham's "Natural History of Mammalia"—the best treatise on the Mammalia ever published—has been long out of print, so that the present book may be considered the only one of its kind now available.

A general summary of our Turtles will be found in that useful publication "The Industrial Progress of New South Wales,"—but it is too short to be of much use to the student, though sufficient to dispose many popular errors. Works of this kind deserve more encouragement; and it may not be out of place to mention here that a valuable series of Plates Illustrative of our Coast Mammals, drawn by the same artist, together with Geological Maps of the Wellington district and the surrounding country, by Professor Alexander M. Thomson, M.A., are in the hands of the Trustees of the Museum, ready for publication as soon as the necessary funds shall have been provided.

The Council of Education will perhaps allow us this opportunity to appeal to residents in the Colony to contribute to our national collection. The Rattles and the Opossums, shot during August, September, and October, but especially their young, being the best desirable donations. Other specimens, such as Fossil Remains of all kinds, sea or shore-birds Skins, Skins of Mammals, Birds, Reptiles, Fishes, and Small Animals, in bones, insects and shells in spirits—will be thankfully received and duly acknowledged by the Trustees.

A most valuable gift, the young of an Echidna or Spiny Ant-eater (not larger than a French bunch), was lately presented by Mr. Sydney Hill, being the second specimen of so small a size ever obtained, and yet the Echidna was discovered nearly a century ago, and described so far back as 1798. It is strange, but true, that not a single very young Opossum or Opossums, or any one of the Mammals in Australasia; the specimen which Dr. Bennett captured in 1824 were unfortunately lost, and I am not aware that others have been secured since.

These facts show sufficiently that the study of Natural History, in which every person best interested is still much neglected. No doubt everybody is desirous of finding new or curious objects, but the consequence is that the more common specimens are exceedingly rare in collections, and cannot be referred to when required.

W'hence, for example, in cases of greater value to the Farmer, the Breeder, or the Veterinary, than a series of skeletons of our domestic animals, showing the changes which the earth undergoes. Certainly these are looks at these subjects, but the examination of our specimens is more instructive than any pages filled with description. Objects of this kind are eagerly purchased on large Bullocks, and would form more desirable gifts to the Museum than the considerable animals which are so frequently presented in the mistaken belief that they are the most appreciated by the public. But there are better reasons why the teeth in particular should be well studied. The reflections which result from, damaged or natural jaws should be gratefully impressed upon children; and they should frequently be reminded that the second as of both teeth, they receive from a bountiful Creator is also the last.

Hence at all times to give information to visitors to the Museum, I especially invite Teachers to come with their school-children, and inspect the Object Lesson and Bibliography exhibited. The collection is the most complete as regards Australian specimen, ever brought together here or elsewhere; and the great want now being the Catalogue, which collections will be provided as soon as the Trustees find the means of publishing it.

GERARD KAEFFT.

Australian Museum.
Sydney, 6 Oct., 1871.
Mammals of Australia.

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INTRODUCTION.

The Flora of Australia is as peculiar as its Flora; and comparing the Mammals with the inhabitants of other Countries, the observer is struck by the total absence of the great groups of Ruminants, Pachyderms, and Placent Carnivores, with which the plains and forests of Europe, Africa, and America abound. Australia is pre-eminently the land of the Marsupials, or Pouched Animals, the more highly organized Placentals being feebly represented by a species of Dog, a few Seals, many species of Rats, and numerous Rodents or Bats. Reviewing these families, we cannot but notice that two groups, namely, the Seals and Bats, have peculiar advantages in their mode of locomotion, and may have reached the Great South Country with little difficulty. The Dog has always been considered to be introduced by Man, and if so, our race must have visited Australia at an early age, though it is more likely that the Dog, the Rats, and the Pouched Animals existed together long before Man made his appearance in this part of the World.

There can be no doubt that the Australian Continent was much larger at one time, and that the numerous islands scattered over the Banda and Aru Sum, such as Aru, Ceram, New Guinea, and, farther east, the Solomon’s and New Hebrides Islands, formed, with New Holland proper, a more or less compact mass, in which the Marsupial Flora was predominant.

The smaller islands are either destitute of Mammals (except Bats), or, if they possess any, they belong to the pouched tribe. From New Guinea, a Pig (Sus papuensis) has been recorded, also a small Placental Insectivore (Parasarcops hagenbredtii); the Marsupials amount, however, to eight genera and ten species. Besides, the interior of New Guinea, with its high tableland, and many peaks of over 13,000 feet in height, is still a sealed book to the geographer and the naturalist; though, with all our scant knowledge, some of the most peculiar forms of marsupial life, the Tree-kangaroos, have been discovered in its sombre forests. Who can say how many more of the Creator’s wondrous animals may yet be found when this the largest island of the Globe is brought under the influence of civilization. There are several Marsupials which New Guinea, the Aru Islands, and Northern Australia have in common, so that the supposition of these islands being at one time joined to the Australian Continent is more than probable.

Before we consider the recent Flora of Australia, it is necessary to go back to the evidence of fossil remains which many caves and alluvial deposits have yielded up. These remains prove clearly that the Country was inhabited in former ages by animals often larger than, but always similar in structure to, our present Kangaroos or Phalangers. The first group, the grass-eating Kangaroos, Wallabies, Kangaroo-rats, Phalangers, and Wombats, abounded; there is evidence even of the Koala, or Native Bear, and of a small Flying Phalanger not larger than a sugar squirrel (Hylodes); but there is also clear proof of gigantic creatures roving over our plains, or perhaps inhabiting the ancient swamps and rivers, which in size can only be compared to the Rhinoceros or the Hippopotamus. The teeth of these large species, in their form, number, and distribution, resemble, with some modifications, those of the Phalangers; and the usual formula, which holds good in recent species, varies but slightly in the large fossil ones. When we examine the dentition of a Diprotodon, the largest of the tribe, we find six incisors above and two below (that is, three and one respectively in each ramus). We also notice one premolar and four molars or grinders in each ramus, above and below. The tusks, or first pair of upper, and the two incisor lower teeth, are conical, not very regular, and evidently designed for the cutting of thick, rank herbage,
such as reeds or twigs, on which these animals probably browse. When by a change of climate, or from other causes, the bogs, with their rich vegetation, disappeared, the great Diprotodonts must have found it hard to make a living, and naturally succumbed to the altered circumstances, and became extinct. The smaller Kangaroos, with their admirably dentition and science-like lower jaws, nipped the grass if it was ever so scanty; and many of these ancient species having successfully fought for existence, still live on. There must have been many more Herbivorous Marsupials than at present, because many of the remains discovered differ much from recent bones and teeth. Sometimes portions of skeletons are noticed, however, which closely indicate animals of the Kangaroo and Phalanger tribe, identical with living ones, but all the gigantic species have ceased to exist. We gather from the fossil remains that the bulkier kinds stood low on their legs, and that they progressed in the same way as the Wombat; in fact, the skeleton of a Diprotodon must have resembled that of a Wombat or "Native Bear" in many points.

The extinct Kangaroo tribe is principally distinguished by having shorter and stronger arm than the living Kangaroos, and their mode of progress must have been therefore slower.

Another gigantic animal, the Hypsodon, first described by the late Mr. W. S. Macleay, M.A., belongs to the same group as the Diprotodon; its incisor teeth are however more feeble, and bear a still closer resemblance to those of the Phalangers. Numerous lower jaws in our collections indicate at least fifteen or more large species of either Diprotodon or Nototherium, so that we cannot enumerate less than twenty gigantic grass-eating Marsupials belonging to our extinct Puma. If we add to these at least fifty species of Kangaroos, Wallabies, and Kangaroo Rats, and twenty species of Wombats, with a few Phalangers, we bring the Herbivorous Marsupials of Post-pliocene Australia in round numbers to eighty-five species. It is generally considered in conformity with the laws of the Creator, that the undue increase of prolific animals should be checked by beasts of prey, and this duty was evidently a true Phalanger, and of course proportionately carnivorous; it certainly was not the monstrous Carnivore which checked the undue increase of the Diprotodonts.

The Thylacoceon coracina, a Marsupial with very peculiar dentition, and about as large as a common Bear, was evidently a true Phalanger, and of course proportionately carnivorous; it certainly was not the prodigious Carnivore which checked the undue increase of the Diprotodonts.

The last group of Marsupials, which in dentition resembles the Dasyurus, and in the formation of its hind feet, the Kangaroos, has also been found in a fossil state—we allude to the Bandicoot. A few fragments of leg bones point even to the presence of an Echidna or Ant-eater of the Order Monotremata, as yet peculiar to Australia, whilst other not determined specimens may throw additional light on the extinct Fauna of this wonderful Country, which continues to astound the World with important discoveries. It will be as well to recapitulate our extinct Fauna before noticing the recent one in detail.

ORDER PLACENTALIA

Family Canina (Dog tribe).

Remains of a Dog have been found at Wellington, but not many specimens were obtained.
3

**Family Rodentia** (Rat tribe).

From six to ten species of fossil rodents have been discovered, all of which differ much in their dentition from other Rodents, but resemble some living Australian species.

**Order Marsupialia.**

**Family Phalangidae** (Phalanger tribe).

Twenty fossil species, including the four still living ones.

**Family Peramelidae** (Bandicoot tribe).

About five or six fossil species, which cannot be distinguished from living ones.

**Family Dasyuridae** (Numbat tribe).

Four large and as many small species, the latter identical with living ones. Two large Dasyures, the Thylacoleon and Varochoerus, still exist in Tasmania, but are extinct on the mainland.

**Section Monotremata** (Egg-eater and Duck-bill tribes).

One or two species of the Echidnas probably existed; remains of the Platypus have not yet been found.
The Flying Fox.

(Phóropus Poliocéphalus.)

Twenty-five species of Bats are known to inhabit Australia, five of which are Fruit Bats, or "Flying Foxes." The last-mentioned animals have not yet been found in any other part, except on the east coast, where they range from Cape Howe to Cape York. The figure represents the most common one—the grey-headed Fruit Bat, or "Flying Fox," which is peculiar to the New South Wales coast districts.

The food on which the "Foxes" principally rely, when garden fruit is not in season, consists of honey-bearing blossoms, and the small native figs, abounding in the coast-range scrubs. They pass the day suspended from the branches of gigantic fig-trees, as shown in our figure, and in this position they feed. The number of these creatures is almost incredible; they swing in clusters and fomations, like swarms of bees, hanging on one to the other, and the weight of their bodies frequently brings down great limbs, killing many, but not appreciably diminishing them. Thousands may be motionless, seated, and silently wagging their way to some orchard, which they invade in spite of the farmer's guns, and destroy more fruit than they eat. The ground is strewn in the morning with baskets of half-eaten fruit, because they are not serpentine, and drop every pear or peach they have tasted, if it is not sufficiently sweet. The "Foxes" appear only during certain seasons in the cultivated districts, and after a few weeks' sojourn retire to the mountain forests. During this period they select a regular camping-ground, where the day is spent; and when such a place is discovered, a general battle takes place and they are killed in large numbers. These Bats are found on the east coast only, but during very dry seasons they occur as far west as the neighbourhood of Melbourne. The vegetation on the plains of the interior does not appear to suit them, as they are seldom seen west of the coast range.

The general colour is a glossy, greyish-black, with the exception of a broad rusty-red collar, covering the back of the head, neck, breast, and shoulders; the face is light grey; the ears and wing-membrane are black.

The skull is thin, almost transparent, and very light, as in all animals formed for flight; it is provided with very powerful canine teeth, which are grooved, and differ in this respect from the smooth canines of real carnivorous animals. It is highly probable that the Flying Fox is able to subsist on insects as well as on fruit. Too little, however, is known of the economy of these animals to prove this; they are observed only when fruit is plentiful, and how they subsist in the dense mountain forests can only be conjectured. The fruit of the fig-tree, and some sweet blossoms, must form their principal food at that time. The dentition consists of incisors $\frac{3}{2}$, canines $\frac{1}{2}$, premolars $\frac{3}{2}$, molars $\frac{3}{2}$, teeth $\frac{3}{2}$.

The number of young seldom exceeds one at a birth.

The name of Vampyr Bat has been given to this fruit-eating animal, and many dismal tales of its blood-sucking propensities have been rife among the ignorant, but there is of course not a grain of truth in these statements. The largest species occurs in the island of Java, where it is known by the name of "Kiling," and is much esteemed as an article of food. The flesh of our "Flying Foxes" has been represented to be palatable food; it is necessary, however, to warn the males for some hours as watchers, to take away any unpleasant smell. The following table will show the number of Bats and their habitat in Australia:

<table>
<thead>
<tr>
<th>FAMILY OF BATS.</th>
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<tbody>
<tr>
<td>Chiroptera.</td>
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<tr>
<td>(c.) Fruit-eating Bats, Kalongs or &quot;Flying Foxes&quot;:—</td>
</tr>
<tr>
<td>Common Flying Fox, Pteropus poliocephalus. Bushes of New South Wales.</td>
</tr>
<tr>
<td>Cape York Kalong, Pteropus acuminatus. Cape York.</td>
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<tr>
<td>Dwarf Kalong, Pteropus. () North-east Coast. (Not larger than a common Bat.)</td>
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</tbody>
</table>
(b.) Insectivorous Bats—


Australian Taphozous. Taphozous australis. Northern Australia.

Great-eared horse-shoe Bat. Rhinolophus megaphyllus.


Orange horse-shoe Bat. Rhinolophus semoni. Coburg Peninsula.


Tinor long-eared Bat. Nyctophilus simiuens. West Australia.


Chocolate-coloured short-eared Bat. Scotophylax eurya. Southern and Western Australia.

Red short-eared Bat. Scotophylax rosacia. South Australia.


Great-footed Bat. Pteropterus macropus. South Australia.

Tasmanian Bat. Pteropterus tasmanius. Tasmania.
The Dingo, or Native Dog.

(CANIS DINGO.)

There has been much discussion among naturalists with regard to the Australian Native Dog, as to whether the animal is indigenous, or has been introduced into the Country. This is certain, however, that a species of dog existed in Australia many ages ago. Fossil remains of dogs have been discovered at the Wellington Caves, and in other localities, and it must therefore be accepted as a fact that the Dingo is indigenous.

The subject of the illustration represents the light-yellow or tan-coloured variety; colour is, however, of little importance, as the real Dingo is subject to as much variation as any other kind of dog. The most common shades are sandy, or tan, with white belly, and the inner portions of the legs and feet white; black and tan varieties are rare.

In one of the oldest publications on Australia, "Culpeo's Voyage," the author, speaking of the Dingo, says—

"The dogs of this Country are of the Jackal species; they never bark; are of two colours, the one red, with some white about it, the other black; some of them are very handsome."—Mr. Gilbert, writing from Swan River, states—

"The Dingo is very common over all parts of this Colony. There are a very great number of varieties, marked from redish brown to black, white, light brown, and black and white." The general belief is that a thorough-bred native dog is of two colours only, that it is rarely spotted, and never barks. Several real Dingoes have, however, been seen with white and yellow fur, and one, which only howled before, began to bark after being chained up near an excellent watch-dog for a short time; the voice of the Dingo is short and snappy, and can be distinguished at once from that of a well-bred domestic dog. Much has been said and written about the Dingo's cunning, his tenacity of life, and dangerous bite; it is stated that he frequently fakes death, and that he has recovered and escaped after being beaten to such an extent that one would imagine every bone in his body had been broken. A single Dingo will cause great damage to a flock of sheep, and experience proves that the wounds inflicted by its bite are generally fatal. In a case where a number of goats—ten or fifteen—had invaded a garden a tame Dingo was despatched to drive them away; but he ran from one to the other, snapping and biting right and left, and every goat bitten by him died within a few days.

The Dingo is remarkable for power, agility, and grace. A tame one which was being hunted reached his kennel long before the hounds, easily outrunning the whole pack; and during the chase was seen frequently to clear a three-foot fence at a bound; even with a heavy chain he could jump six feet off the ground. He was very suspicious with regard to his food, and would never stand thus long as meat was hanging up on a strong, neither would he take it if he had the least unusual smell. The aborigines of Australia use the Dingo for hunting purposes, and thoroughly tame it; it is no wonder, however, that they esteem in this, as they think as much of these dogs as they do of their children, and treat them as well. A "hubs" will not hesitate to rear a Dingo pup with her own offspring. A gentleman who succeeded in taming several Dingoes, found that in one case only would the dog follow at the call of his master. The experiment of taming the Dingo is, however, always hazardous, as the acknowledged master only is respected, and everybody else snapped at famously. The Dingo howls before sun sets in, doleskin music, and cannot bear the sound of bells; he exhibits, in fact, many traits of the domestic dog, with which he freely breeds. The aboriginal name of the Australian dog is "Warnagil" in most parts of New South Wales, and "Dwer-da" in Western Australia.

The dental formula is as follows.—Incisors 3-3, canines 1-1, premolars 3-3, molars 3-3 = 42 teeth.
The Sea Leopard.

**(STENORHINUS LÉPTONYX)**

**Comparatively few Seals inhabit the Southern Ocean,** and only two species occur on the Coast of New South Wales. The figure represents the largest kind, the well-known Sea Leopard, so named on account of its spotted fur, the general colour of which is a silvery grey washed with yellow; the markings are irregular, sometimes lighter than the ground colour, with a darker border, and a few uniform black spots interspersed. Young specimens and females occur without them.

This Seal grows to a considerable size, and one specimen in the Australian Museum measured fully 10 feet in length; it was taken at Shoalhaven, in the Illawarra Distrid, and the stomach contained a full-grown Pinguia—a proof that the animal must have gone far up the River into fresh water. A second (female) specimen, 7 feet in length, was obtained in October, 1870, at Double Bay, near Sydney, and kept alive for several days in the Museum grounds, where it fed on green, no other food being at hand. It is not certain that a fish diet is absolutely necessary for the subsistence of this animal, and it is to be regretted that no experiments were made to settle this point. Dr. J. E. Gray, F.R.S., states, in one of his numerous papers on the Seal tribe, that the stomach of one contained the remains of fishes, a quantity of sea-weed, and some feathers of gulls. Our specimen would probably have subsisted on butcher's meat or fish; but unfortunately before the trial could be made, the taxidermist had killed the creature. This Seal moved rather quickly, not unlike a snake, and turned to the right or left in an instant when in fear of attack. Water was thrown over her, but she appeared to dislike it, and lay shivering till quite dry again. The same species occurs on the coast of Tasmania. The mother produces a single young, which the parents protect with fins or flippers, and defends against the numerous enemies which are always in pursuit of such young creatures. It is stated that the female will not leave the spot whence her young has been taken, and grows furious in vainly attempting to save its life.

The occasional appearance of Seals in rivers or in lagoons, where they may have remained after a flood, has probably given rise to the fable of the "Bunyip." On one occasion a so-called Bunyip's skull was presented to the Australian Museum, but proved to be that of a malformed foal. At another time some terrified Murray natives pointed out their dreaded enemy on the other side of the river. There was certainly a large animal in the water, making a curious noise, but the night being dark it could not be seen. After a vain attempt to induce the natives to come across in their canoe, a shot was fired, the noise ceased, and a venerable be-goat was tracked the next morning to the scrub, where he had died of his wound.

It is to be deplored that such really beautiful and intelligent animals as Seals should have been destroyed so indiscriminately as they have been on this Coast. Collins, in his "Voyage to New South Wales," published in 1788, mentions that the rocks in Bass Straits and other localities were covered with Fur Seals of great beauty, but at the present time they are rarely met with in these localities. The total number of species which visit the east and south coast does not exceed three or four. The following is a list of the Seals on record as taken in the Antarctic Ocean—

1. The crab-eating Seal. *Lobodon carcinophaga.* On the packed ice, South Antarctic
7. Crabeater Seal. *Acanthoplagia fabalis.* North-west coast of Australia. (Huntman's Abrolhos.)

The teeth of the Seals are generally hollow, more or less lobed (except the incisors and canines), and number 6 cutting teeth above and 4 below, 4 canines, 1 in each ramus, and from 20 to 24 grinders. The incisors or cutting teeth vary considerably in number.
Golden-bellied and White-bellied Beaver Rat.

(HYDROMYS CHRYSOGASTER AND HYDROMYS LEUCOGASTER)

It is a strange fact that Beaver Rats have not yet been found beyond the Australian region, though they appear well adapted to lead an aquatic life, and seem able to cross the narrow straits dividing the mainland from New Guinea and the various groups of islands not strictly Australian. Whatever may be the cause, however, they do not inhabit other parts of the World, and are as peculiar to our Country as the Kangaroo.

These rats have their gninders reduced to a pair in each ramus, above and below, and differ therefore from all other Rats. It is difficult to determine how many species there are, and we believe that the four or five which naturists choose to class as distinct, on account of a difference in fur, are in reality mere varieties of one kind.

We have selected two well-marked species for representation,—the one bright orange, the other dirty white, beneath; the upper parts are much alike, and of a generally brown or black colour. The top of the tail is white in all species but one,—Macleay’s Beaver Rat (Hydromys macleayi).

Two kinds are considered particularly doubtful, namely, the Fulvous Beaver Rat (Hydromys fulvogaster), from the Murray River, and the Sunny Beaver Rat (Hydromys solagustus), from West Australia. The western animal is known to the aborigines of Perth as Ngarroo, whilst those who inhabit the country near King George’s Sound call it Ngaw-zr-zr-gzn. A third species was discovered by the late Mr. W. S. MacLeay, in front of his residence at Elizabeth Bay. This latter rat has a uniformly dark tail, and is smaller than the others; but it is probably only an immature Hydromys sumagustus. The original specimen in the Australian Museum has lost much of the fur, and its characteristics cannot be described with that certainty which is desirable when new species are under discussion.

Beaver Rats are found in almost every part of Australia where there is permanent water; they become rare towards the tropics, and occur in large numbers in the southern streams and lagoons. They are shy and nocturnal in their habits; they are well armed when unable to find a resting-place in the water. We have frequently tried the experiment in a large tank, and found them succumb in less than an hour. This fact may throw some light on the limited distribution of the genus. Their food consists of crustaceans, fish, and water insects, but principally of a small bottom of the genus Chiron, which our talented artist, Mrs. Forde, informs us is to be found in the rivers of the interior in such large quantities that refuse-heap of the empty shells always lines the banks. The number of young is from four to a litter, and the mother provides a burrow in the river-bank for them. The young ones are often handed upon by snakes, and in one instance a dozen of them were taken from the stomach of a snake.

The bone cavities of this Country, which have been most carefully examined, did not yield remains of these animals, though they have afforded proof that the Tremoull and Arboreal Rodents lived in large numbers at a former age. It is not possible to add descriptions in this paper of the numerous rats and mice that inhabit Australia; but we furnish a list of all the supposed species, which may be found interesting. When more consideration is devoted by describing authors to teeth and structure of skeleton, and less to colour and texture of fur, these numerous species will suffer a better analysis, because one half of them are, no doubt, immature specimens, or local varieties.

The description of the genus Hydromys is as follows—Incisors $\frac{\sqrt{3}}{\sqrt{2}}$ molars $\frac{\sqrt{5}}{\sqrt{2}}$ = 16 teeth. All other Australian rats and mice have—Icisors $\frac{\sqrt{5}}{\sqrt{2}}$ molars $\frac{\sqrt{5}}{\sqrt{2}}$ = 16 teeth.

The Rodents, Genera, or Rats, of Australia are conveniently divided into three groups, which we name,—1st, the genus Hydromys, comprising the water rats just enumerated; and, the genus Hypsilophos, or the slender-eared and long-tailed rats; and, 3rd, the genus Niso, comprising the ordinary rats and mice.

Generic Hypsilophos. (a) Tree Rats, representing the Squirrels in Australia; tall long, and generally pencilled at the tip:—
Jerboalike Rats. Two distinct species of Jumping mice inhabit Australia, the larger is found on the West Coast, and the smaller on the Murray and Darling. These mice or rats progress on their hind legs, like the Kangaroo. They form burrows in the sandhills, which the aborigines soon find out and trace to the very end, for the purpose of obtaining the inhabitants to roast them, when they cannot procure larger game.


The common rats of Australia, that is, species with moderate ears and tails, are numerous, and difficult to classify. We enumerate them as follows——

1. Dusky-footed Rat. *(Mus fuscipes)* Western Australia, South Australia, Islands of Bass's Straits, New South Wales, and probably Tasmania.
2. Tawny Rat. *(Mus oederi).* A long-tailed species, from South Australia. Only one specimen in existence.
3. Long-haired Rat. *(Mus longipoda).* Probably identical with the above. A single specimen in the Australian Museum, from the Victoria River.
4. Buff-tailed Rat. *(Mus arvumipes).* A Queensland and New South Wales species, named "Cumpl" by the aborigines of Broadspear Island, Moreton Bay, and "Cundooor" by the Richmond River natives.
5. Albino Rat. *(Mus albifrons).* "Moo-dert" of the King George's Sound tribe.
6. White-footed Rat. *(Mus nemorus).* An allied species, from Port Essington.
7. Scutul Rat. *(Mus scutellatus).* "Dil-pra" of the aborigines of the Darling Downs District, New South Wales.
8. Plains Rat. *(Mus insularis).* "Tacle" of the aborigines of the Darling Downs.
10. Little Rat. *(Mus nana).* "Jib-berth"—aborigines of Moore's River, West Australia.
11. Greyish-white Mouse. *(Mus silvaceus).* "Now-pra"—aborigines of West Australia, Perth District; "Jag-pra"—aborigines of Moore's River, West Australia.
12. New Holland Field Mouse. *(Mus novaehollandiae)* New South Wales.

* The specimen last has a more or less pointed tail, which is without a brush at the tip. It is a new discovery, and has been described as *Hapalopus delactobatis* by South, and under another name by Dr. Peters. It grows to large as the common *Hapalopus.*
The Tasmanian Wombat.

(Phascolomys Wombat.)

Our figure represents the Tasmanian Wombat, which is rather smaller than the New South Wales species, but closely resembles it in the skeleton. The specimen which served as a model was a remarkably tame one. General color dusky-grey or brown, more or less mottled with light hairs, so that the fur appears greyish, lower part of the body greyish.

All Wombats have 24 teeth, arranged as follows: incisors 5, premolars 2, molars 3. These teeth are without fangs, are more or less curved, and resemble the teeth of the common Hare. The food of the Wombat consists of grass, herbs, roots, young twigs, and other vegetable products, so that their flesh is palatable.

All the different species form extensive burrows, in which they pass the day, coming out to feed after dark. The female produces only one young at a birth. The feet are constructed like those of the Phalangers or Opossums, to which family the Wombats are closely allied; the fore-feet have five toes, and the hind ones the same number, the inner or first toe being a small naked thumb.

The pouch is directed upwards, as in the other marsupials that progress on all-fours, and contains four manmap. Our present species is peculiar to Tasmania and the isles of Bass's Straits.

The New South Wales Wombat (Phascolomys phlegmaticus) is found on the East and South Coast, extending even as far as Victoria, where also a brown variety occurs. The eastern Wombat differs little from the Tasmanian one, except that it is larger, and grows to over 80 lbs. in weight. Its colouration resembles the Tasmanian animal.

The third species inhabits the western parts of Victoria and the eastern border of South Australia. Fur sandy or yellowish, the muzzle covered with hair (all other species have this part of the head naked). Professor Owen was the first to point out the difference between this and the eastern species, and proposed the name "Broad-faced Wombat" (Phascolomys bigonius) for it.

A fourth variety, having brown or black, soft and silky fur, inhabits the neighbourhood of Port Lincoln, in South Australia, and for this animal the name of "Black Wombat" (Phascolomys nigra) has been proposed. A very fine specimen of this new species is in the Museum collection, and, having examined the skull, and compared it with that of the other Wombats, we have arrived at the conclusion that it is distinct. One very decided feature of the Black Wombat's skull is the great contraction between the orbits.

Wombats were much more numerous in olden times than they are at present, and varieties existed that were twice the size of our living species. We do not know how far these animals range to the north, the temperate regions of Australia appear to be their head quarters. They have not yet been observed on the West Coast.

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THE NATIVE BEAR.
Phascolarctos Cinereus.

From a photograph by Thomas Eckersley.
The Koala, or Native Bear.

(PHASCOLARCTOS CINEREUS)

The animal figured in the accompanying plate, in the position of carrying a young one upon its back, is so well known to Australians that a short description will suffice. The total length is about two feet, the fur short and woolly, of an ashy-grey colour, more or less spotted with white near the limbs. The tail is so very small as to appear altogether absent, but in the skeleton ten flattish caudal vertebrae are observed.

The Koala, often mantled “Native Bear,” has no relation whatever to the Bear tribe, but belongs to the marsupial or pouched section of the animal kingdom, and is closely related to the common Phalanger.

Comparing the general form of this animal with other members of the same group, we experience at first some difficulty in its proper classification, but having examined the hand, we notice a powerful prehensile inner toe or thumb, and observe that the next pair of toes, which are smaller than the others, are to a certain extent pressed together by the skin. This construction of the hand determines the question, for it is peculiar to members of the Phalanger family—the Monkeys of the Marsupial Order, as they are often termed.

It must be remembered that the Phalanger tribe comprises all the animals which we usually designate “Opossums”; but as the true Opussum, of the family Didelphidae, is peculiar to the American Continent, the term “Phalanger” sometimes applied to these animals, should always be used when speaking of “Australian Opossum.” It is necessary for the purpose of classification to examine the teeth carefully, and not to trust to the colour, texture, or length of fur only. Some authors lay great stress on difference in colour, but this is not a good characteristic, because animals vary constantly in consequence of climate, food, or locality. We all know, for instance, that the fur of the same species in the south-eastern portion of Victoria, have a much darker fur. The result is that such specimens are often described as new, while in reality they are only local varieties. The fur changes in length, thickness, or colour, under certain conditions, but the structure of the skeleton is so little affected by local or climatic influences that, for our part, we can only accept a decided difference in the body frame or the teeth to decide.

We noticed that the Koala belongs to the Phalanger tribe, on account of the structure of the hand and the teeth. In the upper jaw there are six front teeth, termed incisors, next to these are a slightly curved one—the canines, then comes a somewhat compressed and rather elongate premolar, and after that four teeth all equal in size, with their crowns divided into four points—these are the molars or grinders.*

The form of the molars indicates that the animal is herbivorous, though the presence of canines shows that its food may be varied by insects, eggs, or even flesh. As far as our experience goes, the Koala will not touch meat in captivity, and if its proper food—fresh young gum-leaves—be not provided, the creature soon paces away and dies. The Koala is nocturnal, and arboreal (or tree-living), and passes the day either on the ground or in its lair, which is embroidered with the powerful arms, or in some other cozy position, during all the approach of darkness calls it to fresh activity. The difficulty of discerning the grey animal on aumber-coloured bush is a great trial, and were it not for the protection thus given to it by the all-wise Creator, this harmless creature would soon be exterminated by its numerous enemies. The eye of the Koala is very small, of a light amber colour, and provided with a vertical pupil, which obliterates after dark; the ears are large, and covered with bushy hair. The tail, as before stated, is apparently absent. The Koala is a powerful climber, and seldom comes to the ground.

* We would add, that the small red and blue organs situated are frequently lost, so that students might think the dechira-gums to be absent. If they should feed chiefly with only two or four curved teeth above, they may not realize that they have to do with those of equal appearance, or the proper number of cutting teeth in it, in the upper and two or four lower set.
except asked for the purpose of ascending another tree, its activity is, however, limited, and several specimens observed when in captivity were seen to set down for a rest after every few steps. Old bushmen state that if a Koala is taken for a male or two from its usual haunt, placed in captivity, and then liberated, it will run to the nearest tree, and remain there in preference to seeking refuge in a tree more remote or in the neighbouring forest, if there be one. Experiments have been made to test this, and the liberated "Bear" has been invariably found in the tree standing nearest to its last place of confinement.

The south-eastern part of Australia is the stronghold of these animals, the mountainous districts of Victoria and New South Wales are their most favourite localities; they are also found in Queensland to within the tropics, but always keep to the mountain ranges, and never visit the plains of the interior. They have a peculiarly bushy and shrill voice when angry, but are generally silent at other times, and very harmless.

The female seldom carries more than a single young one, which is born very small—about the size of a French bean. The young, like those of other marsupials, do not suck at first, but the mother is provided with certain peculiar muscles which enable her to pump the milk into her helpless progeny. The question as to the mode of birth of marsupials has been much debated. They are believed by some to grow on to the nurse. This is not the case, however, as they have frequently been found in the uterus. How they are conveyed thence to the nurse will probably remain a secret for a long time to come.

The flesh of the Koala is not very palatable, owing to the nature of the animal's food. The skin makes excellent leather, and good serviceable fur-mats.

The animal described as a Marsupial or Pouched Lion (Thylacine carnifex), and of which we know only a few fossil remains, is in reality allied to the genus Canis. Many other remains, in particular portions of the lower jaw, indicate clearly that a whole group of gigantic creatures has become extinct, and that nearly all of these—the Great Dolichocephus, the Short-headed Zygodonuma, and the different species of the genus Nototherium—resembled the Koala or Native Bear more in the arrangement of their limbs, the formation of the jaw, and the mode in which the teeth are constructed and implanted, than any other Australian marsupial now living.
THE RING-TAILED OPOSSUM
(PHURAGISTA COOKI)

From a photograph from life by Peter A. Foss.
Ring-tail Phalanger.

(PHALANGISETA COOKI / DUM.

Fur dense, and moderately soft; upper parts of body grey, more or less suffused with red; flanks and outer surface of limbs bright rufous colour, beneath whitish, ears short, hairy, sometimes with a white spot at the base; tail rusty at the upper part, which colour darkens to within a third of the total length, and ends in a white tip. The white portion of the tail varies considerably in different individuals, and is sometimes altogether absent.

The rusty-coloured Phalanger inhabits the east coast of Australia, and may be considered peculiar to New South Wales and the southern portions of Queensland.

A darker variety is found in Tasmania, and in other parts of Australia, extending as far as the Swan River Colony. The specimens observed in New South Wales, west of the coast range, are generally much paler than the animals found in the dense scrub near the sea-board, there can be no doubt, however, that all the Ring-tailed Phalangers, of whatever colour, are varieties of one and the same species.

These remarks are based upon a careful examination of many skeletons and skulls from the localities before mentioned, and they must be considered far better characteristics than the colour of the fur or the length of the ears, which appear so important to superficial writers.

The Ring-tailed Phalangers are closely allied to the Petaurista or Great Flying Squirrel (or better Phalanger), much more so than may at first appear. The dentition of these two groups, in shape, number, and arrangement, is almost identical, but both differ considerably from the smaller Flying Phalangers—the well-known "Sugar Squirrels".

North Australia produces several species of Phalangers, which have a wide geographical range beyond New Holland; they belong to the genus Cuscus, and are distinguished by their remarkably short ears and partly nude tail. The best known Cuscus is a large grey species, more or less spotted, the fur in texture and colour being a close resemblance to the fur of the Koala or Native Bear.

Returning to the southern Phalangers, it is pleasing to notice that the original "Phalanger of Cook" was one of the rufous-grey specimens of New South Wales, or what was then considered New South Wales, before the parent Colony had given birth to the prosperous divisions of Victoria and Queensland. The animal was discovered by Sir Joseph Banks on the Endeavour River, during Cook's first voyage, and the second specimen which came to hand was obtained during the great navigator's last expedition, at Adventure Bay, in Van Diemen's Land. Years passed on, and many Phalangers, from other parts, had been brought to England, but all were considered to be one and the same species by the naturalists of the day, till Mr. Waterhouse, the most able writer on our Fauna, declared both animals to be specifically identical. It is necessary to enlarge upon this subject, because less competent authors than Waterhouse are constantly dividing "Cook's Opossum" again and again, when they observe a new variation in the colouring; the last and most brilliant species being the "Victoria Ring-tailed Phalanger," but in truth only the dark variety of honest Captain Cook's own "Ring-tail." It is time for naturalists to take broader views, and to cease confusing the many eager students who are only too willing to learn, but are constantly disheartened by empty discussions about dark and light hair and long or short ears, among the great Professors.

It is well known that all Phalangers are nocturnal in their habits, and Mr. Gould informs us that this particular species of Cook spends its days in the spouts and holes of the larger trees. Mr. Gould is not quite correct in this instance, as the animal much more frequently constructs a most beautiful covered nest among the slender branches of high trees, probably on account of the marauding propensities of the "Tiger Cats," it being no match for these ferocious brutes.

The female is provided with a well-annexed pouch, containing four mammae, and the number of young seldom exceeds two. Mr. Masters took four young from the pouch of a specimen on one occasion; so large a number is, however, an exception. We will now give a general review of the group, as it comprises many species which are not figured in this work.

(S. L. E.)


**Family Phalangidae (The Phalangers)**

The animals forming this group differ considerably in their general habit and dentition. The normal number is—incisors 3 canines $\frac{1}{2}$ premolars $\frac{1}{2}$ molars $\frac{1}{2} = 32$. The canines and first premolar are often wanting. In the genus Phalanger there is a permanent, but reduced to 30 teeth, there being no lower canines, and but one premolar in each ramus. The pouch is present, well developed and downward, the number of teeth four, and the young produced at a single birth. The skull of the Phalanger almost of this type, and the tongue of the species are joined by a membrane, as in the Wombat or Kangaroo tribe. The Phalangers are found in almost every part of Australia, except the Aces and Tesselar, which inhabit only the tropics. The tail, generally so conspicuous and important, is absent in one species—the Koala, but in all others it is well developed and of great utility, on account of its being prehensile. We arrange the genera as follows—

1. *Phalanger coochoo.* Cook's Phalanger. Habitat—New South Wales, Victoria, South and Western Australia. The fur in this species is not red, as in *Phalanger cookii,* but either grey or almost black. In young Animals from Western Australia the tip of the tail is red instead of white.

2. *Phalanger longicaudus.* Woolly Phalanger Habitat—New South Wales, Victoria, Queensland. This species does not occur on the plains of the interior, and is restricted to the hilly country near the coast.

5. *Belvedra tenuis*. Squirrel Flying Phalanger. Fur very soft; general colour delicate obby-grey; a black dorsal stripe from nose to tail; beneath, white; tail very long, and bushy. Habitat—the north-east coast of New South Wales and the Queensland coast districts. Of the three smaller Flying Phalangers this species is the largest in size.

6. *Belvedra longipes*. Short-tailed Flying Phalanger. Colouration delicate obby-grey, as in the preceding species; beneath, white; a dorsal stripe on the back, and a smaller and more cylindrical stripe than *Belvedra tenuis*. The present species inhabits New South Wales, Victoria, and probably South Australia. It prefers the mountain districts, and is not found on the plains of the interior.


Genus *Acrobates*. Tail elongate, slender, densely clad with fur, with the exception of the under-side, near the tip; ears elongate, rounded, bald, except the outer side of the base; fore-feet elongate; toes very slender, compressed, very unequal in length, quite free; the hind feet slender, toes compressed, the two inner toes turned—i.e. the fore of a Phalanger. The skull resembles that of *Belvedra flaviventris*, but the palate is narrower, and the orbit portion more contracted, the sagittal crest, which in *Belvedra* is absent, is damatically, but not much developed in the present genus; the tympanic arch is weak as both animals, though much curved, and wide apart; the incisors above and below are strong, the lower ones bent upwards, very powerful at the base, and as broad again as those of *Belvedra*, but the gninders are smaller. The correct formula is exactly as in *Belvedra flaviventris*. Incisors $\frac{2}{1}$ canines $\frac{2}{3}$ premolars $\frac{2}{2}$ molars $\frac{3}{3} = 40$.

*Acrobates aureus*. Snub-nosed Flying Phalanger. General colour above, with three broad black stripes. The middle one runs from the head to the tip of the tail, which is black; the two outer ones enclose the eye, and send a branch down each leg; there is also a branch-stripe down the side of the neck. The habitat of several specimen from Tasmania, which appear to be identical with our *Echidna* or spiny hedgehog. The last specimen has been figured very fat, but the palate is narrower, and the orbit portion more contracted, the sagittal crest, which in *Belvedra* is absent, is damatically, but not much developed in the present genus; the tympanic arch is weak as both animals, though much curved, and wide apart; the incisors above and below are strong, the lower ones bent upwards, very powerful at the base, and as broad again as those of *Belvedra*, but the gninders are smaller. The correct formula is exactly as in *Belvedra flaviventris*. Incisors $\frac{2}{1}$ canines $\frac{2}{3}$ premolars $\frac{2}{2}$ molars $\frac{3}{3} = 40$.

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*Belvedra aurea*. And Flying Phalanger. 

Genus *Acrobates*. The present genus comprises a single species, which is one of the smallest of the whole tribe. The most important generic characters are the strongly developed canine teeth, the otherwise altered dentition, and the feathered tail. The present genus contains a single species, which is one of the smallest of the whole tribe. The most important generic characters are the strongly developed canine teeth, the otherwise altered dentition, and the feathered tail.
THE COMMON OPOSSUM.
(PALAEOTHERIA VELIFrons.)

From a Photograph by Dr. John Gould.
Vulpine Phalanger.

(PHALANGERPA VULPINUS)

The subject of our present illustration is the most common and widely-distributed of Australian animals. It is classified with the phalanger family, having the peculiar attributes of the tribe, namely, hand with a prehensile thumb, and two small inner toes, unison by a membrane. The fore-feet are provided with the usual five strongly-clawed toes. The teeth differ considerably—the small ones at least between incisors and molars. The permanent set consists of three incisors, a canine, two premolars, and four molars, in the upper jaw; and one incisor, a very small tubercular canine, a premolar, and four molars, in the lower. In describing the dentition, the maxillary, front, or cutting teeth of both jaws are enumerated together, while the other teeth in each ramus are given separately. The usual way of expressing the dental formula in this case would be—Incisors 3, canines 1, premolars 3, molars 4. We state that the teeth differ considerably in various specimens; because some retain the small premolars, and others shed or absorb them; their proper number would be 3, 1, 3, 4 above and below. In the majority of animals the dentition is, however, as above, two premolars in each ramus of the upper, and one premolar in each ramus of the lower jaw. In order to test the correctness of our supposition that the number of premolars in each ramus really amounted to three, we obtained more than 100 skulls, but amongst them only two were found with perfect dentition.

The colouration of the Vulpine Phalanger is as follows:—Pur long and woolly, ashy-grey, under-parts of body yellowed, muzzle and chin blackish, ears nearly naked on the inner side, well covered externally, except at the tip; a black patch at the base of the ear; feet yellowish, more or less suffused with brown. Old males have a rust-coloured neck and breast; tail bushy, black towards the apex, prehensile; and one-third of naked beneath eyes rather large, brown, with rounded pupil. Female with a well-developed pouch, four teats, seldom bearing more than one or two young at a time.

Numerous varieties of the common Phalanger exist in every part of Australia, from the far north to the islands of Bass's Straits and Tasmania, the black variety, with long ears, is peculiar to the island. In New Holland, or Australia proper, we find a Phalanger of a grey or black colour, and with shorter ears—in particular in the Clarence District—which has been described as a distinct species, under the name of Phalanger canma. A third variety occurs near the sea-coast, in thick stunted scrub about Port Hacking, and the colour is sandy, and the tail less hairy than that of the species under review. This animal is said to inhabit the scrub only, and not to ascend trees. It is captured by herding with dogs, which drive it from the shelter of the thick brushwood where it passes the day, and it is thus secured without difficulty.

The Vulpine Phalanger is a small animal, and is said to be found in the neighbourhood of Port Denison, and was caught in localities similar to those which the animal frequents at Port Hacking. It is possible also that the Phalangers that inhabit the Mallee-scrub are different from those which frequent high trees; the aborigines appear to think so, but in the absence of specimens we are unable to decide the question.

Setters require a great deal of the ravages of the Phalangers, and the reason is accounted for because their greater numbers—the aborigines say—their great numbers—the aborigines say—they are easily seen; it consists of leaves, fruit, grass, and seeds. We have frequently observed them gazing vessels; and when they get a small bird, or a small fish, they are not slow to take advantage thereof.

The day is generally passed in a hollow branch; only the Rusty-tailed Phalanger constructs a sort of covered nest for its habitation.

Our figure, which represents the animal well in a natural position, is taken from a very near half-grown specimen in the possession of the Hon. Henry Parkes, M.L.A.
THE SOOTY OPOSSUM.
(Phalangista Fuliginosa)

From a photograph from life by William J. Swain.
The Sooty Phalanger.

(Phalangista Fuliginosa.)

This large phalanger, a variety of the common mainland species, is peculiar to Tasmania, and either of the same colour as the Phalangista sulphurea or deep sooty-brown, and occasionally almost black. The fur, however, is thicker and longer, and the darker skins are much valued for the manufacture of the famous Black Opossum rugs, which form a considerable item of Tasmanian exports. The dark variety is peculiar to the island, and not even found in Southern Victoria, where the colder climate would probably be congenial to its habitat and economy, which are the same as those of the grey variety—the Volpine Phalanger, better known as the common or “Brush-tail Opossum.”

General colour brown-black, darker on the back; muzzle, chin, feet, and ears externally, black; throat, chest, and abdomen, of a fulvous brown colour—the last-mentioned part of a deeper hue than the chest, &c. The ears are naked internally, or nearly so; externally they are well clothed with fur, excepting near the point and along the anterior margin, which parts are covered with small sparsely-haired hairs. About six inches of the apical portion of the tail is naked beneath.

Mr. Waterhouse, than whom a better authority on our Mammals does not exist, gives it as his opinion “that the almost black specimens are reared from Tasmania, accompanied with others which are of very deep rufous-brown tint, much suffused with black on the back,—by others which are of a rich rufous-grey,—by others again which are grey,—and, lastly, by individuals which are of a cream colour,—and as all these specimens agree very closely in size and proportions,—we can but conclude that they form one and the same variable species. Upon comparing the skins, or stuffed specimens, of this Tasmanian Phalanger, with those of the Phalangista sulphurea of New South Wales, the only tolerably constant difference which could be perceived was that the island animal was larger than that of the mainland, and two skins of Tasmanian specimens presented a corresponding difference of size when compared with the caesura of the common P. vulpinus.” Our own observations corroborate Mr. Waterhouse’s opinion. There is a difference in size, and some slight alteration in the position of the teeth, but these characteristics may only belong to certain individuals, and probably occur in mainland specimens also. It would be interesting to secure a series of young of the dark variety, and compare them with the young of the light-coloured species. If really different, these dark-coloured animals would show indications of it even before the hair has appeared; and we shall prove hereafter, when speaking of the Kangaroo tribe, that certain places which, in the white animal, are covered with black hair, are marked accordingly in the naked young.

The aborigines of Tasmania are now extinct, and the Phalangers have no other enemy except the Tiger Cat, or Tasmanian Dasyure, and conversely; but with all the acrobatic weapons at their command the hunters cannot perceptibly diminish them. On the mainland these animals have become a perfect pest in some districts. Their nocturnal and arboreal habits, their food, and number of young, are well known, and are the same as those of New Holland.
Great Kangaroo.

(MACRÓPS MAJOR. Young Male.)

It is just a century since Captain Cook discovered the Common or Great Kangaroo in the neighbourhood of Port Jackson, and notwithstanding all the persecution by man and dog these large Marsupials still hold their ground. From the victory of the City they have certainly disappeared, but in the Port Hacking District, on the south side of Botany Bay, a few may yet be found. The nearest spot where good sport can be obtained is Jervis Bay, to which locally regular hunting parties proceed, and generally return with good "bags" or rather "car-loads" of game.

The distribution of the Great Kangaroo appears to be confined to Tasmania and the southern portions of the mainland, the animal does not occur on the West Coast, where another allied species (MACRÓPS EUGENUS) takes its place, nor do we remember that the Common Kangaroo has been observed very far north.

In some districts the settlers are obliged to have regular battues to keep the Kangaroos within bounds, because they feed voraciously and multiply so quickly that sheep or cattle would soon be outnumbered by them. The main cause of this prolific increase is no doubt the destruction of the Native Dog and the absence of the aboriginal hunting parties. The fur of the Kangaroo is rather short and woolly, the prevailing colour a brownish grey, the under side of the body, inner parts of legs and the arms being lighter; the ears and toes are black. The male exceeds the female in size, but there is no difference in the colour of the sexes.

When a herd of Kangaroos is disturbed, the old males keep in the rear, the fleetest females and young going off first; and it is astonishing to see the large space of ground they cover at a single bound when hurried. Few authors have however attempted to illustrate the precise way in which these animals progress; even our best authors represent them as running like greyhounds (see Gould's "Mammals of Australia," plate 34), but if really they attempted to do so they could not avoid going "head over heels."

The whole tribe progresses by a succession of jumps, using the hind legs only, and the tail to balance the body; the arms are pressed close to the chest; the heavy tail forms a gentle curve, but never touches the ground; and the two elastic tarsi come down together at regular intervals with a heavy thud. When feeding on short herbage the arms and hands rest on the ground, and the tail with the hind legs form a sort of tripod. In this fashion the Kangaroo moves by running the tarsi (the body resting on the tail and fore-legs) and pushing them forward.

Few animals are more graceful when running than those of the Kangaroo tribe, but, as we mentioned before, artists will not take the trouble to observe them, and the consequence is that, when a sketch is attempted, a caricature is the result. We appeal to the rising generation to study nature, and trust they will learn to draw a Kangaroo as carefully as they learn to draw a Horse or a Dog, and that they will discontinue to accept as correct the hitherto representative of the animals which have heretofore supported the Australian Shield under the names of Kangaroo and Emu.

*We quote without change passing emphatic belief in the existence of Kangaroos; three authors, for the sake of the order in line so much repeated. We respectfully, to best purpose both. - Personal Correspondence*
Great Kangaroo.

*(Macropus major)*. Female, with young.

The usual bear-resemblance is the female of the common or Great Kangaroo, which has been already described, and we take this opportunity to review the whole family, comprising the following natural groups or genera—

Great Kangaroos (*Macropus*); weight of male up to 400 lbs.

Wallabies or Brush-kangaroos (*Halmaturus*); weight from 10 to 50 lbs.

Rock-wallabies or Rock-kangaroos (*Petrogale*); weight up to 50 lbs.

Tree-wallabies or Tree-kangaroos (*Dendrolagus*); weight up to 80 lbs.

Silky-booted or Nunalik-kangaroos (*Onychogalea*); weight from 8 to 10 lbs.

Hare-kangaroos (*Lagorchestes*); weight from 6 to 8 lbs.

Bettongs or Jerboa Kangaroos (* Bettongia*); weight from 4 to 5 lbs.

Hypsiprymn or Rat-kangaroos (*Hypsiprymn*); weight from 2 to 5 lbs.

**THE GREAT KANGAROOS (GENUS MACROPOD).**

First and second upper incisors rather feeble, third very broad, with two slight vertical folds.* Permanent premolars small, and soon lost; molars pushed gradually out, so that the normal number of molar teeth is never found perfect in aged animals. The teeth are always irregular, and are frequently retained longer on one ramus than on the other. When the last molar has come into position, the dentition may be considered complete, and would stand in this way:

\[
\text{Incisors} \rightarrow \text{Premolars} \rightarrow \text{Molars} \rightarrow 4 \leftrightarrow 4 = 28 \text{ teeth.}
\]

The skull is rather broad between the orbits, rounded above the anterior portion of the zygoma, and the space between the pterygoid and the incisors rather longer than in the small Kangaroos. The arms are strong, but appear small from the elbow to the wrist, on account of their being covered with short adpressed hair. The tail is long, very powerful, and forms a strong support to the body.

It is difficult to say how far the common Kangaroo ranges northward,—probably not much beyond the tropics. The West Australian Kangaroo is a distinct species.

**WESTERN KANGAROO (Macropus fuliginosus).**

This animal, which at first sight appears identical with the common Kangaroo, is of a smaller size; its limbs are finer, and the fur shorter but more woolly. The colour is slightly darker, and the legs when, or nearly so. It is peculiar to West Australia.

**SOOTY KANGAROO (Macropus fuscogriseus).**

Little is known of this species, which was first discovered by French voyagers on Kangaroo Island, where it is not now to be found. The fur is longer, more yellowish, and has a more woolly texture than the fur of the Great Kangaroo.

**RED KANGAROO (Macropus rufus).**

The male is rich orange-red, with the legs and abdomen of a light yellowish-white; throat and chest duller pink. This colour is very deep during the rutting season, and appears to be a sort of pigment extruded from the body. We have often examined old males a short time after death, and have also kept others in an enclosure, and in every one of these animals the colouring matter of the neck and breast marked the fingers when these parts were touched. When some of the tame animals were driven about and led exercised themselves violently, the colouring became more apparent, and a peculiar odour, not unpleasant however, was also noticed.

The teeth are slightly different from those of *Macropus rufus*; the stronger premolar is not pushed out, but having examined only a few skulls of adults we cannot say whether these characteristics are constant.

The Red Kangaroo inhabits the interior of New South Wales, Queensland, and South Australia. The female is bluish-grey; legs and abdomen white. Weight of male about 300 lbs.

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* Those fold or groove become dilated with age.
* "These authors who we fail of meeting kangaroos without giving proper names for so doing, among the Red Kangaroo with the great Opisthoteuthis—see below on the examples of so many men." If a kangaroo is male, the male signs may be replaced under the great Opisthoteuthis of which we mean South of China.
Red Wallaroo (Macropus adustus)

Male.—For short, the hairs stiff, and closely applied to the body; limbs and abdomen pale rusty-yellow; toes black; height, about 4 feet. Female.—Considerably smaller; for longer, less bush, and less closely applied to the body than in the male. General test brown, under-parts and limbs rusty-white; feet over brown, with black hairs near the claws.

Mr. Waterhouse states that the skull of Macropus adustus is about equal in size to that of M. eupor, but shorter in proportion to its width; and the most striking difference is in the form of the muzzle, which, instead of becoming gradually narrower towards the apex, is quite as broad near the end as at the base, and is broadest near the middle of the tooth; the nasal bones are shorter than in M. eupor. The frontal bones are deeply concave above the orbit, and are much contracted immediately behind them; the temporal ridges meet to form a well-marked sagittal crest. The foremost incisor is but little broader than the second; the third is about double the width of the second, has a broad oblique external groove, rather in front of the middle of the tooth, and there is a second groove in front of that; but this latter, which represents the foremost of the two grooves observed in Macropus eupor, is much less distinct than in that animal. In an adult, or rather aged individual, Mr. Waterhouse observed only 13 molar teeth in both jaws—a proof that this animal has been correctly arranged with the Kangaroos proper, in which the teeth are variable, and are pushed from behind forward and out.

The habitat of this species is given as Port Essington, where it was discovered by the late Mr. Guthrie.

Weight of male from 150 to 200 lbs.

Black Wallaroo (Macropus robustus)

Male.—For short and hind legs rather short, but powerful. General colour deep silt-grey; legs and toes black.

Female.—Much smaller than the male. General colour silt-grey, beneath and legs white; toes brownish-black.

Habitat.—The mountain ranges of the Coast of New South Wales.

Animals from 10 to 50 lbs. weight.

Brush-Kangaroos (Genus Halmaturus)

Kangaroos of moderate size, with slender, sometimes very short arms, and rather elongate tail. Skull comparatively shorter than that of the Great Kangaroos. The teeth the same as in Macropus. The principal distinguishing characteristics are the third upper incisor and the permanent large premolar. The third incisor is more elongate, with rather a narrow crown and a deep groove; the corresponding tooth of a Macropus has a broad crown, and the groove is often obliterated by the time the adult state is reached; in young animals it is always better developed. The premolar is permanent, and seldom lost except perhaps in extreme old age. The molar series wears down instead of being pushed forward, so that the dental formula is constant. Incisors 3, canines 2, premolars 3, molars 3 = 18. All Wallabees or smaller Kangaroos (with very few exceptions) have a bridle-mark behind the shoulder and a horizontal stripe across the haunch. There is not much difference in colour and size between male and female, and their habits are more or less nocturnal. The largest species live in Tasmania; the smallest are found in New South Wales and in Western Australia.

Paddy's Wallaby (Halmaturus parryi)

This is one of the finest and most slender-footed of the whole tribe; its tail is very thin and long, the arms are rather powerful, and the general colour is silvery-grey above and white beneath; there is the usual black mark from the eye to the muzzle, bridle and haunch marks are indistinct; the toes are black.

The habitat of this species is New South Wales and Queensland; it first occurs in the Clarence River District, and is common at Woy Woy and on the Burnet and Dawson.
BLACK WALLABY (Hypolagus melanops).

Fur of moderate length, rather harsh and glossy; general colour deep brown, suffused with reddish on the upper parts of the body; feet and tail very dark, almost black. Abdomen and breast rusty yellowish. The Black Wallaby, or Red-tailed Wallaby as Mr. Waterhouse designates this species, inhabits the eastern parts of New South Wales, principally the Coast Range, extending northward as far as the Clarence and Richmond, perhaps farther. An allied species to which the name of Hypolagus Melanops has been given, occurs in some of the Queensland Districts at the Burnett and other rivers. This variety is lighter in colour, but sufficient specimens have not yet come to hand which would prove that the light colouration is constant.*

In the neighbourhood of Sydney no other but the Black Wallaby is found. The structure of the skull resembles H. radfordi, the nasal and inner upper moerae is very large, with a deep groove and rounded inner margins, the premaxillae are thick and very permanent; that is, not easily lost or worn down. The tail is long, not much sinuuated at the base, and less stiff than other Wallabies have them, in fact, the form approaches the pliable tail of the Rock Wallaby ( Petrogale).

BLACK-TAILED WALLABY (Hypolagus melanops).

Fur rather short, general colour grey with a wash of brown, neck and shoulders rust colour, beneath white, toes black, a black stripe from the neck to near the tail. The skull is rather elongate, and resembles H. radfordi. The teeth are very unguine, and of size on ten adult specimens examined not two are alveoli, that it would be vain to attempt a description. The animal is smaller than H. radfordi, and inhabits the districts of Southern Queensland; it is also found in the north-eastern parts of New South Wales.

RED-NECKED WALLABY (Hypolagus radfordi).

Fur of moderate length, general colour rusty-gary, under parts grey-white, slightly suffused with pale rust colour, ears whitish externally, tipped with black, tail rather long, greasy, with black apex; toes black.

It is stated that this Wallaby was first discovered by the French naturalists in King's Island, Bass's Straits, and that it was found even in the neighbourhood of Sydney. The first statement we doubt very much, and we hope that the second may not be erroneous. The Wallaby is as plentiful as ever, and this is the only species which old residents remember to have hunted since they were boys. The fact is, all these supposed species vary so much in colour that it is really out of the question to give a description which will answer to every variety. We will just examine the red-necked Wallaby, and record a few facts.

Mr. Gould gives some good figures of the animal, which answer to a variety from the Clarence River. The "Bong Bong" variety, lately discovered by Mr. Masters, is of a more grey colour, no rust-marks are visible on the neck. A white stripe on the head is present in one specimen, but this is wanting in others. The face-markings differ also in the four specimens in our collection. Only one young has the white stripe under the eye as drawn by Mr. Gould, figure 1, an old male has the whole face black, with a shade to indicate the white mark seen in the young. A full-grown female shows a similar shaded stripe and a small light patch on the corner of the mouth, so that it is extremely difficult to give more than a general description without causing confusion. Both Mr. Waterhouse and Mr. Gould consider Hypolagus radfordi of Tasmania to be only a variety of the present species. In outward appearance both animals differ much, H. radfordi being almost uniform dark-rust-gary, with shorter legs and tail, but having composed a series of skulls of both, we come to the conclusion that there is no specific difference, as far as head and teeth are concerned. The facts are, all three Wallabies interbreed, in captivity at least.

BLACK-SHOELED WALLABY (Hypolagus australis).

General colour grey, externally pencilled with black and white, under parts pale grey, slightly suffused with yellowish. Legs and feet yellow, except the fore-part of the latter, which is black, the two colours being sharply defined. Arms short and dense, ears tipped with black; tail long, compressed, not very thick, with a crest of black hair on the upper and under surface of the upper half. The bridge-mark is indistinct or absent, but there is a series of black stripes across the back and haunches resembling the markings of the Bandicoot Har-limongero. No author has mentioned these marks before, we have to draw attention to them.

* Mr. Masters has lately collected a few specimens of these Wallabies on the Burnett River, in Queensland, and though short and with dark hair, except the ventral, they are the same species. The head is smaller, but with long, fine incisors, 1, 2, 3, the lateral series of the lower incisors present is 1, 2, 3, 4, 5, 6. The colour is uniformly grey, with some brown pencilling, 1, 2, 3, 4, 5, 6.
The skull resembles the skull of a Hare-kangaroo (Lagorchestes), it narrows suddenly in front of the tympanum, and the size is deep vertically, furnished with a slender canal, and has the first upper incisor large and strong, exactly as the Lagorchestes minimus. West Australia is the habitat of the Wallaby.

**Brush Kangaroos** (Genus Halmaturus)

A Queensland species, of a sandy colour. This concludes the list of the larger Brush Kangaroos or Wallabies up to 50 lbs. weight. The following species are much smaller.

**Pademelons, or Small Kangaroos** (Genus Halmaturus)—up to 50 lbs. weight.

- H. Grey. South Australia
- Derrnanus. South Australia
- Haustruas. Haustran's Abrolhos, West Australia.

**Furh趁aLons, Ora Small Kangaroos** (Genus Halmaturus)—from 10 to 15 lbs. weight.

- E. juncta. East coast of New South Wales.
- dama. West Australia.
- Amauris. Coast districts of New South Wales.
- bellidens. South coast districts and Tasmania.
- magnus. North-east coast.
- brachyura. West Australia.
- fulcra. Clarence District and Southern Queensland.

These animals inhabit the mountain districts near the coast, and are seldom if ever found on the plains of the interior.

**Strong-Armed Kangaroos, or Tree-Kangaroos** (Genus Dendrolagus)

- inustus. New Guinea.

These animals ascend trees, and are distinguished by their powerful fore-limbs and long phallic tail, which resembles that of the Rock-wallabies. A third species (Dorcopsus brucei) also inhabits New Guinea, but is terrestrial, though the fore-limbs are more strongly developed than in usual in Kangaroos. The weight of these animals we should judge to be about 30 lbs. The D. ursinus was the first Kangaroo ever discovered—many years before Cook's voyage.

**Silky-haired, or Nail-tail Kangaroos** (Genus Onychogalea)

- lunata. Plans of the interior of South and West Australia.

This group comprises the small silky-haired Wallabies or Kangaroos of the interior, they weigh seldom more than 8 or 10 lbs, and are about the size of a common hare. Their light-grey fur is of a peculiar softness, and the tail has a bare nail-like tip. The genus and the following genera possess more or less developed canine tooth.

**Hare Kangaroos** (Genus Lagorchestes)

- lagorchestes. West Australia.
- harrisi. West Australia.
- conspicilis. West Australia.
- luteomas. Plans of New South Wales, South Australia, and Victoria.
The Rat-kangaroos, so called from their resemblance to that well-known rabbit, are the largest of the whole tribe; and though they do not exceed a common hare in bulk, they are much more agile. They hop about with a quick movement, and the tail is an aid to this. The ears are short and rounded, the head small, and the fore legs long. These animals are not common in New South Wales, but are found in South Australia, and in the northern part of that colony, in the vicinity of the mouth of the Murray. South Australia has four species, two of which are found in New South Wales, one in South Australia, and the other in Western Australia.

**BETTONGS, OR JERBOA KANGAROOS (GENUS BETTONIA).**

- B. canaliculatus, Tasmania.
- B. graps, New South Wales, South and West Australia.
- B. carpenters, South Australia.
- B. australis, New South Wales.
- B. platypus, Western Australia.
- B. vaillantii, Western Australia.
- B. perpunctatus, Western Australia.

These three species of Bettongia resemble each other very much, and are probably nothing but variations. The western and southern species, that is, B. graps and B. carpenters, turn extensive burrows, which the Tasmanian species does not; the tail is more or less prehensile, and the weight ranges from 3 to 4 lbs.

**RAT-KANGAROOS (GENUS HYPSIPRIMUS).**

- H. munni, New South Wales.
- H. australis, South Australia.
- H. gigas, Western Australia.
- H. platypus, Western Australia.

The true Rat-kangaroos approach the Bandicoot tribe, and some naturalists have classed them with the Bandicoots when the skull could not be examined. Their limbs are of more equal length, they progress rather slowly, and the tail is short and small. The head of the Rat-kangaroo is elongate, that of H. platypus excepted, and the canine teeth are strongly developed.

**BANDICOOT TRIBE (PERAMELIDÆ).**

Having closed the Kangaroo family with the Kangaroo Rats proper of the genus Hypsiprymnus, we cannot but notice in the Bandicoots a general resemblance to the Rat-kangaroos. The Bandicoot family differs, however, much from all the preceding ones in the larger number of teeth. The usual formula, from which the Wombat is only deviated, of six cutting teeth above and two below, has disappeared in the present section, and we find the incisors increased to ten above and six below. The fore feet have the outer toes rudimentary, with only three nails, and the hind feet (though they retain the Kangaroo characteristics, and still possess the two inner toes joined by an integument) begin to produce a yet very rudimentary fifth toe or thumb. The pouch of the female, owing to its peculiar mode of progression, remains the reverse position to that of the Kangaroo and Phalanger tribe, and again resembles the pouch of the Wombat, with an opening upwards. The number of mammae is changed, however, we now find seven instead of four, though the young never exceed four. The tail of the Bandicoot is short, and the fur harsh to the touch; their food comprises bulbous roots, grass, and insects; they are excellent destroyers of vermin, and we have assisted fifty and more as destroyers of vermin, and we have assisted fifty and more mice killed by one of them in a very short time.

The family comprises three genera:

**GENUS PEBAGALEA.**

Head very elongate, canine teeth, powerfully developed; incisors curved and almost rooted, with nothing but a few tubercles at the lower part of their teeth; tail large, compressed, with a crest of hair on the upper edge, ending in a considerable tuft.
seeds on bulbus more principally, and is not so frequent as these there would entail. The upper end of the tail is black, the remaining half covered with long white hair; the under part of the body is whitish. This is the only member of the family which burrows in the ground.

Habits—New South Wales, Northern Victoria, South Australia, Queensland, and West Australia.

**GENUS CEROSUS.**

Head very broad, shall much contracted between the orbits, in the preceding genera; teeth small, canines much reduced with triangular base, and in form resembling a premolar, five lower teeth, with two functional ears, and a third one situated very much higher up, which is very rudimentary, and often overlooked; young animals have the short toe well developed; ears and tail long, like those of the Peromyscus; tail compressed, and with a crest of hair running from the base along the upper edge, and ending in a tuft.

**PEROMYSCHUS BANDICUT (Chorangus cassaratus).**

Four long, loose, and sabat-grey, beneath whitish, ears long, covered with small curly hair, tail covered with short hair, and with longer on the upper edge, eyes very large. The first specimen of the species arrived was discovered by the late Sir T. A. Mackell, Surveyor General, near the junction of the Murraybridge River, on the 16th June, 1846. This first specimen, had accidentally lost its tail, and from this Sir Thomas concluded that it was a peculiar characteristic; but all subsequent examples, which, in shape and the distribution of hair resemble the tail of Peromyscus cognatus. The fur in both species is very soft, whilst all the true Bandicouts have very hard fur.

**GENUS PEROMYSCUS.**

Four tail, and ears rather short, the hind foot with a retractory inner toe or thumb. Fur composed of hairs of two kinds, the one forming a soft underfur, the other long coarse, thickened, and huggeously greasy; tail short, clothed with small shaggy hairs only. Five species are as record, of which three are found in New South Wales.

**SHORT-TAILED PEROMYSCUS (Peromyscus brevicaudus).**

Head moderately long, for very bush to the touch, yellowish-brown, marked with black spots, sandy Below: five pale-yellowish, short, and rather thick, the ears are very short, and the skin, as in all other Peromyscus, is thin and晷il'; the tail, in young animals, appear always more worn, and the true form of the glabella can only be determined upon the examination of immature subject. The dentition approaches to that of the Dipodomys in the size and position of the molars, but their worn surfaces enable the student to distinguish them from the sharp edges of the "Navy Cat."

The present species has a very wide distribution, and is found in almost every part of Australia, and in Tasmania. In the neighbourhood of Sydney, however, the trunck has never been observed. The short-tailed Bandicoot, when kept about a house, will soon destroy all the mice, though he does not eat many of them, and prefers moths, grubs, and insects, to fleshy food. It has been noticed that when one of these animals was put into a large cage with a number of mice, he would quickly destroy them in the following manner:—The victims were troubled about with his fore-paws, and their limbs broken, when the whole were disabled the Bandicoot began to devour a portion of each—generally the brain only.

**LONG-TAILED PEROMYSCUS (Peromyscus major).**

Muscle very elongated, ears of moderate size, general colour greyish-brown, beneath white, or yellowish-white under—New South Wales, more particularly the Coast district. The present species is excellent eating, and the largest of the tribe.

**GEOG'S BANDICUT (Peromyscus Moler).**

Upper parts of body grey, pencilled with yellow and black; under parts white; hinder parts of back blackish, with lighter bands; feet and tail white. This appears to be the near largest species, it is closely allied to the other species Bandicoots of the mainland, and abdus Thomsen exclusively.

**STREPTOM BANDICUT (Peromyscus ferrugineus).**

Four rather long, and bush to the touch, the hind, comprising it is grey at the root, pencilled with yellow, and tippd with black; upon the back it is darker than on the sides, three black stripes cover the back. The present species, the smallest of the tribe, inhabits the interioe of New South Wales, Northern Victoria, and South Australia. The West Australian Golden-backed Bandicoot (Peromyscus auriculatus) is probably a local rarity, in which the markings are less distinct. The weight of the smallest species does not exceed a lb.
Dog-headed Thylacine, or Tasmanian Tiger.

(*Thylacine cynocephalus*)

This animal is the largest and most terrorous of the whole Mammalian Fauna in Australia, and at the present time restricted to the island of Tasmania. It inhabits the cold rocky mountain deserts, and frequently visits the plains country to attack the sheep-folds. The shee-holders try everything in their power to exterminate the dangerous creature, and it has consequently become very rare in the more populous districts. The summits of the western mountains of Tasmania appear to be their strongholds. These inhospitable regions are about 3,000 feet high, and the climate is consequently very cold in winter-time. We have been informed that when the snow is on the ground the "Tiger" or "Hyena" (as the Tasmanians call this animal) is easily trapped; a very powerful instrument is however necessary to retain them, and if they can reach the captured limb they are certain to break it off. Mr. Masters, a careful observer, states that he has noticed the tracks of the Tiger after a fresh fall of snow, followed first by the not less formidable Black Dasyure, by ordinary "Native Cats," and even by the smaller species such as *Antechinus attenuatus*, all going one after the other in expectation of putting the fowl in their turn. Some of the shee-holders state that one of these animals will kill hundreds of sheep in a very short time, and instances are on record of men having been attacked by them.

The number of young brought forth at a time does not exceed four; they are carried in a pouch, and when born are as small as young Kangaroos, but the well known marsupial bones with which all the other pouched animals are furnished are not found in the Thylacine. The animal is peculiar to Tasmania, but, as fossil remains prove, has once also existed on the mainland. There are two varieties which the shee-holders have distinguished for years—one called the Bull-head the other the Grey-headed Tiger. The difference between them is a shorter head and closer packed and larger teeth in the first-mentioned species.

As it is not possible in the present work to illustrate all the members of the family to which the Thylacine belongs, we shall give a brief list of all the genera and species hitherto described, which will greatly assist the student in his labours.

**DASYURUS FAMILY—(FAMILY DASYURID.E.)**

Marsupials having the second and third toes of the hind feet dissimulated and well developed, the thumbs or first toe small or absent; the tail non-prehensile and hairy; the canine teeth well developed, except in the small species of the genus *Antechinus*, and the molar teeth either with crescent-shaped crowns or with the grinding surface presenting numerous prickly points.

The family is subdivided into the following groups of genera—

**GENUS MYRMECOBIAIUS**

General habit and size like a squirrel, head flat and broad, muzzle slightly elongated, mouth, nose, and ears of moderate size and pointed, tongue long and slender, legs short and strong, toes, five in front and four to the hind feet, all bearing compressed curved nails, tail long and bushy, female provided with four mammae but destitute of a pouch; teeth small and detached, incisors 5/5, canines 1/1, molars 3/3 = 52 teeth.

**Banded Myrmecobius (Myrmecobius fasciatus)**

Fur harsh and compressed, dark red of various shades, more or less pencilled with white on face, but much darker on the back of the body: beneath dirty white, from seven to eleven white bands across the back, the interspace between increasing as they approach the tail. A black mark or band runs from near the muzzle to the ear, enclosing the eye. The ears are small, narrow, and pointed, the tail is bushy, and has a fine appearance. There are many points in the anatomy of this singular animal which even those the Ant-eater (Eleutherodon), these are—the long and narrow palate, the rounded bone-case, the strong limbs, elongate tongue, and weak mandible. The teeth are small, weak, and do not touch each other, on their number they are not exceeded by any living Mammal, and approach those of the extinct *Phascolobatus*,—one of the oldest of the Mammalian Fauna known to us. The two first lower incisors are curved, and directed upwards, resembling the same teeth of some Mammals. If there is a tendency on one hand to approach the form of the Ant-eater, there is on the other some relationship with the Phalangers, and (See PP.)
more so with the little Tasmanian. Both animals have delicate heads with weak jaws, and the ears standing for gaps: both possess a long, slender tongue, a bushy tail, and four mammae, like all true Phascogales. We have not been able to ascertain whether any mammary bones are present, if so they are very small, as in a specimen under examination they could not be felt.

The statement made by some authors that the number of mammae is eight, and that from five to nine young are produced in a litter, is erroneous. We have had an opportunity to examine several female specimens, every one of which had only four teats, generally all drawn, and proving the production of four young only.

The Myomurus is common on the West Coast and in the interior of New South Wales and South Australia, the Murrumbidgee River being taken as its most eastern boundary. The food of this animal is said to consist of ants and their eggs; but it is probably augmented by honey and other vegetable substances, for the extinction of which from flowers or the hives of the wild bee it is well adapted.

GENUS PHASCOCALAE

Described, with the two foremost incisors of the upper and lower jaw larger than the others; premolars \( \frac{2}{2} \) and \( \frac{1}{2} \), studded with prickly tubercles, those of the upper jaw with triangular crowns, the last tooth very narrow and transverse. Five toes in each foot, the inner toe of the hind foot a small thumb. Tail long and bushy; mammae eight, pouch absent.

BRUSH-TAILED PHASCOCALAE (Phascogale penicillata).

For rather long and soft, grey, pencilled with white, beneath white; tail long, black, and bushy towards the tip, basal portion covered with short grey hairs.

Habits—Australia generally, with the exception of the most southern parts of Tasmania.

This species was already known to the first settlers, and figured as far back as 1798, by White, in his Journal.under the name of Tapo n u p a . It appears however, that this name is frequently applied to other animals, such as "Native Cats" or Phascogales. The Brush-tailed Phascogale is about the size of a Rat, arboreal and nocturnal in its habits, and a harmless creature, though authors (but not observers) differ on this point, and put the animal down as most ferocious and a terror to the hen-roost. It is expert in killing mice, but would certainly not attack a fowl. Like all other members of this group, it is in the habit of folding down the ears, which are seldom carried erect.

HANDSOME-TAILED PHASCOCALAE (Phascogale ouboh).

General colour slate grey with a wash of brown, beneath whiten, tail covered at the base with short rust-coloured hairs, tip forming a brush of black hairs.

The habitat is given by authors as Western Australia; it occurs however also in New South Wales, near the Darling River.

GENUS ANTECHINUS

The largest of the genus, general colour dusky-brown or almost black. Specimens occur however which are more of a rust colour. Beneath more or less greyish white. Total length eleven inches.

Habits—Tasmania.
FURRED ANTECHINUS (Antechinus speciosus).

General colour grey-brown, of a very rich brown hue on the hinder parts of the body; on the head and fore-parts of the body distinctly fringed with black and white; under-parts dully yellow-white; fore-legs of a bright rust colour; hind-legs distantly fringed externally with the same colour; tail clothed at the roots with hairs like those of the body; but with the hairs becoming gradually shorter towards the apex, where they are black. Total length, 9 to 10 inches.

Habitat—West Australia. Called “Dibbler” by the Aborigines of West Australia.

YELLOW-FOOTED ANTECHINUS (Antechinus flavipes).

General colour of upper parts grey, towards behind rusty-tinted; feet and under-parts of body of the same rust colour; tail much darker. Total length, 8½ inches.

Habitat—Australia generally.

STUART’S ANTECHINUS (Antechinus stuartii).

Rather larger than the previous species, and of a more uniform colour; grey, with a wash of brown, probably a variety of A. flavipes.

SPOTTED ANTECHINUS (Antechinus maculatus).

This is a small species from New South Wales (Clarence River district); colouration dark blackish-brown above and slate-grey below, with a few white spots, and a tender spot on the throat. The following small species is probably a variety of it.

LITTLE ANTECHINUS (Antechinus minutissimus).

This is probably the smallest of the group; above greyish-brown, lighter beneath. Total length, perhaps 5 inches. We noticed a specimen in the Museum collection, obtained by Mr. G. Masters, which had six good-sized young attached to the nipples. The mother was teaching them along the ground with some difficulty, when he bagged the whole family group. Though we have seen a certain number of mammae to be constant in certain species, this cannot be relied upon always. This specimen has six young, six drawn nipples, and an odd one on one side, distinct but not in milk.

The animals which we have had under consideration belong to what we have described in a former paper as the broad-footed section, and they number five in all; they are more or less arboreal in their habits, and their fur is only moderately soft.

We will now enumerate the members of the remaining section, which have been classed under the generic name of Podacrus.

GENUS PODACRUS.

Comprising the silky-haired and slender-footed species, with more or less terminal habits.

The following animals possess a skin as delicate and soft as a mole, but of longer texture; the tail, often incrassated, is covered with short appressed hair, unlike the Antechinus proper, in which the hairs of the tail are always of unequal length, and very harsh to the touch.

WIRE-FOOTED ANTECHINUS (Podacrus allipes).

Three species appear to be enumerated of the wire-footed silky-haired section; but the other two are no doubt identical with the above, though named otherwise and respectively Antechinus locatus and fuliginosus. If, after careful investigation of these species, we should come to the conclusion that they constituted three distinct species, the result will be made known, though it will not alter much our present arrangement. These little animals are by no means rare in less settled parts, and are caught in large numbers by the aborigines of the Murray and of King George’s Sound. In the immediate neighbourhood of Sydney they have been found occasionally under stones during the winter-time, but never more than about two in three years by one collector. Their nocturnal habits and small size make it difficult for the best observer to obtain specimens.

The two remaining species, which are distinguished by a tail more or less incrassated, but appear otherwise identical with P. allipes, are named Thick-called Podacrus (Podacrus erinaceus), and Large-tailed Podacrus (Podacrus
Habitat-The interior of New South Wales.

GENUS ANTECHINOMYS.

Terrestrial Dasyurine, with long Kangaroo-like hind-legs, and four toes, the thumb being absent; toes covered with hair, the toes only being naked. Dentition like Dasyurus, with canines still less developed.

The genus comprises only one species—the animal described by Mr. Gould as Phascologale lanigrina.

Woolly ANTECHINOMYS (Antechinus lanigrina).

Fur long and silky, general colour greyish-brown, beneath white; tail as long as the body, with a tuft of moderately long fine hair; progressing by a succession of jumps. The female has no pouch, and is provided with eight mammae.

Habitat—The interior of New South Wales and Victoria.

GENUS CHÆTOCERCUS.

Head short, broad behind, almost triangular; auditory bulla very large; upper canines strong and elongate, not so broad at their base as in the genus Phascologale, incisors long and narrow, resembling those of Dasyurus, first pair directed forward, and slightly larger than the others; pre-molars, three in the upper jaw, the middle one largest, the first somewhat smaller, and the third and last very diminutive and tubercular; molars of the usual triangular form, with rather blunt tubercles, increasing in size from the first to the third, the fourth being narrow, transverse, and resembling the same tooth in the genus Dasyurus. The lower jaw is short and strong, and the articulating condyle is placed still higher comparatively than in any other species of this group, the incisors are three in number, the first pair being the largest; canines smaller than those of the upper jaw, sharp and pointed, and devoid of the broad base common to other small Dasyures. Of pre-molars the lower jaw contains only two, the first larger than the second. There are four molars, the first and last being the smallest, the two middle ones of about equal size; on the first the anterior tubercle is scarcely indicated, showing, with the absent third pre-molar, a close approach to the genus Dasyurus. Tail thick, with compressed sides, ornamented by a case of hair on the apical half, similar to the tail of the Pig-footed Bandicoot (Cheropus cinnamomeus).

CRESTED CHÆTOCERCUS (Chætocerus cristatus).

General structure similar to that of Phascologale australis, limbs strong, furnished with long claws; five toes to the fore and hind feet, the inner toe of the latter a short nailless thumb, the hair covering the fore-feet long and shaggy, colouration rusty-brown, the fur being of a dark leaden-grey at the base. Total length 8 inches, tail 4½, head to base of ear 1, toes and toes 1½ inches.

Habitat—South Australia, probably the neighbourhood of Lake Alexandrina.
GENUS DASYURUS.

Flesh-eating animals, of moderate size, with spotted or striped fur; they resemble the Martens and Polecats of the placental order Carnivora, and are best known to the Colonists as Native Cats, or Tiger Cats,—the larger Tasmanian species as "Devil," Tigers, and Hyenas; they have, however, no relation to the Cat tribe, and are Marsupial animals with a shallow pouch or skin-fold. The teeth of the Dasyurus resemble those of the smaller Phalangeres and Antechinus, but the pre-molars reduced by one in each series. The Thylogale is, however, an exception, and has three pre-molars in each series. The dental formula stands therefore (Thylacine excepted):—incisors $\frac{3}{2}$, canines $\frac{1}{2}$, pre-molars $\frac{3}{2}$ molars $\frac{3}{2}$ = 42 teeth.

VITERRINE DASYURUS (Dasyurus viverrinus).

For rather long and soft; tail bushy, ears long, generally carried folded down. General color black spotted with white, or yellowish spotted with white; under parts of body lighter. No inner toe or thumb to the hind-foot. Female with six mammae, and generally four young at a litter. Total length 23 to 24 inches, of which the tail measures 8 or 8½ inches.

Habitat.—Southern Australia and Tasmania. We do not think that the Dasyurus inhabits the West Coast.

NORTH AUSTRALIAN DASYURUS (Dasyurus hallucatus).

For of moderate length, and rather hard; general color of the upper parts of the body darkish brown, much pencilled with yellowish, and having numerous irregular white spots; under parts white suffused with yellow; tail bushy, cylindrical, the spiral half or more, black.

The above is Mr. Waterhouse's description of a British Museum specimen, who also states that the animal is less in size than either the Common or Geoffroy's Dasyurus. The hind-foot is provided with a thumb. Nothing is stated about skull or skeleton, and though we enumerate the species as distinct for the present, it will be seen when the description of Dasyurus geoffroii is compared with it that both animals are identical. The habitat is given as North Australia, Port Essington.

GEOFFROY'S DASYURUS (Dasyurus geoffroii).

For moderate, general color of the upper parts yellowish pencilled with black, and having numerous irregular white spots; body beneath white; tail in general, black at the apex; hind-foot with a thumb.

Habitat.—West Australia, South Australia, and New South Wales.

The fine series of Dasyurus in the Australian Museum enables us to state without doubt that both species, Dasyurus hallucatus and Dasyurus geoffroii, are varieties of each other. The Muskrat is in possession of specimens which answer to both descriptions—specimens in which the yellow and some in which the darker tint predominates. There is one example with a very bushy tail and scarcely any black hair at the apex, and there are others with a cylindrical tail, which is tipped with black. Colobusium is of very little value in the determination of species, and as we have compared the skulls of these variously coloured animals, we can only state that they differ in nothing material except size. The largest specimens occur on the Murray River, those from other parts of South Australia are much smaller and darker in colour, but now and then, examples are found which are pale yellowish.

The name of Dasyurus geoffroii should therefore be adopted for both animals. On the east coast this Dasyurus has not yet been noticed.

SPOTTED-TAILED DASYURUS (Dasyurus maculatus).

For rather harsh and short; general color from deep brown to light reddish brown pencilled with yellowish, body beneath sandy-coloured, the whole, including the tail, spotted with white; a thumb to the hind-foot.

The present animal differs as much as size and color as did the last-mentioned species, and its geographical distribution is so extensive. Tasmania, Victoria, New South Wales, and South Australia, have accorded it as inhabiting these Colonies. We have also seen examples from Queensland. It is peculiar to the Coast Districts, but has not yet been observed in the far North or on the West Coast. The spotted-tailed Dasyurus grows to a large size, and is provided with most formidable teeth. Mr. Waterhouse, the able naturalist, who has written a most valuable work on the Marsupials, mentions a skull as that of an aged individual 3 inches 64 lines long; but a specimen in the Australian Museum measures fully 4 inches, and the upper canines are 1½ inches in length. Specimens have been observed as large as a common Fox; and as these animals are not only very ferocious but also exceedingly stubborn, it frequently happens that they make great havoc if they gain admission to the poultry-yard of the settler.
GENUS SARCOPHILUS.

Dasyurus with a short and stout body, short and broad head, and powerful compact teeth, which are packed so close together that there is not a line of space between them; legs rather long, tail short and thick.

**UROMOS SARCOPHILUS** or **TASMANIAN BLACK DASYURUS (Sarcophilus harrisii)**.

For course, of moderate length, and black, here and there with a white spot or two; these spots occur most frequently on the breast or limbs.

Mr. Waterhouse gives the measurement of a skull as 4 inches 6 bars, another in the Australian Museum collection measures 6 inches, and is 4 inches wide. The fertility of these animals is almost beyond belief; they attack every living thing, and are most destructive to sheep, though not larger than a common Terrier Dog.

One of them, and by no means a large one, escaped not long ago, and killed in two nights fifty-four fowls, six geese, an albatross, and a cat. Having been recaptured in what was considered a stout trap, with a door constructed of iron bars as thick as a lead-pencil, he made his escape by twisting this solid obstacle aside, almost doubting it up with his powerful teeth. To give some idea of the strength of the animal, we mention that the blacksmith who repaired the trap could not bend the bars back into their position without proper tools. When caught in a fox-trap the black Dasyure often bites off the fastened limb and escapes. A specimen in the Museum Collections, the largest ever secured, had only three legs; one of the hind limbs was clean gone, and not even the trace of a stump remained visible. The fossil Sarcophilus harrisii of the Wellington Caves was a still more powerful animal. Numerous bones and teeth prove the existence of large numbers of these creatures during post-pleistocene times, which must have made havoc among the more peaceful animal tribes. There can be no doubt that they were a terror even to some of the gigantic creatures, whose young they probably devoured whenever any opportunity afforded.

We have noticed before the total absence of large furred Carnivores, which were supposed to be necessary to check the undue increase of the herbivorous marsupials; but with such strong and blood-thirsty creatures as this small Dasyure, no great Carnivores were required to carry out the designs of the Creator.

The habitat of this animal is restricted to the island of Tasmania.

GENUS THYLACINUS.

Dog-eared with the outermost masses extending the others in size; the three foremost of the upper true molars with a much-elevated central cusp, an anterior and posterior cusp but little elevated, and an internal lobe; the hindmost of the upper true molars transverse; the true molars of the lower jaw nearly resembling those of the upper jaw, but destitute of internal lobe, and with the central cusp more elevated; the humerus with the inner condyle perforated; the hind-foot destitute of an inner toe; a well-developed pouch with four mammae, but without marsupial bones. The pre-molars resemble those of the genus Phascolonus, and are three in number in each ramus.

**DOG-EARED THYLACINE, or TASMANIAN TIGER (Thylacinus cynocephalus)**.

About equal in size to the common Wolf; tail about half the length of the body; fur short, and closely applied to the skin; general colour grey-brown; the back with about twelve to fourteen transverse black bands, narrow and short on the fore-parts of the back, longer and broader on the hinder-parts; region of the eye pale; tail with short fur, nearly like that of the body, excepting on the under-side of the spiral portion and at the tip, where the hair are comparatively long. The Thylacine stands lower on the legs than either Wolf or Dog, and in every respect resembles the smaller Dasyure; like the Sarcophilus it is a most ferocious and formidable animal, which will soon overpower even a Cow or Horse if driven by hunger to attack them; it is also stated that the creature is not afraid of man, and will show a formidable front when driven to extremities.

We know one large fossil species, which was the largest Marsupial Carnivore on record, and unchallenged the mastard of Australia in former ages; at the present time the Thylacine is restricted to Tasmania.

**SHORT-EARED THYLACINE (Thylacinus brevipes)**.

This species has been found on two skulls obtained by Mr. Manser on the Ouse River in Tasmania. The skulls are those of young animals, and show the damnumgishing characteristics well. The head is shorter, the pre-molars

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The above was a pet half, which had been in the museum ground for months.
much closer together, and, like all the other teeth, larger than in the common Thylacine; this is best seen when we compare a full-grown Thylacinus cynocephalus skull, with one of the Thylacinus bresnangi, which, as regards size and position of the teeth, gives the following result:—

A large skull of the common Thylacine measures, from the occipital foramen (the opening at the back of the head) to the incisor teeth, exactly 9 inches. The width of the palate in front of the last premolar measures slightly more than 1 inch. The palatal opening is 1½ inches in length, and a little more than ¾ of an inch wide, and the median line of the palate is imperfectly everted. The last molar but one—the largest of the series—is ½ of an inch wide, in its broadest part, and the space between the two first premolars measures ¾ of an inch in width.

A skull of the Short-headed Thylacine measures, as above, 6½ inches in length, and is therefore that of a much younger animal, and yet the palatal opening is reduced in size, forms two small holes less than 1 inch in length, and ¾ of an inch wide, and the median line is completely closed up. The width of the palate in front of the third premolars is as large as in the adult T. cynocephalus, and the largest molar extends in size by ¾ of an inch that of the greater specimen. The space between the pre-molar teeth is less than ¾ of an inch, but in the larger one it is double that width—which shows that the teeth of T. bresnangi are much closer packed. Comparing the skull of a young T. cynocephalus with that of T. bresnangi, all the differences in the size of the teeth become more striking, and other diverging points could be mentioned were further proofs required of the correctness of these observations. Professor Owen at once acknowledged the truth of this statement, and accepted the T. bresnangi as a distinct species, but our Tasmanian friends continue to consider the two animals as varieties only.

The foregoing discussion will prove the value of Comparative Anatomy when determining species, and also the advantage of having many specimens for examination. Kind donors to the Museum must not apprehend that these most liberal presents will ever overstock the collection, because the larger the number of skulls or skins the better will the amateurs of the Country be understood by future generations. It is exactly with Comparative Anatomy as with the science of Meteorology, had the changes in the atmosphere been as carefully noted a hundred years ago as at the present time, great results could be deduced therefrom. Let us therefore advise our friends to gather their specimens in time, or it may come to pass when the last Thylacine dies, that the scientific men across the Seas will confess as feebly for its body as they did for that of the last aboriginal man not long ago. A similar want of forethought occurred in New Zealand, where a great trade with smoked human heads at one time existed. The British Government soon stopped the abominable traffic, and Dr. J. Hector, P.R.S., the well known Geologist, and Director of the Christ Church Museum, is now offering fabulous exchanges (a complete Moa we believe), for such a trophy whereof not one is to be found in New Zealand—the Australian Museum possessing two of the sort. The products of a new country should be secured as early as possible, and every object bearing upon the customs and habits, the arts and manufactures of a primitive race, should be gathered and deposited in some public Institution before it is too late. Animals and plants are often very local in their habitat, and soon disappear before the steps of civilization; as an example, we may mention the beautiful Nectar-Parrot of Phillip Island, which has long ceased to exist there. The island is a dependency of this Colony, but only one very bad specimen of this rare bird remains now in our collection.
The Native Cat.

Having already given a full account of the family of *Dasyurus* elsewhere, there remains nothing but to add a short note of the most common and best known of the tribe—the black and white, or buff and white-spotted "Native Cat" proper.

These little creatures, with their short disposition, are familiar to the greater number of Colonists; they inhabit our forests, but prefer to take up their abode with civilized man when they find out that he keeps plenty of meat about his habitation, or runs poultry. They are very savage for their size, and five of them kept in a cage without sustenance for a day only, had almost reduced themselves to the state of the famous tabbies of Kilkenny. The fact is, they devoured each other all but a pair remained, and the savage look and watchfulness of these two animals was amazing to behold.

They are stubborn in the extreme, and appear to care about nothing. We have noted them to come quite unconcerned into a tent at night, and take up a cozy place near the chimney, from which a fire or pet only could dislodge them. Another case was mentioned not many days ago, when one of the Tiger Cats actually faced a half-case man, who was terror-stricken, and ran away. A real aboriginal nature, one of the old tribes, would have made short work of such an adversary, but these poor people have now almost died out, and the few still lingering behind cannot even remember the animals which their ancestors hunted.

The common Native Cat of this Colony is about the size of a half-grown domestic Cat; but further south, and more particularly in Tasmania, it grows somewhat larger. The coat is black with white spots, or yellowish-grey with white spots, the tail rather bushy, and uniform in colour, whilst that of the larger Tiger Cat is smooth and spotted with white. The pouch, or rather skin-fold, with which the female is provided contains six teats, but the number of young seldom exceeds four. At a certain age the young are left in the spout-hole or crevice which the mother has selected for them whilst she goes out hunting, and on more than one occasion have we obtained young specimens (the size of a half-grown cat) from such lairs during the parent's absence. They begin to hunt at a very early age; probably they are forgotten by the old cats as soon as they are able to move about and catch something on their own account.

The common Native Cat is distinct from the extreme fifth toe or thumb on the hind-foot, the bones can be distinguished, however, is the skeleton. With regard to their geographical range, we may safely assert that they are peculiar to the South and South-east Coast and to Tasmania. The interior of the Colony is occupied by another species—Procyon procyno—their range appears to be identical with the northern Native Cat (Dasyurus hallucatus) Not a single species has been recorded as inhabiting the West Coast.
Spiny Ant-eater.

(ECHIDNA HYSTRIX.)

A sub-section of the family Monotremata comprises the Monotremata, with only two known species, one of which, the Spiny Ant-eater, we figure. It is like the Platypus, a strictly Australian animal, and inhabits almost every part of the Continent, from Cape Howe to Cape York, but a is not found on the sail-bush plains of the interior. The Tasmanian species is more hairy, and has been named under another name (E. australis), but both animals are only varieties. Dr. Shaw described the Echidnas and the Platypus about the close of last century, and great amount was shown by anatomists and physiologists in these discoveries, which raised the involved question,—whether the two creatures laid eggs! The greatest men of science gave their opinion for and against this theory, and when Moedel (a well-known German anatomist) had actually discovered the mammary glands, proving thereby that the Echidnas gave suck, Geoffrey St.-Hilaire (a great French savant) would not believe a word of it. Both naturalists have passed away, and it was left to Professor Owen to enlighten us on the manner in which the Spiny Ant-eater carries its young progeny. The condition in which the young came to light, covered by a shell or naked, we do not know; but a specimen forwarded to the Professor by Dr. v. Müller, of Melbourne (a full-grown female), contained two small apertures or pouches on the under side of the body, and these were occupied by two "little ones," then not much larger than a French bean. The milk-glands drained into these pouches, and supplied the necessary nourishment, but a test could not be observed.

Professor Owen has written a most elaborate treatise on the subject, to which we must refer our readers.

The discovery took place a few years ago, so that at least forty years passed before the dispute was settled. Even now we are as ignorant as possible about the habits and economy of this well-known animal, and we certainly cannot tell what becomes of its spiny friends in summer-time. A keen observer, Mr. Charles Kaper, of Soldiers' Point, Port Stephens, who always supplied us with Echidnas in winter, is of opinion that these animals return into the ground,—in fact, hibernate during the hot season. So much is certain—they cannot be obtained so easily in summer.

The Echidnas is about 18 inches in length, of stout build, the upper parts covered with strong spines, underparts, head, and legs, clothed with brownish or blackish coarse hair; head with the facial portion prolonged into a slender and sloping nose, and covered with a naked skin, mouth-opening small, tongue long and delicate, with some horn, teeth-like edges on the hinder part; legs short and strong, provided with five well-armed toes; tail short, covered with spines.

The food of the Echidnas is said to consist of arts and other small insects, but we have on several occasions taken also grass from their stomachs. The jaw is toothless, but the edges of honey tubercles before mentioned, and similar spines on the palate, probably assist in crushing the food.

The heel of the male is armed with a spur, which is movable, performed, and supplied with a gland, and muscles capable of opposing the secretion of the gland through the canal of the spur, as in the Duck-mole. According to Messrs. Quoy and Gaimard the apparatus is not venomous. We have often handled Echidnas, but never experienced any irritation when accidentally scratched by the spur.

The Echidnas will live for months in captivity without taking food, and Mr. Kaper's suggestion that the animal feeds in winter only, and hibernates during summer, is by no means improbable. It is difficult to catch one, and from eight to ten minutes at least are necessary for the experimenter. The animal is also remarkably noise-proof, and a specimen frequently taken by none of our most zealous reptile-hunters lived for ten hours. The strength of the Echidnas is most wonderful, and their digging capabilities will scarcely be credited. The animal often appears to be nailed to the ground, and if sheltered in some convenient corner, where the soil is soft clay, a spade is necessary to dislodge it. In soft adhering soil or sand, an Echidna will disappear before the observer's eyes without any apparent effort, gradually sinking out of sight.

The best means to secure a runaway is to obtain hold of one of the head legs, when the animal is unable to resist any longer. The flesh is considered excellent.

*From the Monograph Monotremata, by Professor R. Owen, F.R.S., Philosophical Transactions, 1846, p. 671.*
Duck-bill, or Water-mole.

(ORNITHORHYNCHUS ANATINUS)

Our plate represents the most interesting of all the Australian animals—the Duck-bill, Platypus, or Water-mole, which inhabits the quiet rivers, creeks, and lagoons of the greater portion of Tasmania and Australia. Known to everybody, and common to many parts, we have added nothing to the account given by Dr. George Bennett, F.L.S., &c., more than thirty years ago. Professional naturalists cannot afford the time for investigation, and few writers with plenty of leisure will understand the importance of some of the questions yet to be solved.

Dr. Bennett informs us that the Water-mole constructs a burrow under creek or river bank, with the entrance beneath the water; in this place the mother brings forth her young, some of which Dr. Bennett captured, and beyond this fact we know nothing whatever. Considerable rewards have been offered for young Water-moles from time to time, but none have come to hand, and all our appeals for specimens (shot during October and November) in the flesh have been made in vain.

The total length of a full-grown Platypus is about 18 inches, the fur is short, dense, and velvety, that of the tail rather coarse; the general colour a dusky brown above, and somewhat paler below. Young and immature animals are bright brown above and whitish below. The few very young specimens obtained were from two to four inches in length, with very short beaks, and quite destitute of hair.

Unlike other mammals, the teeth of the Duck-bill are horny, and two are carried in each ramus above and below, giving a total of eight teeth; four of these, in the form of narrow strips, are situated in the front part of the jaw, two on each ramus; the other slender-like teeth are further back.

In harmony with its aquatic character, we also find some horny teeth on the tongue, which is of moderate length. The eyes are very small, almost rather high up, at the base of the beak. The external organs of the ear, hidden by the fur, is placed at a short distance behind the eye. The legs are strong, and very short; the feet provided with five toes. On the heel of the male is a large and sharp-pointed movable spur; this spur is pierced by a minute tube, the orifice of which is near the point, and, connected with this little tube, is a large gland, which is supposed to secrete a poisonous fluid. Mr. G. R. Waterhouse, whom we have frequently quoted in the present work, and to whom Australia is indebted for the best Natural History of the Mammalia ever published, doubts the poisonous nature of the gland, and states that Dr. Bennett has made frequent experiments upon himself without any evil result. It is possible that the spur has some poisonous properties during certain seasons of the year, because we remember being cautioned to handle a male Water-mole, by a gentleman who said that he once had been wounded in the arm by one, and had suffered severely as a consequence.

It is not our object to go into the anatomy of a species so well described by the able pen of Professor Owen. We refer our readers to the Professor's many papers on the subject, and sincerely hope that country readers will continue to collect Water-moles, and observe their habits, for the benefit of science. A solution of strong salt and alum is sufficient for the preservation of the bodies, which should be opened, well washed (but not otherwise modified with), and then put into the beam.

Sorthern, October, and November, are the most favourable months for collecting, and females only, which are destitute of the spur, should be secured.

Water-cress, small mollusca, and the eggs of frogs and fishes, constitute the principal food of these animals.

(Oct.-Dec.)