

PROCELLARIA LEUCOPTERA. *Proc. vertice, corpore superiore, alisque, e plumbeo nigris; caudá e plumbeo-cinereá; facie, gutture corpore inferiore, reetricum pogoniis internis ad basim, linedque humerali albis; tarsi, et membranis interdigitalibus per dimidium basale e carneo-albis.*

Crown of the head, all the upper surface and wings dark slaty black; tail slate-grey; greater wing-coverts slightly fringed with white; face, throat, all the under surface, the base of the inner webs of the primaries and secondaries, and a line along the inner edge of the shoulder, pure white; bill black; tarsi and basal half of the interdigital membrane fleshy white; remainder of the toes and interdigital membrane black.

Total length, 13 inches; bill, 1; wing, $8\frac{1}{2}$; tail, 4; tarsi, $1\frac{1}{8}$; middle toe and nail, $1\frac{3}{8}$.

APTENODYTES UNDINA. *Apt. corpore superiore, lateribus, alisque supernè nitidè cærulescentibus, per plumas singulas lined nigrá longitudinali (latiore in plumis dorsalibus); corpore inferiore alisque subtùs et ad marginem, reetricumque pogoniis internis albis,*

The whole of the upper surface, flanks and upper surface of the wings glossy light blue, with a narrow stripe of black down the centre of each feather, the black mark being broadest and most conspicuous on the back; all the under surface of the body under side, and the inner margin of the upper side of the wing and inner webs of the tail-feathers silky white; bill reddish-brown beneath, black above; feet yellowish-white.

Total length, $13\frac{1}{2}$ inches; bill, $1\frac{1}{2}$; tarsi, $\frac{3}{4}$.

Hab. Van Diemen's Land.

This is less than *Ap. minor*, to which it is nearly allied.

For the fine specimen here described I am indebted to R. C. Gunn, Esq., who procured it at Circular Head, Van Diemen's Land.

June 25, 1844.

MR. GOULD laid upon the table a number of skins of animals and birds, being part of a large collection which Mr. Gilbert had lately forwarded to him from Australia. Mr. Gould characterized the following species:—

M A M M A L I A.

MACROPUS GRACILIS. *M. infrá incanescens et saturatè fuscus ; colli lateribus rufescenti-fusco lavatis ; genis, mento et gulá fulvescente-albis, vellere molli, ad basin cinereo, exinde fusco, dein albo, apice nigro ; pillis longis nigris crebré interspersis.*

	Ft.	In.
Length from tip of nose to the tip of the tail	2	6
—— of tail	1	1
—— of tarsi and toes, including nails	0	5
—— of arm and hand, including nails	0	3½
—— of face from tip of nose to base of ear ..	0	3½
—— of ear	0	2½

Face and all the upper surface of the body grizzled grey and dark brown, the grizzled appearance produced by each hair being greyish white near its tip ; sides of the neck and the outer side of the limbs washed with reddish brown ; margin of the anterior edge and the base of the posterior edge of the ear buffy white ; line from the angle of the mouth dark brown ; line along the side of the face, chin and throat buffy white ; under surface buffy grey ; tail clothed with short grizzled hairs, similar to the upper surface of the body, and with a line of black on the upper side at the apex for about one-third of its length ; the fur, which is somewhat soft to the touch, is grey at the base, then brown, to which succeeds white, the points of the hairs being black ; there are also numerous long black hairs dispersed over the surface of the body ; feet grizzled grey and rufous.

This is a very elegantly formed little animal, and is intermediate in size between *Macropus lunatus* and *Macropus frenatus*.

HYPSPRYMNUS PLATYOPS. *H. facie magnopere latá ; hác corporisque lateribus, fuscescente-cinereis ; dorso rufescenti-fusco ; facie, partibusque superioribus pilis longis, et flavido-albis inter vellus crebré adspersis ; corpore inferiore fulvescente-cinereo.*

Miscellanea.

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	Ft.	In.
Length from tip of nose to the extremity of the tail	1	7
—— of tail.....	0	7
—— of tarsi and toes, including nails	0	2 $\frac{5}{8}$
—— of arm and hand, including nails	0	2 $\frac{1}{2}$
—— of face from tip of nose to base of ear ..	0	3
—— of ear.....	0	0 $\frac{7}{8}$

Face extremely broad, and, with the sides of the body, brownish grey; back reddish brown; the whole of the face and upper surface beset with numerous long yellowish white hairs, offering a strong contrast to the darker colouring of the fur; all the under surface and limbs buffy grey; tail brown above, paler beneath.

'Mor-da,' aborigines of Western Australia.

The above is the description of a female received from Swan River.

PERAMELES ARENARIA. *P. vellere rigido et cinerascente-fusco, pilis longis nigris intermixto, his fasciam lateralem vix distinctam, notamque instar ephippii ad dorsum medium efficientibus; auribus furrugineis ad basin, in medio saturate fuscis, ad apicem cinerascente-fuscis; corpore inferiore fulvescente-albo.*

	Inches.
Length from the tip of nose to extremity of tail	14 $\frac{1}{2}$
—— of tail.....	4 $\frac{1}{2}$
—— tip of nose to base of ear.....	3 $\frac{1}{2}$
—— of hind-leg, tarsi, and toes	2 $\frac{1}{4}$
—— of fore-leg	2 $\frac{1}{4}$
—— of ear.....	1 $\frac{5}{8}$

The fur is harsh to the touch and of a greyish brown hue, interspersed with numerous long black hairs, which form a broad indistinct band down the flanks, immediately before the hind legs and a kind of saddle-like mark on the centre of the back; ears rather lengthened and of three colours—rusty red near the base, then dark brown, and the apex of a light greyish brown; sides of the muzzle and all the under surface buffy white; line along

the upper surface of the tail dark brown, the remainder buffy white; outside of the fore-legs dark brownish grey; feet and claws buffy white.

HAPALOTIS LONGICAUDATA. *H. supernè pallidè arenacè, pilis longis, nigris, ad caput et dorsum cum vellere intermixtis; rostri lateribus, et abdomine albis; caudá pilis brevibus nigris ad basin indutá, apicem versùs nigris et elongatis; apice extremo albo vellere molli, adpresso et juxta cutem plumbeo.*

	Inches.
Length from tip of nose to extremity of tail.....	16
———— of tail	9
———— from the tip of nose to base of ear	1 $\frac{3}{4}$
———— of hind-leg, tarsi and toes.....	2
———— of fore-leg	1 $\frac{3}{8}$
———— of ear	0 $\frac{7}{8}$

All the upper surface and the outside of the limbs pale sandy, interspersed on the head and over the back with numerous fine black hairs, which, becoming longer on the lower part of the back and rump, give that part a dark or brown hue; ears naked and of a dark brown; the limbs white; tail clothed with short dark brown hairs at the base, with lengthened black hairs tipped with white on the apical half of its length, the extreme tip being white; tarsi white; whiskers very long, fine, and black; the fur is close, very soft, and of a dark slaty grey at the base, both on the upper and under surface.

This species is considerably smaller than *Hapalotis albipes*, but has a much longer tail and longer hind-legs in proportion to the size of the body.

'Kor-tung' and 'Goota-was,' aborigines of Moore's River, Western Australia.

PHASCOGALE CALURUS. *Phasc. cinerea; subtùs pedibusque albis indistinctissimè flavo-tinctis; caudá corpore longiore, dimidio basali pilis brevibus, rufis, apicali pilis longis nigris obsitá; auribus magnis ad basin pilis flavescentibus obsitis.*

	In.	Lin.
Length from tip of nose to extremity of tail	10	6
——— of tail	5	6
——— from tip of nose to base of ear	1	3
——— tarsi and toes	0	11
——— of ear	0	7½

This beautiful species was procured in the interior of W. Australia. It is nearly allied to *P. penicillata*, but is of smaller size and has the tail less bushy; the portion covered with short hair is extended from the base nearly to the middle of the tail, and is remarkable for its brilliant rusty-red colour; on the apical half of the tail the hairs are long, being on an average about half an inch in length; all the under side is black, very nearly to the root. The fur is soft and moderately long, and its general colour is ashy grey externally, but grey next the skin; the under parts of the body are white, tinted with cream-colour, and this last-mentioned tint is very distinct on the sides of the body; the eye is encircled by a narrow black line, and there is a blackish patch in front of the eye. The ears are large and very sparingly clothed for the most part with very minute dusky hairs, but at the base, both externally and internally, are some longish yellow hairs.

(*To be continued.*)

ON THE RUDIMENTAL MARSUPIAL BONES IN THE THYLACINUS. By Professor OWEN.

(*From the Proceedings of the Zoological Society, December 12, 1843.*)

THE marsupial bones, as bones, do not exist in the Dog-headed Opossum or Hyæna of the Tasmanian colonists (*Thylacinus Harrisii*, Temm.); they are represented by two small, oblong, flattened fibro-cartilages, imbedded in the internal pillars of the abdominal rings, and appear each as a thickened part of the tendon of the external oblique abdominal muscle, which forms the above pillar. The length of the marsupial fibro-cartilage is six lines, its breadth from three to four lines, its thickness one line and a half.

This was the condition of the rudimental marsupial bones in two full-grown females and one male specimen of the *Thylacinus* : in a fourth large and old male a few particles of the bone-salts were deposited in the centre of the fibro-cartilage, occasioning a gritty feeling when cut across by the knife.

This unexpected and very remarkable modification of the most characteristic part of the skeleton of the Marsupialia, in one of the largest of that order, has many important bearings upon the physiology of the problematical 'ossa marsupialia.' They have been most commonly supposed to serve for the support of the marsupial pouch and young ; but this pouch is well developed in the female Thylacine, and in one of the specimens which I dissected four well-developed teats, each two inches long, indicated that it had contained four young ones when, or shortly before, it was killed. The existence of the marsupial bones in the male as well as the female sex in other marsupial animals had already invalidated the above physiological explanation, and it equally opposes the idea of the use of the marsupial bones, propounded by M. de Blainville,—that they aid in the compression required to expel the embryo. Besides, it is not in the females of those animals which give birth to the smallest young that we should expect to find auxiliary bones for increasing the power of the muscles concerned in parturition. My view of the uses of the marsupial bones, as explained in the 'Philosophical Transactions' for 1834, is, that they relate more immediately to an increase of power in the muscles (*cremasteres*) which wind round them, than of those implanted in them : and to the extent to which the cartilaginous representatives of the ossa marsupialia in the Thylacine strengthen the pillars of the abdominal ring, they must increase the contractile force of the compressors of the mammary glands and teats, which are situated and surrounded by the *cremasteres* in the Thylacine, as in other Marsupialia. Nevertheless, the almost obsolete condition of the ossa marsupialia in the Thylacine, and their very various relative sizes in other Marsupialia, are circumstances which seem incompatible with the same kind and degree of use in all the species : they are very slender, and not above half an inch in length in the *Myrmecobius*, whilst in the Koala

they nearly equal the iliac bones in size. The so-called 'pyramidales' muscles, which derive a great proportion of their origin from the ossa marsupialia, bear a direct ratio to those bones in size; and an attentive observation of the habits and modes of locomotion of the different marsupial species is still wanting for a complete elucidation of the function of the marsupial bones. It is important to the palæontologist that the cartilaginous condition of the marsupial bones in the Thylacine should be borne in mind in regard to the evidence of the marsupial order that may be yielded by fossil remains: the fossil pelvis of the Thylacine, for example, had that species been long ago, as it soon is likely to be, extinct, would never have afforded the triumphant evidence to which Cuvier appealed in demonstration of the *Didelphys* of the gypsum quarries at Montmartre; yet the Thylacine would not therefore have been less essentially a marsupial animal. This may teach us to pause before drawing a conclusion against the marsupial character of the small Stonesfield mammalia, if their pelvis should ever be found without trace of the ossa marsupialia.

ON THE GEOLOGY OF NEW ZEALAND. By Doctor
DIEFFENBACH.

(From the Proceedings of the British Association for the Advancement of Science—Fifteenth Meeting.—Athenæum, July, 1845.)

June 21, 1845.

NEW ZEALAND forms a group of mountainous islands nearly as large as England and Wales, and its geology is rendered difficult by the primitive forests that fringe the coast, or, where these have been destroyed, by impenetrable thickets of the esculent fern. The fundamental rock is everywhere *clay slate*, frequently containing greenstone dykes, as at Port Nicholson, Queen Charlotte's Sound and Cloudy Bay; in the neighbourhood of the dykes the clay slate sometimes assumes the character of a *roofing slate*. On the banks of the rivers Eritonga and Waibo are terraces, or horizontal plateaux, 50 feet high, formed of boulders of the oldest trap-rocks, and similar terraces are seen on the sea

coast round Cape Palliser, 50 or 60 feet above the sea. *Anthracite coal* crops out in the small harbour of Wangarrie, on the west coast of Middle Island, and there is a thin seam of anthracite in the hard grey sandstone on the east coast of the Northern Island. *Limestone* is described as occurring in the harbours of Kauria and Waingaroa on the west coast of the Northern Island; it is crystalline, and contains fossils of the genera *Pecten*, *Ostrea*, *Terebratula*, and *Spatangus*. Limestone is also found on the river Kaipara in the Bay of Islands, and *Copper pyrites* has been obtained from the Great Barrier Island, where it forms veins in the clay slate. The coasts are in many places fringed with recent horizontal sedimentary deposits, consisting of loam, with fragments of wood and tree ferns, blades of the typha, &c.; and on the Northern Island the coast is often formed of volcanic conglomerate, containing magnetic iron sand near Cape Egmont, and turritellæ and oyster shells at the harbour of Parenga; near Tauranga, it is composed of decomposing tufa, containing lignite and shells of *Pectunculus*, *Natica*, *Pyrula* and *Ancillaria*. The small rocky islands of trachyte, lying off the coast of the Northern Island, also bear marks of wave-action to the height of 100 feet above the present sea level. On the western coast of this island formations of sand are now accumulating, driven over the forests by the prevalent westerly gales. The interior of the Northern Island affords but a scanty vegetation, and the surface is everywhere covered with ordinary volcanic productions, derived from the lofty central group of mountains, some of which are extinct, others still active volcanoes: the lava appears to have been principally erupted from the base of the craters. The highest of these craters are Tongariro, 6,000 feet in elevation, according to Mr. Bidwell, and Mount Egmont about 9,000 feet, by Dr. Dieffenbach's thermometrical observations. There are also many lakes which appear to occupy ancient craters. The mountain chains of the Middle Island are supposed to consist of primary rocks; quartzose sandstone and greywacke are met with at the height of 3,000 feet; the lofty pyramidal summits are covered with snow, and deep narrow valleys separate the various ridges, and radiate from the central cones. Dr. Dieffenbach enumerates many

localities at which he observed mineral springs, particularly between the Bay of Islands and Hokianga, where their temperature varied from 124° to 154°, and having an alkaline taste; the surface was covered with sublimations of sulphur. Along the delta of the Waikato, hot springs rise from the escarpments of the hills, forming deposits like those of Iceland and St. Michael, Azores, containing 75 per cent. of silica. There is also a cold silicifying spring near Cape Maria. Dr. Dieffenbach has examined into all the traditions respecting the existence of the *Moa*, or great bird of New Zealand, and concludes that it has never been seen alive by any natives of New Zealand: the rivers in which its bones have been found flow between banks from 30 to 60 feet high, and as they are continually changing their course the remains of the *Moa* may have been derived from tertiary fluvial strata.

DESCRIPTION OF A FOSSIL MOLAR TOOTH OF A
 MASTODON: Discovered by Count STRZELECKI in Australia. By Professor OWEN, F.R.S.

(From the *Annals of Natural History*, October, 1844.)

THE large fossil femur, transmitted to England in 1842 by Lieut.-Col. Sir T. L. Mitchell, Surveyor-General of Australia, from the alluvial or tertiary deposits of Darling Downs, and described in the 'Annals of Natural History' for January 1843, p. 8. fig. 1, gave the first indication of the former existence of a large Mastodontoid quadruped in Australia.

The portion of tooth described and figured in the same communication presenting characters very like those of the molars of both the *Mastodon giganteus* as well as of the *Dinotherium*, and being from the same stratum and locality as the femur with which it was transmitted, was regarded by me as having most probably belonged to the same animal; and, on the authority of drawings subsequently received from Sir T. Mitchell, was referred to the genus *Dinotherium*.

Having since received specimens of portions of lower jaws with teeth identical in structure with the fragment figured in my first communication to the 'Annals,' I find that the reference of that portion of tooth to the genus *Dinotherium* was premature and erroneous. The extinct species to which it belonged does, indeed, combine molar teeth like those of the *Dinotherium* with two large incisive tusks in the lower jaw, but these tusks incline upwards instead of bending downwards, and are identical in form and structure with the tusk from one of the bone-caves of Wellington Valley, described by me in Sir T. Mitchell's 'Expeditions into the Interior of Australia,' vol. ii. 1838, p. 362. pl. 31. figs. 1 and 2, as indicative of a new genus and species of gigantic marsupial animal*, to which I gave the name of *Diprotodon australis*.

It is not my present object to describe these most interesting additional fossils of the *Diprotodon*, or to enter into the question whether the great femur before alluded to belonged, like the fragment of tooth transmitted with it, to the *Diprotodon*, or to a different and larger animal; but briefly to make known the more decisive evidence of the former existence of a large Mastodontoid quadruped in Australia, which is afforded by the tooth figured, on the scale of half an inch to one inch, in the subjoined cuts.†

If these figures be compared with those of the molar teeth of the *Mastodon angustidens*, reduced to the same scale, in Cuvier's 'Ossemens Fossiles,' 4to, vol i., 'Divers Mastodontes,' pl. 2. fig. 11, pl. 3. fig. 2, or with that of the more abraded molar, pl. 1. fig. 4, they will be seen to present a generic and almost specific identity.

The close approximation of the Australian Mastodon to the *Mast. angustidens* will be appreciated by a comparison of fig 1 with a similar direct side-view of an equally incompletely-formed molar given by Cuvier, *loc. cit.* pl. 1. fig. 1; but this tooth, being from a more posterior part of the jaw, has an additional pair of pyramidal eminences; and if the proportions of the figure of half an inch to an inch be accurate, the European tooth is

* See also my paper "On the Classification of Marsupialia," Zool. Trans. vol. iii. p. 332, in which the *Diprotodon* is placed with the Wombat in the family 'Phascolomyidæ.'

† We regret our being unable to furnish the figures here alluded to.—ED. *Tasmanian Journal.*