

GUIDE

TO THE

AUSTRALIAN FOSSIL REMAINS,

ENHIBITED BY THE TRUSTEES OF

The Austyalian Museum,

AND

ARRANGED AND NAMED

BY

GERARD KREFFT, F.L.S.,

CURATOR AND SECRETARY.

SYDNEY:
PRINTED BY F. WHITE, 140, WILLIAM STREET



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FOSSIL REMAINS OF AUSTRALIAN ANIMALS.

THE Post Pleiocene fossils here exhibited, comprise a series of specimens from the rich stores of the Australian Museum Collection, which are arranged as follows:—

-0-

CLASS MAMMALIA. Section—Placentalia. ORDER BIMANA.

Genus-Homo?

The fractured crown of a molar tooth, probably a human molar.*

ORDER CARNIVORA. Genus—Canis.

Remains of the dog are scarce in every part of Australia where fossil bones occur; there can be no doubt, however, of the presence in this country of a dog, during the post pleiocene period; a few teeth obtained at Wellington are exhibited, and with them teeth of the common Dingo of the present day.

ORDER RODENTIA. Genus—Mus or Hapalotis.

The fossil bones and teeth exhibited are from Wellington, where they occur in large quantities. As far as I have been able to ascertain, some six or more species existed, nearly all of which have very peculiar grinders, and differ from most of the living Rodents. This group of our natural history, requires much study, and when a careful revision of it takes place, many of the species will have to be erased, as they were founded on no better characteristics than a lighter or darker shade of the fur. One of our prolific authors tells us by way of preface, that he is not going to trouble his readers with "Anatomy," it is, however, much to be hoped, that somebody else will do so, and that a classification upon sounder principles than "light and dark hair," and "long or short ears," will be substituted for such loose and corrupting arrangement.

^{*}This being the only specimen obtained, it cannot well be sacrificed for the microscope; whatever this fragment may eventually prove to be, it resembles nothing so much as a human molar.—G.K.

ORDER EDENTATA.

Genus—MYLODON?

Mylodon? Australis (Krefft).

The presence of some animal, allied to the above extinct American genus, is indicated by a single terminal phalanx, or nail-bone, with its peculiar protecting hood, partly broken.

IMPLACENTALIA.
Section—Marsupialia.
(Pouched Animals.)
The Wombats.
PHASCOLOMYIDÆ.

Our fat friends "the Badgers," or Wombats, are well represented in a fossil state, and existed to the number of twenty species at least, during post pleiocene times. A modern Wombat of 90lbs. weight is considered heavy, but some of the ancient fossil animals, judging from the size of their teeth and bones (here exhibited), must have been more than twice as bulky.—The Wombats are closely allied to the Phalangers (the "Opossums and Flying Squirrels"), and are distinguished from all other Marsupials, by their incisor teeth, which, like those of the rodents, number two above, and two below.

THE PHALANGERS.

PHALANGISTIDÆ.

Bones of animals of this group, to which the well-known "Opossums" and "Flying Squirrels" belong, are rare, the only specimens observed, two fragments of a lower jaw, indicate species allied to, or identical with the living Vulpine Phalanger (P. vulpina), and the "Sugar Squirrel," (Belideus breviceps.) The curious "Native Bear" is also a Phalanger, and forms the connecting link between the Wombats and the "Phalangers proper" (the "Opossums" and "Flying Squirrels"). All these creatures have a nail-less thumb to the hind foot; they also possess, like the Kangaroo family, the two small inner toes joined by a membrane. Wombats, Phalangers, and Kangaroos, (including Wallabies and Kangaroo-rats), never produce more than two young at a time; one at a birth is, however, the general rule.—The Phalanger family comprises some of our very largest creatures, namely, the gigantic Diprotodons, Zygomaturi and Nototheri about the position of which, there has been much discussion. Looking at the dentition. and comparing the incisors only, the observer is struck at once with their close resemblance to the teeth of an ordinary native bear. The short tail of both the "Native Bear" and "Wombat," appears to have been peculiar to the large extinct species also; though this supposition is only based on negative evidence—the absence of any caudal vertebræ of a size in proportion to the other large bones which have been found.—

It will be impossible to say more on the subject at present, and I draw attention to the exhibits illustrating the

Genus-Diprotodon.

Consisting of several fragments of jaws and teeth, of large size. The next is Macleay's

Genus-ZYGOMATURUS.

This peculiar animal, is represented by two or three species; the original Zygomaturus trilobus, the Z. Macleayi, and a still undescribed one, lately discovered by Dr. Mildred Creed, near Scone.

To form some idea of the size of these extinct creatures, which in stature resembled the Wombat, attention is drawn to the large upper incisors in the collection.

Genus-Nototherium.

Of the Zygomaturus we know the scull and teeth of the upper series, and of the Notothere only the lower jaw. But many of these mandibles may yet prove to be those of Zygomaturus. It will be necessary, however, to obtain clearer evidence on the subject, as, for instance, palate and jaw of the same animal found close together and properly fitting; specimens of this kind are still missing.

Genus-THYLACOLEO.

Few of our extinct species have been so much misunderstood, as this creature which Professor Owen first described. When we had no further evidence than a few formidable looking trenchant teeth, it was natural that the animal's mode of life should have been mistaken, but after the remaining teeth were found, all speculation was at an end, and the "Pouched Lion" dwindled down into an overgrown Belideus, for no other animal of the Marsupial group, resembles the Thylacoleo so closely as the "Flying Squirrel" (Belideus flaviventer). The great premolar is absent, and the grinders differ much in the two species, but the incisors above and below, are of the same shape, and scull and jaw, when compared with the much larger Thylacoleo, appear to be formed on a similar model. That it was erroneous to consider the Thylacoleo a formidable carnivore, and a match for the ponderous Diprotodons, is plainly discernable from the remains (nearly perfect jaws) exhibited -many of the "trenchant" teeth are worn quite flat, the incisors are weak, and the upper ones, often get rounded off to

conical points, which are unfit to hold or tear tough substances such as flesh.—

Besides these remains, others indicating a smaller allied species have come to hand, and for this animal, I have founded the

Genus-Plectodon,

which is distinguished by lower incisors of a peculiar form, much shorter and more round than those of *Thylacoleo*; a portion of the enamel laps over, and covers the inner side of the tooth, like a fold—hence the generic term.

KANGAROOS. MACROPODIDÆ.

Numerous species of all sizes, some several times larger than any modern Kangaroo, existed in Australia in former ages, but their remains are much scattered about, and upper and lower jaw are seldom found together—to distinguish the bones as those of particular species, is out of the question, and we must content ourselves at present to class them as Kangaroo, or Kangaroo-rat bones.—The fossils which resemble, or are identical with, modern species, may of course, be more correctly classified.

As a general rule, most of the fossil Kangaroos have shorter and stouter tarsi than living species possess, and the greater number, including the largest of the tribe, must be arranged with the *Halmaturi* or Wallabies, a group of Kangaroos with permanent and often large premolar teeth.

The Kangaroos proper, of which our common Great Kangaroo is the type, soon shed their premolars, and continue to lose the grinders also, in such a manner, that sometimes only a pair of teeth are left in each ramus. The Wallabies, on the other hand, wear the teeth down. Looking at a Kangaroo's incisors, we find the first of the upper series comparatively small, and the third very broad; whilst the Wallabies have the third tooth large in a vertical direction, and in most species this tooth is deeply indented by a fold.

A very clear idea of a fossil Wallaby's incisor teeth, may be had by examining the specimens exhibited, comparing them at the same time with the Kangaroos' teeth near it.

In all recent Kangaroos, Wallabies, and Kangaroo-rats, the rami of the lower jaw are moveable; in many fossil Kangaroos, this peculiar characteristic is wanting, and the two mandibles are firmly anchylosed, as may be observed in the two fossil species Halmaturus Scottii, and Halmaturus Thomsonii here exhibited.

The premolars of the fossil species, are often very bulky, with

a deep hollow in the middle of the tooth; another characteristic peculiar to extinct animals of this tribe.

The genera belonging to the family Macropodidæ, are the

Genus-BETTONGIA

comprising the Kangaroo rats, or more correctly speaking, the "Bettongs," with long hind legs, and more or less prehensile tail.—Of these animals many remains were found at Wellington, all of which appear to be identical with the common Bettong Bettongia rufescens, now living in New South Wales.

The next, the

Genus-Hypsiprymnus

had very few representatives, and comprises the smaller Kangaroorats with short stiff tails and short hind-legs; all *Hypsiprymni* progress in the same manner as the Bandicoots.

Genus-Macropus.

The typical species is our *Macropus major*. Fossil remains of closely allied species, and of others, resembling *M. ocydromus*, *M. rufus*, and *M. robustus*, are in the collection.

Genus-HALMATURUS.

This genus, distinguished by permanent and often very large premolar teeth, is numerously represented in a fossil state, and cannot be estimated at less than thirty or more species; the Wombat-like Kangaroos, with short anchylosed jaws, are here included.

THE BANDICOOTS.

PERAMELIDÆ.

Fossil Bandicoots are not rare, but their bones are generally much broken; those observed were collected at Wellington, and represent with slight differences, the two living species, *Perameles obesula*, the short-nosed Bandicoot, and *Perameles nasuta*, the long-nosed Bandicoot. A few remains of the

Genus-PERAGALEA

were also obtained; the teeth are larger and slightly different from the *Peragalea lagotis* of the present day. The discovery of this animal was made during my last visit to the caves, in company with Professor Thomson, when nearly all the most important specimens were found. The Peragalea is known by the English term of "Rabbit-Rat," probably on account of the long slender ears, the native name on the lower Murray, is "Wuirrapur," and "Jacko," on the Darling. The number of young produced at a litter by Bandicoots, does not exceed four.

THE NATIVE CAT TRIBE.

DASYURIDÆ.

The rich deposits in the Caves of Wellington have supplied us with evidence of the existence of two species of "Native Cats," that is, a common Dasyurus viverrinus, and a "Tiger Cat" Dasyurus maculatus; besides these small carnivores, we have to record the presence in post-tertiary Australia, of the formidable Sarcophilus ursinus, the "Tasmanian Devil," and the still more ferocious Thylacinus cynocephalus, Thylacine or "Tasmanian Tiger." The number of teeth belonging to these creatures collected at the Wellington Caves, amount to several hundred, other remains (skulls and jaws) are as plentiful and many of their owners must have died at a ripe old age, because their canine teeth are often worn level with the rest of the series.

We now arrive at the last of the Australian Marsupials, the small insectivores belonging to the

Genus—PHASCOGALE and Genus—Antechinus,

These animals represent the Shrews and Hedge-hogs, of the placental division of Mammals. I mentioned that the Native Cats bring forth 6 young at a litter, but the small Antechini are still more prolific, and eight or even ten is their usual number. The difficulty of discovering their remains is very great, and when, after a long examination, I found a tiny jaw, less than $\frac{5}{8}$ of an inch in length, I thought sufficient had been done to prove their existence in post pleiocene Australia, the jaw referred to belongs to an Antechinus, not larger than a small mouse.

SECTION MONOTREMATA.

Genus-ECHIDNA.

A fractured femur, which I referred to the above genus, has been discovered at Wellington, another specimen, part of a humerus, was obtained at the Darling Downs, and described by me as *E. Owenii*; both are exhibited in the collection.

This closes the list of our Mammals, in which nearly all still living genera are represented, with the following exceptions, namely:—Bats (Cheiroptera), and "Water Rats," of the peculiar Australian genus Hydromys. Of the Marsupial Order, the missing genera are,

^{*}I use the well known term "Native Cat;" be it understood, however that the Dasyurus have nothing to do with "Cats," they are marsupial animals with a skin-fold—not a pouch, producing six young at a litter.

the ant-eating Myrmecobius, and the aquatic "Platypus," (Ornithorhynchus anatinus.)

CLASS AVES. (Birds.)

The remains of Birds are few and fragmentary, and little can be said about them. All the specimens (the largest the tarsus of a Wader) are exhibited—I may state, however, that bones of the Emu Dromaius Novæ Hollandiæ have been found at Wellington (now in the Rev. W. B. Clarke's collection), and that a gigantic bird of the Moa tribe, from the "Leichardt Downs," for which the name of Dinornis Australis is proposed, was not long ago discovered 86 feet under ground, in the above Quensland district.

CLASS REPTILIA.

(Reptiles.)

The Reptilian fossils from Wellington consist of the carapace of a tortoise, vertebræ of a large lace-lizard, mandibles and teeth of various smaller species, and many bones of the extremities. I have not had sufficient leisure to compare all the reptilian remains, the genera which have been determined, are—

Vertebræ of small snakes also occur, but no portion of the jaw or scull has been noticed.

Remains of Crocodilians are common in the far north, as are also the vertebra of a gigantic Lizard, as large as a Crocodile, which may be seen in the Collection. It is impossible, owing to the limited space, to exhibit everything of interest, I have therefore added a series of Photographs, by Mr. Henry Barnes of the Museum, to illustrate the absent specimens. The following is a list of the Photographs of the Australian fossil remains.

PHOTOGRAPHS OF AUSTRALIAN FOSSIL REMAINS.

PLATE I-

- 1. Left mandible of a Nototherium.
- Sacral vertebræ of a Diprotodon.
 Skull from above Zygomaturus.
 Skull shewing palate Zygomaturus.

5. (a) Right mandible Sarcophilus.

(b) Molar tooth and portion of jaw of a new species of Diprotodon.

(c) Left mandible Sarcophilus.

 Seven fragments of the lower jaw of several species of Kangaroos (Macropus and Halmaturus).

 (a) Right mandible of a new species of Wombat (Phascolomys).

(b) Right mandible of an extinct species of Kangaroo (M. atlas).

8. Fragments of jaws of various species of Kangaroos.

PLATE II-

1. Left side of skull of a gigantic Kangaroo (Halmaturus gigas).

 Six fragments of the arm bone (ulna) of various species of Wombats; the small figures are those of Wombats of the ordinary size.

 Two phalanges of the foot and six nail bones (terminal phalanges) of new Australian animals.

 Three phalanges of the foot, the last of a recent Macropus major, and a fractured left upper premolar tooth of a Thylacoleo.

Six phalanges of the foot of various species of Kangaroos.
 Large nail-bone of a new animal seen from below.

Side view of another nail-bone, indicating the existence in Australia of a Sloth allied to the American genus Mylodon.

 Phalanges of various species of Kangaroos, Wombats, Thylacines, &c.

7. Five phalanges of the hind foot of various species of Kangaroos, and three (first) metatarsal bones, indicating a new animal belonging to the Phalanger family, in all probability the thumb-bones of a Thylacoleo or a Plectodon.

 Seven terminal phalanges of the hand belonging to various Kangaroos, and eight undetermined metatarsal bones; also the 5th metatarsal bone of a man (recent).

PLATE III-

Right lower jaw, Diprotodon (outer view).
 Right lower jaw, Diprotodon (inner view).

2. Right lower jaw, Diprotodon (liner view).

 Femur of gigantic Moa-like bird from the Leichardt Downs, Queensland.

4. Left side of the skull of a gigantic Kangaroo.

5. Left lower jaw of Halmaturus Thomsonii.6. Fractured left lower jaw of a Diprotodon.

 Fractured arm-bones (ulna) of Wombat and Tasmanian Tiger (Thylacinus).

8. Left lower jaw of a Nototherium.

PLATE IV-

Large lower incisor of a Diprotodon.
 Right mandible of a gigantic Wombat.

3. Right lower jaw of an extinct Kangaroo Halmaturus Scottii.

4. Palate of a new species of Zygomaturus, Z. macleayi.

5. (a) Palate of a large Kangaroo

(b.c) Two views of upper rami of extinct Kangaroos shewing the permanent premolar tooth in its aveolus.

(d) Premolar of an undescribed species of Wombat.

6. Right lower jaw of a gigantic Wombat.

7. (ab) Two fractured lower incisors of Diprotodon.

(c) First upper incisor Zygomaturus

 Sacral vertebræ of a gigantic marsupial, Diprotodon or Zygomaturus.

PLATE V-

 Skull of a Zygomaturus trilobus with the Zygomatic arch removed to shew the infra orbital foramen (bristle passed through).

2. Mandibles of small marsupials.

- Fractured carapace of a Tortoise allied to Chelodina longicollis.
- (a) Right upper ramus of a gigantic Kangaroo.
 (b) Upper incisor of a species of Diprotodon.
 (c) Upper incisor of a gigantic Kangaroo.

5. Left mandible of a Nototherium.6. Fragments of skull of a Thylacoleo.

7. (a) Fragments of an arm-bone (ulna) of a Wombat.

(b) Two nail-bones of a Kangaroo.

(c) Fractured left mandible Sarcophilus.

(d) Two molar teeth and right lower jaw of a dog (Canis dingo).

8. Fractured rami of gigantic Kangaroos

PLATE VI-

- Fractured rami and teeth of ten species of Wombats and of a Wombat-like Kangaroo (Halmaturus Thomsonii).
- Rami of small marsupials of the genus Dasyurus, Belideus, Perameles, and Peragalea.
- Marsupial bones (Wombats and Kangaroos), four fractured collar-bones of Wombats; articulating condyle, fractured scapula and portion of the zygoma of a Wombat. Portions of the sternum, fractured incisor, and tarsal bone of a Wombat.
- Nineteen fractured rami of a Kangaroo-rat of the genus Bettongia, and upper incisor and six lower ones of the same species of Kangaroo-rat.
- 5. Palates of two species of Wombat.
- 6. Lower jaw and teeth of gigantic Wombats.
- 7. Lower incisors of Kangaroos
- 8. Terminal phalanges and teeth of various marsupials.

PLATE VII-

- Femur of a Moa-like bird from Leichardt Downs, Queensland.
- Femur of a Moa-like bird from Leichardt Downs, Queensland.
- 3. (a) Fractured skull of a Sarcophilus.
 - (b) Upper molar Diprotodon (a new species).
 - (c) Right mandible of Thomson's Kangaroo, Halmaturus Thomsonii.
- 4. (a) Premolar and molar of the upper jaw Diprotodon.
 - (b) Scalpiform incisor tooth of a new animal allied to Diprotodon.
 - (c) Side view of a terminal phalanx or nail-bone (with the protecting hood removed) indicating some unknown animal allied to the extinct Edentata of South America.
- 5. Fractured skulls of Thylacinus and Sarcophilus.
- (a) Fractured rami (3) Sarcophilus.
 (b) Molar teeth of a gigantic Kangaroo.
- 7. Lower jaw (left) of Sarcophilus.
 - (a b c) Three fractured mandibles of a large Thylacine or "Tasmanian Tiger."
- (a) Lower jaw of Creed's Notothere (Nototherium Creedii).
 (b) Left mandible of a Thylacinus (recent).

PLATE VIII-

1. Various bones and teeth of a species of Thylacine.

 Five bones of the leg (tibia 3, femur 2) of a Kangaroo-rat of the genus Bettongia.

3. (a) Proximal portion of a large rib.

(b) Upper molar of a gigantic Kangaroo.(c) Third tarsal bone of a large Kangaroo.

4. (a) Portion of lower jaw of a species of Kangaroo.

(b) Left lower jaw of a Kangaroo (Halmaturus Thomsonii).

5. Four fractured mandibles of Kangaroos.

- 6. Left lower jaw of a gigantic Wombat (Phascolomys gigas).
- Teeth of various marsupials, Diprotodon, Nototherium Zygomaturus, Macropus, Halmaturus, Phascolomys, and Dasyurus.

8. (a) Fractured fibula of a Wombat.

(bc) Distal fragments of tarsal bone Macropus.

(de) Third tarsal bones (perfect) Macropus.

PLATE IX-

1. Fractured lower jaw of a new species of Nototherium.

2. Right ramus upper jaw of a new species of Nototherium, (presented by Dr. Creed, Scone).

3. Lower jaw of Nototherium.

4. Palate of Zygomaturus Macleayi.

5. Fractured left lower jaw Nototherium.

Fractured lower jaw Diprotodon.
 Right lower jaw Diprotodon.

8. Right lower jaw Diprotodon.

PLATE X-

1. Palate of Zygomaturus Macleayi.

2. Left lower jaw Nototherium.

3. Fractured ulna of a new animal.

4. (a) Upper molar Halmaturus Scottii.

(b) First tarsal bone Thylacoleo.

- (c) Last molar (lower jaw) of a new genus of the Kangaroo tribe (reversed).
- (d.e) Much worn upper incisors (1st) of Thylacoleo

(f) Canine Thylacinus.

Upper incisors of various Kangaroos.
 Remains of Wombats (*Phascolomys*).

(a) Lower incisor Phascolomys.

(b) Fractured mandible Phascolomys.

(c.d) Molar teeth Phascolomys.

(e) Premolar of a new species of Wombats (*Phascolomys*).
(f) Fractured right upper incisor of a gigantic Wombat

(Phascolomys gigas).
(q) Fractured left upper incisor Diprotodon.

(h) Portion of skull and upper incisor Phascolomys.

7. (a) Upper molar Diprotodon.

(b) Upper molar Diprotodon, new species.(c) Palate of a Wombat (Phascolomys).

(d) Left mandible of a Kangaroo (Macropus ocydromus).

8. Three fractured mandibles of gigantic Kangaroos.

PLATE XI-

1. Fractured lower jaw of a Diprotodon.

2. Right (fractured) mandible Nototherium.

3. Right (fractured) mandible Nototherium (front view).

 Ulna of a gigantic Wombat (Phascolomys gigas), and above it the ulna of a recent species.

5. Molar teeth of two species of Diprotodon.

(a b c) Molars of Diprotodon.
 (d) Molar Nototherium.

7. (a) Left mandible Sarcophilus.

(b) Molar teeth Diprotodon.

 Shaft of the humerus or arm-bone of two gigantic animals with figure of the same bone of a recent Phalanger.

PLATE XII-

1. (a) Fractured mandible and premolar tooth Thylacoleo.

(b) Much worn premolar, shewing that this animal could not have been a carnivore or flesh-eater; the surface is flat and not adapted for cutting, (Thylacoleo carnifex.)

 Six incisor teeth Thylacoleo. These feeble teeth with their compressed fangs or roots and but partly enamelled inner surface, are the teeth of a gigantic Phalanger closely

allied to the genus Belideus.

(abcde) Incisor teeth (3rd upper) Thylacoleo carnifex.
 (fg) Incisor teeth (2nd upper) Thylacoleo carnifex.

(hik lm nop) Canine teeth (upper series) Thylacoleo.

These teeth are functionless and never worn, the animal could consequently not be highly carnivorous.

4. (a) Lower incisor (?)
(b c d ef g) Upper incisors Thylacoleo.

 (a) Portions of palate with two molar teeth and a peculiar tubercular premolar of a Kangaroo.

(b) Portion of mandible of a Kangaroo, shewing the per-

manent premolar.

(c) Lower incisors Thylacoleo.
(d) Portion of palate Sarcophilus.
(e f) Upper incisor Thylacoleo.

(a) Much worn lower incisor Thylaceleo.
 (b) Canine and upper premolar Thylacoleo.

(c) Upper premolar Thylacoleo.

7. Dentition of Thylacoleo, except the last upper and lower molar tooth. The small tubercular teeth representing the canine, and the two first premolars in the lower jaw are covered by the premolars; the upper 1st and 2nd premolars are also missing.

8. (a.b.c.d.e) Third upper insisors of a Kangaroo (Macropus). (f.g.h.i.k) Third upper incisors of a Wallaby (Halmaturus). In comparing these teeth, it will be observed that they differ much, and that they are well adapted as distinguishing characteristics between the two animals, the Kangaroo and Wallaby.

(1) Upper incisor of a gigantic Kangaroo.

(m n.o.p.q) Lower incisors of several species of the new genus Plectodon (Krefft), lately discovered by Professor Thomson and myself, at Wellington.

(s) Upper incisor (1st) Plectodon. (?)

(t) Premolar, Plectodon. (?)







