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A COLLECTION OF SUB-FOSSIL BIRD AND MARSUPIAL REMAINS FROM KING ISLAND, BASS STRAIT.

By Baldwin Spencer, C.M.G., M.A., F.R.S., Hon. Director of the National Museum, and J. A. Kershaw, F.E.S., Curator of the Zoological Collections.

King Island lies at the western entrance to Bass Strait, almost midway between Victoria and Tasmania. A line of sounding, between the island and Tasmania, as laid down in the Admiralty charts, shows an average depth of thirty-two fathoms. The lowest is twenty, the highest forty-four, and the great majority range between thirty and thirty-five fathoms. A line between King Island and Cape Otway, on the Victorian coast, averages nearly forty-eight fathoms. The lowest is thirty-nine, the highest fifty-five.

The date of the formation of Bass Strait is a matter of doubt but it may in all probability be assigned to the Post Pliocene period.*

The fauna of Tasmania differs from that of Victoria partly in the absence of certain animals, such as the Dingo (*Canis dingo*) and the flying phalangers amongst the marsupials, and partly in the presence of others, such as *Thylacinus* and *Sarcophilus*, which are now extinct on the mainland of Australia. Such differences as exist between the fauna of Victoria, south of the Dividing Range, and that of Tasmania, may be regarded as due to the formation of Bass Strait, which resulted, during comparatively recent times, in the separation of Tasmania from the south-east part of Australia. Some idea of the nature of the land bridge that once stretched across between Victoria and what is now the island of Tasmania can be gained from a study of its remnants, as revealed to us in the chain of islands that stud both the western and the eastern margins of Bass Strait. The central part of the strait is open water, but on the eastern side a chain of islands, consisting in the north of smaller groups, such as the Curtis and Kent, and in the south the larger Furneaux group, lead across from Wilson's Promontory on the mainland to the north-east corner of Tasmania. On the west there is King Island, and close to the north-west point of

* Howitt, Presidential Address, Anthropol. Sect. Aust. Ass. Adv. Sci., Sydney, 1898, Vol. VII., p. 741.

Tasmania a group of smaller islands—Hunter Islands and the Hummocks. Between King Island and Cape Otway lies open water, with a curious and well-marked dipping invading the fifty fathom line, indicating in all probability the former existence of the estuary of a large stream that once ran southwards from the Victorian ranges. We may therefore safely conclude that the old land bridge was traversed in its north-western part by a river of considerable size, that its central part was comparatively low land,* and that this was bordered on the east by a chain of lofty hills. Across this central part a river probably ran northward to join the one flowing southwards near its estuary. On the western side, to the south of the estuary, was high ground, part of which is now represented by King Island.

In the early days of Australian settlement a few sealers and fishermen frequented King Island, but for long years it was practically deserted until, about thirty or forty years ago, an attempt was made to utilize it as a sheep run, but the existence of the poison weed (*Sarcocolla lessertifolia*) proved fatal to the scheme, and once more the island was abandoned. In November, 1887, the Victorian Field Naturalists' Club organized an expedition to the island. Its only inhabitants at that time were the lighthouse-keepers at Cape Wickham and Currie Harbor, and one solitary wallaby hunter. We had considerable difficulty in traversing the island, owing to the fact that its northern half was covered with dense scrub, and its southern part with impenetrable forest. During recent years the island has been occupied again, much of the scrub has been cleared away, and parts previously inaccessible have been opened up. On one occasion a large flock of sheep was placed on what is now known as the "sand patch," near to Stokes Point, the extreme south-western promontory of the island. At that time this particular part of the island was covered with grass, but the sheep eat this down to the roots, and, later on, "numbers of pigs, rooting about, turned up the soil and started a sand-blow, which now extends over some hundreds of acres. There is a dividing ridge running the length of the patch, and the sand shifts from one side of the ridge to the other with every change of wind. . . . It was during a strong westerly gale that I rode down to Surprise Bay. . . . Every few yards lay the bone of some animal in a more or less perfect state of preservation, and here and there the ground was covered with the petrified stumps and roots of old scrubs."†

The fact of the existence of these sub-fossil remains became known to Mr. H. H. Scott, the Curator of the Victoria Museum, Launceston, who placed himself in communication with Mr. J.

* Howitt, A. A. S., Sydney, 1898, Vol. VII., p. 758.

† Extract from a letter written to one of the authors by Mr. T. Alfred Stephenson, to whom we are indebted for valuable assistance.

McKie Bowling, the proprietor of that part of the island, and was instrumental in securing the first collection that was made. A short time afterwards Miss Dickson, of Hobart, visited the island, and was shown the fossil remains by Mr. Bowling. On her return to Hobart Miss Dickson brought the matter under the notice of the Royal Society of Tasmania, with the result that Mr. R. M. Johnston and the late Mr. Alex. Morton went across from Lannceston, and, through the instrumentality of Mr. Bowling, were able to secure a series of specimens, which they kindly placed at our disposal for description. This collection included a considerable number of bones of an Emu, and, after a careful examination of the latter, they were described as the remains of a new species, to which the name *Dromæus minor* was given.*

The collection received from Messrs. Johnston and Morton included also skulls of a Wombat and *Dasyurus*, and, in view of the importance of the remains as indicating the existence in the islands of Bass Strait of animals, such as an Emu and a Wombat, distinct from those of the mainland and Tasmania, we thought it advisable to make further investigations, and, accordingly, one of us (J. A. Kershaw) went across to King Island, and spent some time there carefully collecting as much material as was available. Most fortunately for us Mr. Bowling was much interested in our work, and afforded us the most generous assistance, without which it would not have been possible for us to secure the large series of specimens that we now possess, and we take this opportunity of thanking Mr. Bowling for his invaluable aid.

The remains were chiefly distributed over the sand dunes on the extreme southern portion of the island.† The area covers some 300 acres in extent, and consists of a series of small ridges, the highest of which is on the south-east point. The sand is constantly being blown from one side or the other of these ridges, and the bones alternately exposed and covered. During the strong winds which prevail these are sifted out in considerable numbers, and lie distributed along the sides and in the trough of the ridges. Portions of the skulls, lower jaws, and limb bones of Wallabies were found mixed up with the leg bones of the Emu, skulls of Wombats and *Dasyures*, and here and there portions of the skeletons of both Seals and Sheep. Wallaby remains were by far the most numerous, and, though extremely fragile, fairly complete skulls could be obtained. Portions of the lower jaws were scattered about in large numbers along the sides of some of the ridges, which had recently been exposed to the action of the wind.

* "Victorian Naturalist," xxiii., p. 140 (1906).

† We are indebted to Mr. C. L. Barrett for the opportunity of illustrating the nature of these dunes.

Emu remains were scarce. Every bone that would bear handling was collected. Very diligent search was made for any portions of the skull or sternum, but although the whole area was carefully examined several times, but few fragments of skulls or sterna were found. Very incomplete portions of the sternum were occasionally found imbedded in the firmer soil beneath the sand, but every attempt to remove them resulted in their crumbling away. The remains of the eggs were frequently met with either in small fragments in the loose sand, or in patches imbedded in the firmer soil beneath. In one or two instances fully half the shell was found completely flattened out and fractured into small fragments, with the surface more or less removed by the action of the driving sand.

Exposure to the sun and rain had rendered many of the bones extremely fragile, so that when disturbed, however carefully, they broke into small fragments.

Fairly complete skeletons of Wallabies and one or two Emus were found lying in the more compact soil beneath the sand, but the most careful attempt to remove them again resulted in failure.

Although most of the remains were found on the extreme south point of the island, they were also met with on several parts of the west coast wherever a sand blow had started. Bones of Wallabies, Wombats, Emus, and Dasyures were found fairly numerous on an extensive sand blow near the Porky River, some 6 miles north of Currie Harbor. These were, however, less complete and much more fragile than those obtained from the south. That so many bones should be gathered together in one spot is doubtless to be attributed to the fact that in the early days, before the advent of the white man with his sheep, this area was one of the most fertile spots in the island, and was probably a much frequented and favourite feeding ground.

The collection contains remains of the following animals :—

1. *Dromæus minor*. Spencer.
2. **Tachyglossa aculeata*, var. *setosa*. Shaw.
3. **Macropus billardieri*. Desm.
4. **Macropus ruficollis*. Desm.
5. **Pseudochirus cooki*. Desm.
6. **Potorous* sp.
7. *Phascalomys ursinus*. Shaw.
8. **Phascologale minima*. Geoff.
9. *Dasyurus bowlingi*. Sp. n.
10. *Mus* sp.

Of these animals the six marked with an asterisk form part of the present fauna of the island, but their bones are intermingled under the sand dunes with those of the other three that are now extinct. We will deal at further length with these three.

DROMÆUS MINOR.

The original discovery of an Emu on the islands of Bass Strait was made in 1802. In December of that year Admiral Baudin in his exploring ships *Géographe*, *Naturaliste*, and *Casuarina* visited Kangaroo Island, so named by Flinders, though Baudin, unaware that he had been forestalled by the English navigator, called it île Decrès. Péron described the existence of large troops of Emus there. Three of them were brought back alive to Paris. One went to the Jardin des Plantes and two to the Chateau of Malmaison. The latter evidently found their way eventually to the Museum, as Viellot speaks of several Emus of small size living at his time in the Jardin des Plantes. The Museum now possesses two specimens*, (1) a skeleton labelled "Casoar de la Nouvelle Hollande, mort à la Ménagerie en Mai 1822, de l'île King, par Péron et Lesueur, expédition du Capitaine Baudin," (2) a stuffed specimen labelled "*Dromaius ater* V., Port Jackson, Australie, expédition du Capitaine Baudin," and bearing this further remarkable legend, "Casoar de la Nouvelle Hollande, *Casuarinus Australis*, Lath., rapporté vivant de Port Jackson par l'expédition du Capitaine Baudin, mort en avril 1822—Le squelette est à l'anatomie." As Milne Edwards and Oustalet point out, the stuffed specimen certainly contains some bones, and as the skeleton in the gallery is complete the two specimens must represent parts of at least three birds. However this may be, both specimens certainly came from Kangaroo Island, and from neither King Island nor Port Jackson. The mistake with regard to King Island is all the more curious, because during Baudin's expedition the naturalists Leschenault, Bailly, Lesueur, and Péron were left stranded at Sea Elephant Bay, on the east coast of King Island, a strong gale forcing the ships to stand off from the land. Fortunately for them, they came across a few sealers who had settled in this out-of-the-way spot. The chief man amongst them, named Cowper, entertained the French naturalists in his quarters, and in addition to actually seeing two "Casoars" hanging up in his larder they subjected him to a close questioning, the questions and answers being set forth in great detail in a remarkable manuscript recently published by Messrs. Milne Edwards and E. Oustalet.† Cowper described the bird as possessing when young a greyish plumage that became quite black when the bird reached maturity;

* Notice sur quelques espèces d'oiseaux actuellement éteintes qui se trouvent représentées dans les collections du Muséum d'histoire naturelle, par M. A. Milne Edwards et M. E. Oustalet. Paris. 1893. Extrait du volume commémoratif du centenaire de la fondation du Muséum d'histoire naturelle, p. 63. For the opportunity of consulting this I am indebted to Professor E. C. Stirling.

† Note sur l'Emeu noir (*Dromæus ater* V.) de l'île Decrès. Bull. du Muséum d'histoire naturelle. 1899. p. 206. For the opportunity of referring to this I am indebted to R. Etheridge, jun., Esq.

its height was $4\frac{1}{2}$ ft.—that is less than the mainland form—it weighed 40 lbs. to 50 lbs. ; the male was slightly larger than the female, but there was not much difference; and, finally, Cowper informed his catechist that he had himself killed no fewer than 300 birds.

It is rather curious that the naturalists appear to have contented themselves with questioning Cowper, and apparently made no attempt to capture a specimen, which would have been a much more satisfactory manner in which to determine the nature of the bird.

For many years sealers and fishermen frequented King Island, and if many of them followed Cowper's example in regard to his wholesale slaughter of the bird, as doubtless they did, it is not at all surprising that the members of the Field Naturalists' Club, who visited King Island in 1887, found not a trace of the Emu at Sea Elephant Bay on the very spot where, eighty-five years earlier, the French naturalists had questioned Cowper.

In addition to the collection secured by Messrs. Johnston and Morton we have the extensive one made by one of us, and Mr. H. H. Scott, Curator of the Victoria Museum in Launceston, generously placed all of his material at our disposal. We have been in frequent communication with Mr. Scott, who has assisted us in every possible way, and we desire to record our special thanks to him.

The whole collection, upon which the following account is based, contains, apart from many others that evidently belong to decidedly immature birds, the following bones:—

1. Sixty-four femora.
2. Forty-one tibio-tarsi.
3. Seventy tarso-metatarsi.
4. Four pelves of which the total length can be measured, and parts of sixteen others.
5. Parts of six skulls.
6. One pectoral arch.
7. Portions of three sterna.
8. Fourteen fibulæ.
9. Ribs.
10. Vertebral bodies.
11. Toe bones.

1. *Femur.*

(Plate 2.)

The sixty-four femora vary in length from 186–130 mm. A mature *D. novæ-hollandiæ* measures 238 mm., and the length of that of *D. peroni* (= *D. ater*) is given as 180.*

* In his work on "Extinct Birds," (p. 235), the Hon. Walter Rothschild points out that Vieillot applied the specific name *ater* to Latham's *Casuarus novæ-hollandiæ*, and also that the same author makes no mention of Péron or the île Decrès. Mr. Rothschild has, therefore, proposed the specific name *peroni* for the extinct Kangaroo Island bird.

The following table is instructive as affording a good idea of the general size of the femur:—

Length.	180 and over.	170-180.	170-160.	160-150	150-140.	Less 140.
Number of specimens	2	13	20	19	6	4

Of the two longest, one measures 186, the other 180, but as will be seen, the great majority lie between 150-180. The collection evidently includes bones of birds of different ages, as the smallest ones (not included in the table) only measure 110 mm. Almost every one of those included in the table would, however, if found separately, be regarded as the bone of a well-developed bird. How far differences in size are sexual as well as age characteristics it is impossible to say, but when questioned by the French naturalists, Cowper, the fisherman, said that though the male was the larger the difference in size was not considerable. He also said that the bird reached maturity in one year. We may probably regard the two larger ones as decidedly above the average size of a mature bird, the femur of which would be more nearly 170 than 180 mm. So far as the structure of the bone is concerned, there is no difference save size between it and the corresponding bone of *D. novæ-hollandiæ*.

2. *Tibio-tarsus*.

(Plate 3. Figures 1-10.)

The whole collection includes 75 examples of this bone. The 41 that are included in the table of measurements vary greatly in length. In the original description the greatest length was given as 332. Out of the limited number then collected only two exceeded 320. In the large collection now available there are only four of this size, and they measure respectively 363 mm.* (?), 354 mm., 332 mm., and 328 mm. The general results of the measurements is given in the following table:—

Length.	Above 350	350-340	340-330	330-320	320-310	310-300	300-290	290-280	280-270	270-260
Number of specimens	2	0	1	1	4	6	3	12	10	2

It will be noted that two out of the series exceed by 23 mm. and 14 mm. respectively the length of the specimen of *D. peroni* in the Paris Museum. The number of specimens of the latter species that have been preserved is unfortunately so small that it is impossible to judge of the amount of variation in the size of the

* This is slightly broken.

bird. That considerable variation did exist is almost certain, judging from the measurements of adult mainland and King Island forms. Out of 42 apparently mature bones of the King Island bird, that is, bones in which the tibial and tarsal elements are firmly ankylosed, it would be rather curious not to find more than two representing those of normal full-sized birds, so that we are probably safe in concluding that these two especially long bones represent birds of abnormal size.*

We are inclined to think that the length of an average-sized mature male is between 300 and 320; that those in the table above this are exceptionally large specimens; that the large number measuring from 270-290 mm. in all probability are fully-grown females and males that are not fully grown. In the case of all those included in the 41 the bones appeared, however, to be mature, with the peroneal ridge well marked.

For the sake of comparison we have illustrated both the tibio-tarsus of *D. novæ-hollandiæ* and that of *D. peroni*.† The former is mature, and measures 446 mm. The latter is not mature, and measures only 276 mm. The Paris specimen measures 342. We have placed the Kangaroo Island tibio-tarsus by the side of a King Island bone of approximately the same length. A comparison of the two indicates the fact that the latter bird was evidently of considerably more robust build than the former. Messrs. Milne Edwards and Oustalet say that the tibia in *D. peroni* is quite straight, in contrast to the slightly curved bone in *D. novæ-hollandiæ*. In all tibio-tarsi from King Island, and in the Kangaroo Island bone, there is a slight but quite distinct curvature.

3. *Tarso-metatarsus.*

(Plate 4. Figures 1-12.)

The 70 specimens measured are not all of them mature bones. The lengths of those that are mature, that is, in which the tarsal element is firmly attached to the end of the metatarsal element, the tubercle for the tibialis anticus well marked, and the foramen completely enclosed, varies from 216 mm. to 292 mm. The largest presumably belonged to old males of exceptional size, the smaller to small females. On the other hand, there are quite immature bones measuring as much as 240 mm. in length. Out of the 70 specimens measured, one reached the length of 292 mm.,‡ and four others the lengths respectively of 278, 278, 277, and 271 mm. As shown in the table, the majority of measurements lie between 220 and 250 mm. There are 23 between 230 and 240, and 12 between 220 and 230, and the same

* See p. 17.

† For the opportunity of figuring this we are much indebted to Professor Stirling, Director of the South Australian Museum.

‡ Mr. H. H. Scott informs us that one of his specimens measures 294 mm.

number between 240 and 250. We are probably correct in regarding the length of an average mature tarso-metatarsus as being between 230 and 240 mm.

Above 290	280-290	270-280	260-270	250-260	240-250	230-240	220-230	210-220	200-210	190-200
1	0	4	2	2	12	23	12	11	1	2

In the following table are given the measurements of the femur, tibio-tarsus, and tarso-metatarsus of seven mature specimens of *Dromæus novæ-hollandiæ*, from which it will be seen that there is considerable variation in the size of the bones of the mainland form, though not so great as in the case of the island species:—

Bones of Dromæus novæ-hollandiæ.

	*	*	*	†	†	†	†
Femur	230	240	227	229	243	217	210
Tibio-tarsus	415	446	429	433	470	450	373
Tarso-metatarsus	375	395	388	394	411	335	340

In the following table we give side by side the lengths of the same bones in the three species, taking, in the case of *D. minor* and *D. novæ-hollandiæ*, bones that belong to fair, average-sized, mature specimens.

	<i>D. minor.</i>	<i>D. novæ-hollandiæ.</i>	<i>D. peroni.</i>
Femur	175	227	180
Tibio-tarsus	325	429	342
Tarso-metatarsus	235	388	290

4. *Pelvis.*
(Plate 4.)

There is a most striking difference in size between the pelvis of the mainland and that of the King Island bird, and fortunately, though the bones are very fragile, only one specimen retaining any appreciable part of the pubis and ischium, sufficient measurements can be obtained to warrant the separation of the two species on the evidence of this bone alone.

	<i>D. minor.</i>						<i>D. novæ-hollandiæ.</i>			<i>D. peroni.</i>
Length	276	274	292	...	...	219	440	412	420	340
Width in front		64	...	...	...	...	89	105	80	75
Width behind acetabular cavity	80	78	84	81	86	...	105	113	105	92

* Specimens in the National Museum, Melbourne.

† Specimens belonging to the Australian Museum, Sydney. We are indebted to Mr. R. Etheridge for the opportunity of measuring these.

‡ Measurements given by Messrs. Milne Edwards and Onstalet for comparison with those of *D. ater*. This specimen, presumably in the Paris Museum, can scarcely be full grown.

The first portion of a pelvis secured was obtained by Mr. Campbell, and presented by him to the National Museum. This by itself was too fragmentary and imperfectly preserved to base any decided conclusion upon. Indeed, in the absence of other specimens it could not be definitely stated whether it was an adult or a young one, but the structure of the 20 specimens now in our possession is decisive. As the table shows, there is a difference of 150 mm. between the length of the largest pelvis of *D. minor* and *D. novæ-hollandiæ*, and a difference of nearly 50 mm. between the former and *D. peroni*. Indeed, the latter appears to be intermediate in size between the two former.

5. Skull.

(Plate 6.)

As might be expected, remains of the skull are difficult to procure, and are of necessity more or less fragmentary, the fragile bones of the jaws being easily detached and broken. The complete fusion of the bones, and entire eradication of all sutural marks, show that the remains are those of quite mature birds; indeed, unless complete fusion of the bones had taken place, there would not be the slightest chance of the preservation of the cranium as a whole. The shifting of the sand, under which the bones lie buried, by strong westerly gales would soon dissociate the skull bones. In a young *D. novæ-hollandiæ*, with a length of 80 mm. between the frontal suture and the occiput—that is, much larger than the largest of the skulls of *D. minor*—the sutures between the occipital, parietal, and frontal bones are widely open, and during maceration the bones separate from one another. Instead of there being any chance that the skulls are those of immature or not fully grown birds, it may be regarded as absolutely certain that only perfectly mature skulls would have any chance of surviving the movements of the shifting sand.

Even more striking than the difference in size is that in the shape of the cranium of the island and the mainland form. The illustrations of the skulls seen in side-view in figures 5, 6 and 9, and the outline drawings representing the curvature of the upper surface of the cranium in two adult specimens of *D. minor* and two adult and one immature specimens of *D. novæ-hollandiæ*, show at a glance the great difference that exists in the cranial formation of the two forms. The outline drawings are life-size and in each case the horizontal line passes through the condyle posteriorly, and the suture of the frontal bone anteriorly.* The contrast

* The drawings were made by means of the Dioptograph, designed by Dr. Rudolph Martin, for the opportunity of using which we are indebted to Professor R. J. A. Berry.

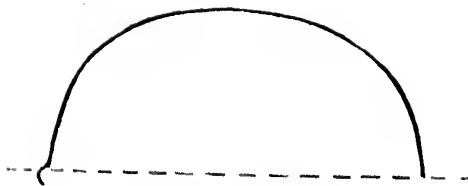


FIG. 1. *D. minor*.



FIG. 2. *D. minor*.

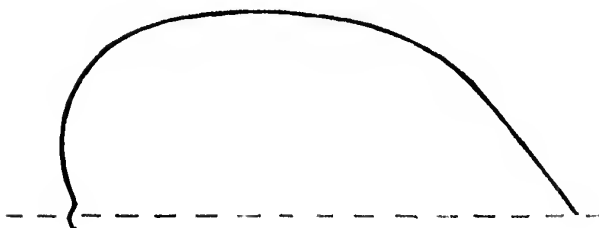


FIG. 3. *D. novæ-hollandiæ*, juv.

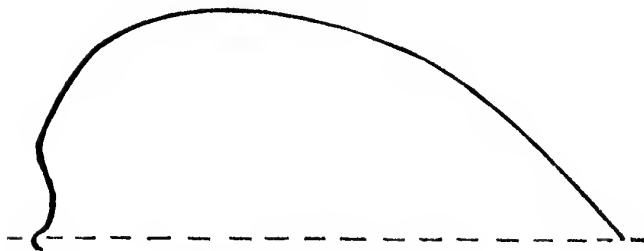


FIG. 4. *D. novæ-hollandiæ*.

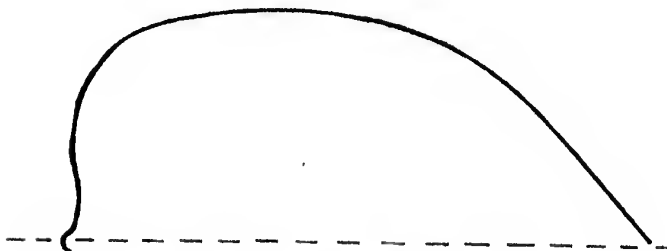


FIG. 5. *D. novæ-hollandiæ*.

between the dome-shaped skull of the island form and the frontally flattened one of the mainland form is strongly marked. It will be noted also that the dome shape of the cranium is indicated to a certain extent in the immature mainland form. The frontal region is certainly flattened, but the proportionate height of the cranium above a basal line running from the condyle to the frontal suture is decidedly greater than in the mature specimens. There is unfortunately no detailed description of the skull of *D. peroni* available, but if the dome shape of the cranium was anything like as well marked in the Kangaroo Island species as it is in that of the King Island bird, it could not have failed to attract attention. This character alone is sufficient to distinguish the King Island species from that of the mainland, and presumably also from that of Kangaroo Island.

In the following table we give (1) certain length measurements of the skulls and (2) the proportionate height of the cranium to the length of a basal line drawn from the condyle to the frontal suture, taking this line as 100:—

—	D. novae-hollandiae.			D. peroni.	D. minor.			
	ad.	ad.	juv.					
Occiput to frontal suture ...	90	91	80	80	58	62	58	..
Maximum width ...	75	76	62	62	66	54	56	...
Interorbital space ...	29	32	26	26	29	20	...	...
Length of premaxilla ...	84	70+	74	74	...	...	...	20
Proportionate height of skull	39	38	40	...	43	...	42	...

6. Pectoral Arch.

(Plate 4. Figures 19 and 20.)

Only one pectoral arch—that of the right side—has been found, and that has the clavicle missing, and about half of the scapular broken off. It is not perfect enough to found any comparisons upon.

7. Portions of three Sterna.

(Plate 7.)

It was found very difficult to secure remains of the sterna which broke up into powder as soon as they were touched. The fragment figured represents the greater part of it, but there is nothing apart from size to distinguish it clearly from the sternum of the mainland bird. The concavity on the inner or upper side is less accentuated, but then this is a feature in which the mainland form varies: one of our specimens being decidedly shallower and flatter than the one figured. The difference in size is, however, striking.

8. *Five Fibulae.*

(Plate 3. Figures 11 and 12.)

These appear to differ only in size.

9. *Ribs.*

(Plate 4. Figures 16, 17, 18.)

Only two ribs were secured, and both of these are broken, The larger one corresponds to the first rib that meets the sternum. and the smaller one to the third. Both belong to the right side. The tuberculum of each is broken, and the capitulum is decidedly longer in proportion than in the corresponding rib of the mainland form.

10. *Vertebral Bodies.*

The collection includes forty-three vertebræ, but, so great has been the action of the wind-driven sand, that not one of them is entire. Apart from size, they do not apparently differ from those of the larger species.

11. *Toe Bones.*

(Plate 4. Figures 13, 14, 15.)

These are such solid parts of the skeleton that it might naturally be expected that they would be well represented, but only two could be found. Each of them is the proximal phalange of the large middle toe, and, apart from size, differs in no way from the same bone in the larger bird.

In the table we give the measurements, and, on the supposition that the first phalange of the median toe has the same relation to the length of the whole toe in the island as in the mainland form, we have calculated the probable total length of the toe, taking as a guide the length of the larger of the two bones, which evidently belonged to a mature bird:—

	D. novæ-hollandiæ.		D. minor.		D. peroni.
Total length of median toe ...	168	151	115-118	...	110
Length of 1st phalange ...	64	59	45	40	...

The measurement given of the length of the toe in *D. peroni* is 110, so that in this respect *D. minor* is somewhat larger than the former.

GENERAL REMARKS ON THE SPECIES OF *DROMÆUS* INHABITING THE ISLANDS OF BASS STRAIT.

It is a matter of great regret that in the early days of Australian exploration so few specimens of the fauna of the islands of Bass Strait were preserved. We know now, when it is too late to do more than gather together—and that with difficulty—such remains as we can secure of their skeletons, that these islands were the home of a species of Emu distinct from that of the mainland of Australia, and probably also from that of Tasmania. The early inhabitants of the islands were naturally not in the least interested in natural history, save so far as the animals that they found inhabiting the primeval scrub were good to eat. Their only object was to capture as many seals and sea lions as possible, and whilst doing this they replenished their larder by exterminating as many birds and mammals useful for food as they could secure. Péron records the fact that on King Island Cowper and his associates had actually trained their dogs to go out by themselves and hunt down Emus and Kangaroos.* When they had killed their prey the dogs returned to camp, and, “par signes non équivoque,” announced their success, and then led the men to the places where their victims lay dead. On Kangaroo Island, by means of one dog trained by the English sealers, and presented to the French naturalists, the latter were able to capture twenty-seven Kangaroos alive, and numberless others that were killed and eaten. Péron says that Kangaroos are so easily killed by a trained dog that a few of these would not take many years to exterminate all the former on Kangaroo Island.

Péron also relates that the English fishermen had actually domesticated the Wombats, which went out during the day into the forests in search of food, and returned to their shelter huts at night.† We may be permitted to accept this statement with some reserve. Péron and his associates were very hospitably treated by the English sealers when they were in a very uncomfortable plight, owing to their ships having to stand off suddenly from the coast; indeed, if it had not been for Cowper and his friends the French naturalists would have had at least a very unpleasant time, so that naturally everything that they say about their rescuers and their surroundings is not likely to suffer from any lack of friendly and appreciative description.

If Cowper really domesticated the Wombat for the purpose of securing a ready food supply, then this is the first case on record of any such thing in regard to marsupials. How, in what must have been a relatively short space of time, he had trained them to

* “Voyage de découvertes, &c.,” vol. ii., p. 18.

† Loc. cit., vol. ii., p. 14.

go out in the day in search of food and return to their huts at night is a mystery. This means not only that he had persuaded the animals to abandon their burrowing habits, but, what is more remarkable still, he had changed a nocturnal into a diurnal animal. The domestication story must, we fear, be regarded as a myth. It is true that Flinders remarks on the fact that on Clarke Island he saw Wombats feeding during the day time. On the mainland the animal is also sometimes seen during the day, but it is essentially nocturnal in its habits, and Sir Everard Home states, in regard to one taken alive from King Island to London, that it was quiet during the day and active at night.

There is no doubt that Emus and Wombats were plentiful at the time of Péron's visit, and that Péron actually saw them. There is a very curious discrepancy between two accounts that are published dealing with their size. Péron makes the following statement* :—"Le puissant Casoar, haut de 16 à 22 décimètres (5 à 7 pieds)," and, in the margin opposite this, reference is made to plate 66. On the other hand, in the publication by Messrs. Milne Edwards and Oustalet, to which we have already referred,† the following question put to, and the answer to it made by, Cowper, are given :—

"6. Quelle est la hauteur la plus grande à laquelle il parvient ?

A l'île King, à peu près 4 pieds $\frac{1}{2}$, plus petit qu'à Sydney."

The plate referred to contains the figures of adult and young birds, and bears the following legend :—"Nouvelle-Hollande—île des kanguroos. Casoar de la N^{elle}. Hollande (Casuaris Novæ Hollaudiæ-Lath.)" It will be noted that in the letterpress the name île Decrès is used, and on the plate the name île des Kanguroos. It is evident that Péron imagined that the island and the mainland forms of Emu were the same, and that he made very little effort to capture them on the islands—indeed, he says, speaking of Kangaroo Island, "Nous mîmes peu de soin à les chasser, nous ne pûmes nous en procurer que trois individus vivans."‡ He makes no remarks whatever about the size of the Kangaroo Island specimens.

It is well known now that there are three authentic specimens of *D. peroni* in existence§—a mounted skin and skeleton in Paris and

* "Voyage de découvertes, &c.," vol. ii., p. 14

† "Note sur l'emu noir, &c., Bull. du Muséum d'hist. nat.," 1899, p. 206.

‡ Loc. cit., p. 78, vol. ii.

§ Hon. Walter Rothschild. "Extinct Birds." 1907. Also Dr. H. H. Giglioli. "Nature." April 4, 1907, p. 534. A very good account of the various specimens brought to Europe is given by Graham Renshaw in the "Zoologist." No. 741, 1903. p. 81.

a skeleton in Florence.* These three are undoubtedly those taken from Kangaroo Island by Baudin's expedition. In addition there is the doubtful specimen discovered in Liverpool by Dr. H. O. Forbes, in regard to which the Hon. Walter Rothschild says †—"In addition to Deerès or Kangaroo Island, also Flinders, King Island, and Tasmania had Emus living on them at the time of Péron's visit, and I believe, if authentic specimens from these localities were in existence, we should find that each of these islands had had a distinct species or race of Emus. Taking this for granted, and also taking into account that it is slightly different from the type of *D. peroni*, I have come to the conclusion that the Liverpool specimen is an immature, though full grown, individual from one of these other islands; but it is not possible from this one rather poor specimen to separate it from the Kangaroo Island species, especially as there is absolutely no indication of the origin of this specimen." The only other remains of the Kangaroo Island Emu are two bones, one a tibio-tarsus and the other a tarso-metatarsus, of which, through the courtesy of Professor E. C. Stirling, the Director of the South Australian Museum, we are able to give illustrations.

Dr. Giglioli is of opinion that the Liverpool specimen is identical with the Paris and Florence specimens. Most unfortunately, there is no evidence whatever of where it came from or by whom it was collected. A few bones from King Island were also sent to Dr. Giglioli by the late Mr. Alex. Morton, and while pointing out the necessity of securing a larger series of bones from the islands Dr. Giglioli expressed the opinion that the King Island specimens belonged to *D. peroni*.

With the comparatively large series of bones now available it is possible to form a tolerably correct idea of the average size of the King Island bird. Unfortunately, we have only the measurements of the bones of one specimen of *D. peroni*, but we have the advantage of knowing that this was full grown, as it lived for some time after its arrival in France either at the Jardin des Plantes or at the Chateau of Malmaison, and we may therefore regard it as probably an average sized specimen—more especially as there does not appear to be any great discrepancy in size amongst the Paris and the Florence specimens.

* In his "Catalogue of the Fossil Organic Remains, Mammalia, and Birds contained in the Museum of the Royal College of Surgeons," London, 1845, p. 353, Owen makes the following statement in regard to specimen No. 1363: "A corresponding section of the spinal canal for the enlargement of the chord whence the nerves of the legs originate, and the more marked difference in the form and proportions of the iliac plates, especially behind the acetabulum." In his work on "The Extinct Wingless Birds of New Zealand" he also figures, in Plate xxxv., fig. 7, a sternum to which he applies the name of *Dromaius ater*. No reference to this particular specimen nor any reference to the species is made in the letter-press. It seems clear that Owen is not using *ater* as a synonym for *novæ-hollandiæ*, because the latter specific name is applied to specimens figured in Plates xxxi. and xxxvii.

† "Extinct Birds," p. 235.

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In the following table we give the measurements of the bones of six specimens of *Dromaeus novae-hollandiae*, of the large series of the King Island form, and the measurements of the one specimen of *D. peroni*. In the case of the King Island form we have given three series of measurements—the minimum, the maximum, and those between which lie the great majority of the measurements. Thus, for example, in the case of the femur the minimum of mature bones is 140 and the maximum 186, but whilst only 2 specimens measure more than 180 and 6 less than 150 mm., no fewer than 52 measure between 150–180 mm., and of these 39 measure between 150–170 mm.

Species.	D. novae-hollandiae.	King Island Species.	D. peroni.
Skull, length	90–91	58–62	80
„ width	75–76	51–56	66
Femur	217–243	140, 150–180, 186	180
Tibio-tarsus	415–446	265, 270–320, 363	342
Tarso-metatarsus	335–411	216, 220–280, 292	290
Pelvis, length	440–442	249–292	340
Pelvis, width in front	80–105	64	75
Pelvis, width behind	105–113	78–84	92

It will be seen that there is considerable variation, not only in the case of the King Island species, but also in that of the mainland species, and doubtless a corresponding amount of variation would be found to exist amongst the Kangaroo Island birds if only we were fortunate enough to possess as large a series of their bones as we do of those of the King Island Emus. It is, for example, almost certain, or at least quite probable, that amongst the Emus of Kangaroo Island there were many adult birds that exceeded the measurements given in the above table, and many that fell below them unless the three specimens secured happened to belong to birds of either maximum or minimum size.

One very striking fact in regard to the Ratitæ is that on insular areas we find a most remarkable development of distinct species, and that on continental areas there is a widespread distribution of a limited number of species.

Throughout the whole of the South American continent we find only three species of Rhea. Africa has only three species of Struthio.

Throughout the whole of Australia there is only one species of Emu*. Six living species of *Apteryx* are recognised on the islands of New Zealand, where there also exist the remains of at least twenty species of *Dinornis* and closely allied genera. In Australia there is only one species of Cassowary; on the Papuan Islands to the north there are no fewer than ten species, and of these one species may be confined to one island, as in the case of the well known Ceram Cassowary, or several may occur on the same island as in the case of New Guinea.

It is thus apparent that for some reason or another an insular environment is associated with considerable variation amongst Ratite birds. It would not therefore be a matter of surprise, judging by what has taken place in the case of the Ratite birds of New Guinea and the surrounding islands to the north of Australia, if King and Kangaroo Islands and Tasmania each possessed its own species of Emu.

The measurements in the table given above indicate very clearly the fact that the King and Kangaroo Island Emus were quite distinct from those of the mainland. Of this there can be no doubt whatever. There now remains the question of the identity or otherwise of the two former. Despite the fact that in the case of the femur, tibio-tarsus and tarso-metatarsus our collection from King Island includes in each case one or two bones equal in length to the corresponding bones in the Paris specimen from Kangaroo Island, it is clear that these belong to exceptionally large specimens, and that the average size of these bones was considerably less than the maximum given in the table. The two bones from Kangaroo Island also indicate the fact that the species of Emu inhabiting the latter was of decidedly less robust build than that of King Island. Not only is this so, but the measurements of the skull and pelvis are quite sufficient to distinguish the two species.

Both the King Island and the Kangaroo Island species were distinguished by their dark colour from that of the mainland.

We have now to deal with the question of the Tasmanian Emu. At the present time no Emu is extant in the island, but names such as Emu Bay and Emu Plains evidently indicate the fact that when the island was first occupied by white men, and probably for many years afterwards, Emus did exist. The only examples of the Tasmanian Emu of which we can find any record are two skins of adult birds presented to the British Museum by Mr. Ronald Gunn, and recorded by Gray in his *List of Birds in the British Museum*, iii., p. 54, 1844, and again by Salvadori in the *British Museum Catalogue of Birds*, xxvii., 1895.

* *D. irroratus* of N.W. Australia is doubtfully distinct from *D. novæ-hollandiæ*.

In 1804, the Rev. R. Knopwood wrote a diary of his visit to Tasmania when H.M. ship *Calcutta* sailed from Port Phillip to the Derwent River in Tasmania.* On Wednesday, 7th March, he has the following record in his diary—"We see Kangaroos, Emews, Pigeons, and Parrotts"; again, on Monday, 26th March, he says—"They caught six young Emews, about the size of a turkey, and shot the old mother;" and, on 9th October, he records the capture by his dogs of an "Emew 60 lbs. weight."†

Bischoff,‡ writing in 1832, and quoting from "An Account of Van Diemen's Land," published by Widowson, in 1829, says—"The birds that may be called game are very numerous, with the exception of the Emu or Native Ostrich, they very much resemble the latter bird, and are very nearly as large." In the "Van Diemen's Land Anniversary and Hobart Town Almanac," for the year 1831, the "Emu or Cassowary Rhea Novæ-Hollandiæ," is included in "A glossary of the most common natural production of Van Diemen's Land," so that evidently the bird was well known at this early date.

The Emu is known to have existed in large numbers in Tasmania up to at least the year 1840. Col. W. V. Legge,§ the distinguished ornithologist of Tasmania, states that during the "forties" the birds inhabited and bred regularly in a locality known as Kearney's Bogs, about 12 miles south of Avoca, amongst the ranges of the east coast. He states that one of the shepherds "used not unfrequently to bring eggs to the house."

Mr. D. Le Souëf, in his notes on the extinct Tasmanian Emu,|| mentions that Mr. Ransom, of Killymoon, in the Fingal district, remembers Captain Hepburn, of Roy's Hill, finding an Emu's nest with eight or nine eggs. A little later these were hatched under a turkey hen. From these others were bred, and a pair of them were given to the late Baron von Steiglitz, of Killymoon, one of which survived until 1873, when it was drowned while trying to cross a flooded river. With its death, the Tasmanian Emu, Mr. Ransom believed, became extinct.

Gould, in his "Birds of Australia," published in 1848, states that Emus were then almost extirpated in Tasmania; a few still ranging over the western part.

* We are indebted to Mr. J. J. Fletcher for much valuable assistance in regard to the early literature dealing with the Emu and Phascolumys.

† "Journal of the Rev. Robert Knopwood, A.M.," in "Historical Records of Port Phillip," edited by John J. Shillinglaw, p. 65.

‡ Sketch of the History of Van Diemen's Land, &c. James Bischoff, 1832.

§ "Emu," iii., p. 239, 1904.

|| "Emu," vi., 1907, p. 116.

Mr. Geo. T. Lloyd* writing in 1862, says, "The Emu of Tasmania, as I have before stated, is much smaller and darker in plumage than that of Australia; but, never numerous there, that noble bird is now nearly extinct."

One difficulty in regard to the safe identification of the true Tasmanian Emu lies in the fact that at a comparatively early date specimens were introduced from the mainland. Mr. D. Le Souëf states, on the authority of Mr. Stephens, that one or more were imported from Victoria by Mr. James Cox, of Clarendon, in the early "fifties," and others were introduced somewhat earlier.

Further evidence of this is afforded by Mr. R. Gunn,† who, writing in 1851, says that he obtained two Emus from the Horticultural Gardens in Hobart, and adds "they were originally from a Port Phillip stock, but brought up in Van Dieman's Land." He goes on to say, "a leg of a Tasmanian Emu is now in my possession, and so far as I can judge from it, as a very imperfect specimen, there are differences in the arrangement and size of the scales, which may justify the separation of the Tasmanian Emu from that of New Holland." In a foot-note, Mr. J. Milligan adds that, "Captain Hepburn, of St. Paul's Plains, possesses a breed of Tasmanian Emus, which he succeeded in rearing from eggs found many years since upon the high healthy land in his vicinity."

Two eggs have been recorded as those of the Tasmanian Emu, one of which is in the collection of Mr. J. W. Mellor, of Adelaide, and the other in that of Mr. D. Le Souëf, Director of the Zoological Gardens, Melbourne. Both are said to be considerably smaller than those from the mainland. The measurements given by Mr. Le Souëf are 4.85 x 3.40 inches and 4.80 x 3.50, as compared with 5.56 x 3.63 inches of a typical egg of a mainland form. A bone found by Mr. H. H. Scott in a limestone quarry was sent to Mr. D. Le Souëf, who identified it as the femur of an Emu smaller than those from the mainland, but too damaged to be of any value.

Finally, during a recent visit to England, Mr. D. Le Souëf examined the two skins of the Tasmanian Emu in the collection of the British Museum, and arrived at the conclusion that they were distinct from those of the mainland, a conclusion in which he informs us he was confirmed by the Hon. W. Rothschild, Dr. Bowdler Sharp, and Mr. Hartert, who also examined them.

On the evidence derived from the size of the egg Mr. Le Souëf proposed the name of *Dromæus diemensis* for the Tasmanian bird that laid it, but exactly what this bird was it is now quite impossible to say with absolute certainty. Presumably, however, granting that the eggs are those of the true Tasmanian Emu, and

* "Thirty-three years in Tasmania and Victoria," p. 62, 1862.
 † R. Gunn. Proc. R. S. Tas., 1853, p. 170.

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not somewhat small ones of introduced mainland birds, the two skins preserved in the British Museum belong to the same species of bird that laid the eggs referred to by Mr. Le Souëf. No adequate description of these skins has yet been published, but in view of the facts that (1) we know of eggs found in Tasmania that are distinct from those of the mainland form, and (2) that there are two authentically recorded skins of Emus from Tasmania that differ from those of the mainland bird, and differ also both in size and colour from those of the Bass Strait Islands, it appears to be certain that Tasmania was inhabited by an Emu distinct both from that of the Australian Continent and that of the Islands, and for this species when it is adequately described the name of *D. diemensis* may appropriately be retained.

In the following tables we give details of the measurements of the Femurs, Tibio-tarsal, and Tarso-metatarsal bones, the general results of which have been summarized in some of the foregoing tables :—

DROMÆUS MINOR.
Femur.

1	2	3	4	5	6	7	8	9	10	11	12
<i>r</i> 186	<i>l</i> 180	<i>r</i> 179	<i>r</i> 179	<i>l</i> 179	<i>r</i> 179	<i>r</i> 178	<i>r</i> 178	<i>l</i> 177	<i>l</i> 176	<i>l</i> 174	<i>l</i> 172·5
13	14	15	16	17	18	19	20	21	22	23	24
<i>r</i> 172	<i>r</i> 171	<i>l</i> 171	<i>l</i> 169·5	<i>r</i> 169	<i>r</i> 169	<i>r</i> * 169	<i>l</i> 169	<i>r</i> 168	<i>l</i> 168	<i>l</i> 168	<i>r</i> 167·5
25	26	27	28	29	30	31	32	33	34	35	36
<i>r</i> 167	<i>r</i> 166	<i>l</i> 162	<i>r</i> 161·5	<i>r</i> 161	<i>l</i> 161	<i>r</i> 160	<i>r</i> 160	<i>l</i> 160	<i>l</i> 160	<i>l</i> * 160	<i>r</i> 159
37	38	39	40	41	42	43	44	45	46	47	48
<i>r</i> * 159	<i>r</i> 158	<i>r</i> 158	<i>r</i> * 158	<i>l</i> 158	<i>l</i> 157	<i>l</i> 157	<i>l</i> 157	<i>r</i> 156	<i>l</i> 156	<i>r</i> 155	<i>r</i> 155
49	50	51	52	53	54	55	56	57	58	59	60
<i>r</i> * 155	<i>r</i> * 155	<i>l</i> 155	<i>l</i> 154	<i>r</i> 153	<i>l</i> 152	<i>r</i> 148	<i>r</i> 145·5	<i>r</i> 145 <i>juv.?</i>	<i>l</i> 145	<i>l</i> 145 <i>im.</i>	<i>r</i> * 142
61	62	63	64								
<i>l</i> 139 <i>juv.</i>	<i>r</i> 137 <i>im.</i>	<i>r</i> 132 <i>imm.</i>	<i>l</i> 130 <i>juv.</i>								

* Slightly broken.

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DROMÆUS MINOR—*continued.*

Tibio-tarsus.

1	2	3	4	5	6	7	8	9	10	11	12
<i>r</i> [*] 354	<i>r</i> [*] 338·5	<i>r</i> 333	<i>l</i> 328	<i>l</i> 318	<i>r</i> 315	<i>l</i> 314	<i>r</i> 311	<i>l</i> 309	<i>r</i> 305	<i>r</i> 303	<i>r</i> 302
13	14	15	16	17	18	9	20	21	22	23	24
<i>r</i> 301	<i>l</i> 300	<i>r</i> 297	<i>r</i> 290·5	<i>r</i> 290	<i>r</i> 288	<i>r</i> 288	<i>r</i> 287	<i>l</i> 287	<i>r</i> 285	<i>l</i> 285	<i>r</i> 284
25	26	27	28	29	30	31	32	33	34	35	36
<i>l</i> 283·5	<i>l</i> 283	<i>l</i> 282·5	<i>r</i> 281	<i>r</i> 280	<i>l</i> 278	<i>r</i> [*] 277	<i>l</i> 275·5	<i>r</i> 274	<i>l</i> 273	<i>r</i> 273	<i>r</i> 272
37	38	39	40	41	42						
<i>r</i> 272	<i>r</i> 271	<i>r</i> 271	<i>r</i> 268	<i>l</i> 266							

* Slightly broken.

Tarso-metatarsus.

1	2	3	4	5	6	7	8	9	10	11	12
<i>l</i> 292	<i>r</i> 278	<i>l</i> 278	<i>l</i> 277	<i>l</i> 271	<i>r</i> 265	<i>r</i> 264	<i>r</i> 253	<i>r</i> 252	<i>r</i> 249	<i>r</i> 249	<i>r</i> 247
13	14	15	16	17	18	19	20	21	22	23	24
<i>r</i> 247	<i>r</i> 246	<i>r</i> 245	<i>r</i> 245	<i>l</i> 245	<i>l</i> 243·5	<i>r</i> 242·5	<i>r</i> [*] 242	<i>l</i> 240	<i>r</i> 239	<i>r</i> 238	<i>l</i> [*] 238
25	26	27	28	29	30	31	32	33	34	35	36
<i>l</i> 236·5	<i>l</i> 236	<i>r</i> 235	<i>l</i> 235	<i>r</i> 234	<i>r</i> 233·5	<i>r</i> 233·5	<i>r</i> 233	<i>r</i> 233	<i>l</i> 233	<i>l</i> 232·5	<i>r</i> 232·5
37	38	39	40	41	42	43	44	45	46	47	48
<i>r</i> 232	<i>r</i> 232	<i>r</i> 232	<i>r</i> 232	<i>l</i> 231·5	<i>l</i> 231·5	<i>l</i> 231·5	<i>r</i> 230	<i>r</i> 229	<i>r</i> 228·5	<i>l</i> 228	<i>l</i> 228
49	50	51	52	53	54	55	56	57	58	59	60
<i>l</i> 227	<i>r</i> 225	<i>l</i> 224·5	<i>r</i> 224	<i>r</i> 223	<i>l</i> 222	<i>l</i> [*] 220	<i>r</i> 220	<i>l</i> 219	<i>r</i> 218·5	<i>r</i> 218	<i>r</i> 218
61	62	63	64	65	66	67	68	69	70		
<i>l</i> 216·5	<i>l</i> 216	<i>r</i> 215	<i>r</i> 214	<i>r</i> 213·5	<i>l</i> 212	<i>r</i> [*] 211	<i>r</i> 199	<i>l</i> 199	<i>r</i> 174·5		

* Slightly broken.

In consequence of the large series of remains secured since the original description was published it is necessary to alter the diagnosis then given :—

DROMÆUS MINOR.

Size varying considerably, but always much smaller than that of *D. novæ-hollandiæ* : not exceeding that of *D. peroni*, but of more robust build. Tibio-tarsus rarely exceeding 330 mm., most usually from 270-320 mm. in greatest length. Tarso-metatarsus rarely exceeding 280 mm., most usually from 220-280 mm. in greatest length. Frontal region of skull decidedly dome-shaped. Length of skull from frontal suture to occiput not or only slightly exceeding 60 mm. Greatest width of skull not or only slightly exceeding 55 mm.

Habitat. King Island. Bass Strait. Now extinct.

PHASCOLOMYS URSINUS, SHAW.

In a separate paper we deal at length with the question of the different species of Phascolomys, popularly known as Wombats, that have been recorded from Australia, Tasmania, and the Islands of Bass Strait. It will suffice to say here that the earliest known Wombat was secured on Clarke Island, in Bass Strait, and taken alive to Sydney in 1797. There is no record of the name of its discoverer.* After lingering in captivity for six weeks it died; and in August of that year Hunter, then Governor of New South Wales, sent the body together with a description of the animal to the Newcastle Philosophical Society. † In 1800 Shaw ‡ published a brief description of this animal under the name of *Didelphys ursina*. Up to this year, and indeed until at the earliest 1802, the only Wombat known in England was the one sent home by Hunter. Bass found his specimen on Cape Barren Island in 1799, but no description of this was published until 1802.

There can be no doubt whatever that all the early descriptions of Phascolomys were based upon specimens from the Islands of Bass Strait, and further still that without any adequate investigation it was taken for granted that the Bass Strait Island species was identical with the Tasmanian. Our collection from the Bass Strait Islands includes eight skulls, thirty lower jaws, and two skins, and after a careful comparison of these with fourteen skulls from Tasmania, and a large number from Australia, we have come to the conclusion that the Bass Strait Island form is quite distinct from that of Victoria and Tasmania, and that as already

* It is generally stated that the first Wombat taken to Sydney was captured by Bass, but this is not so.

† In Bewick's "History of Quadrupeds," 4th edit. 1800, p. 225, Hunter's letter is quoted in full, and a quaint figure of the animal, which is called "The Wombach," is given.

‡ "General Zoology" i., pt. 2, p. 504.

described the two latter are also distinct from one another, though at the same time they are more closely allied than is the Bass Strait Island Wombat to either of them.*

It is therefore necessary to distinguish specifically the two forms which up to the present time have been united under the name of *Phascolomys ursinus*. As this was, without any doubt, applied in the first instance to the particular form secured on Clarke Island, sent to England by Hunter, and named *Didelphys ursina* by Shaw, we retain the specific name *ursinus* for the Bass Strait Island species, and redescribe the distinct Tasmanian species under the name of *Ph. tasmaniensis*.

It is an interesting fact that the first reliable drawings of a Wombat, those in the Atlas to Péron's work represent the King Island species, and further that one of the earliest descriptions of the anatomy of any species of the genus was based upon a specimen taken to London by the distinguished naturalist, R. Brown, who secured it on one of the Bass Strait Islands.† Sir Everard Home, when describing the anatomy of this specimen, says that it lived in captivity with him for two years, and "It appeared to have arrived at its full growth, weighed about twenty pounds, and was about two feet two inches long."

In addition to the sub-fossil specimens from King Island our original collection included a skull from Deal Island, indistinguishable from the King Island skulls. For the purpose of procuring, if possible, material from the Furneaux Group, of which Clarke Island, the habitat of the first found Wombat, forms a part, one of us paid a visit to Flinders Island, the largest of the group, and made the interesting discovery that the small Wombat, though rare, is not yet actually extinct. Further reference to this is made in a separate article. Here it will suffice to say that the Deal, Flinders and King Island skulls are identical. Deal, Flinders, Clarke, and Cape Barren Islands, form parts of a chain of islands stretching across the eastern entrance to Bass Strait, whilst King Island lies far away on its western margin. It would be, at least, a most curious thing if the Deal, Flinders, and King Island wombats were identical, as they are, and at the same time distinct from those of Clarke and Cape Barren Islands.

We have therefore decided to retain Shaw's specific name *ursinus* for the Wombat of the Bass Strait Islands. Though much has been written about it, and it is the oldest known species, it has for many years been confused with the quite distinct Tasmanian form, and it is doubtful if any well authenticated skin of it is in existence, except two recently secured on Flinders Island.

* It is a somewhat remarkable fact that both the King Island Emu and Wombat are more distinct from the mainland and Tasmanian forms than the two latter are from one another.
 † Home. Phil. Trans., 1808, p. 304. "An account of some Peculiarities in the anatomical structure of the Wombat, &c."

Unfortunately Hunter in his letter to the Newcastle Philosophical Society, when sending to England the original specimen on which Shaw established the species, gave only a very vague description of it, nor does that specimen appear to have ever been adequately described.

Collins, however, published a more detailed account of the specimen obtained by Bass on Cape Barren Island, though in his account, which undoubtedly refers to this particular species of Wombat,* there is a curious error in regard to the dentition which must have arisen in consequence of a mistake in the transcription of notes. Taking Bass' account of the external form and combining it with the results obtained from the investigation of the skulls from King, Deal, and Flinders Islands, and skins from the latter, the following may be taken as a fairly accurate description of this species :—

PHASCOLOMYS URSINUS. SHAW.

Size, smallest of the genus. Length, from tip of tail to tip of nose, about 775 mm.† Length of head, 175 mm. Weight, from twenty-five to thirty pounds. The female slightly larger than the male. Hair coarse, light sandy brown in colour, darkest along the back. Ears sharp and erect, about 57 mm. long. Eyes about 60 mm. apart. Muzzle naked. The fore legs strong and muscular, their length to the sole about 130 mm. The three middle claws 20 mm. in length, claws of first and fifth digits 15 mm. in length. The three inner claws of the foot about 5 mm. longer than the longest of the fore claws. Skull smaller than that of the Australian or Tasmanian species. Basal length, 120-132 mm. Greatest breadth 99-106 mm. Nasals much expanded posteriorly, their greatest breadth at least three-fourths of their length. Post-orbital processes small. The malar bones strongly bowed downwards and outwards below the orbit. Length of upper molar tooth series not exceeding 45 mm. ; that of the lower tooth series not exceeding 46 mm. Length of humerus 98 mm. Greatest width of humerus at its distal end 42 mm. Length of femur, 125 mm.

Habitat.—King, Deal, Cape Barren, Clarke, and Flinders Islands in Bass Strait.

Type specimen is the one sent to Newcastle by Hunter. It is doubtful whether it is now in existence.

DASYURUS BOWLINGI. SP. N.

When describing the fauna of King Island,‡ Péron says, “ Nous y avons recueilli, M. Lesueur et moi, une foule d'espèces inconnues à l'Europe, parmi lesquelles se trouvent deux Dasyures élégans.

* “An account of the English colony of New South Wales.” 2nd Edit. 1804, p. 469.

† This may probably be regarded as the maximum. Of two skins from Flinders Island, one, a mature male, measures 715 mm., the other, a female, not quite complete, as the tip of the snout is wanting, measures 675 mm.

‡ Voyage de découvertes, etc., p. 12.

&c.” In speaking of Kangaroo Island he says,* “ Nous y avons vu que trois espèces de mammifères : l’une appartient au joli genres des Dasyures,” and in connexion with the latter refers to a plate on which two Dasyures are drawn, the title of the plate being as follows :—“ Nouvelle-Hollande : Nouvelle Galles du Sud. Dasyure à longue queue (*Dasyurus Macrourus*, Geof.)”

It is evident that Péron regarded the Kangaroo Island species as identical with the larger mainland form now known as *Dasyurus maculatus*, but he says nothing with regard to the two King Island species, and does not appear to have collected specimens.

At the present two species of *Dasyurus* are known from Victoria and Tasmania, a somewhat larger form, *D. maculatus*, and a somewhat smaller one, *D. viverrinus*. Both of these are found in Victoria and Tasmania, the first-named species being more abundant in the island than on the mainland. During the visit of the Field Naturalists’ Club in 1887, *D. maculatus* was reported as existing on King Island, but not *D. viverrinus*.

Our collection of bones includes the remnants of twenty-five crania, and sixty lower jaws, one of which came from Deal Island. No trace of any other bone could be found.

The crania and jaws are clearly divisible into two sets, a larger and a smaller, indicating the existence of two species as recorded by Péron, who, unfortunately, gave no indication of their relative size. The question arises as to the relationship of these two species to those now existing in Australia and Tasmania. In our collection, twenty-one of the crania belong to the larger form, and four only to the smaller. Of the lower jaws, thirty-seven appear to belong to the larger, and twenty-nine to the smaller. The difference in size is not due to immaturity, the dentition of both series being the permanent one.

In order to try and decide the relationship of the fossil forms, we have made a considerable number of measurements of skulls and lower jaws of recent specimens, the results of which are given in the following tables.

In the following table the crania of the King Island specimens, and of a series of specimens of *D. maculatus* and *D. viverrinus* are grouped in accordance with their basal lengths :—

Basal length.	MM.							
	69-70.	70-80.	80-90.	90-100.	100-105.	105-110.	110-115.	115 & over.
King Island species	...	...	2	1	1	3	6	3
<i>D. maculatus</i>	...	1	3	4	...	...	...	...
<i>D. viverrinus</i>	7	1	...	...	...	...	...	...

* See. cit. p. 76. Pl. 63.

SUB-FOSSIL REMAINS FROM KING ISLAND.

The greatest basal length of any of our specimens of *D. maculatus* is 98 mm., and that particular specimen came from Queensland; a second, measuring 97 mm., from Tasmania; a third, measuring 96 mm., from Victoria; are particularly large ones. In the British Museum catalogue the basal length of one is given as 101, but this, as well as the above three, may be regarded as decidedly above the average size. Even if we take 100 mm. as the basal length of *D. maculatus*, the above table still shows very clearly the great relative size of the King Island species.

In the following tables the same species are grouped in accordance with their tooth measurements :—

LENGTH MOLARS 1-2—UPPER JAW.

		MM.							
		14-15.	15-16.	16-17.	17-18.	18-19.	19-20.	20-21.	21-22.
King Island species	...	...	...	...	...	...	4	17	2
<i>D. maculatus</i>	...	...	...	...	...	6	6	...	...
<i>D. viverrinus</i>	...	2	6	...	...	...	...	...	...

LENGTH MOLARS SERIES—LOWER JAW.

		MM.										
		18-19.	19-20.	20-21.	21-22.	22-23.	23-24.	24-25.	25-26.	26-27.	27-28.	28-29.
King Island species	...	...	...	...	...	...	...	8	10	6	13	2
<i>D. maculatus</i>	...	...	...	...	...	...	6	4	1	...	...	...
<i>D. viverrinus</i>	...	4	4	..	...	...	..	...	...	...	...	...

LENGTH OF UPPER p³.

		MM.						
		3-3.5.	3.5-4.	4-4.5	4.5-5.	5-5.5.	5.5-6.	6 & above.
King Island species	...	...	...	1	7	10	2	3
<i>D. maculatus</i>	...	...	...	9	3	...	...	...
<i>D. viverrinus</i>	...	4	4	...	...	...	...	...

LENGTH OF LOWER p³.

		MM.						
		3-3.5.	3.5-4.	4-4.5.	4.5-5.	5-5.5.	5.5-6.	6 & above.
King Island species	...	...	...	6	11	16	5	2
<i>D. maculatus</i>	...	...	...	6	5	1	...	...
<i>D. viverrinus</i>	...	2	5	1	...	...	...	...

The measurements in the first place show unmistakably that *D. viverrinus* is not represented amongst the remains.

They equally clearly indicate the existence of a species decidedly larger than the existing *D. maculatus*, and at the same time prove the existence of animals of a size equal to that of large examples of *D. maculatus*. The question then arises as to whether the smaller King Island specimens are to be regarded as females of the larger form or as representatives of another species, that is *D. maculatus*. We incline to the latter opinion which, moreover, is in accordance with the definite statement made by Péron that two species existed on the island.

A reference to Plate 8, Figs. 2 and 3, representing a larger and smaller specimen will serve to show how distinct the forms are, and though, of course, the smaller amongst the larger forms tend to merge into the larger amongst the smaller, yet an examination of the collection as a whole unmistakably gives the impression that it contains the remains of two distinct forms.

The evidence from the teeth is as decisive as that from the basal length of the skull. In no example of *D. maculatus* does the length of the upper first three molar teeth exceed 19.5 mm.; in the large island specimens it is consistently 20 mm. or more, and the same difference is seen in the length of the lower molar series and of both the upper and lower pre-molar.

But beyond these measurements there is fortunately one structure in the skull which both serves still further to mark the larger form out as a distinct species and at the same time bears evidence in favour of the fact that the smaller island form is *D. maculatus*. Two of the larger and two of the smaller skulls fortunately have the mastoid bullæ sufficiently intact to show clearly what was its size. In *D. viverrinus* this is very largely inflated, the breadth of the bulla being at least three-quarters the length; in *D. maculatus* the expansion of the bulla is not so great, the breadth being slightly more than half the length. When we examine the King Island specimens (Figs. A, B, C,) we find that in



FIG. A.
D. bowlingi.



FIG. B.
D. maculatus.



FIG. C.
D. viverrinus.

the large ones the bulla is decidedly more elongate and much less swollen, whilst in the smaller ones it is similar to that of *D. maculatus*. In a large island form with a basal length of

117 mm. the width of the bulla is 6 mm. ; in a small island form with a basal length of 87.5 mm., the width is 6 mm., and in a *D. maculatus*, with a basal length of 91 mm., the width is 6.5 mm.

Taking everything into account we are of opinion—first, that the *Dasyurus* remains include those of two species ; secondly, that the larger of these two is distinct from any yet described ; and, thirdly, that the smaller form is identical with *D. maculatus*.

It is of course possible that the larger species may still exist in some of the wilder and more inaccessible parts of the island, but it is much to be feared that, like the small Wombat and the Emu, it is now quite extinct, and will only be known from its sub-fossil remains.

We describe it as follows, and associate with it the name of Mr. J. McKie Bowling, to whose assistance in securing these remains from King Island we are much indebted.

DASYURUS BOWLINGI. SP. N.

Size, considerably larger than *D. maculatus*. Basal length of skull, 105 mm. or more. Length of upper first three molars, 20 mm., or more ; and of lower molar series, 25 mm., or more. Bullæ much less swollen than in *D. maculatus*, and more obliquely elongate, their length decidedly more than twice their width, and their height, measured vertically above the glenoid surface, not or only slightly exceeding 5 mm.

Habitat.—King Island.* Extinct.

Type (skull) in the National Museum, Melbourne.

* A lower jaw from Deal Island, with a measurement of 26 mm. for the molar series, and part of a cranium, probably indicate the former existence there of this larger species of *Dasyurus*.

DESCRIPTION OF PLATES.

PLATE 1.

View of sand-blow at Seal Bay, King Island, where the majority of the specimens were obtained. Fragments of bones can be seen in the foreground. From a photograph taken by Mr. C. L. Barrett.

PLATE 2.

- Fig. 1. Left Femur, *D. novæ-hollandiæ*. 238 mm.
- Fig. 2. Left Femur, *D. minor*. 180 mm.
- Fig. 3. Femur, *D. minor*. 158 mm.
- Fig. 4. Left Femur, *D. minor*. 156 mm.
- Fig. 5. Right Femur, *D. minor*. 186 mm.
- Fig. 6. Left Femur, *D. minor*. 171 mm.
- Fig. 7. Left Femur, *D. minor*. 160.

PLATE 3.

A series of bones showing variations in size of the Tibio-tarsus, and a comparison of this with the same bone in *Dromæus novæ-hollandiæ* and *D. peroni*.

- Fig. 1. Right Tibio-tarsus, *D. minor*. 338 mm. (broken, probably 25 mm. longer).
- Fig. 2. Right Tibio-tarsus, *D. minor*. 333 mm.
- Fig. 3. Left Tibio-tarsus, *D. minor*. 328 mm.
- Fig. 4. Left Tibio-tarsus, *D. minor*. 314 mm., slightly broken.
- Fig. 5. Right Tibio-tarsus, *D. minor*. 315 mm.
- Fig. 6. Right Tibio-tarsus, *D. minor*. 301 mm.
- Fig. 7. Left Tibio-tarsus, *D. peroni*. 276 mm., broken.
- Fig. 8. Left Tibio-tarsus, *D. minor*. 283 mm., slightly broken.
- Fig. 9. Right Tibio-tarsus, *D. novæ-hollandiæ*. 447 mm.
- Fig. 10. Left Tibio-tarsus, *D. novæ-hollandiæ*. 447 mm.
- Fig. 11. Fibula, *D. minor*.
- Fig. 12. Fibula, *D. minor*.

PLATE 4.

Figs. 1-12 show the variations in size of the Tarso-metatarsus, and a comparison of this in *Dromæus minor* with the same bone in *D. novæ-hollandiæ* and *D. peroni*.

- Fig. 1. Right Tarso-metatarsus, *D. novæ-hollandiæ*. 395 mm.
- Fig. 2. Left Tarso-metatarsus, *D. minor*. 292 mm.
- Fig. 3. Right Tarso-metatarsus, *D. minor*, 278 mm.
- Fig. 4. Left Tarso-metatarsus, *D. minor*. 278 mm.
- Fig. 5. Right Tarso-metatarsus, *D. minor*. 265 mm.
- Fig. 6. Left Tarso-metatarsus, *D. minor*. 253 mm.
- Fig. 7. Right Tarso-metatarsus, *D. minor*. The specimen is immature. 242 mm.
- Fig. 8. Left Tarso-metatarsus, *D. minor*. 245 mm.
- Fig. 9. Left Tarso-metatarsus, *D. peroni*. 237 mm.
- Fig. 10. Left Tarso-metatarsus, *D. minor*. The specimen is immature. 231.5 mm.
- Fig. 11. Left Tarso-metatarsus, *D. minor*. 232 mm.
- Fig. 12. Left Tarso-metatarsus, *D. minor*. 218 mm.
- Fig. 13. Middle Toe Bone, *D. novæ-hollandiæ*.
- Fig. 14. Middle Toe Bone, *D. minor*.
- Fig. 15. Middle Toe Bone, *D. minor*.
- Fig. 16. Rib, *D. novæ-hollandiæ*.
- Fig. 17. Rib, *D. minor*.
- Fig. 18. Rib, *D. minor*.
- Fig. 19. Pectoral Girdle without the Clavicle, *D. novæ-hollandiæ*.
- Fig. 20. Pectoral Girdle without the Clavicle, *D. minor*.

PLATE 5.

- Fig. 1. Pelvis of *Dromæus novæ-hollandiæ*. Length 423 mm.
- Fig. 2. Pelvis of *Dromæus minor*. Broken specimen, showing the proximal parts of the pubis and ischium.
- Fig. 3. Pelvis of *Dromæus minor*. Length 285 mm.
- Fig. 4. Pelvis of *Dromæus minor*. Length 295 mm.
- Fig. 5. Pelvis of *Dromæus minor*. Length 276 mm.

PLATE 6.

- Fig. 1. Upper view of cranial portion of skull of *D. minor*.
Fig. 2. Upper view of cranial portion of another specimen of *D. minor*.
Fig. 3. Hind view of skull shown in Fig. 1.
Fig. 4. Hind view of skull shown in Fig. 2.
Figs. 5 and 6. Side views of skulls of *D. minor*, showing clearly the domed nature of the skull as compared with that of *D. novæ-hollandiæ*.
Fig. 7. Upper view of the cranial portion of the skull of *D. minor* with the pre-maxilla approximately in its proper relative position.
Fig. 8. Upper view of skull of adult *D. novæ-hollandiæ*.
Fig. 9. Side view of skull of immature *D. novæ-hollandiæ*. The frontal bone of the right side is removed.

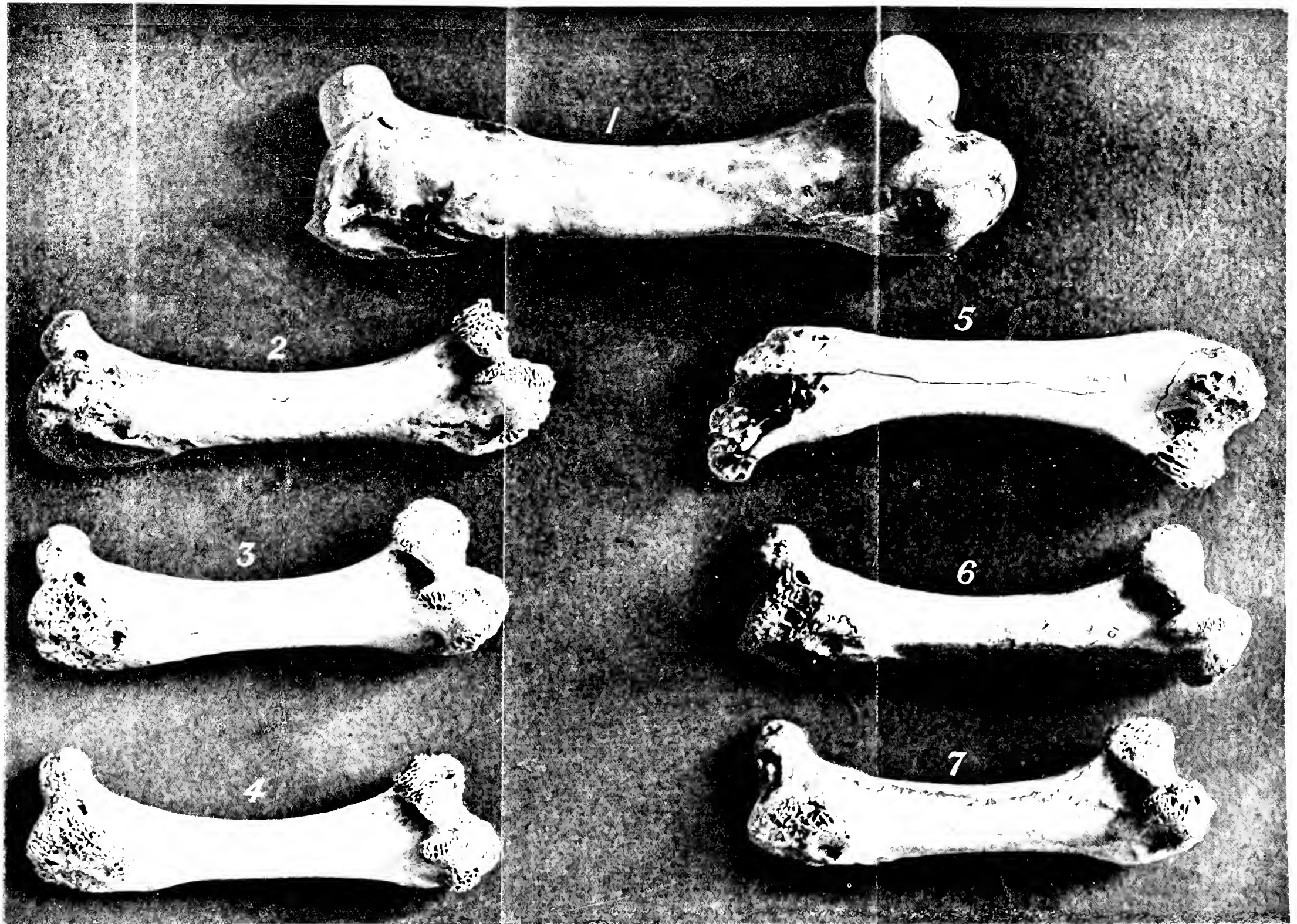
PLATE 7.

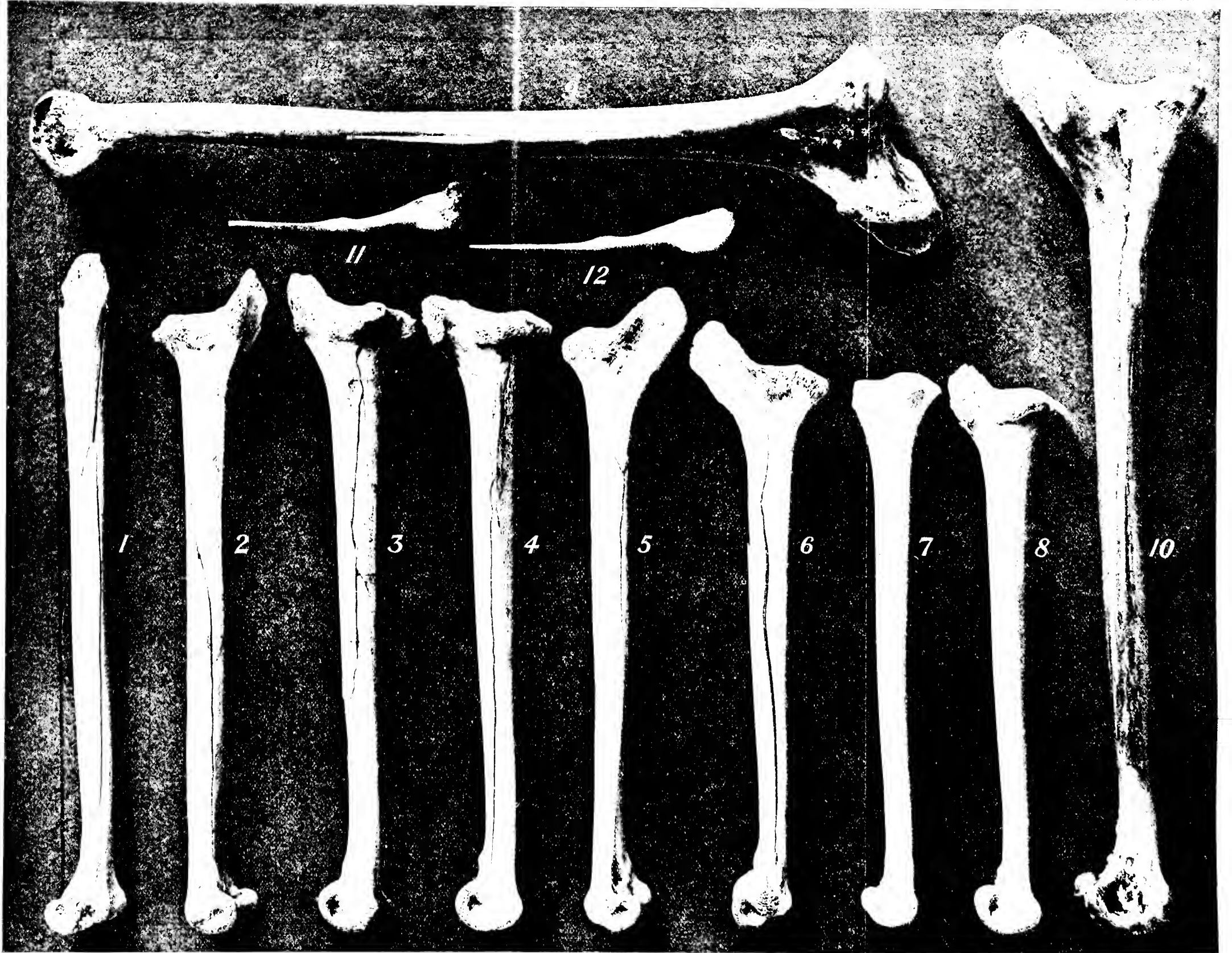
- Fig. 1. Ventral view of sternum of *Dromæus novæ-hollandiæ*.
Fig. 2. Ventral view of sternum of *D. minor*.
Fig. 3. Side view of sternum of *D. minor*.
Fig. 4. Dorsal view of sternum of *D. minor*.

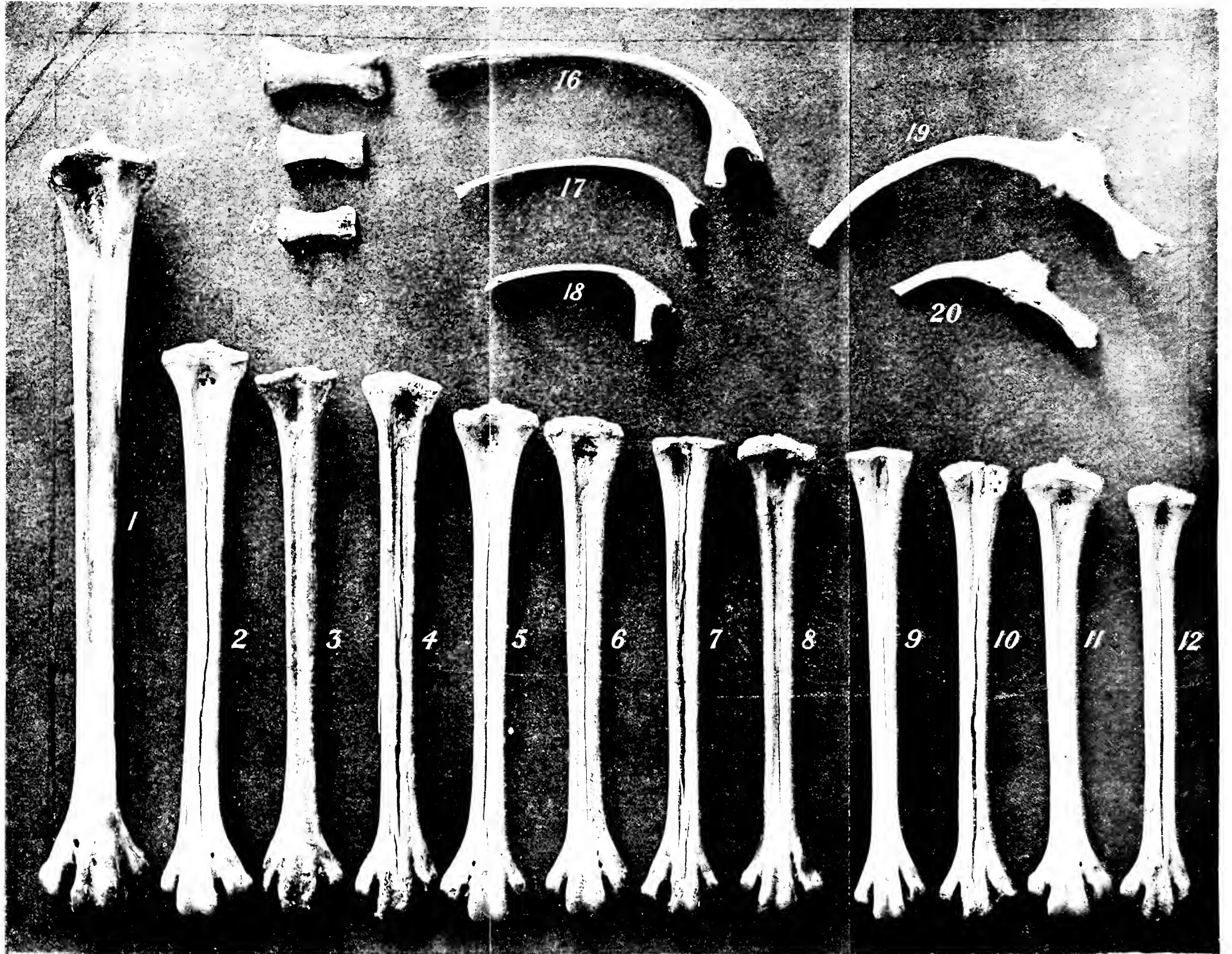
PLATE 8.

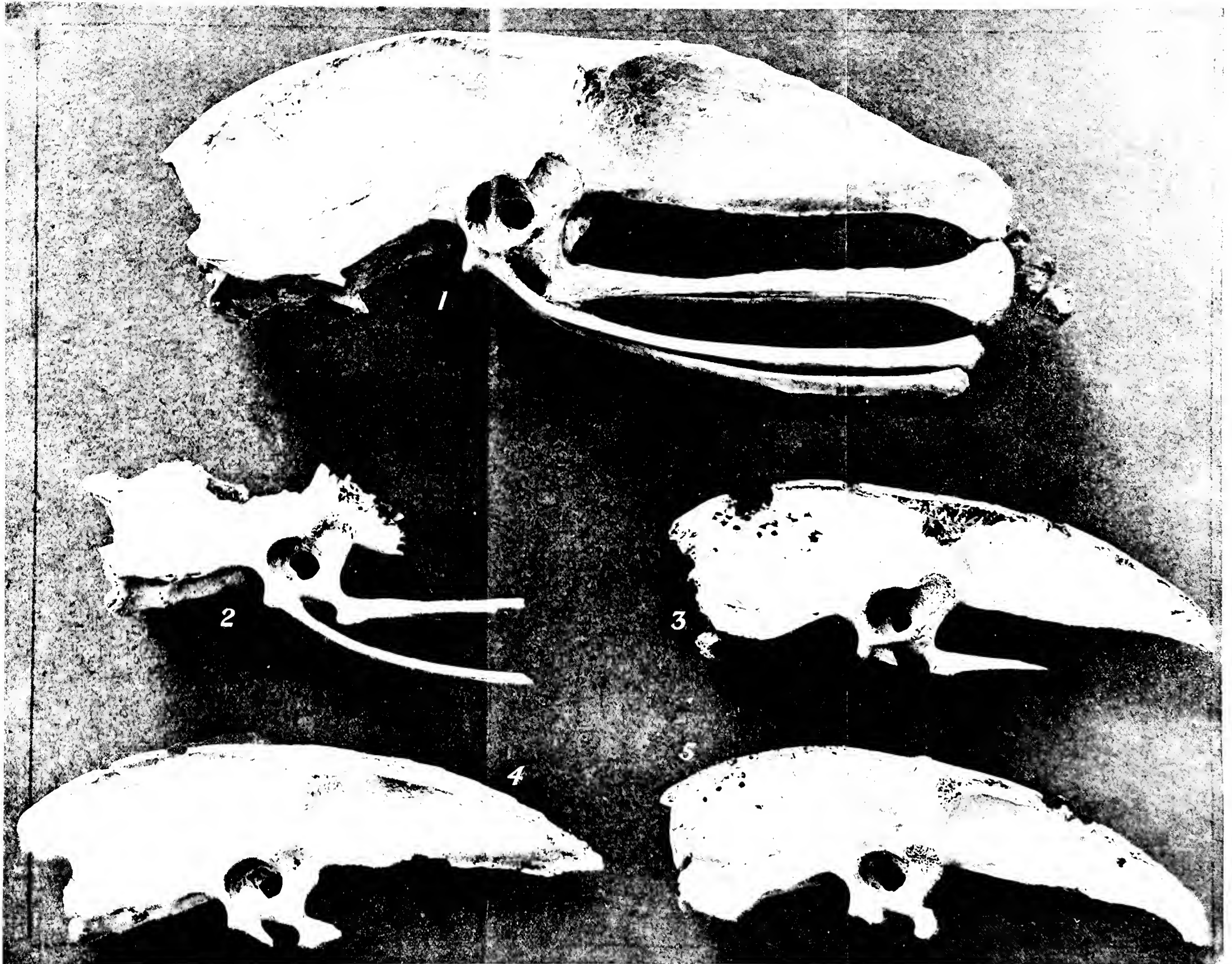
- Fig. 1. Dorsal view of skull of *Dasyurus bowlingi*.
Fig. 2. Dorsal view of skull of *Dasyurus bowlingi*.
Fig. 3. Dorsal view of skull of *Dasyurus maculatus*.
Fig. 4. Side view of lower jaw of *Dasyurus bowlingi*.
Fig. 5. Side view of lower jaw of *Dasyurus bowlingi*.
Fig. 6. Side view of lower jaw of *Dasyurus maculatus*.

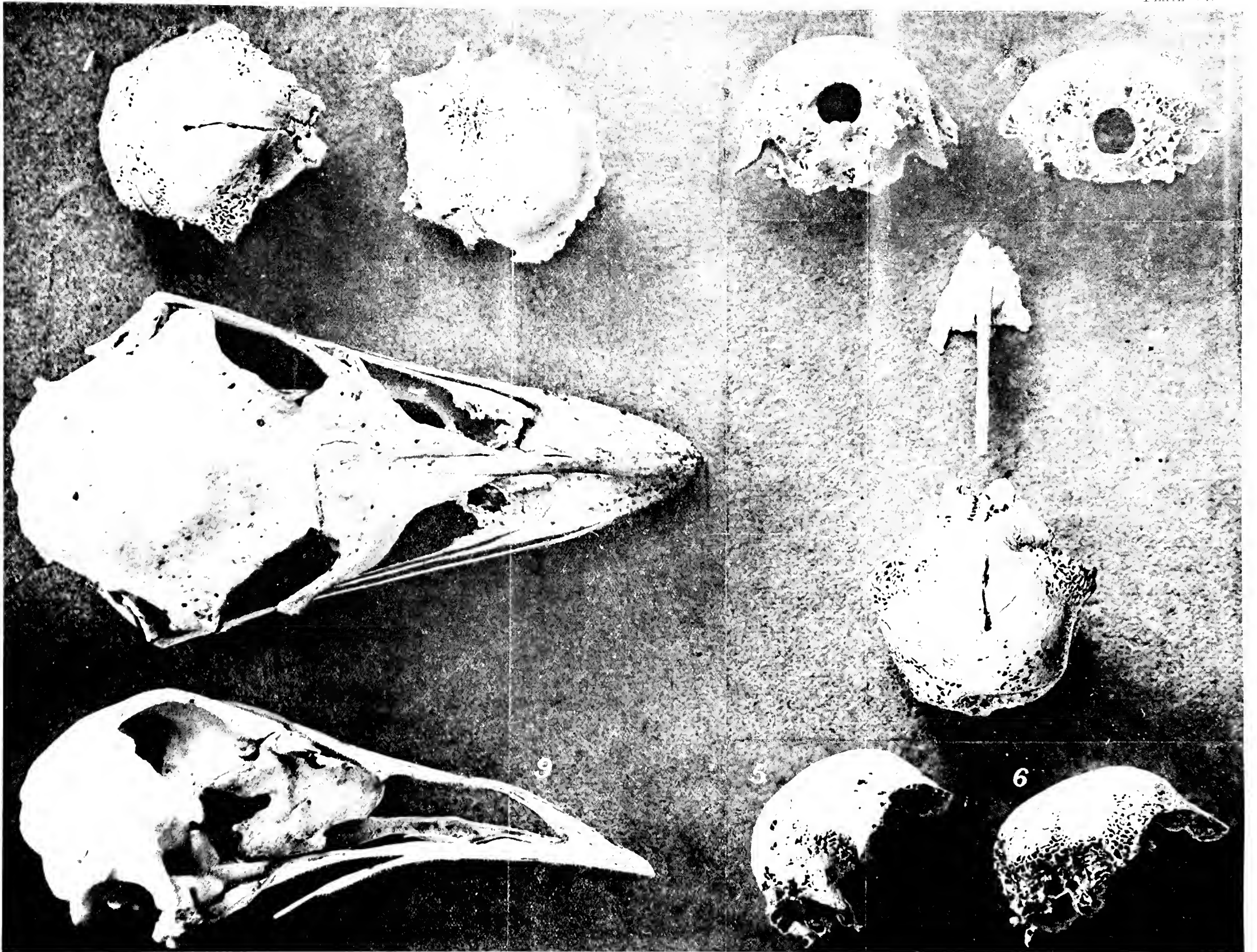


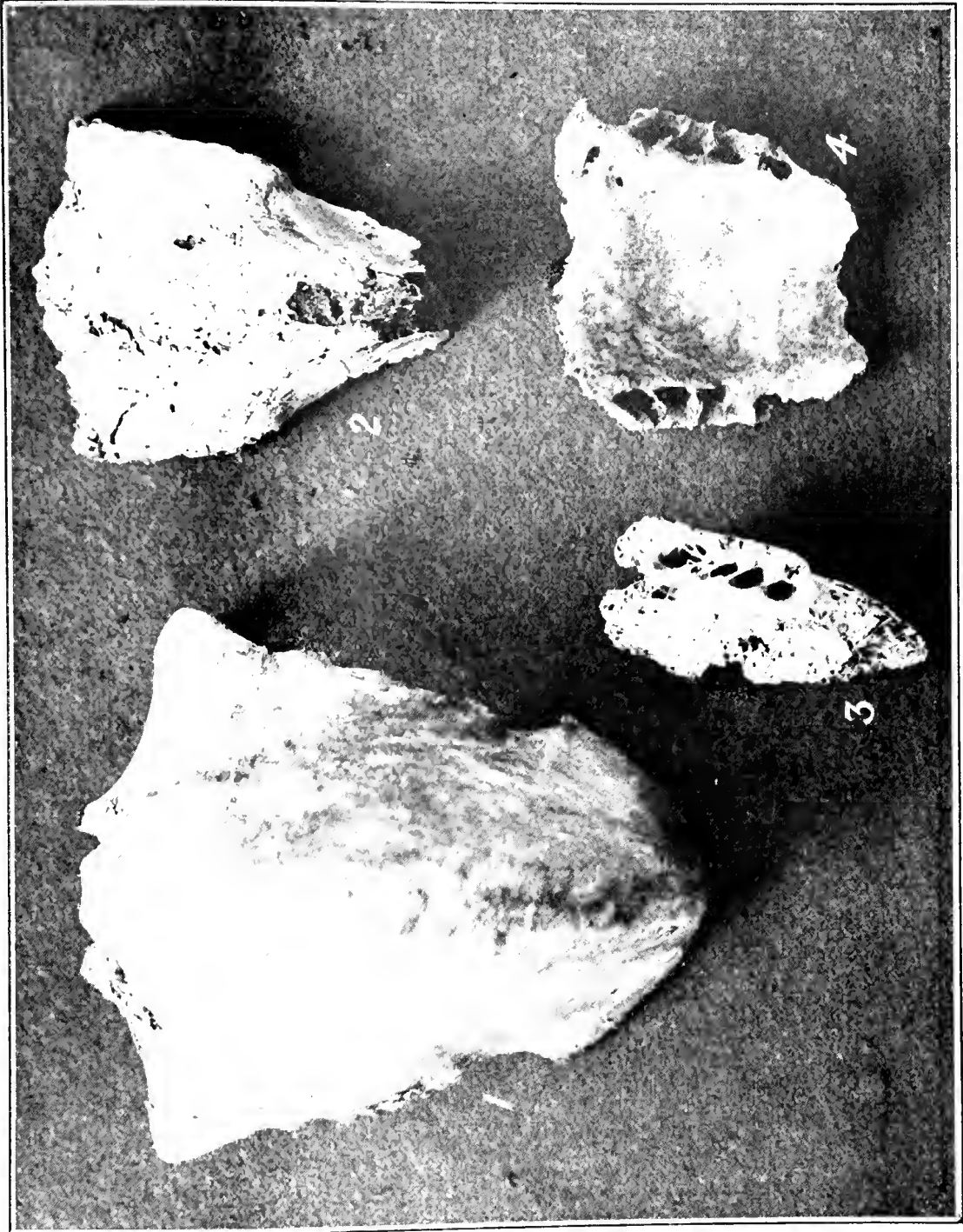


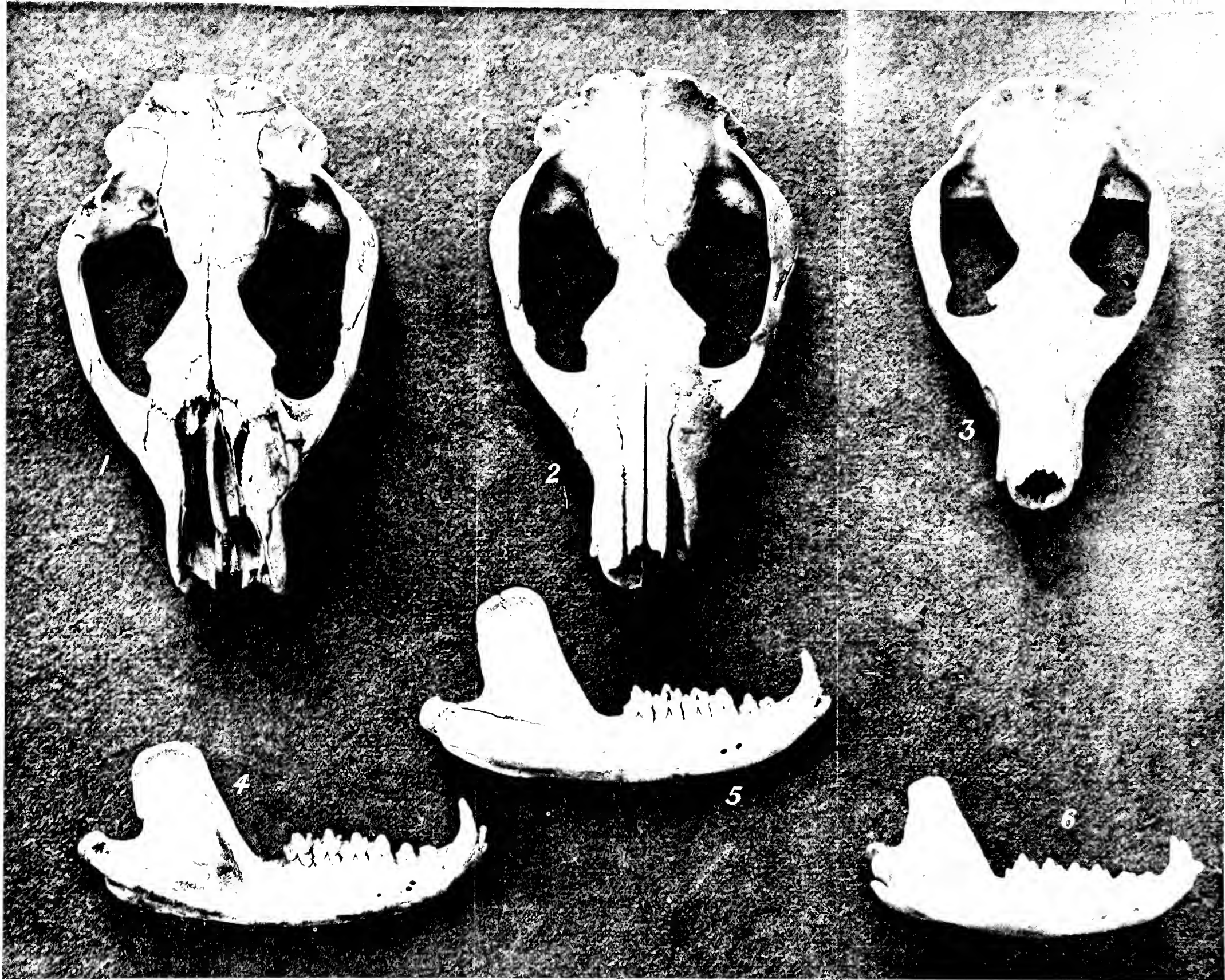












THE EXISTING SPECIES OF THE GENUS PHASCOLOMYS.

By Baldwin Spencer, C.M.G., M.A., F.R.S., Hon. Director of the National Museum, and J. A. Kershaw, F.E.S., Curator of the Zoological Collections.

(Plates 9, 10, 11.)

In this paper we propose to deal principally with the question of the relation to one another of the species of *Phascolomys* that have been described as inhabiting Victoria, Tasmania, and the Islands of Bass Strait. At the present time, three existing species of the genus are recognised in Australia, viz. :—*Ph. ursinus* of Tasmania and the Islands of Bass Strait, *Ph. mitchelli* of Victoria, New South Wales, and South Australia, and *Ph. latifrons* of South Australia. The latter with its almost silky fur, its hairy nose, and strongly marked post-orbital processes, is a very clearly defined species.

Until quite recently it was supposed that the Bass Island forms were extinct, and *Ph. ursinus* has been known only by specimens from Tasmania. Mr. Oldfield Thomas,* describing the latter animal, says—“This species, the oldest known of the group, presents a remarkable exception to the usual rule of size in Tasmanian animals, these being generally larger instead of smaller than their continental allies. The species seems to be well distinguished from *Ph. mitchelli* by this character of size, but otherwise there appears to be no difference of importance between the two.”

The investigation of a collection of sub-fossil bones from King Island has caused us to inquire into the history of this species, an outline of which we propose to give.

During the year 1797, a ship called the *Sydney Cove* ran on shore in Bass Strait, between Preservation and Rum Islands, which form part of the Furneaux group, and lie off the south-west coast of Flinders Island. Hunter, then Governor of New South Wales, sent a boat down from Sydney to rescue the ship-wrecked crew, and this party brought back with it the first found wombat†. It only lived six weeks in captivity, and in August, 1798, Hunter sent its body to England “for the inspection of the learned members of the Literary and Philosophical Society of Newcastle-upon-Tyne.”

* *Brit. Mus. Cat.* 1888, p. 217.

† It is, however, difficult to say positively whether this first wombat was brought back to Sydney by the first expedition sent to rescue the crew of the *Sydney Cove* or by Flinders himself when he went down on a second expedition to the scene of the wreck in the schooner *Francis*, leaving Port Jackson on February 1, 1798, and returning on March 9th.

Early in 1798, Bass had made his celebrated expedition in a whale boat, penetrating the strait that now bears his name, and in October of the same year, accompanied by Flinders, he again set out, this time in a small sloop called the *Norfolk*. During this expedition he found and brought back a wombat from Cape Barren Island.* It is commonly stated that Bass found the first wombat, but this is not so. As a matter of fact, Hunter sent his specimen to Newcastle in August, 1798, and Bass only returned to Sydney with his in January, 1799. It is also evident that Flinders knew of the existence of the animal when, late in 1798, he accompanied the schooner *Francis* on its second visit to the wreck of the *Sydney Cove*. He refers several times to it, calling it by its native name, that is, the name applied to the mainland form by the aborigines of New South Wales. Thus, for example, he says†—"The stations whence angles were taken for a survey of the channel and surrounding lands, were—first, Point Womat, a rocky projection of Cape Barren Island;" and, again, speaking generally of the Furneaux Islands,‡ he says—"No other quadrupeds than the kangaroo, womat, and duck-billed aculeated ant-eater were found upon the islands;" and, lastly, he says§—"Clarke's Island afforded the first specimen of the new animal called *Womat*, but I found it more numerous upon that of Cape Barren; Preservation and the Passage Isles do not possess it. The little bear-like quadruped is known in New South Wales, and called by the natives womat, wombat, or womback it burrows like a badger, and on the continent does not quit its retreat till dark; but it feeds at all times on the uninhabited islands, and was commonly seen foraging amongst the sea refuse on the shore, though the coarse grass seemed to be its usual nourishment."

In 1800, Bewick issued the fourth edition of his *History of Quadrupeds*, and in this|| appears in full the letter dated August 5th, 1798, addressed by Hunter to the Philosophical Society of Newcastle, in which he states the position of the island on which the animal was found and describes it.¶ Amongst other things he says—"It is about the size of a badger, a species of which we supposed it to be from its dexterity in burrowing in the earth, by means of its fore paws; but on watching its general motions, it appeared to have much of the habits and manners of a bear. . . . This animal has lately been discovered to be an inhabitant of the interior of the country also. . . . The natives call it womback."

This is undoubtedly the earliest notice published of any species of *Phascolomys*, and was indeed the only description of the animal

* Collins. *An Account of the English Colony of New South Wales*, 2nd Edit., 1804, p. 469.

† Flinders. *Voyage to Terra Australis*, 1814, Vol. i. Introduction, p. cxxviii.

‡ *Loc. cit.*, p. cxxxiv.

§ *Loc. cit.*, p. cxxxv.

|| 4th Ed., 1800, p. 522.

¶ The latitude of the Island is given as 40° 36' S., thus proving conclusively that, as Flinders says, the first wombat came from Clarke Island.

sent to Europe up to the year 1800. Bewick gives no scientific name to the animal, but above Hunter's letter appears a quaint figure of the animal, which is entitled "The Wombach." There can be no doubt that this account formed the source of information upon which Shaw founded his very brief description of *Didelphys ursina*.

His description reads as follows:—*

"Ursine opossum."

"*Didelphis ursina*. *D. flavescens labio superiore bifido*.

Yellowish O. with bifid upper lip.

The largest of all the opossums: size of a badger: colour, pale yellow: fur, longish and sub-erect: nose strongly divided by a furrow.

Native of New Holland: a species very lately discovered and not yet fully or satisfactorily known or described."

The letter from Hunter, and Shaw's brief description, seem to have attracted no attention, but when, in 1802, Collins† published his *Account of the English Colony in New South Wales* he included in it Bass' description of the specimen that was captured on Cape Barren Island. It is, at least, a curious fact that in this lengthy account no reference whatever is made to Hunter's specimen; on the contrary Collins speaks of Bass' finding on Cape Barren Island "a new quadruped which was also a grass eater." He goes on to say—"This animal, being a stranger, appears to merit a particular description. The wom-bat (or, as it is called by the natives of Port Jackson, the *Wombach*) is a squat, thick, short-legged, and rather inactive quadruped, with great appearance of stumpy strength, and somewhat bigger than a large turn-spit dog." It is difficult to account for this, because certainly Flinders, and without doubt Bass also, were well aware of the previous capture of wombats on Clarke Island; it is indeed, as pointed out previously, quite possible that the first specimen was actually captured by Flinders himself.

In describing the animal from Bass' notes, Collins says that its head measures 7 inches in length, the body $23\frac{5}{16}$ inches, and that its weight was from 25 to 30 lbs. The animal was a female, and amongst wombats this sex is heavier than the male. Collins describes how Bass chased one "and with his hands under the belly suddenly lifted him off the ground and laid him upon his back, along his arm, like a child. . . . He carried the beast upwards of a mile, and often shifted him from arm to arm, sometimes laying him upon his shoulder, all of which he took in good part, until being obliged to secure his legs while he went into the brush to cut a specimen of new wood, the creature's anger arose with the

* General Zoology, 1, Pt. 2, p. 504.

† 1st Ed., Vol. ii., p. 153; 2nd Ed., 1804, p. 466. In this work an account is given of Bass and Flinders' voyage in the *Norfolk*, during which they finally proved Tasmania to be an island.

pinching of the twine ; he whizzed with all his might, kicked, and scratched most furiously, and snapped off a piece from the elbow of Mr. Bass' coat." To those who are acquainted with the animals in their living state, the idea of Bass carrying for a mile, apparently with ease, a full-grown female specimen of *Phascalomys ursinus* (as at present recognised) which does not usually weigh much less than 50 lbs., is suggestive of some mistake having been made in this account. It would take a very strong man to hold and carry a full-grown Tasmanian wombat if it behaved as Mr. Bass' specimen did. *i.e.*, "whizzed with all his might, kicked, and scratched most furiously." By some curious error, either Bass or Collins confused the account of the wombat with that of some other animal in regard to the teeth. Towards the close of his description, which is otherwise quite correct, Collins wrote—"The opening of its mouth is small ; it contains five long grass-cutting teeth in the front of each jaw, like those of the kangaroo : within them is a vacancy of an inch or more ; there appear two small canine teeth of equal height with, and so much similar to, eight molars, situated behind, as scarcely to be distinguishable from them. The whole number in both jaws amounts to twenty-four." The description is accompanied by a drawing of the animal, which is quaint but unmistakable, and bears a strong resemblance to, though it is much larger than, Bewick's figure. The style of drawing and curious pose of the animal, the position of the front and hind legs and of the head—all of these are identical in the two illustrations. We think there is very little doubt that they were drawn by the same hand. There is no evidence that any white man, up to that time, had ever seen the mainland wombat—all that they knew was that a similar creature did exist in New South Wales.

In neither Bewick's nor Collins' account was any scientific name applied to the animal.

During the years 1800-1804, the celebrated French expedition under the command of Baudin was engaged in exploration around the coast of Australia and Tasmania.

One of Baudin's ships, the *Naturaliste*, sailed for Europe in 1802, parting from the other two ships, the *Geographe* and *Casuarina*, at King Island. The *Naturaliste* carried to Europe specimens of the wombat, which presumably came from King Island, though this is not definitely stated. In 1803, E. Geoffroy published a preliminary description* of the animal brought to Europe by the *Naturaliste*, and proposed the generic name of *Phascalomys*. Evidently he was quite unacquainted with the works of Bewick and Shaw, but had seen Collins' account, because he says that the animal described by Bass, "a le porte de nos nouveaux animaux : mais il en est bien certainement différent, si les observations qui ont été publiées sur leurs dents sont exactes." He adds, "Ils ont été trouvés à la côte occidentale de la

* *Annales du Muséum d'histoire naturelle*, Vol. 2, 1803, p. 364.

Nouvelle-Hollande." In those early days, ideas with regard to Australian geography were naturally rather vague. Geoffroy says that the wombats were 17 inches long, but as they were young, there was reason to think that if the two that remained could be kept alive, they would reach the size of a badger. He also adds that they appear to be endowed with very little energy, they prefer to sleep during the day, and, like burrowing animals, search for their food at night time.

In the same year, Desmarest mentioned the animal under the name of *Wombatus fossor*.^{*} It is evident that he had not seen, or at least, carefully investigated a specimen. Sevastianof, writing in February, 1807, describes the skins of two quadrupeds sent to the Museum in St. Petersburg by a correspondent of the Academy, living in London, named Waxel.[†] One of these was a specimen of *Dasyurus maculatus*, the other was a species of wombat "decouvert" says Sevastianof, "par les navigateurs anglois Bass et Flinders dans la nouvelle Galle du Sud." He goes on to quote Desmarest's description of *Wombatus fossor*, and adds finally, "Desmarest a rangé ce quadrupede dans le même ordre et sous-ordre, que Dasyure tacheté. Il est carnassier par ce qu'il a six incisives et deux canines à chaque machoire." Sevastianof had only a skin, of which he gives a very fair figure, and it is evident that Desmarest's name was applied in the first instance to the specimen secured by Bass.

In 1807 there appeared also the first edition of the first volume of the letterpress of Péron's Voyage; the atlas to this appeared in 1808.[‡] In the first edition, there appears a plate,[§] drawn by Lesueur, with the following legend—"Nouvelle-Hollande: île King. Le wombat (*Phascolomys wombat*)." Good drawings are given of a light and dark variety of the animal, together with four young ones. The letterpress describes how four naturalists, including Péron and Lesueur, were left stranded on King Island, when a violent gale forced the exploring vessels to stand out to sea. The naturalists were hospitably entertained by some English sealers, the leader of whom was a man named Cowper, from whom they gathered many particulars concerning especially the emu that then existed in large numbers on the island. Unfortunately, beyond describing how Cowper and his associates had domesticated the wombats, which went out during the day-time to feed in the scrub and returned at night-time to the huts, and describing also the value of the animal as an article of food,

^{*} Desmarest. *N. Dict. d'Hist. Nat.*, xxiv., p. 14. We have unfortunately been unable to refer to this work and give the reference according to Sevastianof.

[†] Sevastianof. *Mem. de l'Acad. de St. Petersbourg*, i., 1807, p. 443. Plate 17.

[‡] Péron et Freycinet. *Voyage de Découvertes aux Terres Australes*. The letterpress and atlases were issued separately. Of the two volumes of letterpress, the first edited by Péron appeared in 1807, the second edited first by Péron, and, after his death, continued by Freycinet, appeared in 1816. The first part of the atlas, with forty-one plates of views and illustrations of Natural History objects by Lesueur and Petit appeared in 1808, the second part, edited by Freycinet, containing fourteen charts, appeared in 1811. A second edition of part i. of the atlas, containing sixty-eight plates, appeared in 1824.

[§] Plate 28. In the second edition it is plate 58.

they tell us very little about it. In one part Péron says that later on he intends to deal in greater detail with the animals to which he makes brief reference, but unfortunately, he died before his work was completed, and in regard to the Bass Island wombat, the only really valuable record in Péron's work is this plate. Possibly the figures were drawn from life by Lesueur during his enforced stay on the Island. The legend attached to the plate proves clearly that in 1808, the name *Phascolomys wombat* was applied by Lesueur and Petit to the King Island species.

In the year 1802, also, Charles Grimes,* Acting Surveyor-General of New South Wales, made a voyage of discovery in the *Cumberland* from Sydney to King Island, and in a journal kept by Flemming, it is stated that the party from his ship met the members of the Baudin expedition, and that "the captain (Robbins) hoisted His Majesty's colours behind the French tents." The journal also says that on Thursday, 30th December, 1802, they "caught four emus, three badgers, three porcupines, and a kangaroo"—badger being the popular name then applied to the wombat.

While Baudin with his three boats, the *Geographe*, *Naturaliste*, and *Casuarina*, was exploring the southern coasts of Australia, he met Flinders at Encounter Bay. Flinders, in the *Investigator*, had previously to this visited King Island and there found the wombats† which were well-known to him after his experiences amongst the islands of the Furneaux Group. He says—"On stepping out of the boat, I shot one of those bear-like little quadrupeds, called womat, and another was afterwards killed." Flinders was detained by the French at Mauritius, but material collected by Brown, who accompanied him as a naturalist, evidently reached Europe safely, for in 1808, Everard Home read a paper before the Royal Society in which he embodied an anatomical account of it written by Brodie.‡ Home says that the wombat was a male, that it "was brought from the islands in Basse's Straits by Mr. Brown, the naturalist attached to Captain Flinders' voyage of discovery. It lived in a domesticated state for two years. . . . It was quiet during the day, but constantly in motion during the night. . . . It appeared to have arrived at its full growth, weighed about 20 lbs., and was about 2 feet 2 inches long."

In 1811, Illiger enumerated two forms under the names respectively of *Phascolomys fusca*, Geoff., and *Amblotis fossor*, the latter genus being founded because Illiger, on account of the wrong description of the teeth given by Collins, naturally imagined that the animal originally described under the name *Vombatus* could not be the same as that to which the generic title *Phascolomys* was afterwards given. The latter animal he distinguished as *Phascolomys fusca*.§

* Historical Records of Port Phillip. Edited by Shillinglaw, 1879.

† *A Voyage to Terra Australis*, 1814, p. 206.

‡ *Trans. R.S.*, 1808, p. 304.

§ *Prodr. Syst. Mamm. et Avium*, 1811, pp. 77-78.

We now come to a description by Leach, published in 1815,* in his *Zoological Miscellany*. In the matter of brevity and inadequateness, it much resembles the original one of Shaw, but it is accompanied by a better figure. The description is as follows:—"Phascolomis Vombatus. P. pallidé fulvescente-brunneus: naso obscuriore; unguibus elongatis. Wombach. Bewiek, Gen. Hist. of Quadrup., Ed. 4, p. 522. Habitat in Australasia." Then he goes on, "Wombat phascolomis. Pale fulvescent-brown: nose darker: claws elongated: inhabits New Holland.

For an account of the anatomical structure of the Wombat Phascolomis, see Philosophical Transactions for 1808. It is named Wombat, or Wombach, by the natives of New South Wales, who kill it for food, its flesh being considered very delicate. The usual length of this animal is about 2 feet, exclusive of the tail." Reading this, one would feel doubtful as to whether the writer had ever seen the animal, but on referring to Gray's *List of the Specimens of Mammalia in the collection of the British Museum*, p. 95, published in 1843, the following entry occurs:—"b. Young: discoloured, having been in spirits. (The one figured in Leach, Z. Misc. t. 69)." Only five specimens of wombat are recorded, the one mentioned above, two from New Holland, one from Mr. Gould's collection, and a young one from Van Diemen's Land. No locality is given for Leach's specimen, nor does he help us in his own description, beyond saying that its habitat is New Holland, and that Home described the anatomy of the species. Home's specimens we know came from King Island. In Thomas' catalogue (1888), apparently the same specimen is described as a young skin, and the locality of Tasmania is ascribed to it. It would be interesting to know the definite authority for this locality, as, up to the time when Leach published, that is, twenty-eight years before Gray's catalogue was issued, there is no record of any true Tasmanian specimen having been sent to Europe.

It is to be presumed that, as neither Gray nor Leach in 1815, nor Gray in 1843, give any definite locality for this particular specimen, none was known when those writers published, more especially since Gray carefully gives the locality of every other specimen. So far as the name is concerned, it does not matter, inasmuch as that of *Phascolomys Wombat* had been applied to the King Island species eight years before Leach published his description. There can, however, be no reasonable doubt that the specimen described by Leach came from the Bass Strait Islands.

Cuvier, writing in 1817,† describes and figures the animal and its skull. He says that only one species is known, which is of the size of a badger and lives on King Island‡ and that this is identical

* Leach, p. 102, Pl. 96.

† Geo. Cuvier. *Regne Animal*, Pl. 51.

‡ He was acquainted with Bass' animal, which was, he says, externally the same as the wombat, but had a different dentition, and refers to Illiger therefor calling it *Amblothis*.

with Shaw's *Didelphis ursina*. The figure that he gives is one of a brown variety, and was drawn from a stuffed specimen in the Paris Museum—presumably one of those captured during Baudin's expedition. Lesson and Garnot, describing the zoological results of Duperry's voyage in 1826, say*—"Nous ne trouvâmes qu'une seule peau de wombat ou phascolome à Sydney (*didelphis ursina*, Shaw; *phascolomys wombat*, Pér. et Les.) animal qu'on n'observe que sur la côte sud et dans les petites îles du détroit de Bass."

In 1831, Owen, when describing the specimens of wombat in the collections of the Royal College of Surgeons,† stated definitely that the distribution of *Phascolomys Wombat* was "King Island and near Port Jackson," and makes no reference at all to Tasmania.

It is, we think, quite certain from the above records that before the year 1831 no wombat had been sent to Europe from Tasmania.‡ With the solitary exception of the skin which Lesson and Garnot mention as found in Sydney in 1826, there is no record of a specimen actually secured on the mainland, and even in this instance there is no proof that the skin was that of a mainland animal. It is quite likely that it had been brought to Sydney from one of the Islands in Bass Strait. It is difficult to believe that no specimens were sent from New South Wales, but, if any were, no record of them appears to have been published, and, apparently, it was taken for granted that the wombats of King, Clarke, Cape Barren, and other islands in Bass Strait were identical with those of New South Wales; indeed, Owen's statement in regard to the distribution of *Phascolomys Wombat*, quoted above, makes this quite clear.

In 1838, Ronald Gunn,§ one of the earliest naturalists in Tasmania, contributed to the *Annals of Natural History* a paper entitled "Notices of some Mammalia and Fish from Van Diemen's Land," and to this, Gray added some notes in which, referring to the wombat, he says—"I have seen Bass' specimen, which is now in the museum of the Natural History Society of Newcastle-on-Tyne; it is the same as the one we now usually receive from Van Diemen's Land, only discoloured by having been kept in spirit." It is evident that this particular specimen must have been the one sent to England by Hunter, and not by Bass.

In 1838, Owen described a mutilated sub-fossil cranium found by Mitchell in the Wellington Valley in New South Wales, under the name of *Phascolomys mitchelli*—this being the first occasion on which a distinct name was given to a mainland form.|| In his description,

* Duperry. *Voyage Autour du Monde*. Zoologie par Mm. Lesson et Garnot, Tome i., 1826 p. 399.

† *Cat. R.C.S.*, 1831. p. 78.

‡ In 1831, a large wombat reached England, but whether it came from Tasmania or Australia is not known. This particular animal lived in the Zoological Society's gardens for five years; in 1836 it died, and its anatomy was described by Owen.

§ Gunn. *Ann. Nat. Hist.* 1., p. 103, 1838. Gray's note is on p. 107.

|| Mitchell's *Three Expeditions in to the Interior of Eastern Australia, &c.* Letter from Owen, dated May 8th, 1838, containing, *inter alia*, description of *Phasc. mitchelli*.

Owen remarks that it is a little larger than the largest wombat's cranium in the Hunterian collection. This is not surprising, since the latter specimens were all presented by Home, and came from King Island.

In 1836, Owen described the anatomy of a specimen* under the name of *Phascolomys wombat*, Péron, at the same time making the following remarks:—"The individual lately dissected at the museum of the Zoological Society had lived at the gardens upwards of five years. The one dissected by Sir Everard Home in 1808 was brought from one of the islands in Bass Strait, and lived as a domestic pet in the house of Mr. Clift for two years. This animal measured 2 feet 2 inches in length, and weighed about 20 lbs. It was a male. The society's specimen was a female and weighed, when in full health, in October, 1833, 59½ lbs." Owen does not say where his specimen came from. The first definite notice of the existence of a wombat in Tasmania that we can find is in the paper published by Gunn in 1838, to which we have already referred. The author, Mr. Ronald Gunn, was well known as a naturalist in the early days of Tasmania.† In this he describes the animal under the generic title *Phascolomys*, but gives no specific name. He states that one large specimen that he secured measured 36 inches from snout to tail, and 34 inches in circumference.

Waterhouse,‡ writing in 1841, accepts the name *Phascolomys wombat*, and says that "the wombat is found in New South Wales, South Australia, and Van Diemen's Land, as well as in some of the Islands in Bass's Straits." Gunn's collection was presented to the British Museum, and possibly it included the young specimen mentioned by Gray in his catalogue,§ with the locality given as Van Diemen's Land. So far as we can ascertain this was the first occasion on which a specific name was applied to a definite example of a Tasmanian wombat, Gray regarding it as an example of *Phascolomys ursinus*.

In 1845, Owen in his article on Marsupialia in *Todd's Cyclopaedia*,|| deals with many points in the anatomy of the wombat and figures a complete skeleton, the name *Phascolomys fusca* appearing under the figure. This is the only mention that he makes of this specific name. In the same year he exhibited at a meeting of the Zoological Society¶ "the skull of a wombat (*Phascolomys vombatus*, Auct.) from Van Diemen's Land, and the skull of a wombat transmitted by Governor Grey from Continental (South) Australia." He pointed out their differences and named the new continental form *P. latifrons*. In 1847** Gray drew attention to certain differences

* *P.Z.S.*, 1836, Pt. 4, p. 49.

† "Notices accompanying a Collection of Quadrupeds and Fish from Van Diemen's Land. *Annals Nat. Hist.*, Vol. i., 1838, p. 101.

‡ Jardine's *Naturalist's Library*, 1841, p. 300.

§ *List of the Specimens of Mammalia in the Collection of the British Museum*, 1843, p. 95.

|| Vol. iii., 1839-1847, fig. 105.

¶ *P.Z.S.*, 1845, Pt. xiii., p. 82.

** *P.Z.S.*, 1847, Pt. xv., p. 41.

in the teeth of three skulls, two from Van Diemen's Land, and one from New South Wales, and suggested that there might be more than one species confounded under the name *Phascolomys vombatus*. Matters remained in this state until, in 1853, Owen described two skulls in the collection of the Royal College of Surgeons* as distinct from *Phascolomys vombatus*. For these he proposed the name *P. platyrhinus*, that is, under different names as regards two of them, Owen at that time recognised the three recent species that are now accepted, viz., *Phas. vombatus* (= *Phas. ursinus*), *Phas. platyrhinus* (= *Phas. mitchelli*), and *Phas. latifrons*. Apparently, however, he regarded the first of these as distributed on the mainland as well as in Tasmania and the islands. Some confusion arose in regard to the South Australian species, named originally by Owen on the strength of a skull only. When the skin of the hairy-nosed wombat of South Australia was first seen it was not identified as belonging to the same animal to which Owen gave the name *P. latifrons*. Gray accordingly founded a new genus and species for it,† *Lasiacanthus m'coyi*; Gould called it *Phascolomys lasiorhinus*‡ and Krefft described a dark variety under the name of *P. niger*.§ Of the distinctness of *P. latifrons* there is no doubt. There remains the question of the Eastern mainland species, that of Tasmania, and that of the islands.

In 1865, Murie published a paper dealing in detail with the various species.|| He came to the conclusion that *P. mitchelli* and *P. platyrhinus* were identical, but retained the latter name for the recent species, and also, like Owen, recognised two other species—*Phascolomys wombat* and *Phascolomys latifrons*. These results he confirmed in 1867, but curiously says nothing definite with regard to the geographical distribution of the species. McCoy, writing of *Phascolomys wombat* in 1868,¶ said, "This is now known to be confined to Tasmania and other islands south of the Australian continent, and as I have demonstrated from the specimens on the table, it is specifically distinguishable with ease and certainty by the characters of the skull and skin, pointed out by Dr. Murie and others, from the wombats of the mainland, which were at one time supposed to be referable to it." Krefft,** in 1871, says again that *Phascolomys wombat* "is peculiar to Tasmania and the islands of Bass Strait. The New South Wales wombat (*Phascolomys platyrhinus*) is found on the east and south coast, extending even as far as Victoria, where also a brown variety occurs. This eastern wombat differs little from the Tasmanian one, except that it is larger and grows to over 80 lbs. in weight."

* *Descriptive Catalogue Osteological Series, R.C. Surgeons, Vol. i. 1853 p. 334.*

† *A. M. N. H. 1863, p. 854.*

‡ *Mammals, Pls. 59 and 60. 1863.*

§ *Mammals of Australia, 1871. Text to Pl. v.*

|| *Murie. P.Z.S., 1865.*

¶ *Proc. R. S., Victoria, 1868, p. 266.*

** *Mammals of Australia. Text to Pl. v.*

In 1888, Thomas published his well-known *Catalogue*, and in this used the names that have been applied ever since to the existing species, viz., *Ph. ursinus* for the Tasmanian and Bass Strait Island species; *Ph. mitchelli* for the common mainland form with naked muzzle; *Ph. latifrons* for the hairy-nosed, South Australian species.

The main points in regard to the history of the various species of wombat up to the present time may be briefly summarized as follows:—

- (1) The discovery of a wombat on Clarke Island in Bass Strait, to which the specific name of *ursina* was first given. (1797).
- (2) The discovery of a wombat on King Island. (1802).
- (3) The discovery of a wombat on the mainland of Australia, first in New South Wales, later in Victoria, supposed to be identical with the Bass Strait Island species. (Exact date uncertain).
- (4) The discovery of a wombat in Tasmania, supposed to be identical with the island and mainland species. (Exact date uncertain.)
- (5) The discovery of a fossil species (*Ph. mitchelli*) on the mainland. (1838.)
- (6) The discovery of *P. latifrons* in South Australia. (1845.)
- (7) The determination of *P. platyrhinus* on the mainland, as distinct from *P. ursinus* of Tasmania and the islands of Bass Strait. (1865.)
- (8) The discovery of the specific identity of *P. mitchelli*, the fossil form, and *P. platyrhinus*, involving the retention of the former name for the New South Wales and Victorian species. (1865.)
- (9) The discovery of sub-fossil remains of the King Island wombat.* (1903.)
- (10) The discovery on Flinders Island by Mr. J. A. Kershaw of living specimens of wombats identical with the sub-fossil remains from King Island. (1908.)

A comparison of the skulls from King, Deal, and Flinders Islands shows that the same species of wombat was distributed over all three, and as Clarke and Cape Barren Islands form part of the Furneaux group, separated from Flinders Island and from one another by only shallow, narrow passages, we may safely conclude that the wombat which once existed on these two islands was identical with that on Flinders.

* We have dealt at length with this in a previous paper. Cf. "A Collection of Sub-fossil Bird and Marsupial remains from King Island, Bass Strait." *Memoirs of Nat. Mus.*, Melbourne. No. 3, p. 28.

It is many years ago since the King Island wombat was exterminated. When the island was visited by a party of the Victorian Field Naturalists Club in 1887, no trace of it was discovered nor, during the process of clearing the land that has been vigorously carried on during recent years, has any record of a living wombat been made.

Flinders Island afforded the only prospect of securing a living specimen of the Bass Strait species, and in the hope of finding that the animal had not been completely exterminated there one of us (J. A. Kershaw) took advantage of a trip organized by the Australasian Ornithologists' Union to visit the island in November, 1908. A considerable part of the north, north-east, and north-west coast line was examined, and abundant evidence was obtained to prove that the animal, though very rare and difficult to obtain, was not extinct. In the deserted hut of a half-caste native at Killiecrankie two skins were found. On the extreme north end of the island an incomplete skeleton, including a skull with the skin still attached to it, was secured, and part of another skin on the north-east coast. On the island there are, in addition to a few settlers, a number of half-castes, or rather the much-mixed offspring of whites, Australian, and Tasmanian aborigines. The existence of the wombat is well-known to them, but it is by no means easy to secure. During the three days spent in searching no living animal was seen, and all that could be done was to make arrangements to have one sent to Melbourne when captured. On Cape Barren Island, where most of the half-castes live on the native reserve, the animal was found to be quite extinct, though well-known under the name of "badger," the common term "wombat" not being known there.

Though not successful in obtaining a living specimen, Mr. Kershaw's visit was the means of proving that the animal is still extant, and in addition to the sub-fossil remains from King Island we now possess also recent remains, including skins from Flinders Island.

In January, 1909, Dr. J. W. Barrett organized a trip to the islands, and kindly invited Mr. Kershaw to join the party, with the object of searching again for the animal. Once more, owing to the very limited time available, the search proved fruitless, but we are much indebted to Dr. Barrett for his cordial co-operation.

At the present time the matter stands thus: Evidence of the existence of a wombat is forthcoming in regard to King Island on the west side of Bass Strait, and Deal, Flinders, Barren, and Clarke Islands on the eastern side. Those of King, Deal, and Flinders Islands are specifically identical, and it may be taken for granted, as already said, that the same species inhabited Barren and Clarke Islands. The animal is now extinct everywhere except on Flinders Island.

EXISTING SPECIES OF THE GENUS PHASCOLOMYS.

The specimen sent to Newcastle by Governor Hunter in 1798 belonged to this species, and it was to this that Shaw referred when he described the animal that he calls *Didelphys ursina*. At a later time other writers described the same species under other generic and specific names. In 1803, Geoffroy, ignorant of the fact that a specimen had been sent to England five years earlier, and briefly described by Shaw under the name of *Didelphys ursina*, proposed the generic name Phascolomys. The true designation of the wombat of the Bass Strait Islands is therefore *Phascolomys ursinus*, Shaw; and the following names, all of which have at one time or another been applied to the Island species, are synonyms of the former:—

- Wombatus fossor*, Desmarest (1803).
- Phascolomys wombat*, Péron et Lesueur (1808).
- Amblotis fossor*, Illiger (1811).
- Phascolomys fusca*, Illiger (1811).
- Phascolomys vombatus*, Leach (1815).
- Phascolomys bassii*, Lesson (1827).

The question now arises as to the relationship of *Phascolomys ursinus*, the mainland species, and the Tasmanian species. There is no question as to the specific distinction of the hairy-nosed wombat, *Phascolomys latifrons*, of South Australia. The remaining mainland form, *Phascolomys mitchelli*, is closely allied to the Tasmanian form, which again, up to the present time, has been supposed to be identical with the Bass Strait Island species, that is *Phascolomys ursinus*. In the following tables we give the measurements of the skull, teeth series, &c., of a series of Phascolomys from Bass Strait Islands, Tasmania, and Victoria, as well as a certain number of *Phascolomys latifrons*.

Table 1.—Skull Measurements of Phascolomys from King and Deal Islands.

Number of Specimen ..	1.	2.	3.	4.	5.	6.	7.	8.	Deal Island Specimens.	
									Adult.	Juv.
Basal length ..	130	..	132.5	121	..	..	..	105	102	82
Greatest breadth ..	106	99	107	103	105	105	104	105	53	..
Nasal length ..	55	..	54	46	51	..	..	53	53	..
„ greatest breadth	40	..	44	39.5	41	..	..	39.5	39	30
„ least breadth ..	11	..	15	13	12.5	..	..	14	13	9
Interorbital breadth	40	38	47	42	41	42	43	41	41	..
Breadth between tips of postorbital processes ..	43	39	48.5	44.5	42	43	46	44	42	..
Constriction ..	33	32	36	33.5	34	33	36.5	30.5	36	..
Palate length ..	84	74	81	..	77	..	..	80	77	59
Diastema length ..	29.5	27	30	26	26.5	..	..	31	25	18
Palatine foramen ..	9	8.5	10	7.5	7.5	..	..	9	5.5	6
Basi-cranial axis ..	42	..	45	41	..	..	40	..	..	..
Basi-facial axis ..	91	81	90	83	82	..	..	83	83	63
Facial index ..	216.5	..	200	202.5	..	..	..	..	..	..
Length of tooth series	45	40	43	42	43	44.5	44.5	41.8	43	35

Table 2.—Skull Measurements of Phascolomys from Flinders Island.

Number of Specimen ..	1.	2.	3.	4.
Basal length	133.5	..	..	..
Greatest breadth	108(?)	104	..	..
Nasal length .. .. .	..	..	..	..
„ greatest breadth .. .. .	..	33	..	..
„ least breadth .. .. .	..	..	..	..
Interorbital breadth .. .. .	..	37	..	..
Breadth between tips of postorbital processes .. .. .	..	40	..	..
Intertemporal constriction .. .. .	..	..	..	..
Palate length	80	78.5	..	..
Diastema length	31	27	..	..
Palatine foramen	8.5	9.5	..	..
Basi-cranial axis	44	..	..	..
Basi-facial axis	91	88.5	..	..
Facial index	206.7	..	..	..
Length of tooth series—upper jaw ..	41.5	41	..	..
„ „ lower jaw ..	43	..	45	42

Table 3.—Skull Measurements of *Phascolomys mitchelli*.

Number of Specimen	1. Adult.	2. Adult.	3. Adult.	4. Juv.	5. Juv.	6. Juv.	7. Aged.	8. Adult.	9. Adult.	10. Aged.	11. Aged.	12. Adult.	13. Adult.	14. Adult.	15. Adult.
Basal length.	170	164	165	116	122	123	170	176	175	166	181	169	170	170	173
Greatest breadth	134	135	127	91	102	101	142	147	141	133	155	138	146	134	135
Nasal length	72	74	70	53.5	52	56	74	76	80	72	75	77	70	75	72
" greatest breadth	52	52.5	52.5	36	41	38	61	60	58	56	63	55	54	48	54
" least breadth	16	18.5	21	12.5	15	12	19	18	18	22	23	19	19	19	15
Interorbital breadth	52.5	broken	55	39	42	41.5	65	61	59	60	69	61	65	55	57
" Breadth between tips of post-orbital processes	52.5	"	56	41	43	41	71	66	63	66	75	63	67	56	60
Intertemporal constriction	45.5	"	44	37	40	36	51	54	48	55	60	52	46	46	48
Palate length	111	106	106	75	81	79	110	115	116	109	122	111	111	109	112
Diastema length	44	37.5	40	27	28	27	39	45	46	43	51	45	42	41	41
Palatine foramen	14	9	11.5	7.5	9	6	6	9	8	9	8	10	11	10	10
Basi-cranial axis	53	52	53	39	40	40	59	59	53	54	55	53	54	55	54
Basi-facial axis	118	114	116	79	83	85	112	118	122	116	128	119	118	116	120
Facial index	222	219	218	202	207	212	189.8	200	230	214.8	232.7	224.5	218.5	210	222
Length of tooth series	51	52	50	38	42	40	53	55	54	51	54	53	52	53	52

Table 4.—Skull Measurements of Phascalomys from Tasmania.

	Number of Specimen	1.	2.	3.*	4.	5.	6. Old.	7.	8.	9.	10. Juv.	11.	12.	13. Juv.
Basal length	..	163	151	141	142.5	151	148	139	135	148	..	..	159.5	125
Greatest breadth	..	138	127	116	118	128	119	113	115	123	98	129	128.5	102
Nasal length	..	69	63	62	59.5	66	59	57	60	62	53.5	65	70.5	58.5
" greatest breadth	..	53	47	44	45.5	42	45.5	44	44	45	35	47	50	37
" least breadth	..	18.5	13	14	13	17.5	16.5	14	14.5	15	13	13	16	12
Interorbital breadth	..	60	52	47	48	48	53	44	45	50	38	52	50	41
Breadth between tips of postorbital processes	..	65	51	49	50	50	55	46	43	52	39	51	54.5	42
Constriction	..	48	39	39	40	40	39	34	36	41	31	39	45.5	33
Palate length	..	102	96	87	90	97	97	87	84	93	75	97	97	84
Diastema length	..	40	36.5	32	32.5	38	36	34	32.5	34	28.5	37.5	36	30
Palatine foramen	..	12.5	13.5	12	10	10	10.5	11.5	11.5	12	9	14	11	10
Basal-cranial axis	..	53.5	50	46	47	48	48	47	45	49	38	50	49	41
Basal-facial axis	..	111	104	96	96	104	101	93	92	100	77.5	101	102	86
Facial index	..	207	208	207.5	204.5	216.6	210	197.9	204	204.8	203	205	208	209
Length of tooth series	..	51	50	47	47	48	47.5	43	43	46	38	50	47	40

* Type specimen of *Phascalomys tasmaniensis*.

EXISTING SPECIES OF THE GENUS PHASCOLOMYS.

Table 5.—Skull Measurements of *Phascolomys latifrons*.

Number of Specimen ..	1.	2.	3.	4.	5.	6.
Basal length	160	144	152	161	159	162
Greatest breadth	134	116	125	126	130	128
Nasal length	73	55	60	73	73	69
„ greatest breadth	59	58	58	57	61	60
„ least breadth	28.5	27	22	29	27	31
Interorbital breadth	65	56	58	64	65	broken
Breadth between tips of postorbital processes	77	67	66	77	75	80
Intertemporal constriction	42.5	38	42	42	47	..
Palate length	98	89	94	100	105	..
Diastema length	42	37	40	42	38	40
Palatine foramen	6	15	9.5	7	6	6
Basi-cranial axis	49	47	49	54	52	52
Basi-facial axis	112	98	104	117	110	107
Facial index	228	208	212	216.6	211.5	205.7
Length of tooth series	49	47	49	48	52	52

Table 6.—Measurements of Humerus.

—	King Island. Juv.	King Island. Aged.	Flinders Island. Imm.	Flinders Island.	Tasmanian. Adult.	Tasmanian Adult.
Length	71	98	90.5	..	110	110.5
Greatest width distal end	17.5	42	41.5	42	..	..
—	Tasmanian. Adult.	Tasmanian. Imm.	Tasmanian. Imm.	Tasmanian. Imm.	P. mitchelli.	P. mitchelli.
Length	114	115	115	111	128	126
Greatest width distal end	52	..	..	..	..	..
—	P. mitchelli.	P. mitchelli. Imm.	P. mitchelli. Imm.	P. mitchelli. Aged.	P. mitchelli.	P. latifrons.
Length	125	122	122	117	116.5	111
Greatest width distal end .. .. .	..	..	..	53.5	..	..

Table 7.—Measurements of Femur.

—	King Island.	King Island.	Flinders Island.	Tasmanian. Adult.	Tasmanian. Adult.	Tasmanian Imm.
Length	125	120	122	146	143	147

EXISTING SPECIES OF THE GENUS PHASCOLOMYS.

Table 7.—Measurements of Femur—*continued*.

—	Tasmanian. Imm.	Tasmanian. Juv.	Tasmanian. Juv.	P. mitchelli.	P. mitchelli.	P. mitchelli.
Length	144	147	141	171	170	161

—	P. mitchelli. Imm.	P. mitchelli. Imm.	P. mitchelli.	P. latifrons.
Length	157	155	150	135

Table 8.—Measurements of Lower Teeth Series of King Island Specimens.

Number of Specimen ..	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Length of series ..	44	45.5	46	45	44.7	45	46	46	45.5	46

Number of Specimen ..	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
Length of series ..	46	42.5	41	44	44	45	42	43	44	44

Number of Specimen ..	21.	22.	23.	24.	25.	26.	27.	28.	29.*	30.*
Length of series ..	44.5	40	43.5	43.5	43.5	44	46	45	30	35.5

Number of Specimen ..	31.*	32.*	33.*	34.*	35.*	36.*	37.*	38.*
Length of series ..	34	29	33.5	31	31	32	33.5	36

* Those marked with an asterisk are immature. In specimens numbered 29, 32, and 34, the fourth molars not yet in position.

Table 9.—Measurements of Lower Teeth Series of *Phascolomys mitchelli*.

Number of Specimen ..	1.	2.	3. Juv.	4. Juv.	5. Juv.	6. Juv.	7. Adult.	8.	9.	10.
Length, teeth series ..	52	52	44	43	44	44.5	52	52	52	54

EXISTING SPECIES OF THE GENUS PHASCOLOMYS.

Table 10.—Measurements of Lower Teeth Series of Tasmanian Species.

Number of Specimen ..	1. Juv.	2.	3.	4.	5.	6.	7.	8.	9.
Length, teeth series ..	40	48.5	52	52	51	50	48	48.5	42*

* M* not in correct position.

Some of the main features in the above Tables may be summarized as follows:—

1.—King, Deal, and Flinders Islands Species.

Basal length ..	..	..	..	..	..	121 - 132.5
Greatest breadth ..	..	..	..	..	..	99 - 107
Teeth—upper series ..	..	..	..	..	..	40 - 45
„ lower series ..	..	..	..	..	..	41 - 46
Length of humerus ..	..	..	..	..	..	90.5 - 98
„ femur ..	..	..	..	..	..	120 - 125
Greatest width of humerus ..	..	..	..	..	..	41.5- 42

2.—Tasmanian Species.

Basal length ..	..	..	..	..	..	135 - 151 (163)
Greatest breadth ..	..	..	..	..	..	116 - 128.5 (138)
Teeth—upper series ..	..	..	..	..	..	47 - 50 (51)
„ lower ..	..	..	..	..	..	48 - 52
Length of humerus ..	..	..	..	..	..	110 - 115
„ femur ..	..	..	..	..	..	143 - 147

3.—*P. mitchelli*.

Basal length ..	..	..	..	..	..	164 - 181
Greatest breadth ..	..	..	..	..	..	127 - 155
Teeth—upper ..	..	..	..	..	..	50 - 52
„ lower ..	..	..	..	..	..	52 - 54
Length of humerus ..	..	..	..	..	..	116 - 128
„ femur ..	..	..	..	..	..	150 - 171

4.—*P. latifrons*.

Basal length ..	..	..	..	..	..	144 - 162
Greatest breadth ..	..	..	..	..	..	116 - 134
Teeth—upper ..	..	..	..	..	..	47 - 52
„ lower ..	..	..	..	..	..	48 - 48.5
Length of humerus ..	..	..	..	..	..	111
„ femur ..	..	..	..	..	..	135

The structural peculiarities of *P. latifrons*, such as the very prominent post-orbital processes and the hairy muzzle, serve to distinguish it at once. In regard to the other three groups, the difference is mainly one of size. It will also be noticed that, so far as the measurements are concerned, the Tasmanian species and *P. latifrons* are very closely similar to one another.

The Island species, the Tasmanian and *P. mitchelli* appear to represent three well-marked forms, so far as size is concerned. The

larger Island specimens, of course, approximate in size to the smaller Tasmanian ones, just as the larger Tasmanian ones do to the smaller *P. mitchelli*. In the case of the Tasmanian form, one skull, for which we are indebted to Mr. H. H. Scott, curator of the Launceston Museum, is remarkable for its relatively large size. Its basal length is 163 mm., the next largest being 151 mm., but even this largest Tasmanian skull is slightly smaller in size than the smallest *P. mitchelli*, and it stands out as a giant amongst the Tasmanian specimens. When other bones, such as the humerus and femur of the Island species (Plate 11, Figs. 9-14) are seen side by side with those of the Tasmanian form, the difference in size and in robustness of the bones is very marked, and they clearly indicate two animals of very different form.

The measurements of both the upper and lower tooth series serve also to mark the Island species as distinct. The maximum length of the upper tooth series of the Island species is 45 mm., the minimum of the Tasmanian species being 47 mm., and that of *P. mitchelli* 50 mm. The maximum of the lower tooth series of the Island species is 46 mm.; the minimum of the Tasmanian form is 48 mm., and that of *P. mitchelli* 52 mm.

A reference to Plate 11, Figs. 1 and 2, illustrating respectively side views of the skulls of a King Island and Tasmanian wombat, serve to show not only the difference in size, but one or two features of structural importance in which they differ from one another. In the Tasmanian specimen (and the same is true of *P. mitchelli*) the paroccipital process slants downwards and markedly forwards, in the King Island skulls it always runs nearly straight down, the forward slant being scarcely noticeable. A second point is that in the Island specimens the malar bone is always strongly bowed downwards and outwards beneath the orbit (cf. also Plate 9, Fig. 1, Plate 10, Fig. 1). In regard to the two specimens figured in Plate 11, it will be observed that the snout region in Fig. 1 is distinctly more elongate than the same part in Fig. 2, with the result that, seen from above the nasals, more completely hide the premaxillæ from view in the Island than in the Tasmanian specimen. This feature, though it happens to be rather marked in the two examples figured, is subject to a certain amount of variation, and cannot be relied upon.

The two skins obtained on Flinders Island measure respectively 715 mm. and 675 mm., the latter being slightly incomplete. The hind foot of the first measures 65.5 mm. In the colour and general nature of its fur, the larger specimen, a male, is clearly similar to light-coloured specimens of *P. mitchelli* or the Tasmanian form. In the smaller specimen each hair is light-coloured at the tip, giving a general light greyish-brown colour to the fur, the darker basal part of each hair being hidden from view. This basal part is much more darkly coloured than in the case of the other example. In the

smaller one also, the fur has a curious silky appearance, with small curls all over it, but it is coarse to the touch.² There is also a light russet-brown line along the back.

In regard to the mainland species (*P. mitchelli*) and the Tasmanian wombat, the difference in size is not so marked as it is in the case of the Island species when the latter is compared with either of the two former. The exceptionally large specimen of a Tasmanian wombat skull sent to us by Mr. Scott (Plate 9, Fig. 7) is so abnormal in size that we feel it would be misleading to take this as the maximum size of Tasmanian specimens without drawing attention to the difference between it and the largest of all the other Tasmanian skulls. A glance at the measurements detailed in Table 4 will serve to show that this one is abnormal so far as Tasmanian wombats are concerned. We have therefore, in the summarized results of measurements, placed in brackets the figures referring to this skull and have taken the largest of the normal series of specimens as indicating what may be fairly regarded as the maximum size of Tasmanian wombats.

In either case it is evident that, so far as size is concerned, the Tasmanian specimens form a group well marked off from those of the mainland, commonly described under the specific name of *Phascolomys mitchelli*. As Mr. Oldfield Thomas* says—"The species seems to be well distinguished from *Ph. mitchelli* by this one character of size, but otherwise there appears to be no difference of importance between the two."

As a result of the evidence now available we have come to the conclusion that four species of existing wombats must be recognised, as follows:—

1. *Phascolomys ursinus*†, Shaw. The oldest known species of the genus confined to the Islands of Bass Strait, and now extinct in all so far as known, except Flinders Island. This is considerably the smallest species.
Type is the specimen sent to Newcastle by Hunter in 1798.
2. *Phascolomys mitchelli*, Owen. The largest species and the most common one on the Australian mainland. It extends over New South Wales, Victoria, and South Australia. The head and body measure 950–1150 mm. The basal length of the skull measures 160–180 mm.
Type (fossil) in Museum of the Geological Society, London.

* *Cat. of Marsupialia and Monotremata*, 1888, p. 217.

† For descriptive characters of this cf. "Collection of Sub-fossil Bird and Marsupial Remains from King Island, Bass Strait," Spencer and Kershaw. *Memoirs Nat. Mus.*, Melbourne, iii., p. 29.

3. *Phascolomys latifrons*, Owen. Characterized by the soft silky fur, hairy rhinarium, and prominent post-orbital processes.

Habitat, South Australia.

Type in the Museum of the Royal College of Surgeons.

4. *Phascolomys tasmaniensis*, sp. n. Size medium, intermediate in this respect between *Ph. mitchelli* and *Ph. ursinus*. Total length of the head and body 910 mm. Except in size it agrees closely in external form with *Ph. mitchelli*. Colour grizzled grey. Underfur fairly abundant, especially on the anterior part of the body.

Hairs within the ear light coloured.

Basal length of skull,* 141 mm.; greatest width, 116 mm.

Type (male) in National Museum, Melbourne.

Specimens vary somewhat in size, the smallest mature female in our possession having a total length of 780 mm., the largest female measuring 910 mm. One male measures 878, and a second (the type) 910 mm., which is probably about the maximum size of the male form, the female reaching a length of 950 mm.

The variation in colour is very considerable, from grizzled grey to black. In melanistic specimens the distal half of the long hairs is black, the proximal half dark-brown; the underfur is also dark-brown, but it is completely, or almost completely, hidden from sight by the black tips of the abundant long hairs. The hairs within the ear are dark-brown in colour. The general colour of the majority of specimens is grizzled-grey, with, at times, brownish or russet tinged areas. The grizzled appearance is due to the fact that the majority of the hairs are tipped with white, and these are interspersed with long, coarse, dark-tipped hairs, varying in number in different parts. They are frequently abundant enough to give a general dark colour to certain areas, such as the middle line of the back.

The underfur appears to be always noticeably thicker on the anterior part of the body, especially in the shoulder region.

In all specimens, excepting melanistic ones, the hairs within the ear are always light-coloured, sometimes almost white. The chin is brown, throat and chest uniformly light-coloured. There is considerable variation in the coarseness of the hair which is not generally so harsh as in *Ph. mitchelli*.

* For skull measurements of the type specimen, see Table 4, specimen No. 3.

In the following list we have enumerated the more important memoirs, &c., dealing with the genus *Phascolomys*, and have given a brief outline of their contents, so far as they are concerned, with the history of the species included in the genus.

1. *Bewick*.—*History of Quadrupeds*, 4th edit., p. 522, 1800. Contains in full the letter written by Hunter, accompanying the body of the wombat from Clarke Island sent to Newcastle. Above the letter is a figure of "the Wombach."
2. *Shaw*.—*General Zoology*, 1, Pt. 2, p. 504, 1800. Gives a short description of, presumably, the animal sent to England by Hunter (as no other was then known) under the name of *Didelphys ursina*.
3. *Collins*.—*Account of the English Colony in New South Wales*, 1st ed., vol. ii., p. 153, 1802. 2nd ed., 1804, p. 466. Includes a description of a wombat found by Bass on Cape Barren Island. The description of the teeth is wrong. The animal is figured, the drawing being remarkably similar to the one in Bewick.
4. *Geoffroy*.—*Annales du Museum d'histoire naturelle*, vol. 2, 1803, p. 264. Contains a preliminary description of certain animals collected on Baudin's expedition. The generic name of *Phascolomys* is proposed for the wombat. Reference is made to the animal described by Bass and to the nature of its teeth.
5. *Desmarest*.—*N. Dict. d'hist. nat.*, xxiv., p. 14, 1803. Refers to the animal described by Bass, and calls it *Wombattus fossor*.
6. *Sevastianof*.—*Mem. de l'Acad. de St. Petersbourg*, i., 1807, p. 443, Pl. 17. Describes a skin sent to the Museum in St. Petersburg, and says that it is the same species as the one discovered by Bass and Flinders.
7. *Péron et Freycinet*.—*Voyage de Découvertes aux Terres Australes*, Vol. i., letterpress, 1807; atlas, 1st part, 1808. Gives an account of the finding of wombats on King Island by the naturalists of Baudin's expedition. Plate 28 (1st edit.) represents light and dark varieties of the animals together with young ones, drawn by Lesueur. The animal is called *Phasecolomys wombat*, and the locality given is King Island.
8. *Home*.—*Trans. R. S.*, 1808, p. 304. Contains a description of the anatomy of a male wombat. It was one of those taken to England from King Island by Brown, and lived in a domesticated state for two years.

9. *Illiger*.—*Prodromus Syst. Mamm. et Avium*, 1811, pp. 77, 78. Refers to what is evidently the species sent to France from the Bass Strait Islands under the name of *Phascolomys fusca*, and proposes the genus *Amblotis* for Bass' animal, in consequence of the wrong description of teeth given by Collins.
10. *Flinders*.—*A Voyage to Terra Australis*, vol. i, p. 206, 1814. Describes the finding of wombats on King Island in April, 1802. Some were taken to England by Brown.
11. *Leach*.—*Zoological Miscellany*, p. 102, Pl. 96, 1815. Gives a very brief description of the animal, which he calls *Phascolomis vombatus*, together with a figure. He mentions Bewick's and Home's accounts as referring to the same animal, the usual length of which he says is 2 feet.
12. *Cuvier (G.)*.—*Règne Animal*, Tome i., p. 184, Pl. 51, 1817. Says that only one species is known; it is the size of a badger, lives on King Island, and is identical with Shaw's *Didelphis ursina*. Figures a brown variety from a stuffed specimen in the Paris Museum.
13. *Lesson and Garnot*.—In Duperry *Voyage autour du Monde*, Tome i., p. 399, 1826. The authors say that they could only secure one skin of the wombat in Sydney, and that it is only known from the southern coasts of Australia and the Islands of Bass Strait.
14. *Owen*.—*Catalogue, Royal College of Surgeons*, 1831. Gives the distribution of *Phascolomys wombat* as "King Island, and near Port Jackson," and makes no reference to Tasmania.
15. *Owen*.—*P.Z.S.*, p. 49, 1836. Description of the anatomy of *Phascolomys wombat* that had lived in the gardens for five years and weighed 59½ lbs.
16. *Gunn*.—*Annals Nat. Hist.*, Vol. i., p. 103, 1838. Says that *Phascolomys*, the wombat, is commonly known as the badger, and is found in various parts. One that he caught measured 36 inches in length and 34 in circumference.
17. *Gray*.—*Annals Nat. Hist.*, Vol. i., p. 107, 1838. In a note appended to Gunn's paper (15) Gray says that he has seen Bass' specimen at Newcastle, and that it was the same "as the one we now usually receive from Van Diemen's Land" (The specimen was Hunter's, not Bass').

18. Owen.—In Mitchell's *Three Expeditions into the Interior of Eastern Australia, &c.* Letter, dated May, 1838. Contains original description of *Phascolomys mitchelli*.
19. Waterhouse.—*Jardine's Naturalists' Library*, p. 300, 1841. Describes the animal under the name *Phascolomys wombat*, and gives its distribution as New South Wales, South Australia, and Van Diemen's Land. A short general account of the history of the nomenclature of the animal is also given.
20. Gray.—*List of Specimens of Mammalia in Collection of Brit. Mus.*, p. 95, 1843. Includes a young specimen from Van Diemen's Land.
21. Owen.—In article *Marsupialia* in Todd's *Cyclopedia*, p. 208, fig. 105, 1845. Figures a complete skeleton under the name *Phascolomys fusca*.
22. Owen.—*P.Z.S.*, p. 82, 1845. Gives the specific name *latifrons* to a South Australian form (skull); also exhibits skull of *Phascolomys* from Tasmania.
23. Waterhouse.—*Nat. Hist. of the Mammalia*, p. 246, 1846. Recognises two species—*Ph. wombat* (distribution as in 19), and *Ph. latifrons* from South Australia, and gives a general account of the knowledge of the genus up to date of publication.
24. Gray.—*P.Z.S.*, Pt. xv., p. 41, 1847. Describes and compares skulls from Tasmania and Australia, and suggests possibility of more than one species being confounded under name *Ph. vombatus*.
25. Owen.—*Trans. Z. S.*, p. 303, 1849. Describes and compares the skulls of a Tasmanian wombat as *Ph. latifrons*.
26. Owen.—*Cat. Ost. Ser. R. C. Surgeons*, Vol. i., 1853, p. 344. Describes two skulls from Australia under the name of *Ph. platyrhinus*.
27. Angas.—*P.Z.S.*, p. 268, Pl. 60, 1861. Describes and compares living specimens of the Tasmanian wombat and *Ph. latifrons*.
28. Gould.—*Mammals of Australia*, Introduction, p. 29, Plates 59 and 60, 1863. Recognises *Ph. wombat* from Van Diemen's Land and the Islands in Bass Strait; *Ph. latifrons* from Victoria and South Australia; *Ph. lasiorhinus* from Victoria and South Australia; and describes *Ph. niger* from South Australia (?). He figures the first three.

29. *Gray*.—*A.M.N.H.*, p. 457, Vol. xi., 1863. Describes *Ph. ursinus* from Van Diemen's Land, *Ph. angasii* from South Australia, *Ph. setosus* from Australia. The latter is the specimen figured by Gould as *Ph. latifrons*. Describes the first skin of *Ph. latifrons* that reached England under the name of *Lasiorhinus m'coyi*.
30. *Sclater*.—*A.M.N.H.*, Vol. xii., p. 78, 1863. States that Gray's *Ph. angasii* is identical with Gould's *Ph. niger*.
31. *Murie*.—*P.Z.S.*, p. 838, 1865. Contains general discussion with regard to the species of the genus described up to date. Gives figure of *Ph. latifrons* (animal), and of skulls of *Ph. latifrons*, *Ph. wombat*, and *Ph. platyrhinus*. States that *Ph. platyrhinus* is identical with *Ph. mitchelli*. Recognises *Ph. wombat* and *Ph. platyrhinus*, and *Lasiorhinus* as a sub-genus with the species *Ph. latifrons*.
32. *Murie*.—*P.Z.S.*, p. 798, 1867. Describes *Ph. platyrhinus* at length, and again recognises three species. Figures *Ph. platyrhinus*.
33. *McCoy*.—*P.R.S.*, Victoria, p. 266, 1868. States that the common Victorian species is *Ph. platyrhinus*, of which *Ph. niger* is only a variety, and with which *Ph. angasii* is identical. Recognises *Ph. setosus* as a distinct species.
34. *Krefft*.—*Mammals of Australia*, Text to Plate v. Says that *Ph. wombat* is peculiar to Tasmania and Islands of Bass Strait. *Ph. platyrhinus* occurs in New South Wales and Victoria.
35. *Grimes*.—*Voyage of His Majesty's Colonial Schooner "Cumberland" from Sydney to King Island and Port Phillip in 1802-3*. The journal kept by Flemming was published in *Historical Records of Port Phillip*, edited by John J. Shillinglaw, Melbourne, 1879. Grimes met Baudin at Sea Elephant Bay on the east coast of King Island, and on the return voyage to Sydney discovered the River Yarra. Several references are made to the capture of emus and wombats (called badgers) on King Island.
36. *Thomas*.—*Cat. Marsup. Brit. Mus.* Recognises *Ph. ursinus* of Tasmania and Islands of Bass Strait; *Ph. mitchelli*, the common mainland form; with naked rhinarium and *Ph. latifrons* in South Australia, with hairy rhinarium. The species as recognised by Thomas have been accepted up to the present time.

EXPLANATION OF PLATES.

PLATE 9.

- Fig. 1—*Phascolomys ursinus*. Shaw. King Island.
Fig. 2—*Phascolomys tasmaniensis*. Sp. n. Juv. Tasmania.
Fig. 3—*Phascolomys ursinus*. Shaw. King Island.
Fig. 4—*Phascolomys tasmaniensis*. Sp. n. Tasmania.
Fig. 5—*Phascolomys ursinus*. Shaw. King Island.
Fig. 6—*Phascolomys tasmaniensis*. Sp. n. Tasmania.
Fig. 7—*Phascolomys tasmaniensis*. Sp. n. Tasmania.
Fig. 8—*Phascolomys mitchelli*. Owen. Victoria.

PLATE 10.

- Fig. 1—*Phascolomys ursinus*. Shaw. King Island.
Fig. 2—*Phascolomys ursinus*. Shaw. King Island.
Fig. 3—*Phascolomys ursinus*. Shaw. King Island.

PLATE 11.

- Fig. 1—Side view of skull of *Phascolomys ursinus*. King Island.
Fig. 2—Side view of skull of *Phascolomys tasmaniensis*. Sp. n.
Fig. 3—Lower jaw of *Phascolomys ursinus*. King Island.
Fig. 4—Lower jaw of *Phascolomys ursinus*. King Island.
Fig. 5—Lower jaw of *Phascolomys tasmaniensis*. Sp. n. Juv. Tasmania.
Fig. 6—Lower jaw of *Phascolomys mitchelli*. Owen. Victoria.
Fig. 7—Lower jaw of *Phascolomys tasmaniensis*. Sp. n. Tasmania.
Fig. 8—Lower jaw of *Phascolomys tasmaniensis*. Sp. n. Tasmania.
Fig. 9—Femur of *Phascolomys ursinus*. Shaw. King Island.
Fig. 10—Femur of *Phascolomys tasmaniensis*. Sp. n. Tasmania.
Fig. 11—Femur of *Phascolomys ursinus*. Shaw. King Island.
Fig. 12—Femur of *Phascolomys mitchelli*. Owen. Victoria.
Fig. 13—Humerus of *Phascolomys ursinus*. Shaw. King Island.
Fig. 14—Humerus of *Phascolomys tasmaniensis*. Sp. n. Tasmania.

Much to our regret we overlooked the description of a new species of hairy-nosed Wombat published by Mr. C. W. de Vis in the *Annals of the Queensland Museum*, No. 5, p. 14, 1900. Mr. de Vis' description is based upon two entire specimens and a skull secured at St. George, on the Moonie River, in South-eastern Queensland, close to the New South Wales border. Externally it is indistinguishable from the South Australian species, *Phascalomys latifrons*, but Mr. de Vis, as the result of certain cranial peculiarities, regards it as distinct from the latter. In the collection of the National Museum, Melbourne, we have three skins, a stuffed specimen, and skulls of a hairy-nosed Wombat from Deniliquin, in the southern part of New South Wales, close to the Victorian border. One of us,* since this paper has been in print, has recorded these under the name of *P. latifrons*, thus widely extending the distribution of the species. In regard to the proportions of the skull, the shortness of the frontals, the pronounced ramification of the naso-frontal suture, and the backward cuneiform extension of the same, our Deniliquin specimen agrees to a large extent with those of Mr. de Vis, for which he has proposed the name of *Phascalomys gillespiei*, but we feel considerable doubt as to whether either the Queensland or the New South Wales form is specifically distinct from *P. latifrons*.

* J. A. Kershaw. *Victorian Naturalist*, vol. 26, p. 118, 1909

